

UNDERSTANDING NEWS SHARING DECISIONS
ON SOCIAL MEDIA

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UNDERSTANDING NEWS SHARING DECISIONS ON SOCIAL MEDIA

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News sharing has become a common user behavior in social networking services (SNS) and has been extensively studied as an emerging community practice. This dissertation presents four studies extending current news sharing knowledge. It also provides promising new directions for future investigation. Study 1 suggests that news sharing is a complex process. There are different cognitive processes pre, during, and after- one clicks the sharing button. Study 2 indicates that college students choose to share news on Instagram because it is easy to use, visually appealing, and easy connection to peers. Study 3 suggests that when an incentive is given, there are chances the initial sharing or non-sharing decision can be reversed. Study 4 examines international students' news reading and sharing experiences on social media and indicates that they face language and cultural barriers when reading news in the host country and adopt various strategies to identify the veracity of the news piece. Moving forward, this dissertation calls for future collaboration of various disciplines such as information science, computer science, communication and psychology. Finally, to reduce misinformation sharing, I provide recommendations that scholars and designers can test to solve this urgent social issue.

BIOGRAPHICAL SKETCH

Luping Wang completed his Ph.D. in the Department of Information Science at Cornell University, with a minor in Communication, in 2022. He worked in the Communication and Collaborative Technologies Lab led by Prof. Susan R. Fussell. Prior to Cornell, he received M.A. in Strategic Public Relations from Annenberg School of Communication and Journalism, University of Southern California.

Luping's main research interest lies in the intersection between behavioral science and human-computer interaction. As a mix-method and interdisciplinary researcher, he works in the context of understanding social media users' information sharing behavior. His past projects focused on investigating cognitive processes social media users engage when they make sharing decisions, as well as how factors like beliefs and motivations shape this experience. Drawing insights from qualitative and quantitative research, a higher-level theme of his work is to understand how people make sense of their online decisions. With the growing concern of misinformation dissemination, he envisions his work will contribute to the system and interface designs that can help social media users share less misinformation.

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Chapter 1: Introduction

An increasing number of American adults report that they frequently get news from social networking services (SNS), including Facebook, Twitter, YouTube and Reddit (Shearer, 2018). In addition to receiving news from friends and media accounts with which they connect or follow, social media users also actively share the news they read with friends on those platforms (Lottridge & Bentley, 2018; Bentley et al., 2019). With a single click of the share button, information can be disseminated to one's online social network. As Mitchell et al.'s work predicted (Mitchell & Rosenstiel, 2011), "news sharing may be among the most important developments in the contemporary media environment." Indeed, in the past ten years, news sharing has become an increasingly common practice for many social media users.

Along with the increasing popularity of sharing news on social media, fake news sharing has become an urgent public concern, especially since the U.S. presidential election in 2016 (Guess, Nagler & Tucker, 2019). Although the expression "fake news" is commonly used by the journalists and scholars, there is not a well-accepted definition. Allcott and Gentzkow (2017) define fake news as "news articles that are intentionally and verifiably false" (p.4). Others argue that fake news involves deliberate misinformation. Many social media users (news readers) agree that fake news is information that is not true and is created to shape others' views (Tufekci, 2018). For the purposes of this dissertation, I define fake news as a piece of information that includes content that is not fact-based but presented by the content creator as if it were true. It should be noted that fake news includes a broad range of topics including politics, public health, science, entertainment, etc.

The spread of fake news can influence public understanding of truth, shape personal beliefs and even threaten democracy and the economy (Allcott and Gentzkow, 2017). Recent research on fake news demonstrates that news sharing has been strategically weaponized to achieve political

goals or victimize (Hannan, 2018; Paletz, Auxier & Golonka, 2019). Social media platforms are major outlets for the rapid spread of fake news (Allcott & Gentzkow, 2017). At the same time, social media is also a major source of legitimate news (Mitchell, Gottfried, Barthel & Shearer, 2016). As a result, online users face an ongoing challenge of distinguishing between fake and legitimate news when they browse their social media channels. For example, during the 2016 U.S. election, the Facebook engagement level of top fake news pieces was higher than that of top true news stories (Silverman, 2016). A nationwide survey further found that although people were confident in identifying fake news (Barthel, Mitchell & Holcomb, 2016), they in fact struggled to evaluate the truthfulness of online messages (Wineburg, McGrew, Breakstone & Ortega, 2016).

Different stakeholders have attempted to address the issue of fake news using a variety of approaches. Social media platforms including Facebook and Twitter, are designing algorithms to detect and remove fake news from their services (Crowell, 2017; Lyons, 2017), sparking debate about the boundary of “freedom of speech” (Tufekci, 2018). Computer scientists use natural language processing to spot fake news (Zhao, Resnick, & Mei, 2015) by identifying linguistic signs of misinformation; social scientists look at what factors contribute to the human behavior of fake news sharing (Bakshy, Messing & Adamic, 2015); and psychologists are also interested in the role of emotions in the motivated sharing of fake news (Kim & Bock, 2011).

Finding proper ways to resolve fake news concern require researchers to take one step back and gain a more comprehensive understanding of the news sharing phenomenon from various perspectives. First, previous research has shown that many distinct factors influence the sharing decision, including demographics, previous sharing experience, source reliability, channels of sharing, etc (Li & Sakamoto, 2014; Reis et al., 2017; Flintham et al., 2018). Extensive studies have also investigated different user goals behind social media news sharing (Lai, 2019). For example,

Lee & Ma (2012) suggested that users share news in order to fulfill a range of personal and social “gratifications”, including information seeking, entertainment, status-seeking and socializing. Scholars agreed that people take many different considerations into account when deciding to share a piece of news or not. While these studies provide valuable insights, they rarely considered news sharing decision on social media as a process. Namely, an overarching framework of cognitive processes people engage in before, during and after sharing is lacking in the current literature. I thus propose an interview study to systematically examine sharing decision as a process, and further reveal what are some of the considerations in each of those sharing phases (Study 1).

Second, finding proper ways to resolve fake news concern also require researchers to keep up with the emerging trend, including understand new platforms and practices people use to share news. Much of recent research attention has been focusing on the phenomenon of public news sharing on platforms like Facebook and Twitter (Flintham et al., 2018; Lottridge & Bentley, 2018; Wang & Fussell, 2020). Yet, there is an emerging trend that has been reported in empirical studies and nationwide surveys: a growing number of Instagram users, especially those who are 18-24, are using this platform to access and share news (Auxier, 2020). Thus, in addition to understanding news sharing decision as a multi-stage construct (Study 1), a promising direction to complement the current news sharing literature is to investigate this Instagram news sharing practice (Study 2). Specifically, I propose a qualitative interview study that can offer the first insight into: (1) what types of news content do users share on Instagram, and which mode of sharing is popular; and (2) what are the reasons that people opt to share news on Instagram instead of other platforms?

Third, after gaining knowledge of how sharing decisions are made as a multi-stage process and across traditional and emerging social media platforms, this dissertation further explores whether sharing as a human behavior can be reversed in an online experiment. Inspired by past

studies of the social costs of friend-sourcing which made use of an extrinsic economic incentive to manipulate participants cost/benefit ratios (Rzeszotarski & Morris, 2014), I decide to use a range of monetary values to incentivize participants to reverse their declared sharing decision in exchange for extra study compensation. Study 3 plans to model: if users are given an external incentive to “flip” their original sharing/non-sharing choice, sharing items that they had previously opted not to share, or vice versa, how does this incentive affect their perceived costs versus benefits of the sharing decision? Moreover, this study tests what factors (e.g., demographics, topics, motivational factors) make people more “resistant” or “fluid” to incentives? This study sheds light on how the design of future systems might help to mitigate the spread of misinformation by helping users re-evaluate the decision of sharing it.

Lastly, while these three aforementioned studies provide new lenses for understanding social media users’ news sharing behavior, they focus on the context that people share in their familiar language and cultural environments. A less-studied user population in news sharing literature is newcomers (Komito & Bates, 2011), including immigrants and international students who live and study in a new culture apart from their native country. Literature suggested that many native users shared fake news because they had difficulties identifying them from true news, leading to “accidental” fake news sharing (Pennycook & Rand, 2018). It is plausible to suspect that the language and cultural unfamiliarity of new immigrants and international students could also contribute to this “accidental” sharing phenomenon, making them even more vulnerable when compared to natives. Therefore, taking one step back, I’m interested in a fundamental question: what international students’ news reading and sharing experiences are when they study in the U.S., and what are some of their observations of misinformation that travels from one country to another? (Study 4).

Research Goals and Approach

The overarching goal of this dissertation is to further advance the understanding of social media news sharing decision and what can be done to mitigate the increasing concern of fake news. In particular, I aim to understand the sharing decision as a process that encompasses different stages. Then, I plan to provide first insights into an emerging trend of Instagram news sharing. Next, I model quantitatively that whether the sharing decision can be reversed. It should be noted that these previously mentioned works are focusing on understanding news sharing in users' native language and relatively familiar cultural contexts. Thus lastly, I expand the current knowledge by focusing on a previously understudied and potentially vulnerable user demographic of newcomers (particularly international students) and learn about their social media news reading and sharing practices in the new environment.

I take a social and behavioral science research approach when designing each component of the dissertation studies. Grounded from information science theories and empirical studies, I evaluate users' sharing behavior by conducting mixed-method studies including interviews and online survey experiments. Specifically, by doing semi-structured, in-depth user interviews (Study 1, 2 and 4), I plan to gain a deeper understanding of how the sharing decisions are made, as well as the sharing behavior across different platforms and demographics. I also conduct a carefully designed online survey experiment with news sharers to understand whether their sharing decisions can be reversed (Study 3). The data generated from both qualitative and quantitative studies provide insights for me to propose new interfaces, algorithms and tools to address the fake news issue in the context of social media news sharing. The knowledge built from this dissertation is fundamental to support and improve users' sharing experiences. The following paragraph provide an overview of highlights for each of the study:

First, guided by the fundamental question: what the process of an individual's social media news sharing decision is, *Study 1* brings individual elements that contribute to the sharing decision together to offer a holistic framework of sharing in three stages: before-, during- and after-. The results highlight that the sharing process is built on a myriad of small decisions users make; Second, this dissertation enriches news sharing literature by investigating Instagram as a popular news sharing channel among college students. *Study 2* findings revealed that it is popular because of the convenience of use, easiness of reaching out to peers, and the natural affordance of delivering powerful visual messages. Third, *Study 3* looks at whether people are willing to swap their original sharing decisions in exchange for monetary rewards. Results highlighted that the underlying cost structure of swapping decisions are different for sharing and non-sharing decisions. Further, if one is motivated to share because of social-norm related reasons, this participant is more likely to reverse that decision when an incentive is given, when compared with sharing decisions induced by other motivations. Fourth, for international students in the U.S., *Study 4* finds that they encounter both language and cultural challenges when understanding the news content. To overcome those barriers, they adopt a variety of strategies to make themselves stay informed. The language and cultural unfamiliarity are likely to be reduced as they spend a longer time leaning into the new environment. International students also tend to be cautious when sharing news to maintain their personal images and mitigate potential conflicts.

Research Contributions

This dissertation contributes to the fields of human-computer interaction (HCI), computer-supported cooperative work (CSCW), user experience research by providing new understandings of the news sharing phenomenon on social media from the following different perspectives:

1. A novel conceptual framework of how people make news sharing decisions on social media platforms, which encompasses three distinctive stages, and each stage consists of specific cognitive processes.
2. An empirical examination on how and why Instagram is an emerging platform for news sharing, especially among college students. This is one of first several works focusing on the practice of Instagram news sharing.
3. Evidence for the potential behavior change that social media user will reverse the decision of sharing, due to incentives provided.
4. Understandings of international students' news reading and sharing experiences, including barriers understanding news they read, strategies figuring out the content and the truthfulness of news content, as well as considerations before making the sharing decision in a new cultural context.
5. Lastly, a set of design implications for social media platforms to address issues emerged from news sharing, especially the spread of misinformation.

Dissertation Outline

The remainder of the dissertation is structured as follows. In Chapter 2, I first reviewed related literature on social media news sharing, including how users decide the news credibility, social and psychological factors that influence the behavior, motivations behind it, as well as current design space to address the issue of misinformation dissemination. Chapter 3-4 presented a series of qualitative studies, illustrating the current and emerging trends of news sharing practices on different social media platforms. First, Chapter 3 (based on Wang & Fussell, 2020) presents a qualitative interview study about social media users' decision-making process. Then, using this framework as a basis, Chapter 4 (based on Wang, 2021) describes Instagram users' (especially

those in college) news sharing practice, revealing why they choose Instagram over other platforms to spread news. After gaining a deeper understanding of how sharing decisions are made, in Chapter 5, I present an experiment focused on a potential behavior-change: can sharing decisions be reversed, upon an incentive is given? If so, what factors are influence that reversal? Next, Chapter 6 focuses on a less-studied user group in social media news sharing: newcomers who live in a new environment that is apart from their native country and culture. Specifically, I investigate how international students read and share news and potential ways to help them overcome the barrier of language and culture when they intend to share news. Finally, Chapter 7 summarizes the main findings and discusses how this line of research can contribute to the broad knowledge of social media news sharing and the design of future tools, algorithms, and interfaces to mitigate the spread of misinformation.

Chapter 2: Literature Review

A national survey in 2019 showed that social media became a major source of news for the Internet-using population (Shearer, 2018; Shearer & Grieco, 2019). Online news behavior, including reading, sharing and commenting, has been examined extensively in previous works (Bentley et al., 2019). Recent research has also called attention to innovative methods for detecting fake news, identifying how it is disseminated (Arif et al., 2016; Stefanone et al., 2019), understanding different types of misinformation, as well as providing technical and persuasive designs to reduce fake news sharing (Allcott & Gentzkow, 2017; Guess et al., 2019 & 2020).

This chapter describes previous work related to news sharing, points out research gaps as well as clarifies research motivations behind this dissertation. First, I review previous literature on how people process social media news' credibility and shareability. Then I provide a high-level summary of the motivations of news sharing, then propose a categorization of those motivations. After that, I present a brief review of news sharing across different social media platforms. Next, I review literature about social media regret and self-censorship, which throws light on the study about news sharing decision reversal. Following that, I review previous works on immigrants and international students' information seeking behavior in the new language and culture environment, as well as how they use social media to facilitate their adaptation process. Lastly, built on identified research gaps, I summarize my research motivations and questions.

Perceptions of News Credibility

When people process the news online, credibility is one of their considerations. Wathen & Burkell (2002) found that visual factors such as the presentation and layout, the message source as well as content details were considered by users when they were deciding on the Internet content's credibility. Metzger et al. (2010) found that people evaluated online information's

credibility heuristically rather than systematically. Specifically, they considered factors such as whether many others had shared the information (“endorsement heuristic”) and to what extent the content meets their expectations (“expectancy violation heuristic”), rather than carefully processing the content to decide whether the news was credible or not. People are also more likely to believe a news piece is trustworthy if it contains an image (Gupta et al., 2013), a URL (Aigner et al., 2017), a nearby geo-location tag (Kang et al., 2011), or comes from a verified account they follow (Morris et al., 2012). Due to the reliance on heuristic cues instead of evaluating news content to assess credibility, social media users are poor judges of the truthfulness of online news pieces (Morris et al., 2012).

However, in previous line of work, the connection between perceived news credibility and subsequent sharing is usually not tested. That people would share news stories they find credible sounds logical, but in fact, it is not uncommon for people to share information they know is false intentionally to entertain or upset others (Chadwick, Vaccari & O’Loughlin, 2018). In addition, people may share the news they believe to be true but false. Beyond that, many other factors other than credibility influence whether or not a piece of news will be shared. It is also worth investigating whether the perception of news truthfulness can be affected by the sharing decision one made due to reasons such as self-perception (Bem, 1972).

Factors that Influence the Sharing of News

Various factors influence an individual’s sharing decision, including demographics, political beliefs, gender and age (Reis et al., 2017; Guess, Nagler & Tucker, 2019). Personal liking of a news story also affects users’ sharing intentions (Ma, Lee & Goh, 2013). If users are particularly interested in a topic or feel a personal connection to the story, they are likely to share the news (Lottridge & Bentley, 2018). People are more likely to believe and share news from

stronger social ties but weak ties can lead to faster dissemination of information because of the range of propagation (Bakshy, Messing & Adamic, 2015). Displaying when others have shared a news piece also influences users' willingness to share it with their friends (Li & Sakamoto, 2014). A news piece with a higher number of retweets has a higher chance of triggering users' sharing intentions (Lee & Oh, 2017).

Xu & Yang (2012) summarized four types of features on an interface that can influence the shareability of a piece of information: (a) social cues reflecting the relationship between the user who sees the news and the news source; (b) content-based cues such as the similarity between the news topic and users' general posting profile; (c) social media-based cues including the number of hashtags used, shares and mentions; and (d) source-based cues reflecting the social influence of the content creator (e.g., followers). They found that social cues were most important, while content-based and social media cues were less significant in predicting shareability.

Emotion also correlates with sharing behavior. When compared with positive emotions, information recipients' negative emotions are more frequently associated with the spreading of online rumors (Kim & Bock, 2011). When people share political topics in public forums like Twitter, anger is one of the most notable driving emotions that motivates users to post, with the purpose of venting or persuading (Lottridge & Bentley, 2018).

In addition to the factors mentioned above, a considerable body of literature focuses on understanding the motivations behind information transmission and news sharing. Capella et al. (2015) drew concepts from attitude research (Eagly & Chaiken, 1993; Albarracin et al., 2014) to argue that there are three psychological-based motivations behind information dissemination: defense, accuracy, and impression-relationship management. In the specific context of news sharing, the defense motivation is in line with the notion of "confirmation bias," in which social

media users are looking for and willing to spread news pieces that confirm their pre-existent beliefs (Kim, 2015; Knobloch-Westerwick, 2015). Accuracy is the motivation that drives people to evaluate the truthfulness of news they intend to spread. Individuals inherently care about information quality, scrutinizing the news by examining the source credibility (Fletcher & Park, 2017), or cross-checking the information from different sources to verify its truthfulness (Wang & Fussell, 2020). Lastly, social media users have a particular image they want to display in front of others. When people share news, they share more than the specific content. News sharing also acts as a form of self-presentation, deliver an underlying message of who individuals are, what they like, and how they identify (Ihm & Kim, 2018).

An early work by Lee & Ma (2012) applied uses and gratifications (U&G) theory (LaRose & Eastin, 2004) to look at news sharing behavior and the motivations behind it. They argued that four human needs drive the behavior. First, information seeking motivations denote how news can be shared for self-information retrieval purposes – when the information is needed when in the future, the user can quickly access the content they shared in the past (Holton et al., 2014). Entertainment motivations relates to the feeling of enjoyment when one shares a piece of news. By sharing entertaining and funny news pieces, people may escape from current pressure (Lee et al., 2010). Third, status seeking motivations capture the potential social benefits of sharing, including that people may win peer recognition, gain reputation, and achieve popularity after sharing (LaRose & Eastin, 2004). Finally, socializing motivations drive users to share to achieve a sense of belonging to different communities and groups. News sharing can be a way to keep in touch with others, maintain or build relationships, exchange ideas, etc. (Ma et al., 2011).

Summarizing the ongoing discussion of motivational news sharing, Paletz et al. (2019) added that news sharing originates from fundamental human needs of pursuing “accuracy, self-

consistency, impression-management, self-enhancement and social affiliation”. They further argued that people might intentionally spread misinformation due to a motivation to push political agendas (Allcott & Gentzkow, 2017). Osmundsen et al. (2020) found disruption and partisan polarization are in fact two primary psychological motivations that lead to fake news sharing.

Kumpel et al. (2015) reviewed theoretical and empirical literature in both communication and information science on news sharing, finding three overarching motivational themes: self-serving, altruistic, and social. Self-serving motives indicate people share in order to serve their own interests. Altruistic motives focus on the intrinsic desire to help others by providing useful information, which is also known as “unconditional kindness without the expectation of a return (Fehr & Gächter, 2000). People monitor their friends’ information needs and share information they think is helpful for their friends (Holton et al., 2014; Wang & Fussell, 2020). Social motives encompass various social-related inspirations, including: staying in touch with the community (Lam & Lambermont-Ford, 2010), strengthening existing relationships, building connections (Cappella et al., 2015) and seeking social approval (Ma & Chan, 2014; Oh & Syn, 2015).

After reviewing related research on factors that shapes news sharing decision and a rich body of work that examines motivations of news sharing, I find that scholars often put their research findings under the umbrella term of “news sharing”, instead of teasing apart or grouping users’ different considerations during sharing into distinct cognitive processes. Further, there is a lack of mapping of cognitive processes to different stages of sharing: before, during and after the behavior. This research gap leads to *Study 1*.

News Sharing on Different Platforms

Internet users share news on a variety of platforms. In a board review of existing news sharing literature, prolific work has been focused on the platform of Facebook (An et al., 2014;

Oeldorf-Hirsch & Sundar, 2015; Beam et al., 2018; Guess et al., 2019). This is not surprising because Facebook ranks the most popular for the U.S. Internet users to get news, according to the most recent national survey by Pew Research Center (Walker & Matsu, 2021). During the U.S. Presidential election of 2016 and 2020, scholars also found that Facebook had become an important battlefield for candidates to attract voters' attention. Alarming, fake news content on Facebook received significantly more impressions (comments, likes, shares) than factual news (Dvoskin, 2021).

According to a recent Pew report (2021), YouTube and Twitter ranked second and third when it comes to the pathways for Internet users to access news. A number of current works specifically examined the pattern of sharing political campaigns and misinformation on those two platforms (Bovet & Makse, 2019; Grienberg et al., 2019; Lemos, Bitencourt & dos Santos, 2021; Chen & Wang, 2022). Yet, it is less known why users specifically chose YouTube and Twitter to share news other than the reason of personal preference.

Scholars recently examined TikTok as an emerging social platform for news sharing. For example, Serrano, Papakyriakopoulos & Hegelich (2020) found that TikTok short dance videos enabled the political message to efficiently reach the target audience of young adults. Similarly, Kennedy (2020) found that the TikTok information and content cascade was heavily influenced-driven. At the early stage of the COVID-19 pandemic, WHO warned that information on platforms such as Tik Tok and YouTube might lead to "infodemic," suggesting a trend of increasing misinformation dissemination on those platforms (Thomas, 2020). In response to this, TikTok added warning labels to potential misleading videos, yet this effort turned out to be ineffective (Ling, Gummadi & Zannettou, 2022). It is also suggested that health agencies could utilize TikTok

to create verified accounts to spread trustworthy vaccination information to the public (Li et al., 2021).

In addition to examining news sharing on a single platform, Lottridge & Bentley (2018) grouped different services based on their privacy affordances. Specifically, there were three types of news sharing platforms: private messaging (e.g., WhatsApp), social (e.g., Facebook) and public (e.g., Twitter). While news sharing via a public channel has been used to spread ideology to others, private sharing in messaging apps is more personal. Despite this, it should be noted that social media users can still choose to share the news with varying groups of audiences even on the same platform (Wang & Fussell, 2020). For example, Facebook news sharers can decide to make the content public, available only to a group of friends, or in a private one-one conversation as soon as they click the share button.

Extensive research has been focused on studying the news sharing phenomenon on Facebook, Twitter and emerging platforms such as TikTok, Still, recent empirical works suggested that Instagram has gained popularity as a platform for news consumption and sharing: it is the fourth most popular social media platform for Internet users to access and share news (Walker & Matsa, 2021). In light of this, in *Study 2*, I investigate the intersection between the news sharing behavior and Instagram in an in-depth user interview: what is the news sharing experience for college students between 18 and 24, one of the leading user groups of the platform?

A New Categorization of Social Media News Sharing Motivations

Previous works provided a series of distinct frameworks for understanding motivations behind news sharing. However, it should be noted that when unpacking motivations, a parallel line of work takes an intrinsic-extrinsic perspective on them. In knowledge sharing (Kankanhalli, 2005) literature, scholars argued that people wanted to exchange knowledge due to both types of

motivations (Ryan & Deci, 2000). Intrinsic motivation consists of normative motivation, which means people need to comply with fundamental social norms because certain behavior is expected from society; and hedonic motivation, which relates to the “inherent pleasure and satisfaction derived from a specific activity” (Lindenberg, 2001; Lin, 2007). Extrinsic motivations are goal-driven and related to rewards and benefits: acknowledgment, recognition, personal reputation, economical wins, relationship-enhancement, and more (Lam & Lambermont-Ford, 2010). Social media news sharing is an instance of this more general pattern of knowledge sharing. Using this lens, I propose a new categorization of social media news sharing motivations to throw light on future research: (1) social norms, (2) psychological benefits, (3) personal rewards given by others, and (4) social and relational benefits. For each of these four motivation types, I add specifications to build a systematic understanding of it. Additionally, I suggest that there is another type of motivation: (5) the desire of self-expression.

Social norms. This aspect is similar to the normative intrinsic motivation. Norms such as empathy and altruism are socially constructed and natural to human beings (Kohn, 2008). People share news due to feelings of empathy, in which they want others to know what is going on because others may struggle to find relevant information (Ma & Chan, 2014; Oh & Syn, 2015); Accuracy also belongs to this genre because sharing truth (accurate news) may be believed to be an important component of a healthy social environment (Chadwick et al., 2018; Flintham et al., 2018). One may believe that fake news is not societally desirable, making it a pro-social behavior to circulate true stories (Vosoughi, 2018).

Psychological benefits. This aspect relates to intrinsic hedonic motivation. First, people share news to feel happy and relieved internally (Lee & Ma, 2012), or use news sharing to escape the current pressures of life. Additionally, when individuals think they are the first ones in their

peer group who know some information, they may choose to share the news with others, making them feel psychologically satisfied and competent (Lin, 2007) – a form of self-efficacy.

Personal rewards given by others. This can be categorized as the extrinsic motivation for sharing. People share the news to receive social support from others, such as recommendations and mental support. They also share to win peer recognition and acknowledgment, attain reputation and gain status within a group (Kümpel, 2015). While this motivational group still benefits an individual, it cannot be realized without engagement from an audience (with associated audience estimations by the individual).

Social and relational benefits. This is another type of extrinsic motivation. By sharing news with friends and groups, users can engage with their networks and collect comments or likes, sometimes even starting a conversation with future friends (Wang & Fussell, 2020). News sharing is thus a tool for users to maintain and strengthen connections (Cappella et al., 2015; Kümpel, 2015). At times, social media users intentionally share misinformation to obtain social and relational benefits, such as entertainment and making fun of others (Wang & Fussell, 2020).

Additionally, I propose self-expression is another motivation that can lead to news sharing. When people share news to express opinions, values or emotions on social media, they may do so not for a perceived sense of self-satisfaction, but rather as a form of self-expression or presentation of personal identity. Therefore, this act of sharing is less focused on informing an audience about news content than it is about the sharer's personal relationship to the content.

Desire of self-expression. This motivation is intrinsic. It highlights the inner desire to express personal thoughts. Scholars defined it as a “powerful urge to convey the self-related inner states from the inside out” (Kovač, 2016). In the context of news sharing, self-expression or venting is what sharers intend to achieve rather than the conveyance of information or exchange

of social goods. For example, if a group of users supports a social issue or a politician, they might share multiple news pieces related to this. Admittedly though, self-expression can also bring about unintended consequences such as shaping others' opinions on the sharer. While positive psychological benefits may also result from the act, the perceived emotional benefits are not the focus of the sharer. This motivation is also different from norm-induced sharing, because it highlights expressing an individual's opinions and ideology rather than the social expectation to disseminate truth.

Social Media Regret

With the rapid development of the Internet technology and the emergence of social media, a rich body of work has explored various types of content people post (Wong & Burkell, 2017; Van den Broek et al., 2018) on those social platforms, such as self-disclosing information (Bazarova & Choi, 2014), requests for recommendations (Nam et al., 2009; Morris et al., 2010), messages that seek for support (Oh & Syn, 2015), images and videos tag others (Ames & Naaman, 2007), etc. Moving forward, what will happen after one posts a piece of content? Grinberg et al. (2017) investigated the feedback expectation from posters' perspective and found that their demographics, the specific content posted as well as the perceived social relationship with others influenced the estimation of who would reply and the amount of feedback. From the reader's perspective, Zhou et al. (2021) looked at what affected the audience's willingness to act on a post. They found that a social media post reader's estimated benefit of acting on it and the potential cost of doing so affected the likelihood of (1) accepting the recommendations others shared on social media, (2) further sharing it with others, or (3) donating to a cause as described in the post.

Another important line of work focuses on the emotion of regret Internet users have after posting. Wang et al.' (2011) presented a comprehensive list of rooting causes of this regret emotion:

(1) social media users treat a post as a method of self-presenting. If the post fails to make them look good, they feel regret of posting it; (2) people regret making a post because the content is social or culturally inappropriate; (3) For some users, sharing is a decision that hasn't been well thought-through or is made under strong emotions without full consideration of the consequences; (4) people worry that unintended audiences can look at the post and form biases about them; Similarly, (5) speaking of perspective-taking, users fear that the post will fail to satisfy the potential audience's needs. Lastly, people also regret because they accidentally hit the post or share button. Adding to this list, Haimson et al. (2015) found that people regretted posting private information because they worried the platform would use or even sell the content for purposes that would risk their safety, leading to mental stress. This feeling of regret has also been examined in different contexts. For example, Cho et al. (2021) found that recommendation-based features could entice people and make people regret. Users reported a high level of regret after spending an extended time browsing recommended "bite-sized" content.

When it comes to the types of content that people regret posting, many are personal and confidential information or sensitive topics that may lead to arguments (Mao, Shuai & Kapadia, 2011; Wang et al., 2011). Scholars further investigated what factors contribute to the feeling of regret (Moore & McElroy, 2012) and found that personal characteristics play a role. For example, "more agreeable people expressed greater levels of regret about inappropriate content they may have posted on Facebook (p.270)". In addition, for teenagers on Facebook, factors such as the awareness of using privacy controls and the proportion of strangers among Facebook friends correlate with the level of regret (Xie & Kang, 2015; Kaur et al., 2016).

While there is little previous knowledge about what people will do after feeling regret, a recent study by Wang & Fussell (2020) found that in news sharing, users expressed interest in

retracting the post or adjusting the settings to make content private after they were informed the content posted had been identified as fake. To avoid regret to begin with, social media users also engage in a process called “self-censorship” (Sleeper et al., 2013): they decide not to post certain content due to self-presentation concerns or want to avoid arguments and conflicts with the audience.

In sum, previous literature on social media regret suggests that after the news gets shared, it is likely sharers feel regret doing so due to various reasons. They may choose to reverse the sharing decision. Inspired by behavioral change and its potential use in curbing misinformation dissemination, *Study 3* focuses on answering: what if an external incentive, such as a monetary stimulus, is presented to encourage people to change their sharing behavior on social media? Moreover, what factors, including a series of motivations mentioned in the last section, influence the reversal of news sharing decisions?

Immigrants and International Students’ Information Seeking and Social Media Use

With the increasing global connectedness, a growing number of immigrants and international students depart from their home country to the host country for living and studying purposes (Khoir, Du & Koronios, 2015; Hsiao & Dillahunt, 2018). While it is common for people to read and share news in their home countries and native languages, there is a lack of knowledge of how immigrants and international students access, read and process, then share news in the new environment. Inspired by this research gap, this section reviews two lines of previous works. First, immigrants and international students’ information-seeking behavior in the host country; Second, what is technology, especially social media’s role in assisting them in adaptation?

As part of the adaptation and integration process (Sayegh & Lasry, 1993; Scott & Scott, 2013), immigrants have constant information needs when they initially arrive in and adapt to the

host country (Caidi, Allard & Quirke, 2010; Case & Given, 2016). As newcomers (Miglietta & Tartaglia, 2009), their top information needs include health and insurance (Courtright, 2005), social welfare, employment, tax, and establishing a new identity (Komito & Bates, 2011). They gain these types of knowledge from both the internet and friends or families. Some also opt to learn such information before arrival in the host country. It should be noted that immigrants need to overcome a broad range of challenges to access the local information successfully. For example, for those whose native language differs from the host country, the initial barrier is reading and communicating using a new language (Todd & Hoffman-Goetz, 2011). As they ramp up language skills and get to know more about social-cultural knowledge, the capability of accessing and comprehending local information increases (Ward, 1996; Miglietta & Tartaglia, 2009).

Like immigrants, international students also constantly have information needs in the host country (Song, 2004) and adjust to it (Mehra & Bilal, 2007). Oh & Butler (2016) studied international students' information-seeking behavior in a longitudinal study and found that at their early stages of arrival (e.g., first-year college students), they had a strong need for local, location-based information so they could "survive", such as finding the nearest grocery stores, ATMs, transportation and routes. The sources of such information were diverse, ranging from native peers, co-nationals, online maps and location-based mobile applications. After initial adjustments, entertainment-related information needs emerge, such as finding work-out places and entertainment venues. In addition to seeking necessary everyday information and navigating surroundings (Sin & Kim, 2013), international students also look for information to improve their academic performance (Liao, Finn & Lu, 2007) and facilitate their relationships with native peer students (Jeong, 2004).

In a small number of studies that looked at immigrants' news needs, scholars found that they frequently watched what happened back at their home countries (Komito & Bates, 2011). By doing so, immigrants stayed in touch with their extended family members back home and maintained relationships (Kivisto, 2003; Burrell & Anderson, 2008). However, this awareness of what is happening in the origin country decreases over the years, partially because immigrants are no longer actively involved in activities and events back home (Komito & Bates, 2011). Burrell & Anderson (2008) further pointed out that immigrants not only "looked homeward," but also explored opportunities to adapt to the new environment by reading local news. Yet, the topics of news immigrants frequently consume (Christiansen, 2004) and the underlying motivations of this local news behavior remain further investigated, especially in the age of social media.

Immigrants' social media use has been extensively studied in HCI and intercultural studies (Sawyer & Chen, 2012; Croucher & Rahmani, 2015; Rui & Wang, 2015; Alencar, 2017; Manzi et al., 2018). Various social media platforms have been adopted to access information such as health (Hong, Juon & Chou, 2021) and locations (Oh & Butler, 2016), and more broadly, as a tool to adapt to the new culture and environment (Komito, 2011; Dekker & Engbersen, 2014). For example, Hsiao & Dillahunt (2018) found that both early-stage immigrants - those who lived in the new environment for less than five years (Cohen & Hoberman, 1983; Hiller & Franz, 2004), and established immigrants used social media to build social capital in the host country. They not only create social relationships and exchange resources with those who come from the same country but also with ethnically diverse population, such as local friends.

Like their native peers, international students also use social media extensively (Lin et al., 2012). They mainly use it for personal and educational purposes (Sleeman, Lang & Lemon, 2016). For example, social media is helpful for international students to know the "local way of life and

cultural norms” (Sawyer & Chen, 2012, p.164). As a result, they utilize information gathered from social media to adapt to the host country (Forbush & Foucault-Welles, 2016). Additionally, social media is one of the most effective ways to connect with and build relationships with domestic students and friends they know in class and person. A recent work by Li et al. (2019) further suggested that computer-mediated technologies, especially social media, could be used as an effective channel for engaging with classmates on academic-related issues. Along with Facebook, international students frequently use Twitter, YouTube, LinkedIn (Saw et al., 2013), even Instagram (Wang, 2021) to achieve those aforementioned goals. Those who use social media more regularly have also demonstrated higher levels of adaptation (Forbush & Foucault-Welles, 2016) and well-being (Park et al., 2014). It should be noted that international students not only use social media platforms of the host country, but they also continue to use unique platforms from home countries to keep in touch with friends and family members back home (Zhang, Jiang & Carrol, 2012; Yuan & Fussell, 2017). Scholars argued that the dual use of social media platforms of both host and home countries reflects the continued tension between accommodating new identity and maintaining original identity.

In sum, while it is known the wide use of social media facilitates immigrants and international students’ adaption and integration into the new environment, there is a research opportunity to further understand their news reading and sharing experiences on these platforms, including barriers to understanding the news content, strategies for fact-checking and the considerations before sharing a news piece. *Study 4* is designed to address those unanswered research questions.

Interventions to Prevent the Sharing of Fake News

With the increasing concern about fake news, there have been many efforts to design novel interventions to reduce its dissemination. There are continuing efforts from social media services to limit the spread of misinformation. For example, Facebook invested heavily in stopping fake news (Mosseri, 2017) and launched various campaigns to educate users to spot false pieces, especially those related to politics and public health (Facebook, 2020). In addition to utilizing the algorithm to detect misinformation, Facebook (2021) also worked closely with third-party fact-checkers to monitor false news pieces across platforms such as Facebook, Instagram, Messenger and WhatsApp. However, the sustainability of using human power to flag an increasing amount of fake news remains to be discussed. Moreover, Broniatowski et al. (2022) found that despite those efforts to curb vaccine misinformation during the COVID-19 pandemic, the success lasted only for a short time, then anti-vaccination content emerged again.

Social media platforms also often allow users to report and flag fake news (Mosseri, 2016; Zhou et al., 2019). However, such flagging mechanisms backfire by entrenching people's belief in the story. Furthermore, both manual and automated fact-checking can take time. Therefore, an unflagged fake story may be wrongly perceived as already validated (Pennycook & Rand, 2020). Nevertheless, there is some evidence that providing related articles, including pieces that correct the false post, can help people identify fake news (Bode & Vraga, 2015; Lyons, 2017).

Popular video platforms such as YouTube have also been criticized as a “major conduit of fake news” (Milmo, 2022). During the U.S. presidential election in 2020, YouTube set up community guidelines. It stated that they could suspend accounts, delete content identified as misinformation and remove comments interfering with public understanding of truth (Chen &

Wang, 2022). The same procedure has also been adopted by platforms such as Twitter and Reddit as part of the effort to increase platforms' integrity (2022).

In addition to the efforts from social media services, scholars also explored innovative ways to stop the spread of misinformation. For example, in a recent study, Yaqub et al. (2021) tested four different types of credibility indicators: fact-checkers, news media, public and Artificial Intelligence (AI): and their effectiveness in reducing the sharing of fake news stories. They found that when study participants saw a headline annotated by fact-checking services as fake, users' likelihood of sharing it was the lowest compared with other indicators. However, even fact-checking services could have fundamental political or perspective biases. Thus, Allen et al. (2021) suggested a crowdsourcing approach that "politically balanced groups of laypeople" could be recruited to identify misinformation. In addition, some recent works also investigated at what time point correcting fake news will be more effective (Brashier et al., 2021) on a social media platform. Results suggest that when the fact-checking information is presented to readers after exposure, instead of pre or during reading, it will be treated as a piece of feedback and can boost long-term learning.

Other interventions that scholars have tested in the past include: ensuring that people who are exposed to fake news also read real news (Farajtabar et al., 2017), or creating plug-ins to mark social bots (Varol et al., 2017; Wang, Angarita & Renna, 2018) because people are particularly vulnerable when bots choose a target audience to curate content. However, many of those attempts to tackle the fake news problem have failed because of the infrequent update of the fake news source database or questionable accuracy, including marking true news as false. In addition, users who installed the plug-ins and fact-checking tools such as Firefox and Chrome extensions (B.S.

Detector, 2022; Fake News Detector, 2022) are often dissatisfied with the interventions and expressed their disappointments in the comment section of those tools.

This Dissertation: Understanding Social Media Users' News Sharing Decisions

The overarching goal of this dissertation is to expand the knowledge of current news sharing literature to provide design recommendations to mitigate fake news sharing. To achieve this goal, I conduct qualitative user studies to understand news sharing decisions as a process instead of “a click”. Then I provide first insights on two topics that haven’t been studied in previous works: (1) Instagram news sharing and (2) newcomers’ experiences using social media to read and share the news. Additionally, I conducted an experimental study to examine whether sharing decisions can be reversed. Finally, grounded on the findings of those studies mentioned above, I provide actionable recommendations to platform designers.

Previous research has shown that many different factors influence the sharing decision, including demographics, previous sharing experience, source credibility, personal interest, social norms, sharing channels, etc. In addition, the motivations for sharing are also diverse. In Chapter 3, I bring these individual decisions together to offer an overarching framework people engage in before, during and after sharing. Specifically, I ask: (1) before, during and after the social media news sharing behavior, what are some cognitive processes users engage in; and (2) what are some specific considerations users take into account during each of these cognitive processes?

Much of recent works have been focusing on the phenomenon of news sharing on platforms like Facebook and Twitter. However, there is a lack of understanding of the news sharing practice on Instagram. Based on the foundational knowledge of college students’ cognitive processes when making sharing decisions, I apply this general framework to the context of Instagram (Chapter 4). By interviewing 20 college students who recently shared news content on their Instagram accounts,

I try to answer the following research questions: (1) what types of news content do users share on Instagram, and which mode of sharing is popular; and (2) what are the reasons that people opt to share news on Instagram instead of other platforms?

Inspired by past studies of the social costs of friend-sourcing, which made use of an extrinsic economic incentive to manipulate participants' cost/benefit ratios (Rzeszotarski & Morris, 2014), Study 3 uses a range of monetary values to incentivize experiment participants to reverse their declared sharing decision in exchange for extra compensation. Through this method, I hope to understand how individuals weighed different factors (including motivational ones) when an external stimulus was introduced to alter their decisions. Specifically, the following research questions guided the development of specific hypotheses as laid out in Chapter 5: (1) how do a series of factors shape whether SNS users are willing to share a news piece sampled from a spectrum of topic areas; and (2) if users are given an external incentive to "flip" their original sharing choice, sharing items that they had previously opted not to share, or vice versa, to what extent will they accept the monetary incentive and reverse the original decision?

Few previous studies examined immigrants and international students' news reading and sharing experiences on social media (Komito & Bates, 2011). Is this experience significantly different from what they have when reading in their native language and home culture? When people arrive in an environment that they are not familiar with, they likely need time to adapt to the language, media landscape and local culture (Oh & Butler, 2016; Li et al., 2019). Due to this unfamiliarity, they are also likely to fall prey to fake news. Intending to provide social media platforms insights about new features to add to assist this user group and broader immigrant demographic, I conduct in-depth interviews with international students in a large U.S. university. Chapter 6 aims to answer: (1) what are some barriers international students have when using social

media to access local news in the host country; (2) what are the considerations international students have when they think about what news to share on social media in the host country; and (3) what are international students' experiences facing and combating misinformation that travels from the host country to the home country, or vice versa?

Chapter 3: Understanding Social Media Users' Decision-Making Processes in Online News Sharing¹

This chapter aims to gain a holistic understanding of the process when people make sharing decisions on social media through an in-depth interview study. Previous studies suggested that a host of factors can affect whether someone shares a piece of news, including demographic factors, personal interest in the topic, the popularity of the news item, and the relationship between the user and news source. In this study, I bring these individual decisions together to offer an overarching framework of the flow of cognitive processes people engage in before, during and after sharing. By identifying and understanding these decision-making processes, I aim to shed light on why social media users often have difficulty differentiating fake from true news (Wineburg, McGrew, Breakstone & Ortega, 2016). These findings in turn provide insights for the design of new tools and strategies to help users combat fake news.

According to the literature review, a variety of factors can influence the sharing decision, such as demographics (Reis et al., 2017; Guess, Nagler & Tucker, 2019), personal interest and relevance, (Ma, Lee & Goh, 2013), the social relationship between the news source and the user (Bakshy, Messing & Adamic, 2015) as well as the popularity of the news piece (Li & Sakamoto, 2014). Moreover, there are diverse motivations behind news sharing behavior on different social media platforms (Lee & Ma, 2012; Kumpel et al, 2015; Wang & Fussell, 2020)

While previous extensive literature throws light on the understanding of the news sharing phenomenon, few of them treat the behavior as a systematic process and look at the mapping of

¹ The text and figures of this chapter were derived from a previous publication (Wang & Fussell, 2020)

cognitive processes to different stages of sharing: before, during and after the behavior. In response, I ask the following research questions to understand news sharing behavior on social media better:

RQ1: Before, during and after the social media news sharing behavior, what are some cognitive processes users engage in?

RQ2: What are some specific considerations users take into account during each of these cognitive processes?

Method

I used in-depth semi-structured interviews to address aforementioned research questions. By talking with 20 college students about their recent sharing experiences, I aimed to understand how they made sharing decisions in different stages.

Participants

Participants consisted of 20 college students (5 male, 15 female; mean age = 21; age range 18 – 23 years old) at a large U.S. university, who were recruited via flyers and a participant recruiting system. Because the research interest was in the practices of participants who frequently come across and share news stories in their social media feed, I restricted participation to those who had experiences sharing news from others on Facebook, Twitter or WeChat in the past six months. This study included these three platforms because Facebook and Twitter are the most popular social media platforms for news consumption (Matsa & Shearer, 2018) and WeChat is very popular among international students at this university. The demographic backgrounds of participants were diverse in terms of gender, major, race/ethnicity and nationality (see Table). Participants received research credit or a small monetary payment upon finishing the interview.

	<i>Gender</i>	<i>Age</i>	<i>Year</i>	<i>Major</i>	<i>Self-Reported Ethnicity</i>	<i>Region of Birth</i>
<i>P1</i>	M	21	Senior	Engineering	Hispanic	North America
<i>P2</i>	M	23	Graduate	Economics	East Asian	East Asia
<i>P3</i>	F	23	Graduate	Economics	East Asian	East Asia
<i>P4</i>	F	20	Sophomore	Computer Science	East Asian	North America
<i>P5</i>	F	19	Freshman	Engineering	Black	Africa
<i>P6</i>	F	20	Junior	Fine Arts	East Asian	Australia
<i>P7</i>	F	18	Freshman	Engineering	South Asian	North America
<i>P8</i>	M	21	Senior	Architecture	White	North America
<i>P9</i>	F	19	Junior	Information Science	White	North America
<i>P10</i>	M	18	Freshman	Communication	East Asian	East Asia
<i>P11</i>	F	23	Sophomore	Communication	White	North America
<i>P12</i>	F	18	Freshman	Engineering	Mixed	East Asia
<i>P13</i>	M	21	Senior	Information Science	Hispanic	North America
<i>P14</i>	F	18	Freshman	Communication	White	North America
<i>P15</i>	F	21	Senior	Economics	East Asian	East Asia
<i>P16</i>	F	18	Sophomore	Computer Science	East Asian	East Asia
<i>P17</i>	F	20	Junior	Communication	East Asian	East Asia
<i>P18</i>	F	18	Freshman	Art History	East Asian	North America
<i>P19</i>	F	21	Junior	Engineering	East Asian	North America
<i>P20</i>	F	18	Sophomore	Communication	White	North America

Table 1. Study 1 Interview Participant Demographics Information

Interview Protocol

The interview protocol (Appendix A) consisted of a discussion with participants about the latest news piece they had shared, followed by a task in which I presented them with two news items and asked how they reached a sharing/non-sharing decision. The protocol started with ice-breaker questions about social media usage (e.g., frequently used platforms, sharing habits). Participants were then asked to locate a specific piece of news they had recently shared on Twitter, Facebook, or WeChat and answer a series of questions about it, including how the story attracted their attention (Did you find the content interesting? Why did it interest you?), whether the news was personally relevant (Is this news related to your work, or life experience? If so, how?), their

reasons for sharing it (What are some factors you considered when sharing this particular piece of news?), the emotions they felt while sharing (Did you recall any emotions when sharing this news article? If so, could you describe your feelings?), and whether any feedback was received after sharing (Did you receive any feedback from your friends after this post? If so, what was the feedback?).

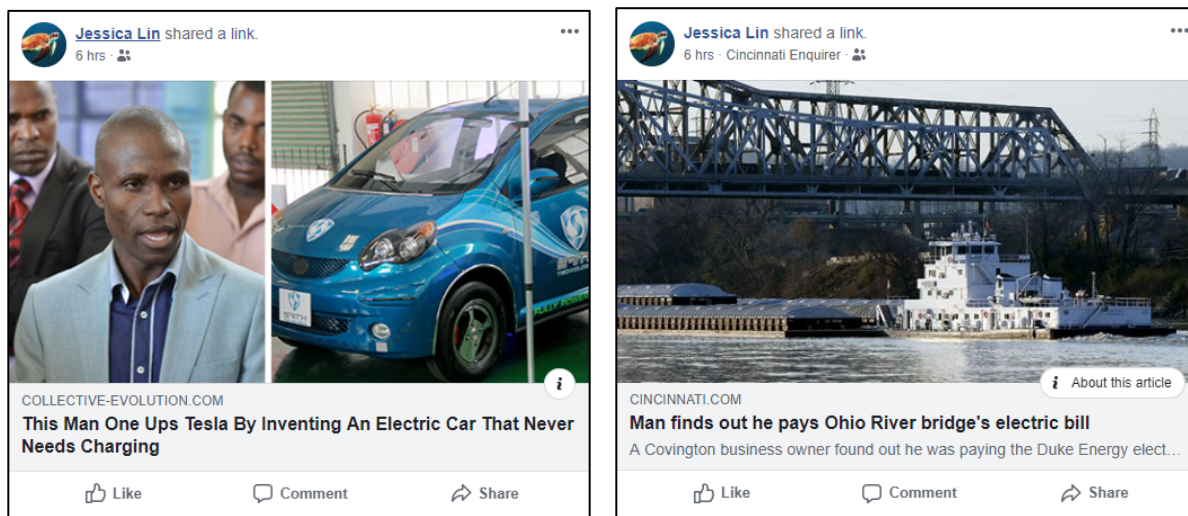


Figure 1. News Sharing Interfaces Used as Prompts for Participants During the Interview

To prepare the news stimuli, I conducted a pilot study in which 40 domestic and international students decided whether ten news items from Snopes.com (Allcott & Gentzkow, 2017) were true or false. In the end, I chose the two stories (one true and one false) that our pilot participants had the hardest time determining the truthfulness of as the stimuli for our interview study. The intention was to present interview participants with challenging news items (those two news stories received a roughly equal number of fake/true evaluations in the pilot study) so that we could capture insights about their cognitive processes when making sharing decisions. I chose topics that were not related to politics or propaganda to avoid bias (Zhao, Resnick & Mei, 2015). I then created two Photoshopped Facebook screenshots of news sharing interfaces (Figure 1). The news to the left is fake, the one to the right is true. Those two news pieces don't require special

expertise to be understood. The image and title attached to the content were the same as in the original source of the news. Participants could read the full news article during the process if they requested to do so. The news environment for these two stories was carefully controlled. Each piece came with a general user headshot. I informed interview participants that the sharer, “Jessica Lin,” was a member of the research lab and frequently shares on social media. At the end of the study, I debriefed participants that the news interface was created for this study.

Data Analysis

Interviews were conducted in a laboratory space. After signing consent forms and agreeing to be audio recorded, participants answered questions following the interview protocol. The duration of the interview session was from 45 minutes to an hour. The audio recordings were transcribed and coded in Atlas.Ti using a grounded theory approach (Glaser, Strauss & Strutzel, 1968). I read through all transcripts and used open-coding to assign codes to important instances and expressions (Auerbach & Silverstein, 2003). Then a group of research assistants analyzed the initial codes, grouped similar codes into concepts then categories. In the end, I organized and integrated the patterns observed into different cognitive processes of online sharing and drew key quotes from interview sessions to support this research’s findings.

Findings

The results from the interview analysis were organized in three sections to reflect different stages of human sharing behavior: before sharing, during sharing and after sharing. In each of the stage, there are cognitive processes users engage with and decisions they need to make. The decision of news sharing is built on multiple small decisions people make throughout different stages.

Before Sharing – Evaluating the Content and Social Value

In the *before sharing* stage, participants engaged in a content assessment process in which they evaluated the source of a piece of news, its personal relevance, and their interest in the news content. Along with assessing these content-related factors, participants assessed the social shareability of the news: did I want to share for entertainment? Did I want to share to help others? Did I want to only share true news to maintain a good image in front of friends? Further, people frequently engaged in the process of deciding about whether they needed to fact check or not.

Content Assessment. In evaluating content, participants reported first assessing the source of the news to help them evaluate its credibility and shareability. On social media platforms, people are exposed to news selected by others including their friends. Nearly all participants (16 out of 20, 80%) agreed the source was important. If the source was seen as trustworthy (e.g., familiar news agencies), participants would put more stock in the content of the news.

If it were from a credited source – [I would] definitely would be more inclined to believe it, regardless of how bold it is. (P3, F, graduate)

After participants confirmed the source looked credible, the news had a greater chance to be shared in comparison to news items for which users had questions about the source.

I trust the source because they wouldn't accidentally share the news that isn't fact-checked.

I then prefer to share news from credited sources. (P9, F, junior)

In addition to the original news source who published the story, participants mentioned that the person who made them aware of the information (by sending them the post) was also important. The personal relationship between news sender and participant helped them evaluate its shareability. For example, if the person was a close friend, respondents said that there would be a higher chance that they would trust the news and think it was shareable in comparison to a piece of news shared by a less close acquaintance.

The person is more important because he or she have read that article and found it very useful before sharing. I would trust their recommendations. (P2, M, graduate)

Secondly, participants assessed the personal relevance of the content when evaluating its shareability. Eight of our 20 participants explicitly mentioned personal relevance in their responses. Participants felt that news was more shareable when they could relate to specific news items they read, for example through shared social identity. One participant mentioned that sharing the story of Malala Yousafzai's speech at the United Nations reflected her identity as a social activist:

I definitely connect to her story. So, it's something that's very important to me and something I can connect to for sure. (P5, F, freshman)

Other participants mentioned that they were more likely to examine and consider sharing news related to their group memberships or geographic area where they came from.

Unless it's related to me, if it's news about my company, my employer, I would ... look into it. Otherwise, I would just ignore it. (P3, F, graduate)

Along with the personal relevance of a story from their own perspective, interviewees also mentioned that they considered whether the potential news reading audience (especially their friends) would find the story relevant. The perceived relationship influences people's judgment of the relevance of the story to their friends. Specifically, close friends are more likely to be targeted in that type of sharing than casual friends:

If I care about that person, I probably will pay more attention and may even share for her particularly. (P9, F, junior)

Lastly, participants assessed the alignment between personal interest and news content to evaluate the shareability of a news story. Participants shared what they were interested in. Personal

interests included both favorite topics and temporary interests triggered by the specific content. I found shared news items covered a wide range of topics, including local news, education, public health, and career development. For this particular interviewee group of college students. Interestingly, only one of the news pieces was related to politics.

I enjoy paying attention to the information that is related to the field to keep up more with innovation in engineering. (P7, F, freshman)

The personal interest may also be stimulated by factors like the title or image of an online news piece. When participants browsed their social media feeds, titles and images of stories were the first cues seen. And if these were eye-catching or arousing, the news items they belonged to could grab the user's attention, leading to a higher chance of being shared. In that sharing scenario, personal interest is a temporary reaction triggered by the content of the news.

I'm sure it [the story of electric car we presented to the interviewee] sounds cool and I would click on this even share it because it is so cool. (P1, M, senior)

Assessing the Social Value of Sharing. Participants had multiple considerations when evaluating the social value of sharing a piece of news. First, as reported in other research (Lottridge & Bentley, 2018), participants shared news for the purpose of entertainment. Seven participants mentioned that entertainment value was one of the factors they would consider. In that case, they claimed that they didn't care if the news was true or false. Participants reported the entertainment value had also to be clear to resonate with the audience to make it a funny post. Interestingly, among all seven participants who express they considered entertainment value, none of them mentioned the risk of doing so:

I know this is fake [the news of Canadians inviting Oregon to join Canada], but it's entertaining regardless. What I did was send the link by texting my friends and saying, 'this is funny, I saw this on Facebook.' (P8, M, senior)

The strength of personal relationships was an important consideration for deciding the audience of entertainment-oriented sharing. Participants mentioned their close friends knew them well and they shared the same values regarding interesting and funny things, thus many of entertaining news pieces were shared in private messaging on social media, instead of public posts.

It's almost funny to trick people, but I'm cautious about who to trick when the news is fake. (P14, F, freshman)

A second social consideration some participants considered when sharing news was social media friends' information needs. Five participants discussed this consideration explicitly. For example, if they had new parents in their friends list, they would assume that a piece of news on baby care would be of interest to those friends and thus be more likely to share it. Personal relationship is an important factor when evaluating the helpfulness of a piece of news to others. P11 mentioned she shared a piece of news about things to do to combat climate change with someone who popped up first in her head when reading it, because she felt it was important to share this news with this particular friend because he is an environmentalist. And P18 mentioned that if she thought that the news would be helpful to the community she came from, she would be likely to share it to remind others:

People especially in my community would like to know and benefit from this [a news story about DACA – “Deferred Action for Childhood Arrivals”]. I felt most people who I've met will hold that to a higher regard. (P18, F, freshman)

Perceived helpfulness to others also depends on the participant's judgment of the situation, including how the news will shed light on an urgent issue. One participant mentioned adapting to a new environment was a common issue among international students. The story she shared introduced a local organization that provided support to students who sought help:

I think it's just important that people know there are some others have the same issue. And you know, there's an organization like this that can help you. (P15, F, senior)

Lastly, more than half of the participants (10) reflected that they usually had good intentions to share true news (at least what they believed was true) on social media, unless the news was obviously false and shared for entertainment purposes. They valued the behavior of sharing true news and wanted to keep their timeline a good information source.

You don't want to share fake news, you don't want to be foolish. You don't want to be perpetuating some lies on the Internet. (P1, M, senior)

Though participants indicated their good intentions, they also admitted that these intentions were sometimes distorted by a lack of time to carefully read the news. Several participants thought sharing was a "snap" decision and there was little time for them to process all the information related to the news carefully.

I didn't think about too much before sharing. It wasn't like a big part of my day. I do it for likes. Sometimes a really good headline could be misleading, though. (P8, M, senior)

Fact-checking. When participants had the intention of sharing information, one decision they needed to consider was whether to fact-check the news or not. About half of our interviewees (11) mentioned the strategies they used for fact checking. For example, when the news came from a source that users had a hard time recognizing, a validation process was activated:

I would validate before I sent it out. I don't normally send the first thing I see unless it's New York Times or something that I know is credible. (P13, M, senior)

If they thought the title of the news was ambiguous or possible clickbait, participants reported that they took advantage of Internet search engines to check how many other sources had reported the same piece of news. If there were many similar news reports, participants had greater confidence that the story was true. When talking about a story of “an electric car without charging,” one participant said:

If I see such an eye-catching caption on the news, I will go to Google and type the same thing to see how different sources for the same piece of news. (P14, F, freshman)

Another strategy our participants reported using was to click the hyperlink to read the full article to make sure they knew the beginning to the end of the story. After gathering information, stories that passed the interviewee's fact-checking protocol had a better chance of being shared compared to those that didn't. Further, fact-checking served as a gate-keeping process that regulates the sharing decision of some of our interviewees. Not surprisingly, after discussing the issue with us, some participants said they were willing to fact-check if they didn't do so already.

I really want to do some research on my own and make sure what I'm about to believe and share is true. (P8, M, senior)

During Sharing - Strategic Decisions While Clicking the “Share” Button

When discussing the question of who they had in mind when sharing a piece of news, participants reported they considered the audience who might be the readers of the shared content. Right at the moment of clicking the share button, participants had the opportunity to change who would be receiving the news by adjusting the privacy controls in the system. Though they might consider to whom they shared the news piece in the previous stage, this particular interface on Facebook (Figure 2) serves as a reinforcement to help users choose the actual readers of sharing.

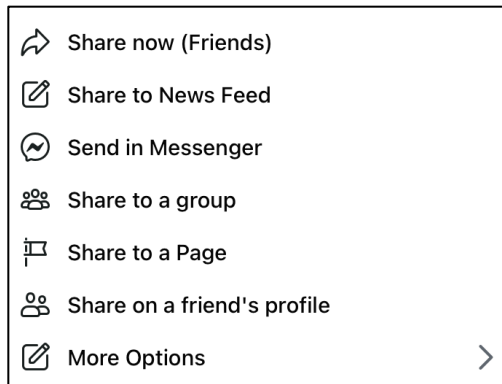


Figure 2. Interface After Users Click the “Share” Button on Facebook

When asked how they chose the audience of shared news pieces, participants’ responses varied. Some news pieces got shared publicly and they were available to all social media friends; the remaining news pieces were shared privately and only a single friend or a group of friends could see it. Interestingly, there was not a single news piece that was shared for personal retrieval purposes. One participant shared the rationale she used if she wanted to share publicly:

If I share something publicly, I would want it to relate to a lot of— a big proportion of my Facebook friends. (P6, F, junior)

Yet, interviewees reported that the news they shared was rarely applicable to everyone. As a result, some participants preferred to share privately. They took advantage of the privacy controls and even created different groups for sharing different types of content. For example, one shared a story about how the company she interned with got acquired by another company, but she only shared this news piece to the particular internship group on Facebook:

I don’t feel the need to tell all a thousand of my friends about this piece of news. It’s not something that would affect the majority of my Facebook friends. (P9, F, junior)

In sum, the key difference between sharing publicly or privately resides in the sharer’s perception of whether the content is relevant to most of his/her social media friends or if it is only appropriate to a small number of the friends.

Lastly, participants mentioned that tagging on Facebook (or mentioning on Twitter) was a popular way to share news content. It allowed them to address their friends directly by name in the comment section of a news story. Then the user who got tagged received a notification of the news. One participant said she tagged more frequently than sharing:

If I really want to share with my friends, I will tag them in the comments so it wouldn't show up everywhere, just those few people. (P9, F, junior)

After Sharing Behaviors

After sharing news to their timeline, interviewees reported that they engaged in two processes: (a) awaiting responses from their friends; and potentially (b) revisiting previous posts including sharing decisions for retrieving or recalling purposes.

Expecting and Evaluating Feedback. Seven study participants said that they expected feedback from their friends. They were looking forward to a conversation after sharing news because they thought their friends would find the content interesting or because the shared piece directly addressed their information needs. In addition to sparking a private conversation, other types of feedback users expected included a public comment or like from their social media friends. According to participants, leaving a comment suggested a higher level of engagement compared to liking or clicking a “heart” emoji. Participants indicated that they expected comments from closer friends but a simple like or emoji would be sufficient from casual acquaintances. Their expectations also influenced how they dealt with shared news pieces in their timeline. One participant said:

If it's a super close friend, I'll like it and leave like ten comments of how amusing the content is. But if it's just some old high school friend, I'd just like that. (P5, F, freshman)

While some participants waited for responses after sharing, the others did not. They reported that the responses were generally short and not informative. As a result, the value of the feedback was low, so they didn't form any expectations when they share:

I don't see it going into a whole discussion. Maybe she responds, "that's interesting," which is not helpful. (P3, F, graduate)

Deciding to Revisit Previous Shares. Nearly half of the users mentioned they tended to look at what they posted and shared in the past. They also deleted previous posts including the shared news to make sure they presented a consistent image in front of their social media friends. This suggests that the process of sharing does not stop immediately after clicking the sharing button. I asked participants to revisit their sharing decisions and imagine if they read the news at the moment of the interview, would they share the news item again? One participant said the decision to share might not be made because of it was not unique anymore. In discussing a piece of news he shared about one of the high school students from his local area being admitted to an Ivy League school:

I'm not a hundred percent sure if I would share it (now). Just imagine scrolling down, finding the same news. It's just less exciting. (P1, M, senior)

At the end of each interview session, we showed participants two Photoshopped interfaces of news items (one true and one false) and inquired about their sharing intentions. Some of our respondents decided to share the fake item. After telling them the news was actually false, we asked what they would do if they were given the option to keep or remove it from their timeline. Most said they would like to delete the information. One participant said he would like to go one step further and announce that he had made a mistake: "*I would probably take it back and say, sorry that was fake.*" (P9) Yet, few participants who decided to share the fake news and were then

informed that it was false mentioned they lacked the incentive to delete or correct it. One participant explicitly expressed that he would not feel obligated to deal with the fake news: “*I don’t feel (the) social responsibility to do so*” (P2, M, graduate).

For participants who chose not to share the fake news item, we asked them to imagine a scenario in which they found out that what they had shared was false. They stated that the decision about whether to keep or remove the fake news post would be made on a case-by-case basis, depending on the content of the story.

That [informing me what I shared was false] would be helpful. If I were to share news and later, I find out it is fake, I would delete it if it were serious; or sometimes if like satire fake news, I might keep it because in that case, it was funny. (P16, F, sophomore)

Discussion

In this study, I investigated how college students make news sharing decisions on social media through 20 in-depth interviews. The findings provide an initial glimpse of different cognitive processes college students engage in before, during and after sharing news. Overall, I found that participants engaged in a variety of cognitive processes before-, during- and after-sharing. Before sharing stage, they assessed the news content and its shareability based on factors such as source, personal relevance, and perceived interest to others. Next, when deciding about whether to click the share button, participants considered factors such as the appropriate audience for the specific piece of news. After sharing, participants looked at the feedback they received and, in some cases, considered deleting the post if they learned it was false afterwards. I visualize these stages during the decision-making process below. During each of those stages, people often had social relationship information in mind, influencing their decision of sharing.

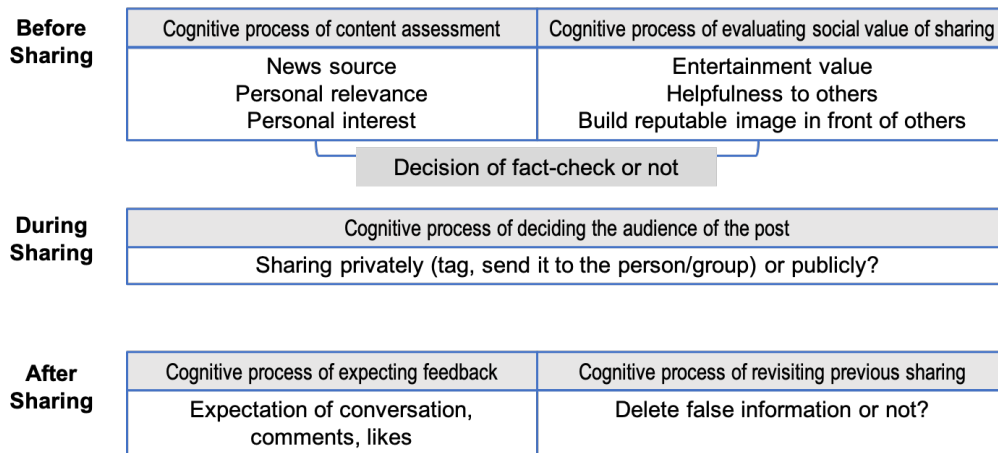


Figure 3. Cognitive Processes Before, During and After News Sharing

The general applicability of the framework lies in its inclusion of as many as possible factors mentioned by the interview participants as possible. As a result, it has the potential to link to any individual’s sharing activity. At the same time, it worth noting that each interview participant had distinct sharing behaviors; thus, not all social media users engage in all stages and cognitive processes. Further, within each cognitive process, a participant might not consider every factor listed in the Figure 3 above. The relative weighting of those processes and factors is likely to vary by person. In fact, how one user’s journey of sharing maps to our framework is influenced by the user’s: level of cognitive processing, motives for sharing and perceived group/community norms.

Level of cognitive processing. In the interviews, some participants mentioned they would click to read the full news article and verify the source before sharing whereas others claimed they shared “for the likes” based on immediate cues like an arousing image, headline and caption. The level of cognitive processing varies by person and can be different for each sharing decision. These findings are consistent with previous works about how people process online information (Lee et al., 2013; Kümpel et al., 2015; Flintham et al., 2018; Lottridge & Bentley, 2018). I suspect this pattern reflects a more general pattern of central vs. peripheral processing (Petty, Cacioppo &

Schumann, 1983). In central processing, people are motivated to put effort into the reasoning process, taking into account all the cues available and scrutinizing the content (text) of the news. Information quality is important when people use central processing. In contrast, in peripheral processing people exert less cognitive effort, making snap judgments based on the most salient cues. This suggests that different interventions to prevent the sharing of fake news will be needed based on the level of cognitive effort people put into the sharing process.

Motivations for sharing. Consistent with earlier work (Lee & Ma, 2012; Cappella, Kim & Albarracín, 2015), interviewees reported a broad range of motives for sharing news stories, including self-presentation, informing others, humor, and getting many likes or comments. I suspect that these motives inform the types of cognitive processes the study interviewees engaged. For example, when their goal was to inform others, participants wanted to be confident in the information they shared and were thus careful to fact-check. Similarly, when their goal was to craft a credible image in front of their friends (Goffman, 1978; Nadkarni & Hofmann, 2012), participants processed news more carefully to avoid sharing fake news, which they thought would reflect poorly on themselves (Kümpel et al., 2015). Yet, in other cases, interviewees mentioned goals like “tricking people” and providing entertainment. In these cases, participants were less concerned with assessing the truth of the news story, but paid more attention to the social value of sharing (Chadwick, Vaccari & O’Loughlin, 2018).

Community and group norms. Norms include values, customs and traditions that can influence individual behavior (Cialdini & Trost, 1998). Interview participants discussed different ways that community and group norms affected their sharing behavior. Though invisible, participants who belonged to a group knew the expected behavior from other members (Bettenhausen & Murnighan, 1985). While some participants mentioned that they were motivated

to share to help others, one participant felt social pressure to remain silent on issues that were not frequently discussed in the community she belongs to, though the news itself was perceived as helpful. This finding connects with prior research that people hold group norms in high regard (Li & Sakamoto, 2014). Furthermore, with the consideration of community and group norms, people may also feel social responsibility to be accurate about the news being shared. This in turn helps regulate the dissemination of fake news within a group. However, there is also a threat that when a publicly shared news item is wrong, new users might believe and share it, due to cascade effects (Romero, Meeder & Kleinberg, 2011).

Study 1 suggests there is an array of reasons users considered for their sharing decisions. At the same time, it will be helpful to understand the behavior of non-sharing and those who choose not to share. The behavior of not sharing a piece of news, particularly fake news, prevents the dissemination of misinformation. What is the reasoning process they engaged to and are those people value truth more? It would also be valuable to provide customized solutions based on users' past sharing behavior, or different types of sharing, to help them focus on carefully processing the news content.

This study has several limitations. First, I interviewed college students in the U.S. because they are a significant proportion of social media users. In addition, I focused on sharing behavior on three popular social media platforms: Facebook, Twitter and WeChat. Additional work is needed to determine whether this research's findings will generalize to other populations and platforms. I suggest including a broader spectrum of participants from different age groups, professions, geo-locations, etc. in future work to determine whether they take similar considerations into account when deciding to share news. A more diverse user group will also help researchers design system-wide recommendations to combat fake news.

Second, participants in this study may have felt pressured by social desirability, especially as regards their efforts to fact check news stories, since other studies have shown low rates of fact-checking (Pennycook & Rand, 2020). Interviewees said they wanted to be informed about whether the stories they shared were right or wrong and did not feel ashamed when they retracted previous falsely shared information. This finding should be treated with caution until more data is collected with users who actually retracted fake news pieces.

In sum, Study 1 found that college students underwent three stages of cognitive processing: before, during and after sharing. In each of these phases, they considered a variety of factors, such as the content and social value of the story, their community, and others' reactions to the news. Their reasoning processes were shaped in part by their motives for sharing, the amount of effort they put into the sharing decision, and community norms.

Study 1 results, along with recent national surveys on social media use, suggest another trend: people are using Instagram for news reading and sharing purposes. However, previous literature has not been focused on a comprehensive examination of this practice, specifically the content being shared on Instagram, popular modes of sharing, and the rationales for using it instead of other platforms such as Facebook and Twitter. Inspired by the method and findings from Study 1, I designed an interview protocol to address those questions related to Instagram news-related behavior. In the next chapter, I detailed findings from Study 2 to provide the first insights into this emerging new sharing trend.

Chapter 4: Understanding College Students' News Sharing Experience on Instagram²

Based on the understandings of how people make the news sharing decision in Chapter 3, I further explored the news sharing behavior on the platform of Instagram, especially on what type of news content is being circulated on this popular platform and why people prefer to share news through this channel instead of others. Current research work has been focused on studying the news sharing behavior on Facebook and Twitter (Flintham et al., 2018; Lottridge & Bentley, 2018; Wang & Fussell, 2020), this chapter thus hopes to become the first several works to understand the news sharing mechanism on this popular image sharing platform.

In an open discussion with Study 3's interview participants, they reported that Instagram was another platform they frequently used for sharing news content, along with Facebook, Twitter and other messaging services (e.g., WeChat, Messenger, WhatsApp). Inspired by this empirical observation, and the fact that more recent works suggest that Instagram gains popularity as a platform for news consumption (Auxier, 2020), this chapters aims to investigate the intersection between the news sharing behavior and Instagram: what is the news sharing experience for college students who are between 18 and 24 (Mulder, 2020; Statista, 2021), one of the largest user groups of the platform?

To address this overarching research goal, I first revisited the literature on why users share news on social media and what type of content is being circulated (Metzger, Flanagin & Medders, 2010; Flintham et al., 2018). Empirical works suggest that Internet users disseminate content with purposes of defending their own points of view, providing accurate and reliable information to others, and impression-relationship management (Cappella, Kim & Albarracín, 2015). Lee & Ma

² The text and figures of this chapter were derived from a previous publication (Wang, 2021)

(2012) surveyed social media users and found news sharing could fulfill a variety of personal and social goals, including information seeking, entertainment, status-seeking and socializing. Those distinct goals help people navigate what they would like to share, and on which platforms (Wong & Burkell, 2017; Lottridge & Bentley, 2018). In terms of the mode of sharing, previous work further revealed that while some news pieces get shared publicly, other content is shared within a group or through private messages (Lottridge & Bentley, 2018; Wang & Fussell, 2020).

In previous work examining Instagram use, scholars found that people posted pictures and videos for self-expression purposes. At the same time, the goal of sparking conversations with others (“social interaction purposes”) also drove that sharing behavior (Kim, Seely & Jung, 2017). More fine-grained uses of Instagram were revealed as it has grown in popularity in the past few years. In addition to documenting life, Instagram has been used for surveilling, self-disclosing (Feuston & Piper, 2018) and seeking for mental and social support (Sheldon & Bryant, 2016). It is also not rare that organizations and activists use Instagram to spread messages to mobilize the public. In a most recent national survey by Pew (Auxier, 2020), Instagram ranks as the fourth popular pathway for Internet users to access news, behind YouTube, Facebook and Twitter. Yet, less attention has been focused on the news content being shared, and underlying reasons why Instagram is chosen as a tool for news sharing. Thus, I ask:

RQ1: What types of news content do users share on Instagram, and which mode of sharing is popular?

RQ2: What are the reasons that people opt to share news on Instagram instead of other platforms?

Method

I used in-depth semi-structured interviews with 23 college students to capture insights on the popular content being shared on Instagram, ways college students share news on the platform, and most importantly, why they prefer to use Instagram for news sharing.

Participants

I conducted in-depth, semi-structured interviews with 23 college students (5 males, 18 females; mean age = 19; age range: 18 – 23 years old) at a large northeastern U.S. university. Participants were recruited via an internal participant recruiting system. They were in different stages of the study: freshman (8), sophomore (8), junior (6) and senior (1). By inviting college students to talk about their recent news sharing experiences, this part of the dissertation aims to document the decision-making process of the sharing behavior, particularly highlighting why Instagram was chosen as the platform of sharing. Participants' demographic backgrounds were diverse in terms of major (information science, computer science, engineering, communication, and art history) and self-reported ethnicity. They received a research credit or a monetary payment (\$10) upon finishing the Zoom interview. Only those who had Instagram news sharing experience in the past month from registering the study were eligible. It is expected this participant group would be able to recall their latest sharing experiences during the interview. Participants reported that in general, they used Instagram in their spare time for keeping update with friends, posting pictures of their personal life and exploring topics they were interested in.

Interview Protocol

The semi-structured interview protocol (Appendix B) started with ice-breaker questions about social media news consumption. It then narrowed to questions related to participants' Instagram use and news sharing experiences. They were then asked to locate the most recent piece

of news they shared on Instagram, which could be a story, a regular post, or private messaging. After describing the news content, participants responded to prompts including why they shared the news piece, how they shared it (“could you describe the sharing process for this particular post?”), who the audience was participants had in mind and the response they received (“how did your friends respond to this sharing?”). To obtain as rich reflection as possible, participants were also asked why they chose Instagram to share instead of platforms like Facebook or Twitter.

	<i>Gender</i>	<i>Age</i>	<i>Year</i>	<i>Self-Reported Ethnicity</i>	<i>Social Media Use</i>
<i>P1</i>	F	19	Sophomore	East Asian	Very often*
<i>P2</i>	F	19	Sophomore	Black	Very often
<i>P3</i>	F	19	Freshman	White	Very often
<i>P4</i>	F	18	Sophomore	Hispanic	Very often
<i>P5</i>	M	20	Freshman	White	Often
<i>P6</i>	F	19	Freshman	South Asian	Very often
<i>P7</i>	M	19	Sophomore	East Asian	Very often
<i>P8</i>	F	21	Junior	East Asian	Very often
<i>P9</i>	F	19	Sophomore	White	Often
<i>P10</i>	F	21	Senior	Mixed	Very often
<i>P11</i>	F	20	Freshman	Pacific Islander	Very often
<i>P12</i>	F	19	Freshman	White	Very often
<i>P13</i>	F	19	Freshman	White	Very often
<i>P14</i>	M	23	Freshman	East Asian	Sometimes
<i>P15</i>	F	20	Sophomore	East Asian	Very often
<i>P16</i>	F	20	Junior	Southeast Asian	Very often
<i>P17</i>	M	20	Junior	White	Very often
<i>P18</i>	F	18	Freshman	Black American	Very often
<i>P19</i>	F	19	Junior	East Asian	Very often
<i>P20</i>	F	20	Junior	South Asian	Very often
<i>P21</i>	F	20	Sophomore	East Asian	Very often
<i>P22</i>	F	19	Sophomore	White	Very often
<i>P23</i>	M	20	Junior	South Asian	Very often

*Very often = multiple times a day; Often = several times per week; Sometimes = several times per month

Table 2. Study 2 Interview Participant Demographics Information

Data Analysis

The author and two research assistants used a modified grounded theory method to process the interview data, which ran about 20 to 25 minutes for each session. After transcribing all audio recordings, each person in the research team first coded a same set of interview transcripts ($N = 5$) individually in Atlas.Ti, a qualitative research software. During this round of initial open-coding, guided by interview questions, researchers assigned codes to important instances throughout transcripts. More than 50 codes were generated. Some examples were: “share to raise awareness,” “powerful visual message,” “share to spark conversation,” etc. After that, we sat together and compared the codes generated. Even for a same quote, different coders might assign codes differently. We discussed those and reached a consensus before proceeding to the next one. Then, using this refined codebook, we recoded the first batch of transcripts then the remaining ones. When new codes emerged during the second round of the coding process, we added them as necessary to ensure the comprehensiveness of the analysis. Lastly, I organized codes into higher-level themes in response to the aforementioned research questions.

Findings

The results from the data analysis were organized in two sections: the content being shared on Instagram, including the mode of sharing, as well as the rationales behind the choice of using Instagram to share instead of other platforms. Results suggest that Instagram is popular for news sharing because of its convenience of use, easiness of reaching out to peers, and the natural affordance of delivering powerful visual messages.

News Content Shared on Instagram

To answer RQ1, I first looked at the latest news pieces participants shared on their Instagram accounts. A majority of them (17 out of 23) were related to the broad topic of politics.

Specific content included the Supreme Court justice nominee, local and nationwide policies, calling for voting, the 2020 presidential election candidates' campaigns, etc. It should be noted that this concentration of sharing political news might relate to the fact that the study was conducted during the 2020 U.S. presidential election campaign period. The rest of the news postings on Instagram mainly covered respondents' interests such as sports, technology, entertainment, and campus updates. Instead of news reports, two participants shared the popular black square image during the Black Lives Matter movement, and they considered that to be an example of news sharing. One of them further elaborated:

It will encourage others and it's not only an image, but also a statement, and the event behind this. When you see it, I believe you'll immediately connect it to the news, right? So I guess that's just what I want to promote (P18, F, freshman).

Interestingly, there was only one piece of news related to the COVID-19 pandemic. Approximately half of the pieces shared (12 out of 23) were screenshots directly taken from news media outlets' websites or their social media accounts.

When asked what led them to share the news, participants' responses mainly fell under three categories. First, nine participants mentioned that news pieces that helped them express their viewpoints and attitudes were being shared, in a visually appealing way. They agreed that the news they shared reflected who they were and what they believed in, such as political ideologies and social justice. One participant mentioned that sharing an activism event news allowed him to "stand in solidarity" with other social movement participants. Another participant shared a news piece to her friends about "clean clothes campaign" and explained:

It's really important to me, it is very personal to me. I personally am really passionate about social responsibility and sustainability. I'm probably more on the lookout for it than other people. (P12, F, freshman)

Second, seven participants highlighted that the information they thought worth their Instagram friends knowing got shared. The goal was to raise awareness on the news topic like voting and climate change, especially among peers. There were different ways to achieve this purpose of informing: stories, regular post, direct messaging and group messaging, depending on the audience the sharer had in mind. For example:

I feel like I would be a hypocrite if I did not use my platform to share these things, because they're very important. And this is the best way that I can think of to help in my very limited broke college student capacity, to let my friends know these things (LGBT rights). (P22, F, sophomore)

Lastly, five participants reported that the news content that could spark conversations got shared. They intentionally share such pieces to get opportunities to chat with friends. While this was true for some participants, others expressed that they tended to avoid controversial and debatable content in their posts.

I have like, been vocal about some really pressing issues like the Black Lives Matter movement and things like that. I have like, really, really good conversations with people, even if they don't necessarily have same perspective as me. (P2, F, sophomore)

The dominant mode of news sharing (16 out of 23) was through “stories”. Participants preferred this approach because a story post “vanished in 24 hours” to the viewers. Users thus didn't have to worry about the post being sticky to their accounts. Respondent also pointed out that they normally browsed “stories” before scrolling down to the main feed because the “stories”

bar is on the top of the Instagram interface. Thus, posting stories was seen as an instant way to make the news visible to friends.

I think it's a great place to post because it goes away after 24 hours. So it's kind of more current news or updates, and it goes to your entire following. (P10, F, senior)

Though users were allowed to add customizations to story postings such as filters, stickers, hand-drawings and polls, there were only a few examples ($N = 3$) using that strategy. One participant said that she did so because she wanted her audience to see her emotions:

Another news I shared was when Ruth Bader Ginsburg passed away earlier this year in September, I shared it with like a heart emoji as well as a little sad face because you know, she was a really important woman. (P22, F, sophomore)

Yet, for most of the interview participants, they pointed out that they considered posting a piece of news as a “formal action,” thus they wanted to keep it “serious” rather than “beautiful”. As a result, they opted not to add customizations to the posts.

In terms of feedback, participants expressed that the quality of comments they received mattered more than the quantity. Especially when the news content was shared via stories, the reply was a “private conversation” between the commentor and the sharer. Participants highlighted that when there was a comment, they treated it as “a good time to start a conversation” or even an “education” opportunity, though sometimes it became a debate.

(For) people disagree with me, I would love to talk to them about it. I feel like it'd be a risk for most people if they would be upset with me. But I think it'd be a benefit in this case, because I could do a talk to them about helping about doing something good. (P21, F, sophomore)

Reasons for Choosing Instagram to Share News

RQ2 asked why college students prefer to share news on Instagram over other platforms. Participants mentioned that they choose Instagram to share news mainly because of the access to peer networks, the power of visual content, and the ease of using the sharing function.

Access to Peers. Comparing to other platforms, many participants expressed that on Instagram, they had more peers with whom they had close relationships ($N = 10$). Yet, on other platforms, they often had connections that were not in their same age groups, or a high number of acquaintances like on Facebook and Twitter. Thus, they felt more comfortable sharing news with peers on Instagram, especially when the shared content suggested their personal emotions or attitudes on a public issue, such as politics. Further, participants claimed that sharing with peers who knew them effectively stopping unfamiliar others (e.g., those who didn't share similar experiences) forming biases on them. As a result, when posting news to raise awareness on a specific topic, such as climate change or immigration issue, participants considered Instagram a more effective channel to reach out to, even persuade peers than other frequently used social networking services (SNS), due to the homophily nature of the network. As one participant explained, using Instagram to share news also maximize the number of peer-audience:

I think that's probably the social media platform that my generation is most active on. So it gets the most – viewership. (P16, F, junior)

Powerful Visual Messages. Participants enjoyed reading and sharing news on Instagram because the presentation of the post was visually appealing ($N = 8$). When the sharing goal was calling to actions, image- and video-based content was considered to be more “inciting” and “powerful” than a regular news piece shared on other SNS, where additional details like texts, or social cues like the number of likes and comments distracted the readers from focusing on the

news content itself. For example, one participant posted images in their stories to encourage their friends to vote for the presidential election:

(I share) just getting people out to vote, and making people like more aware of what's going on around them and like, the potential for the future of the country and things like that. (P5, M, freshman)

Another participant re-shared a video story that showed the crowd marching together to raise awareness of recent social activism events. He then explained that this post was “inspiring” because “you can see the emotions on people’s faces”. Lastly, Sharing news on Instagram is also helpful for story-telling. Users can choose to publish multiple images and videos at the same time in the story to deliver a comprehensive pack of messages to the audience.

I like being able to see visual posts about information, whether it's pictures or just infographics. I feel like I'm very much like a visual learner and I think my peers are visual persons as well. So Instagram is the best option for me. (P14, M, freshman)

Ease of Sharing. Participants suggested that they spent substantial time on Instagram every day. Thus, it is convenient for them to share news on it, rather than switching to a different platform ($N = 6$). Specifically, when participants were tagged in a story, Instagram allows them to forward it directly to their own stories, making it easy for future sharing. For example, one got mentioned in a local news story that a child was missing. She then re-shared this story with one-click and mentioned her other friends to spread the information further. Another typical sharing scenario is that when users saw other accounts (e.g., media accounts) posted the news content they felt worth sharing: they tapped the “add post to your story” button to add the image or video to their own stories. This function was described as “immediate” and “intuitive”. One participant also

mentioned that she sometimes used direct message function within the app to send news content directly to friends or group.

Instagram has lots of features that enable sharing really easily like the stories and DM feature. A lot of people are creating content and sharing content, surrounding news especially. (P13, F, freshman)

Discussion

Much of recent research attention has been focusing on the phenomenon of news sharing on platforms like Facebook and Twitter (Flintham et al., 2018; Lottridge & Bentley, 2018; Wang & Fussell, 2020). Yet, a growing number of Instagram users, especially those who are 18-24, are using it to access and share news (Auxier, 2020). When explaining why Instagram was chosen for news sharing, in addition to the consideration of convenience, participants also emphasized that the platform largely represented their peer network. As a result, it was perceived to be less risky to share news that unveiled their authentic opinions and attitudes on it when compared with other SNS. Participants also suggested that “occasionally” posting news would catch their friends’ attention because most of the content posted on Instagram is lifestyle rather than news content.

Pathways to news sharing on Instagram were diverse. Participants shared both: (1) what they read from news media outlets’ websites or social media accounts by snapping screenshots and (2) news pieces posted by their friends by using native Instagram tools and functions, such as reposting and forwarding. Participants also mentioned that they updated their account headshots during events like Black Lives Matter, as a way of sharing news, expressing themselves and showing support. “Stories” was the primary way of sharing. The responses one received such as likes and comments via stories were private. Participants agreed that they did not intentionally

expect feedbacks after posting news content on Instagram, but when there were replies from friends, they might take this as an opportunity to start in-depth conversations.

This study was conducted during the 2020 U.S. presidential election. Many most-recent news pieces shared by participants were about politics. This finding resonates with previous literature that social media opens a forum for users to express political preferences and beliefs. However, the fact that a specific political event occupied public attention for an extended time might influence this observation. Future research can investigate: during a different data collection period, what news topics and content do college students share? Moreover, qualitative researchers can also examine whether this research's outcomes (such as motivations of sharing news on Instagram) hold for different age or demographic groups.

More than half of participants expressed that they hoped Instagram to allow them to add clickable links for news piece they shared in both regular posts and stories. Ideally, when the readers want to learn more details about a news story or want to access the content, they can read the full article by following the link provided by the sharer. Up until the research, this feature is only available to verified accounts or those who have followers more than 10,000. However, there is also a risk that the hyperlink function being "hijacked" if such function is broadly accessible, particularly by those who intentionally spread misinformation or conspiracy theories.

Correcting the spread of misinformation has become an urgent task of many social network services (Allcott & Gentzkow, 2017; Vosoughi et al., 2018). Previous studies suggested that people in general didn't fully trust the news content they read on Instagram (Auxier, 2020). Yet, chances are users encounter fake news on sensitive topics (e.g., politics, public health) they have a hard time telling whether it is true or false. To combat that, Instagram algorithm can perform image/video recognition of posts and stories, then direct the news-reading audience to credible

sources of the recognized topic. For example, if one user posts an image with COVID-19 vaccine-related content, the link to the CDC (Center for Disease Control and Prevention) verified Instagram account or official website would be displayed.

In sum, this qualitative research work with college students offers the first insight into how this demographic group uses Instagram to share news. Interview results suggest that participants chose Instagram to share news because they could utilize the power of visuals to reach out to peers on this platform. During the 2020 U.S. presidential election, college students shared a large amount of political content that aligned with their beliefs or reflected their points of view. To enhance the experience, users agreed that Instagram could allow them to incorporate external links when posting news content.

This chapter extends the knowledge in Chapter 3 by revealing why one particular platform like Instagram is preferred over others for news sharing by college students. Future work can also investigate popular platforms like TikTok and Snapchat, which are traditionally not seen as news sharing social network services, and their unique affordances for sharing news among different demographic groups.

In both Chapter 3 and Chapter 4, I try to understand individuals' positive sharing decision-making process, such as cognitive processes they engage in, rationales of using a specific platform, etc. However, less attention has been focused on when a sharing decision has been made - to what extent it can be reversed. If so, what factors correlate with this decision reversal. By answering this, the study will provide a design basis for algorithms that encourage people not to share content, with the goal of reducing misinformation dissemination. Chapter 5 uses an experimental approach to address this promising research agenda.

Chapter 5: Understanding Decision Reversals in Social Media News Sharing

News sharing has become prevalent on many social media platforms such as Facebook and Twitter. Users are not only exposed to a large amount of news shared by others but also actively share information with their networks. With a click of the share button, information can be disseminated to one's social network quickly. Interested in a fundamental question: what motivates social media users to share – I synthesize previous works and propose a new categorization of news sharing motivations: (1) social norms, (2) psychological benefits, (3) personal rewards given by others, and (4) social and relational benefits. Additionally, I add another type of intrinsic motivation: (5) the desire for self-expression, which may drive sharing behavior.

Furthermore, though extensive work has focused on underlying reasons that lead to the sharing behavior, in the hope of reducing misinformation sharing, I'm interested in examining a potential user behavioral change that has not been studied before – would it be possible for news sharers to reverse decisions after clicking the sharing button, given there are external incentives?

Inspired by past studies of the social costs of friend-sourcing, which made use of an extrinsic economic incentive to manipulate participants' cost/benefit ratios (Rzeszotarski & Morris, 2014), I use a range of monetary values to incentivize participants to reverse their declared sharing decision in exchange for extra study compensation. Through this novel online experiment method, I hope to go beyond self-reported rationales, estimating more concretely how individuals weigh different factors, including motivational ones, when an external stimulus was introduced to alter their decisions. This study seeks to model empirically: (1) how article features, demographic factors and self-reported interests shape whether SNS users are willing to share a news piece sampled from a spectrum of topic areas; (2) how motivational factors influence users' news sharing

decisions; and lastly, (3) if users are given an external incentive to “flip” their original choice, sharing items that they had previously opted not to share, or vice versa, what are factors that contribute to this behavior change?

Facebook is the platform of interest for examining abovementioned research questions. Previous studies indicated that Facebook is one of the most popular services for news sharing (Shearer, 2018), with a broad user base representative of the American online news-sharing population (Perrin & Anderson, 2019). Approximately 43% of U.S. adults have had experience using Facebook as a news source, two times more than the second-most-popular platform, YouTube (Gramlich, 2019). Recent research also shows that news pieces, including fake ones, spread faster on Facebook than on other social media websites (Guess, Nagler & Tucker, 2019; Guess, Nyhan & Reifler, 2020). These facts make it an ideal choice for us to recruit Facebook users due to their extensive sharing and reading of news activities.

This chapter highlights that news sharing decisions come with not only a diverse set of motivations but also relate to interest level in the content, demographic factors, and (reverse effect) article content features. Furthermore, news-sharing decisions can be reversed if an external stimulus is given. Finally, I observed that original non-sharing decisions are more resistant to the incentive when compared with initial positive sharing decisions, suggesting the underlying cost structure of swapping decisions is different for these two types of decisions.

Hypotheses Development

Social media users are motivated to share news content. In addition to modeling how motivational as well as other factors influence initial sharing decision-making, this work further explores the behavior of sharers when an external incentive is introduced that asks them to reverse

decisions. In the section below, I outline hypotheses concerning how motivational factors may shape sharing decisions and users' reversal behavior.

Previous work has suggested that users are willing to share content in which they are interested (Wang & Fussell, 2020). *Visa versa*, if people are not interested in news content, then it is less likely they will share. The level of interest in a piece of news is an indicator of the amount of commitment to the sharing decision made. Thus, I predict that a higher self-reported interest level in the news item is associated with a higher likelihood of sharing and reduced likelihood of reversing the sharing decision.

H1a: Higher self-reported interest in a news item will be associated with a higher likelihood of initially sharing it.

H1b: Higher self-reported interest will be associated with a lower likelihood of reversing the decision later, regardless of incentives provided.

Users on social media see different types of content on their newsfeeds every day. They also share various types of content that serve different purposes. Previous work suggested that social media users tend to follow the public discourse and share news pieces that relate to “focusing events” (Birkland, 1998), which are news events that occupy public attention in a given period of time. I hypothesize that positive sharing decisions associated with “focusing events” are less likely to be changed due to the importance of those topics.

H2a: News related to a “focusing event” will have a higher likelihood of being shared.

H2b: News related to a “focusing event” will have a lower likelihood of decision reversals, regardless of incentive.

In a controlled study environment, I suspect that participants' motivations for sharing study-selected articles are unlikely to exceed that of their motivations to avoid sharing a piece of

content they wouldn't like to see on their social media feed. As individuals may have stronger reasons not to share something, I anticipate that there will be asymmetry in reversal decisions when an external incentive is introduced. Thus, I propose that participants' expected costs of reversing a "share" decision will always be lower than the costs of sharing something a participant initially did not want to share. Thus, it is expected that there will be more reversals when an initial sharing choice was to share the item, as the perceived costs of changing their mind may be reduced.

H3: Participants will be more likely to reverse an initial share decision compared to a non-share decision regardless of incentive.

When social media users receive a monetary incentive to alter their initial decisions, it is anticipated that the increasing amounts of incentives should also match with increasing rates of reversing decisions. For example, I expect that participants who are assigned to the condition for a higher bonus per reversal will be more inclined to make that decision.

H4: A higher monetary incentive will result in an increased number of reversals of the initial sharing choice.

With respect to individual motivational components, I expect some variations among participants and news items. When people make sharing decisions, some of the motivations may be strong, while some may be weak or not even receive consideration. In this study, when the participant indicates that at least one of the multiple motivations has been weighted heavily for a sharing decision (for example, a 5 on a 1-5 Likert scale), I consider it to be a "strongly motivated" choice. Otherwise, I define a decision with no heavily weighted motivation (i.e., no answer at level 5 on a 1-5 Likert scale) to be "not strongly motivated". I suspect strongly motivated sharing decisions are less likely to be reversed when compared with "not strongly motivated" items.

H5: A highly motivated sharing decision is less likely to be reversed when compared with a less motivated one.

To avoid single item bias in the experiment study, I decide to present participants with multiple items for them to browse and indicate their sharing decisions. However, as participants begin to adapt to the study procedure, they may adjust their strategy if they feel that sharing too much content might saturate their social media newsfeed. This, in concert with reversed decisions, may lead to changing criteria over time. Participants may also become increasingly aware of the study bonus, introducing additional motivational factors into their decision making. I suspect:

H6a: As participants progress in the experiment and realize more news could be posted to their newsfeed, they will choose to share news less often to avoid over-sharing.

H6b: As participants progress in the experiment and get exposed to the prompt of study bonus, they will choose to reverse the initial sharing choice more often to obtain higher compensation.

Method

I designed a two-step study to address the overarching research question: will social media users keep or reverse sharing decisions they made when an external incentive is given, and what factors (including motivational ones) make them more “resistant” or “fluid” to this additional incentive?

Material Preparation and Motivational Framework Validation

To prepare news items to present in the experiment, I created an Amazon Mechanical Turk (Mturk, <https://www.mturk.com>) task that asked participants to upload the most recent news pieces that they shared publicly on their Facebook homepages. Participants were those who resided in the U.S. and at least 18 years in age with at least an 85% lifetime approval rating on MTurk. They

were required to have a valid Facebook account and self-report the Internet as one of their primary news sources. The compensation of this task was \$3 and took approximately 10 minutes to complete including informed consent. Participants first needed to provide screenshots of the three latest news items they shared. They were instructed not to include personally identifiable information in the screenshot to protect their privacy. News should be published by external source and should not be a personal update, photo or video. After uploading, participants self-reported their motivations for posting the news item in an open text box question.

Forty participants completed this study (21 females, 19 males; 8% were 18-24, 45% were 25-34, 23% were 35-44, and the remaining 25% were > 45 years old). An initial examination of 120 news pieces suggested two leading categories among the news topics: 32 pieces (26.6%) were related to the COVID-19 pandemic, and that 21 news pieces (17.5%) were related to politics, one of the most circulated news types on social media (Romero, Meeder & Kleinberg, 2011; Jakesch et al., 2018). Other topics that were shared included health, technology, sports, climate and finance. News sources ranged from prestigious agencies and media outlets, to less known sources that were publishing polarized or misleading content.

Motivation	Cases	Category
To provide important information for friends; or to spread truth and reality that one believes in	51	Social norm
To pass time, relax, escape from pressure; or to get a sense of self-efficacy by providing knowledge that others consider valuable	19	Psychological benefits
To get social and emotional support from others; or to gain status and recognition from others	24	Personal benefits gained from others
To interact with and get feedback from friends; or to advance relationships	8	Relational benefits
To express personal opinion on a news event; or venting on an issue	22	Self-expression

Table 3. Motivations of User Responses (by frequency)

This Mechanical Turk task also served as a preliminary validity check of the motivational framework proposed in the *Literature Review* section. The author and one research assistant processed and coded 120 motivational statements. This coding procedure asked two raters to call out any examples that did not match a category in the framework. To avoid an order effect in the coding (the tendency to assign user response to a code that appears first), the second coder used a reversed version of the codebook. The interrater reliability (Krippendorff's alpha) is 0.88 (N Agreements = 105, N Disagreements = 15). For the items that received inconsistent code assignments, the two coders discussed them and reached consensus after working together. According to Table 3, people share news due to both intrinsic and extrinsic motivations. A large number of news pieces were shared due to the social norm motive ($N=51$). News about natural disasters like hurricane and wildfire (Vieweg et al., 2010) also got shared. Participants shared such stories to seek for support and help from others. The least frequently mentioned category of motivation was social and relational benefits ($N=8$). While informing, this ranking of motivations should be treated with cautious due to participant sample, timing of the study and other factors.

Item	News headline
1	Colleges scrapping spring break amid travel concerns during coronavirus pandemic
2	Masks help bring down Covid-19 cases, governors and state health officials say
3	Meet the burger-flipping robots that may take over fast food kitchens
4	What is Prop 22? How California voters will decide Uber, Lyft's future
5	West Coast wildfires are ravaging communities. Here's how to help victims and first responders
6	These 9 hand sanitizers may be toxic, FDA warns
7	President Trump says \$5 Billion from TikTok, Oracle, Walmart deal will go toward education
8	National Zoo's Panda Cub Gets First Exam: 'Our Young Panda Appears to Be Healthy and Vibrant'
9	Here's what a Biden presidential win may mean for your Social Security benefits

Table 4. News Presented to Experiment Participants (random ordered)

In total, there are nine news pieces sampled from all 120 items uploaded by participants (Table 4). This selection didn't include news content that did not align with current scientific and medical practice, or had obvious misinformation. Several were updated with comparable items because they featured out of date information. In a five-minute long experiment study, each of the participants was exposed to three randomly selected news items out of those nine pieces.

Experiment Procedure

Experiment participants were recruited via Facebook advertisements. Individuals who clicked the ad were then directed to a page that outlined the study process. Participants were informed that the study was about their news sharing experience and that they must have shared news content in the past month to be eligible. They were also informed that in the process that they may be asked to share news items on their newsfeed, and will always have the option of refusing to share it. For full survey protocol, see Appendix C.

After signing the electronic consent form, participants validated their Facebook accounts via a secured authenticator built into the Qualtrics survey platform. This study did not gain access to their feed, though the authentication process leads to that impression. Participants were informed that their Facebook account had been "linked" to the study, and that any posts they choose to share during the study will be posted to their account. In light of the potential social implications of news sharing, this study chose not to algorithmically post stories. Instead, this deception tactic was intended to give participants the understanding that their sharing decisions could result in real world actions. Participants were informed of this deception in the debrief portion of the study at the end, and all Facebook authentication credentials were wiped in the data analysis. The experiment and deceptive components were approved by the university internal research ethics review board (IRB).

Participants next filled out a demographic survey, including questions about their Facebook use. After that, they were exposed to three news pieces above-mentioned. For each of the news items, participants were asked first to read the article snippet provided. Afterwards, they rated their interest level in the news and decided whether they would share it on their Facebook timeline. This decision is referred as the initial sharing choice. Participants were informed that if they opted to share the article, it would be scheduled to appear in their Facebook page 30 minutes after the study ended (a believable claim given they previously provided Facebook authentication). Regardless of the initial sharing choice (share or not share), participants are then surveyed about their motivation for making that choice. Using a 5-point Likert scale, they agreed or disagreed with motivational statements corresponding to the framework introduced.

Figure 4 has two examples of the news interface participants saw. The designed mimicked Facebook news sharing interfaces. Not all news on social media is encountered in a socially “equal” way. Previous research found that news metadata (Chorley et al., 2015) like the number of shares (Lee & Oh, 2017), who shares the news (Metzger et al., 2010; Bakshy et al., 2012), and other factors all influence sharing. To reduce this effect, I decided to only present the news image, headline and default comments/likes buttons to participants. This approach is expected to isolate out potential social cues.

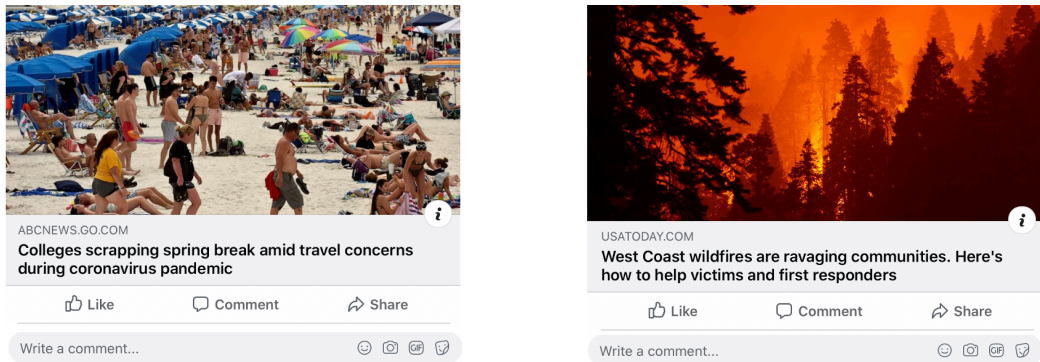


Figure 4. Example of Interfaces Participant See in the Experiment

In pilot study, participants were asked to rate statements (similar to Table 3) that mapped to five higher-level categories of motivations. During the post-study discussion, however, participants pointed out that some categories did not map evenly to their conceptualization of motivations. For example, “inform others with helpful information,” and be a “good social citizen to share truthful information” - were distinct reasonings that both fit into the social norm category. In fact, the umbrella term of social norms, psychological benefits, personal benefits and relational benefits each encompasses a set of distinct motivational elements within them. To address this, high-level motivational categories were broken down into itemized statements that form survey scales for the greater category (Table 5). With each statement different from each other conceptually, traditional reliability measurements such as Cronbach Alpha and factor analysis that measure internal consistency (Gren & Goldman, 2016) are not applicable (see *Appendix* for the correlation table of these items). Lastly, self-expression motivation has not been systematically examined in previous news sharing literature, Thus, I only included one statement related to it.

Statement	Category
(1) This story is important for my Facebook friends to know about	Social norm
(2) Sharing it reflects my desire to spread information about truth/reality, or correct misinformation	
(3) Sharing this news helps me pass time, relax, escape from pressure & combat boredom	Psychological benefits
(4) I am confident in my ability to provide knowledge that others consider valuable	
(5) Sharing this news helps me get social and emotional support for one another	Personal benefits gained from others
(6) It helps me to gain status and recognition when sharing it	
(7) My Facebook friends are likely to interact with me (share, like, comment on) this story	Relational benefits
(8) My friends will be entertained/upset by this story	
(9) Sharing it makes me express my own opinion on that issue	Self-expression

Table 5. Motivations Statements in the Study 3 Survey Experiment

Having gathered an initial set of decisions, the survey presents each news item one by one again. For each item, there is a monetary incentive to reverse the sharing or non-sharing decision participant just made (i.e., “if you switch to sharing this article, you will earn bonus compensation”). By enforcing a choice, this experiment design can directly push participants to reconsider the previously made decision. At the same time, participants may also re-evaluate the motivations behind them. There are three base pay rate conditions when participants agreed to participate in the study: \$1, \$1.5 and \$2. The extra monetary incentive for reversing a decision is set as a fixed fraction ($1/3$) of the base compensation. For example, if the participant is in \$1 base compensation condition, one decision change leads to an extra payment of approximately \$.33. This amount set-up aligns with prior work where similar monetary incentive design is introduced to modify online decisions (Rzeszotarski & Morris, 2014).

As mentioned earlier, sharing decisions made in this study didn't result in posts to participants' feeds. As a result, it is most ethical to reward participants the full possible bonus amount even if they did not reverse any decisions, so as to guarantee parity across all participants in the pool. They were informed of this during the debrief at the conclusion of the study. This decision resulted in a \$2, \$3, or \$4 final post-bonus compensation. The \$2 and \$4 condition are comparatively high with respect to the proposed study duration. Payment condition was assigned randomly, as I did not want to distribute compensation in a way that risked inequities caused by posting research ads at specific times or in batches.

Participants

The study announcement was advertised and distributed through Facebook Ads. I first set up the ad's audience to be those who were aged 18 or older and resided in the U.S. I further targeted users who the ad service estimated were interested in social media and reading newspapers (the two closest interest filters available on the Facebook Ad service). This study reached out to more

than 24,000 unique Facebook users that met the pre-set audience criteria and received more than 1,000 clicks. In total, there were 244 survey responses (\$1 base compensation condition – 79 participants, \$1.5 base condition - 82 participants, \$2 base condition - 83 participants). The participant size for each experiment group is in line with previous works that tried to detect the economic implications of online decisions (Rzeszotarski & Morris, 2014). The study took about 8 minutes on average (median = 6.5 minutes) for participants to complete. Among participants, 67% identified as female, 32% identified as male. The mean age of study participants was 44 (median = 33 years old), with age ranges from 18 to 77. The age distribution of participants resembles the user demographic of current Facebook users. For education level, 2% had some high school experience, 18% had a high school degree, 3% had a vocational degree, 17% had some college experience, 14% had an associate degree, 27% had a bachelor’s degree, and 18% had a graduate or professional degree. 64% of participants self-reported as Caucasian, 12% as African Americans, 5% as Hispanic, 12% as Asian, 6% as American Indian, Alaska Native, Native Hawaiian or other Pacific islander. 80% of study participants were interested in reading politics-related news, 73% indicated they were interested in health-related news, 57% favored lifestyle news pieces, and 53% liked technology news pieces. Self-report data further suggest that 88% of participants check Facebook pages several times a day. 57% of participants reported they checked Facebook “several times a day” to read the latest news. Moreover, 49.2% survey participants reported they shared news on Facebook at least once a day.

Results

This section first presents observations of survey participants’ initial sharing decisions and, after an incentive was given, to what extent participants changed their decisions. Then, I modeled initial sharing decisions, and the regression model results suggested various factors influenced

initial sharing decisions. Next, in the second regression model, I looked at what influenced the reversal decision. Analysis indicates that sharing decisions can be reversed when a strong external stimulus (higher bonus) is presented and are mediated by motivational factors that independently influence participants' reversion decisions.

Initial Observation

Among 244 study participants across three experiment conditions, 326 sharing decisions and 403 non-sharing decisions were made. For those initial sharing choices, after the incentive that encouraged participants to give up the original decision in exchange for extra study compensation, a total of 206 out of 326 (63.2%) decisions were swapped. In comparison to that, for initial non-sharing choices, 105 out of 403 (26.1%) were reversed. This trend provides preliminary support for H3 - non-sharing decisions will be reversed less often compared to sharing ones (regression model in the following section). Table 6 includes four different scenarios of decision-changing dynamics: (1) those who originally didn't want to share and was not "motivated" by our incentive; (2) those who originally didn't want to share but were willing to share the news after seeing the incentive; (3) those who originally wanted to share and kept this decision after the incentive was given; and lastly, (4) those who originally wanted to share but decided to "retract" the sharing decision after seeing the monetary incentive.

	Initial non-sharing decisions		Initial sharing decisions	
	(1) Keep original	(2) Change to the opposite	(3) Keep original	(4) Change to the opposite
\$1	96 (77%)	28 (23%)	48 (43%)	63 (57%)
\$1.5	118 (75%)	39 (25%)	39 (44%)	49 (56%)
\$2	84 (69%)	38 (31%)	33 (26%)	94 (74%)
Total	298	105	120	206

Table 6. Dynamics Between Initial and Post-incentive Sharing Decisions

For those who initially decided to share, while there was no obvious difference in \$1 (57%) and \$1.5 (56%) conditions in terms of the reversal rate, I did observe a jump in the \$2 condition, where approximately 74% original sharing decisions were reversed. It is suspected that these relatively moderate incentives (\$0.33 and 0.5 per change) might result in a ceiling effect at \$1 and \$1.5 conditions. For those who didn't want to share originally, when the incentives rose, the rate of change also grew (23% to 25% to 31%). Though the level of conversion rate from non-sharing to sharing was lower when compared with the rate of sharing to non-sharing, the gradually increasing trend is noticeable. In sum, these findings provide initial empirical evidence for *H4* – the higher the incentive payment, the higher chance the initial sharing choice will be reversed holds.

Modeling Initial Sharing Decisions

To more fully evaluate research hypotheses, I construct a series of logistic regression models. In this section, I begin by modeling factors which contribute towards an initial sharing choice - positive results indicate increasing likelihood of sharing news content. Among hypotheses, *H1a* predicts that people are more willing to share what they are interested in and *H2a* predicts that people will prefer to share content related to “focusing events”. In the model, I also add demographic terms for age and gender as in previous work age- and gender-related differences have been observed (Chen et al., 2015; Reis et al., 2017). The main goal of this study is to examine the effect of five different motivational constructs in the sharing decision-making. Thus, instead of modeling “empathy” and “good citizenship” as separate motivation types, I take the average rating of these two statements as the input of the “social norm” motivation in the regression because they both belong to that high-level construct. I also incorporate a term in the model to account for the order of presentation (*H6a* – participants will share fewer items as the study continues). As the order of presentation begins to integrate within-subjects factors which are repeated measures for participants, I construct a mixed-effects model that accounts for participant

identifier. The resulting factors for a logistic model predicting for initial sharing choice (share positive, non-share negative) are shown in Table 7. The model depicts a series of main effects. During model construction, I also explored interaction effects between variables (e.g., interest and self-expression), but did not identify any significant interactions.

	Est.	SE	P(> z)
(Intercept)	-15.4731	1.71646	<.001***
Interest level in news (1-5)	1.05627	0.19522	<.001***
News being focusing event	-0.89291	0.40035	0.0257*
Age	0.06123	0.01875	0.0011**
Gender: M (F as baseline)	-0.27013	0.57471	0.6383
News display order in the study	-0.09088	0.23113	0.6942
Social norm	0.46045	0.34805	0.1859
Psychological benefits	2.82529	0.39972	<.001***
Personal benefits given by others	-0.71367	0.33458	0.0329*
Relational benefits	0.46431	0.33593	0.1669
Self-expression	0.17289	0.26716	0.5175

* Signif. codes: 0 '***' 0.001 '**' 0.01 '*'

Table 7. Logistic Regression for Initial Sharing Decisions (with coefficients and p-values)

I first note that interest in a news item is positively related to initially sharing ($\beta = 1.06$; $p < .001$), providing support for H1a that when participants report a higher interest level, there is a higher chance the story will be shared rather than skipped. Contradictory to what I predicted in H2a, experiment results suggest that news items being related to a focusing event (in our experiment, COVID-19 and the election) decreased the chance of the news being shared ($\beta = -.89$; $p = .026$). This finding is interesting, though not surprising, since social media users may have already been exposed to similar news items previously and may not want to subject their friends to more news about the topic. Display order does not appear to have an effect on sharing choices, providing no evidence in support of H6a, though this might be more due to the short duration of

our study than a true lack of order effect. I observed no differences based on gender, but did identify a significant influence of age, where increasing age matched with increasing likelihood of sharing a news item in general ($\beta = .06$; $p = 0.001$).

For motivations, I found that when people were motivated by psychological benefits, they were more likely to share the news piece than not ($\beta = 2.83$; $p < 0.001$). An interesting finding is that the motivation to acquire personal benefits was negatively related to sharing ($\beta = -.71$; $p = .033$). One possible explanation is that participants were reluctant to indicate they “strategically” use news sharing to make themselves look good in front of others or get necessary help – a bias resulting from this being a study and creating a perceived need for self-presentation maintenance.

Modeling Sharing Decision Reversal

To understand what factors influenced participants’ decisions to reverse their initial sharing choice, I constructed another mixed-effects logistic regression to model their reversal, as presented in Table 8. In this model, positive estimates indicate a higher likelihood of reversing the initial decision. For the variable term “news sharing decision being highly motivated,” if at least one of the multiple motivational statements has been weighted heavily (a 5 on a 1-5 Likert scale), I consider it to be a “strongly motivated” decision and record it as 1 in the regression. Since practically, social media users might not be highly motivated on all dimension to share a piece of news.

Regression results suggest that participants’ initial sharing choice influenced their likelihood of reversal ($\beta = 2.509$; $p < .001$), with individuals who initially shared much more likely to reverse, confirming H3. I also find a main effect in increasing compensation ($\beta = .727$; $p = .009$), which increases the likelihood of reversing a sharing decision, supporting H4. I then plot H3 and H4 together in Figure 5 below. Though it is predicted that participants would be more and more willing to sacrifice their original sharing decision for obtaining money as the experiment

progressed (“news display order” variable in the regression), there is no evidence for H6b ($\beta=-.138$; $p = .335$). Surprisingly, unlike in the initial model of making sharing or non-sharing decisions, interest in the news topic does not have a detectable effect on reversal of sharing decisions ($\beta=-.043$; $p=.745$). This does not support H1b and implies that other factors might be more dominant in participants changing their minds. Likewise, I find no support for H2b, as focusing events did not play a detectable role in reversals ($\beta=.12$; $p=.651$). This study detects both age- and gendered-related effects in reversals, with individuals who identify as male were less likely to reverse ($\beta=-1.003$; $p=.037$), and the increasing trend in age leads to the lower likelihood to reverse ($\beta=-.032$; $p=.045$). Lastly, there is strong support for H5 ($\beta=-.846$; $p=.001$), which is in accordance with the hypothesis that a highly motivated news sharing decision (regardless the motivation type) is in general hard to be reversed even when an incentive was presented. I also provided this regression model for both sharing and non-sharing decisions separately in appendices.

	Est.	SE	P(> z)
(Intercept)	-0.8211	1.03088	0.42517
Initial sharing choice (1-share, 0-not share)	2.50907	0.3941	<.001***
Compensation condition	0.72656	0.28087	0.00969 **
Interest level in the news (1-5)	-0.0425	0.13076	0.74518
News being focusing event	0.12029	0.26596	0.65107
News display order in the study	-0.13836	0.14361	0.33533
News sharing decision being highly motivated	-0.84653	0.33338	0.00111 *
Age	-0.03202	0.01603	0.04571 *
Gender: M (F as baseline)	-1.00355	0.48065	0.03681 *

* Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’

Table 8. Logistic Regression for the Sharing Decision Reversal

It should be noted that in Table 8, it tested a high-level hypothesis: to what extent a news sharing decision being highly motivated can influence the decision of reversal. Yet, specific motivational factors were not considered. To address this, I opted to use a boolean feature in the following regression analysis to represent motivations of sharing. For example, for two motivation statements in the social norm category, if either one of the motivations in the group received a “5” rating by the participant – the highest rating one can give, I then recorded it as strongly motivated (1) for the category, otherwise I recorded not strongly motivated (0). Table 9 below presents the result for this regression. Specifically, there is evidence that when people share for personal benefits given by others – this motivation plays a meaningful role in “safeguarding” reversals of choice ($\beta=-.951$; $p=.031$). Namely, a news sharing decision that came with strong considerations that relates to others recognition and support (it could be either one of these benefits mentioned, or both) had a lower chance to be modified when a monetary incentive was given. It further reveals that one’s expectation of gaining benefits from others is a relative “resistant” motivation in news sharing phenomenon.

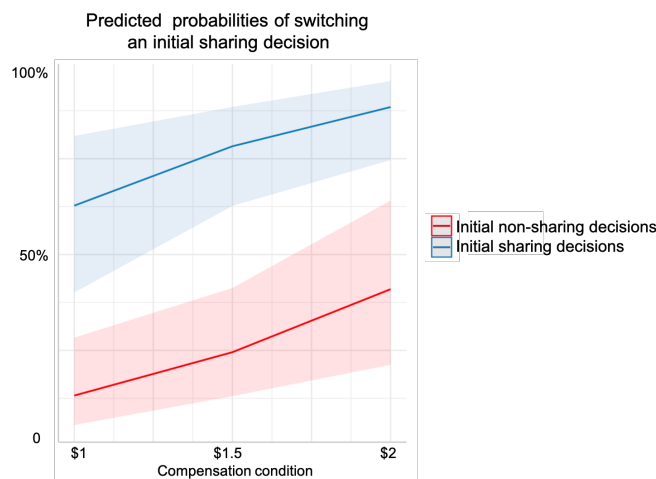


Figure 5. Predicted Probabilities (marginal means) of Switching Based on Initial Choices

I also find weak support that if sharing relates to social norms, this motivation is comparatively fluid and may even “facilitate” reversals ($\beta=.744$; $p=.083$). This can be explained

by the fact that though people share for the good of others or information purposes, they may not feel the urgency or necessity of having to share certain pieces with their others (Wang & Fussell, 2020).

	Est.	SE	P(> z)
(Intercept)	-1.25061	0.87941	0.155
Initial sharing choice (1-share, 0-not share)	2.23687	0.33167	<.001***
Compensation condition	0.69638	0.26532	0.00867 **
Age	-0.02728	0.01521	0.07283
Gender: M (F as baseline)	-1.10862	0.46043	0.01605 *
Social norm (if strongly motivated)	0.74431	0.4291	0.08281
Psychological benefits (if strongly motivated)	-0.5713	0.42786	0.18179
Personal benefits given by others (if strongly motivated)	-0.95054	0.44068	0.03101 *
Relational benefits (if strongly motivated)	-0.33745	0.42172	0.4236
Self-expression (if strongly motivated)	0.18799	0.4502	0.67627

* Signif. codes: 0 '***' 0.001 '**' 0.01 '*'

Table 9. Logistic Regression for the Sharing Decision Reversal with Motivational Factors

Discussion

Built on a new theoretical categorization that proposed five types of news sharing motivations: social and contextual norms; the desire for self-expression, including venting; internal, psychological benefits; personal rewards that are given by the audience and relational benefits – this chapter used an online experiment that provided different levels of base payments to gain more knowledge of how “determined” Facebook users were in their choices of news sharing. In this discussion section, I pull out some higher-level themes that emerge from the study results and provide future directions to amplify the impact of this research.

Study and Model Insights

First, there are diverse motivations behind the news sharing behavior. Both intrinsic and extrinsic factors motivate Facebook users when they make sharing decisions. News sharers spread information to inform their friends about important information, express personal opinions, build connections, seek social support, etc. A news sharer may not be motivated to make a sharing decision due to all of the motivations proposed. On an individual basis, some motivations stood out, yet some others were not prioritized. The relative weighting of those motivations, in fact, varies by the person who makes the decision. Even for sharing the same news piece, different social media users could share it with different underlying motivations. For example, one may intentionally share misinformation to depress others and spread propaganda. Yet, it could also be that one shared fake news for entertaining purposes. This complexity of human sharing behavior further requires researchers to grasp the underlying motivations of sharing and non-sharing decisions before designing universal interventions to mitigate misinformation dissemination. While much of recent research has been focusing on the motivations behind “positive” sharing decisions, findings in this chapter suggested that all motivations proposed could act as an underlying construct when people make non-sharing decisions. While much of recent research attention has been focusing on the motivations behind “positive” sharing decisions, findings in this chapter also suggested that all motivations proposed in this paper could also act as an underlying construct when people make non-sharing decisions. This complements current knowledge of news sharing and might inform the design of systems that “demotivate” social media users from sharing anti-social content.

Second, modeling of the news sharing decision indicated that personal interest level in an article positively influenced the probability of the news being shared, suggesting that news sharing is a relative personalized behavior. Yet, experiment data didn’t provide evidence that participants

specifically share news articles about prominent current events. In this study, the current events of COVID-19 and the election may be perceived by users as oversaturated topics, thus these articles were not shared more frequently. In terms of demographics, it is noted that age had a positive influence on sharing behavior but did not find gendered sharing differences that some past studies have identified. While this experiment only presented authentic news pieces, previous work argued senior age groups are more likely to disseminate stories that contain misinformation (Guess et al., 2019). When looking at initial news sharing decisions, I did not observe any interaction effects which might suggest co-occurrences of motivations. However, they could be interconnected from a theoretical perspective. For example, altruistic norm-based motivation of sharing helpful information with others may lead the sharer to form an expectation for interactions with friends; When people share funny news pieces that they think interesting they might both be attempting to relieve internal pressure as well as potentially entertain their friends or advance relationships. It is possible that this current survey protocol lacks necessary power to be able to detect such interactions.

Third, modeling of the news sharing decision reversal suggested that there could exist different cost structures when people evaluate their initial sharing and non-sharing decisions. For those who initially decide to share, when they accept the incentive and reverse their sharing decisions, the underlying cost structure would be that taking the extra compensation is more worthwhile than sharing a piece of news. As news sharing becomes an everyday experience for many social media users, not sharing a piece of information may not be a significant loss for those participants. However, for those who decide not to share, they likely think others would not be interested in the content and have a stronger disincentive to reverse their choice. There may also be negative effects of news sharing (e.g., occupying others' time to read, stereotype risk based on

the news content shared). In that case, the amount of the incentive needed to be high enough to overcome this barrier. This helps explain why the reversal rate for sharing decision is significantly higher than updating non-sharing decisions. This is also one potential explanation for a floor effect observed between the \$1 to \$1.5 base payment conditions, where the increase in swapping non-sharing to sharing was marginal, yet there was a significant increase from the \$1.5 to \$2 conditions in terms of the reversal rate. This result should be treated with caution though, since I only tested three compensation conditions and may not necessarily have calibrated to the value judgments that the participant pool was making.

Lastly, this chapter is inspired by previous work on social media regret. After posting certain content, users may feel regret doing so. With that, they adopt different strategies to deal with the content posted, such as making it private, deleting it, or publicly correcting it. With the user behavioral tendency that posting may not be the end of sharing, the current study contributes to the broad knowledge of social media regret by understanding whether sharing decisions can be modified. Specifically, when an incentive is given, to what extent can this external stimulus encourage people to give up the original decision of sharing or not sharing to exchange for extra compensation? This novel approach, along with the research findings, also throws light on future works.

Future Directions

Sharing doesn't stop at the moment one clicks the share button (Wang & Fussell, 2020). The content will be circulated to sharers' friends, as well as friends of friends in the cascade of sharing. Correcting misinformation has become a critical goal in social network services as a result (Arif et al., 2017; Vo & Lee, 2018). This chapter suggests that monetary incentives, as well as initial motivations of making news sharing decisions (if detected) could be carefully utilized to reduce misinformation dissemination. Previous work suggested that social media users could

experience hard times to different fake news from true ones to begin with (Paletz, Auxier & Golonka, 2019). For future designs, I recommend that if the system can let users know if their previous news sharing was proven to be untrue, and that there were negative consequences (or positive feedbacks, such as badges and virtual tokens if they could correct it) of that, participants will be alerted and may be willing to reverse sharing decisions or provide clarification information on top of the original post. This recommendation is in line with observations that positive sharing decisions can be switched more easily, when compared with initial non-sharing decisions.

Using money incentive as a stimulus has been tested in the context of reducing misinformation sharing of last U.S. presidential election (Facebook News, 2020). This large public experiment looked at what monetary compensation individuals would like to accept in exchange of giving up using certain SNS services for a week to several weeks. While it is true that abstention may mitigate the problem, this current chapter results suggest that there could be avenues for “demotivating” individuals from sharing. While these approaches come with any number of risks ranging from algorithmic bias to far-reaching personal effects, I expect that trolls and paid accounts may be especially susceptible to incentive-based motivational structures. For this group of people, less engagement and insufficient traffic to fake news websites may be particularly discouraging.

Future works should attend to address the limitations of this current experiment design. This research focuses on the context of public sharing on Facebook. Yet, recent work has pointed out that news sharing is also widespread in semi-private and private channels (e.g., Instagram messaging, Facebook messenger (Lottridge & Bentley, 2018)). One might examine how platforms and modes of sharing affect motivational structures. When it comes to the study setup, the intensity of motivations is measured on a 5-point Likert scale, which has been used in many related projects (Lee & Oh, 2012; Oh & Syn, 2015). However, self-reported data has limitations, including

participants making choices based on the statements' attractiveness rather than their authentic motivations, as well as the tendency to provide socially desirable answers.

In this current chapter, all news items selected were true from well-known news sources. Future works could include fake news in the experiment design. With that, researchers will be able to scrutinize the motivations behind misinformation sharing. Next, the study was conducted during two "focusing events": the COVID-19 pandemic peak and the 2020 U.S. presidential election. This timeframe of data collection might limit the generalizability of research findings. Future works can investigate whether this study's results hold on a "regular" day or time period.

To sum, this chapter contributes to the existing knowledge on SNS news sharing by evaluating the sharing decision reversal in a novel online experiment: are people willing to swap their original sharing decisions in exchange for monetary rewards? What are contributing factors to this behavioral change? Furthermore, by modeling this, this work sheds light on the design of future systems to assist users in evaluating the costs and benefits of sharing news articles to mitigate the spread of misinformation online.

Similar to studies in Chapters 3, 4, and 5, current news-sharing literature often examines this behavior from native speakers' perspectives. However, less work has been focused on reviewing what immigrants' and international students' news reading and sharing experiences are in the host country. Previous work also suggested they engaged in a process of called "adaption" (Sayegh & Lasry, 1993; Kosic, 2002; Hsiao & Dillahunt, 2018) and had constant information needs in the host country. At the same time, they use social media for various purposes, including getting local information. In light of this, Chapter 6 investigates this previously unanswered research question and is designed to reveal insights that allow social media platforms to develop interventions to reduce the barrier for this user group to read and share news confidently.

Chapter 6: Understanding of International Students' News Reading and Sharing Experiences in the U.S.

With increased global connectedness among countries, it is becoming common for one to immigrate from one country to another (Bojars, 2015). According to the most recent data by the United Nations (2015), there were 45 million immigrants in the U.S. (14% of the overall population). In addition to those who permanently immigrate and settle down, people may temporarily leave their home country to a new environment for working, or studying purposes as international students and scholars (Sherry, Thomas & Chui, 2010). A recent DHS (United States Department of Homeland Security) report in 2020 highlighted that there were 1.2 million international students from 226 countries study in the U.S. in more than five thousand different types of majors in education institutions.

Immigrants and international students desire to learn more about the host country (Caidi et al., 2010; Khoir, Du & Koronios, 2015). They engage in a process called adaptation (Sayegh & Lasry, 1993; Kosic, 2002; Hsiao & Dillahunt, 2018), during which they may experience various challenges ranging from accessing necessary information such as health (Selsky et al., 2013), understanding the local culture, engaging in community activities, studying and learning new languages, etc. For international students, they face academic-related challenges such as adapting to an English-speaking learning environment and developing relationships with native peer students outside of the classroom (Li et al., 2019). While there has been extensive work studying the information-seeking behavior among immigrants and international students (Oh & Butler, 2016), as well as how they use social media to adapt to an unfamiliar environment (Sleeman et al., 2016; Alencar, 2017; Manzi et al., 2018), it has not been extensively investigated what are their

news reading and sharing experiences in the host country as an informational need, especially on social media platforms.

Thus, this interview study aims to provide first insights that lie in the intersection between those areas. The findings of this chapter can serve as basics for future platform interface and feature designs to offer a better experience for immigrant and international student users, especially when they browse newsfeeds. I choose to interview the international student group first because they have constant information needs in the host country and often choose to use social media to satisfy those demands. Future works can expand the knowledge generated from this chapter by interviewing more broader immigrant groups and learning about their social media news reading and sharing behavior. The following three research questions drive the study and research design:

RQ1: What are some barriers international students have when using social media to access local news in the host country?

RQ2: What are the considerations international students have when they think about what news to share on social media in the host country?

RQ3: What are international students' experiences facing and combating misinformation that travels from the host country to the home country, or vice versa?

Method

To unpack international students' news reading and sharing experiences in the host country, including the barriers to comprehending news and the underlying considerations when deciding what to share, I conducted 28 semi-structured interviews with international students at a large U.S. university. By asking specific news-related questions about their social media experience, this chapter hopes to provide first insights into the understanding of news sharing practices among this

particular demographic group. Using interviews also helps me capture cognitive processes and motivations that are hard to document in quantitative studies.

Participants

The participants (21 female, 7 male) all identified themselves as international students. A majority of them were recruited via an internal participant system. To diversify the participants' sample, I also recruited several doctorate-level students who are not often on the internal platform through word-of-mouth. For this study's purpose, international students are foreign nationals who are on student immigration status when entering the U.S. Study participants come from different native countries or regions, including China (17), Taiwan (3), Canada (2), India (2), Philippines (1) and Korea (2). I did not intentionally exclude any countries or regions in this study because international students, in general, come from a variety of backgrounds: the native language might be the same as in the host country, but the culture may have slight or significant differences, or both the language and culture are distinct from the new environment. Having participants from different backgrounds also brings insights if there are differences when they read and share the news. International students studied in various fields in the university, such as computer science, communication, information science, food science, engineering and labor relations. Among participants, 15 were undergraduate students, seven were master-degree students, and six were doctoral-level students. In terms of the experiences in the host country, they spent from two months to nine years as student-visa holders in the U.S. A handful of participants self-reported that they attended high school in the U.S. Due to the global pandemic, some students stayed at the home country participating in online courses. According to previous intercultural literature that studied the adaptation process (Sayegh & Lasry, 1993; Miglietta & Tartaglia, 2009), immigrants who live in the host country under five years are considered "newcomers" (Catanzarite, 2000), and those who live more than that timeframe are considered more established in terms of understanding the

local culture (Elliott, 2001). Participants' ages ranged from 19 to 31 years old when the interview was conducted. Upon finishing the interview, participants who registered through the online recruiting system received research credit. Those who participated in the study through word-of-mouth received a small monetary payment. Due to the research interest, I restricted participation only to those who had recent experiences reading and sharing news in the U.S.

	Gender	Citizenship	Length of stay in the U.S.	Program	Native language
P1	F	China	6 years	Doctorate	Chinese
P2	F	China	5 years	Doctorate	Chinese
P3	F	China	4 years	Doctorate	Chinese
P4	F	China	4 years	Doctorate	Chinese
P5	F	Korea	9 months	Doctorate	Chinese
P6	M	China	5 years	Doctorate	Chinese
P7	F	Taiwan	9 months	Masters	Chinese
P8	M	Taiwan	3 years	Undergrad	Chinese
P9	F	Canada	3 years	Undergrad	English
P10	F	Taiwan	4 years	Undergrad	Chinese
P11	M	China	5 years	Undergrad	Chinese
P12	F	China	2 years	Undergrad	Chinese
P13	F	China	2 months	Masters	Chinese
P14	M	China	5 years	Undergrad	Chinese
P15	F	China	2 months	Masters	Chinese
P16	F	China	6 years	Undergrad	Chinese
P17	F	China	1 year	Masters	Chinese
P18	F	India	3 years	Undergrad	Hindi
P19	F	China	7 years	Undergrad	Chinese
P20	M	Philippines	2 years	Undergrad	Filipino
P21	F	China	4 years	Masters	Chinese
P22	M	China	2 years	Undergrad	Chinese
P23	F	India	4 years	Undergrad	Hindi
P24	F	China	8 years	Masters	Chinese
P25	F	China	9 years	Masters	Chinese
P26	M	China	3 months	Undergrad	Chinese
P27	F	Canada	2 months	Undergrad	English
P28	F	Korea	3 years	Undergrad	Korean

Table 10. Study 4 Interview Participant Demographics Information

Interview Protocol

The interview protocol (Appendix F) invites international students to talk about their news reading and sharing experiences in the host country's environment. If applicable, how this experience is similar or different from that in their native languages and countries. The protocol starts with general questions about the number of years they stayed in the host country, native language they speak, and their daily social media usage in the United States (e.g., “Which U.S. based social media platform do you use most when you’re in the US? Why?”). Then, the conversation narrows down to news-specific questions. Participants are asked questions about their sources of news (“Where do you normally get your news from when you’re in the U.S?”), platforms they use for news sharing (“Which U.S. based social media platform do you use for sharing news most frequently?”) and the reasons why they prefer to use the platform. This section provides the basics of international students’ news-related habits.

After that, the interview focuses on understanding their news reading experiences. Specifically, whether they find themselves having trouble understanding the news they see on different social media platforms written in English, strategies to identify news truthfulness (“If you are having trouble understanding a piece of news on this platform written in English, what would you normally do?”), how the role of being an international student influences their judgment of news truthfulness (“How would you think being an international student, or English as your second language, influences your judgment in identifying if the news is true or not?”)

The following section shifts focus to the news sharing behavior. To help participants build the context, I ask them to browse the social media platform they most often use for news sharing and locate the most recently shared news piece. Participants then reflect on this news sharing decision, answer questions such as the reason for sharing (“Why did you choose to share this specific piece of news?”), perceived audience (“When you share this piece of news, who do you

have in mind?"; "Why do you think this news piece is useful or valuable to them?"), feedback received ("What about the number of likes and comments this shared news piece received (if there are any)?"; "Is this the response you expect to receive? If so, why? If not, why?"). and whether they considered the news is true or not ("Could you tell us if you think this piece of news that you shared is true or not? How do you make that decision?").

In the following section, I ask about study participants' experiences if they encounter any misinformation translated from English to their native language or vice versa. If so, participants are encouraged to share their reactions, such as how they help friends and families back home correct misinformation. In the end, participants provide their definition of misinformation - given their exposure to news in both their home country and in the U.S. and what steps social media platforms can help them better understand the content and the veracity of the information.

Procedure and Data Analysis

This study was conducted in the middle of the global COVID-19 pandemic. Interviews were conducted over Zoom. Participants agreed on verbal consent that the interview session would be audio recorded at the beginning and their identities would be anonymized in the data analysis. After that, participants responded to the questions based on the interview protocol mentioned above, including questions about social media use, then (1) news reading, (2) news sharing, (3) latest news piece they shared and (4) experiences (if they had) helping friends and family members back home combat misinformation that travels one country to another. Lastly, the participants reflected on what they could do as international students and bilingual speakers to help people in home and host countries identify misinformation. The interview session lasted about 30 minutes, depending on the responses from the participants.

After completing the study, I transcribed all the interview sessions. The transcripts were then saved and processed in Atlas.Ti, a qualitative data analysis software (Hwang, 2008). I used a

modified grounded theory approach as in Chapter 3 and Chapter 4 to process the data. First, I read through all interview transcripts and performed open coding by assigning codes to important instances and expressions. After finishing the first round of coding, I looked at all the codes and grouped them so that those with underlying themes were placed under the umbrella category. This step allows me to see the pattern of participant responses. During this grouping and synthesizing procedure, a second coder joined. We iteratively looked at the codes to reach a consensus on the themes presented in the findings section. I was also able to call out outliers (unique news reading and sharing experiences) in the dataset. In the end, I mapped those themes back to the high-level research questions of international students' (1) news reading, (2) sharing and (3) experiences dealing with misinformation travels from one country to another. Key quotes from the interviews were selected to support research findings.

Findings

In this section, I first present detailed findings of international students' news reading experience in the host country: (1) like their native speaker peers, they use a diverse set of social media platforms to access news. In addition to social media, they also read information from other traditional media sources; (2) when they browse newsfeeds on social media, there are two types of challenges: language and culture. As the length of stay increases, their ability to understand language and cultural context also improves. Yet, some topics, such as politics and health, require more in-depth knowledge; (3) When they don't understand a piece of news, there are various strategies for clarification and verification, ranging from reaching out to peers and experts to cross-validation. Though at the same time, not all news pieces they do not understand will be chosen for further investigation due to personal relevance and limited attention span. Next, I uncover international students' news sharing experience in the host country: (1) they use a variety of social

media platforms for news sharing; (2) due to considerations of self-presentation, relationship management and conflict avoidance, they choose to self-censor sharing certain types of news content. Lastly, the interview study further revealed that international students from China who studied in the U.S. had experiences helping their friends and families back at home by correcting misinformation about the U.S. This finding highlights the role of established immigrants and bilingual speakers in combating misinformation that travels from the host country to the home country, or vice versa.

Platforms International Student Used to Access News

In this study, I interviewed participants who had experiences reading and sharing news on at least one of the host country's social media platforms. Across international students, they reported a diverse set of platforms to access news, such as Twitter and Facebook. At the same time, there is an emerging trend that this population is using Tik Tok and Instagram to read the news. Not surprisingly, those are also popular platforms among native-speaker students. When discussing the consideration for picking news sources, one participant mentioned that the most significant factor was the ease of obtaining the content. She used Tik Tok and Twitter most of her spare time, thus it was the easiest option for her to get news on those two platforms.

Honestly, probably Tik Tok or Twitter, because it's so easy. I just scroll and it's there.

(P27, Canada, 2 months)

Instagram is another platform frequently mentioned by international students for reading news. When they are in the U.S., they use Instagram to connect with peers and friends, post photos and videos for self-presentation and image management purposes, and read and share news (Wang, 2021). It should be noted that the news posted on Instagram lacks the news details. News readers need to read the caption (if there are any), click on the post's link, or search themselves to understand the full news story.

I think I mainly get news from Instagram, because I just like scrolling through pictures. And if something catches my eye, I'll look at the caption. (P10, Taiwan, 4 years)

Facebook, one of the most popular platforms for news sharing among Internet users (Bentley et al., 2019), and a platform that has been widely adopted by newcomers for adaption purposes when they first arrived in the new environment (Lin et al., 2012; Saw et al., 2013), is also a go-to platform for international students to know what is going on in the host country. It should be noted that frequently international students get exposed to news without actively pursuing the news themselves. One participant from China mentioned that she read whatever information presented on her newsfeed on Facebook when she was on the platform. She assumed that the content in her newsfeed was all shared by her friends. This perception suggested the newsfeed algorithm remains to be unclear to certain international student social media users (Eslami et al., 2015).

Honestly, it's just whatever news comes to my newsfeed. Some I think most of them are academic, because most of my Facebook friends are academics. (P2, China, 5 years)

Some participants mentioned that they liked YouTube for the purpose of accessing news because the visuals enabled them to engage with the news content more. It is also more appealing when compared with the news presented solely in text. Additionally, they could see captions and even translations along with the videos, which reduced the barrier to understanding English narrations.

Article that is not my native language makes me want to fall asleep. I feel like I can't read that much content. In my native language, it is easier for me to skip the content and find the keywords that I want to. In English, it's not that easy for me. Yeah, so I'm feeling like

that's the reason why I love watching news videos on YouTube. It even includes animation – I feel like that really helps me to understand this situation more. (P7, Taiwan, 9 months)

Some of the social media platforms international students mentioned were those they already used back in their home country. Thus, it is a continuation of previous news reading habits. However, some platforms were new to them, and they started using them to keep up with new friends they met in the host country. For example, international students from China reported that platforms like Twitter and Facebook were blocked until they started their studies in the U.S due to firewalls. Not surprisingly, they continued to use WeChat and Weibo to read the news to keep in touch with events back home. They also indicated that reading news from western media outlets, including social media, gave them a new perspective of what happened in China. Other intercultural studies have documented this dual use of social media platforms from both home- and host- country (Zhang, Jiang & Carrol, 2012; Yuan & Fussell, 2017).

I think the most significant difference is censorship, whereas, in China, there is a lack of United States-based platforms. Sometimes I even prefer English news because some Chinese sources are not that reliable. Reading in both ways at least provides a different perspective on looking at things. (P14, China, 5 years)

Another international student from Taiwan also expressed a similar point: he liked to read stories from both sides on the same event. He claimed this to be an interesting experience. The potential conflict in reporting styles, in fact, allowed him to have critical eyes of evaluating news events.

I do see the foreign perspectives. And when I notice that, I see it in a better way so that I can see the biases both sides have. I don't necessarily feel like it's a bad thing. I think it's

just a natural thing to have different framings of the same thing based on the positionality of the journalist or a larger schema behind the scene. (P8, Taiwan, 3 years)

In addition to social media, international students also used other sources to seek news. One participant who originally came from the Philippines mentioned that due to the unfamiliarity with the media landscape in the U.S, he would like to go to sources that he perceived to be credible or popular based on his previous knowledge to obtain news. It should be noted what an international student perceives to be credible is not necessarily a neutral news platform, especially when it comes to specific topics such as politics. International students may not fully understand the political nuances behind the media outlets.

I can't say I am familiar with the news outlets here. I would probably go for the popular ones, like the New York Times or Washington Post or something like that. I know enough to stay away from places like, like Fox? But generally speaking, I don't know a lot about nuances. I just go for the most popular one. (P20, Philippines, 2 years)

Barriers International Students Have Understanding News

International students in the U.S. encounter two barriers when reading through newsfeeds on social media: language and culture. Those whose native language is not English or haven't been extensively exposed to the English-learning environment, such as going to an international school back home, experience language difficulties after arrival. Specifically, international students expressed challenges in understanding certain aspects of news content published in English, such as vocabulary and expressions they had not seen before. This language unfamiliarity reduced after they spent more time in the host country and used English more frequently. However, jargon and terminologies might still cause problems after extensive exposure, even if after an extensive stay. International students use tools such as a translator API to help them fully understand the

vocabulary. One participant from China explained that living and studying experiences helped her increase her proficiency in reading in English.

When I first came here, there was a language barrier, because it's rare for us to read news in English, when in high school back in China. At that time, the language did have some effect on my news reading. But since I am a student in communication, I had to read a lot about the news. I started getting used to reading them in English. And right now, I don't consider any language barrier for news reading. (P21, China, 4 years)

Second, there is a cultural barrier. For example, international students expressed that they had trouble understanding the historical context of a news story, which stops them from knowing the full development of the story; or understanding specific sensitive topics such as politics and healthcare. For example, several participants from China mentioned that they did not fully understand how the political system worked in the U.S. Lacking this foundational knowledge created a barrier when they were trying to figure out certain pieces of political news:

I don't think in terms of language, there's nothing hard for me to understand, because I'm comfortable with English. But one thing that I struggle with, because I don't regularly follow the news, when there's context like events that happened in the past, it wouldn't come to me very intuitively. (P6, China, 5 years)

I still find it difficult to build context. I don't know who the specific senator is or what their backstory is. I did not know what a congressional hearing was before. Just understanding how the US system works like that's also a barrier for me (P16, China, 6 years)

Even though international students could make efforts and be culturally aware of specific news topics, or keep an eye on the major political events of the host country, they still felt worried that not growing up in the country made them miss the nuances of news.

It's not that I'm not politically aware, it's more of like growing up in an international setting, even though we are exposed to American politics, we're not living there. Until now. I guess I'm not too fully politically involved. I just simply do not quite understand the systems here, for example, different candidates related stuff. (P25, China, 9 years)

Since social media is one of the primary sources for international students to get U.S. news, they could also read comments posted underneath the news content on different social media platforms. However, several participants explicitly mentioned they had difficulty understanding the comments or memes in the comment section, due to the lack of knowledge of those culturally embedded content.

Sometimes the comments are hard to understand because I don't know what they are talking about, there are names I cannot recognize. But one thing good about Instagram is that they have the Translate feature that you can translate into your native language. (P17, China, 1 year)

Moreover, international students from similar cultures and language backgrounds may also experience cultural barriers. For example, one from Canada expressed that she found some subtle ideological differences in certain news topics. Specifically, she believed that the definition of political left and right was different between the two countries. In addition, the stances and attitudes toward health care and social welfare were different. As a result, it took her time to learn this knowledge in the host country.

I think the language is less so because it's English in Canada. The biggest difference is cultural. I wouldn't necessarily say the news makes it untruthful. It's just the news that takes a spin on certain issues that I'm a little bit shocked by. In Canada, overall, it's more democratic. We have the Liberal Party and a conservative party. The Canadian version of

conservatism is probably more Democrat than it is Republican in the US. So there are times when I share particular perspectives that I think are very important in society, but that isn't always the case in America. (P9, Canada, 3 years)

Strategies International Students Use to Understand News

When international students came across news pieces that they didn't understand, they expressed there were various strategies they could use to figure out the news content. For important news pieces they had questions about, they also verified whether the news was accurate or not. If it was just a language-related issue, such as a vocabulary they did not understand, they tended to use online dictionaries to look them up or translation tools built in the browser to translate the news into their native languages. When recalling the news reading experience when she first came to the U.S. four years ago, one participant said:

I would definitely do this on my laptop, and there is software that I'm using for translation. So put your mouse on a word, and it will show you the translation. So that makes my reading faster and easier. (P21, China, 4 years)

In addition, international students mentioned they used a cross-checking strategy to check whether other resources had reported the same news event through search engines. This step allows them to build the knowledge of the news comprehensively. The strategy of cross-validation has also been adopted by native speaker college students when they try to figure out the truthfulness of news content during the verification process (Figueira & Oliveira, 2017; Wang & Fussell, 2020).

If I read something in CNN, and I am not sure what's the background of this or I'm unsure about it, I will just search the news events in Google. Probably five similar reports pop up, so I can get a better scope of understanding what's really going on. (P11, China, 5 years)

Approximately half of the study participants ($N = 12$) expressed that they often turned to their native-speaking friends for help to understand the context of the news, such as the

development of the story. International students sometimes want to learn their friends' perspectives on an issue, partially due to their unfamiliarity with the issue's nuances. However, they also sometimes felt embarrassed to ask their native speaker friends and perceived this request as a favor.

I discussed it with my friends because I want to know what is really going on from their perspective. I rely on their knowledge on this. I just asked them whether this is true. (P23, India, 4 years)

While it might be convenient for them to ask native-speaking peers, international students also discussed a similar strategy: reaching out to those they perceived to be knowledgeable in a topic (expert). However, due to the fact that international students may have limited social contacts, such sources were often limited to the personnel within the university settings such as professors of a subject matter.

When it comes to more political related stuff, I would probably either consult with someone who has more knowledge on it, or someone who is more capable, in terms of sources. (P26, China, 3 months)

Checking whether the news content is accurate or not requires time and effort. Yet, international students may not have enough time and capacity to check all the news they see in their newsfeeds. One participant particularly expressed that she often believed everything unless something was "outlandish". In that case, she chose to search the news online or ask friends to check the content's credibility.

To be honest, I'm gullible. I normally believe everything. But if something that's really wonky, or unbelievable, then I'll look it up online. (P27, Canada, 2 months)

Similarly, there is a possibility that those who just arrived in the host country may fall prey to misinformation because there is a lack of access to fact-check sources or believe in friends who may have biases toward certain news topics.

I have some friends who just came here and knew very little about the culture here. So, they just believed in what their friends shared with them. So, if their friends have some misinformation like reading bias, they will just believe that. (P1, China, 6 years)

Personal relevance is another frequently mentioned factor that influences international student' decision of whether they will engage in the process of scrutinizing or verifying. Many news pieces they encountered on social media were also considered to be irrelevant to their academic and personal life. One participant specifically highlighted this sentiment:

Sometimes I feel like I don't really need to know about it. I can't win all battles and know everything. So it's okay, And I just move on. (P6, China, 4 years)

Lastly, there is one less common strategy used by international students in the U.S. who originally come from a different language speaking country (e.g., China). They look back into their home country's news sources and check if there are similar reports so they can cross-reference for verification, or vice versa. For example, two participants mentioned past experiences that they first read news about what happened in the U.S. about COVID-19 from Weibo, a Chinese social media platform, then returned to U.S. news sources to read the full news articles. One further elaborated that in such case, the comment section was also helpful:

I read news from the accounts that I follow on Weibo. And usually, those accounts translate news from foreign websites. If the news is not correctly translated into Chinese, someone will point it out in the comments. If the comment looks good, I may not check that in the

original source. If the comments are really biased, I may check it from other sources. (P14, China, 5 years)

News Sharing in the Host Country

Similar to the diverse set of platforms international students use for accessing news, this population also uses a variety of services to share news. One participant expressed a unique experience that physically being in an English-speaking environment allowed him to share news more confidently. Especially with the shift of audience, he felt more comfortable when compared with the desire to share English news with the non-English speaking audience back home.

I think I already had a habit of reading English news back home. So that hobby hasn't really changed. I feel more confident sharing those news pieces on my social media now. It's more justifiable to speak or write in English, as opposed to saying, if I just did it back home, it might seem weird because most of my friends speak Mandarin. Whereas now, because I'm having an English-speaking audience. (P8, Taiwan, 3 years)

While some international students preferred to use Facebook because of its ease of use when it comes to sharing functionalities, others tended to use platforms their peers were on to maximize the audience size. It is also common for international students to share the news wherever they read news, which is convenient and saves extra clicks jumping between different platforms.

- 1. I will definitely say Facebook, because Facebook is so easy for me to click the share button, and I can choose which friends I want to share with. (P9, Canada, 3 years)*
- 2. ...because I use Instagram most frequently. And I'm not interested in using multiple social media platforms at the same time. So, if I choose to use Instagram, I will generally not use Twitter or Facebook. Also, most of my friends are on Instagram. (P5, Korea, 5 months)*

Similar to the findings in the previous chapter, Instagram is the most popular platform among international students for news sharing ($N = 16$). They liked the Story function because it only lasted for 24 hours (*P14, China, 5 years*), as well as the capability of customizing the audience during sharing. By selecting who would be able to see the news shared, international students managed their friends' impressions of them. Instagram also had group messages and one-on-one chat functions. Thus, international students felt less worried when sharing on this platform.

If I want to share the news to all my followers, I will just post my story. Otherwise, I would just share to my "close friends", or send it to my friends via DM. It's so convenient. And it's more direct for them to just look at the news themselves instead of me telling them because that has my interpretation and can be biased. (P19, China, 7 years)

For the news being shared, most participants said they only clicked the share button, thus what was posted originally got shared. Like *P19* above, she let her friends interpret the news. However, a small number of participants mentioned they liked to customize the news. For example, one participant (*P28, Korea, 3 years*) said she almost always added her comments during sharing, so her friends knew about her opinions. As a result, they were able to start conversations quickly based on the comments she left.

To understand the decision made by international students about what to share, I look at their perceptions of audiences across different social media platforms. A common theme frequently mentioned by international students is that there is a natural distinction between different platforms when it comes to audiences, especially the audiences back home and in the host country. For example, one international student from China mentioned that he kept a good separation between his audiences and there was no overlap.

For American friends and American classmate, I usually just share some entertainment news, music, concerts, travel etc. And that's mainly on Instagram. But WeChat is mainly for my family, like my parents as well as my Chinese fellow students. So, I always share something like what is going on around the campus. (P22, China, 2 years)

While native speakers also expressed a similar approach to sharing with different audiences on different platforms, a unique scenario international students may face is that they have friends back home on the same platform they use to share English news. One participant from Taiwan mentioned that Instagram is popular among his friends back at home as well. Thus, what he shared here in the U.S. would also be seen by the audiences in Taiwan.

For Instagram, it's a mixed bag. All my friends are on Instagram. I have two different audiences on the same platform: the English-speaking ones, and the Mandarin-speaking ones. But Mandarin-speaking ones also speak English, so they can understand both. That's an interesting tension there. (P8, Taiwan, 3 years)

When it comes to the news content being shared, international students generally expressed that they avoided sharing news that they determined to be sensitive to avoid debates and conflicts with friends. The same strategy has been adopted by native speakers as well when they decide what to share and what not to share. However, what is unique about international students' news sharing behavior is that they intentionally avoid news that discusses the relationship between the home country and the host country, such as news pieces about China-U.S. relationships.

And I don't want to share too sensitive topics. So, a lot of times just some topic that is not quite important. Like entertainment, oh, here's a new movie. I share that kind of news. But for the news that have political directions, especially China and American relationships, I don't share. (P1, China, 6 years)

This self-censor strategy about specific topics may root in international students' perception that there are underlying differences between cultures. Due to a limited understanding of local politics and culture, participants were hesitant to share news about the host country as well. By doing so, they believed they avoided sharing inappropriate content that may hurt their native speaker friends' feelings, which would, in turn, be helpful for them in managing personal relationships.

I'm very cautious to actually share any political related news in my social media and I don't want to share news that hurt somebody else's feelings unnecessarily. (P11, China, 5 years)

We have different cultural backgrounds. Some of my friends here in the United States do not understand my (Chinese) culture. Similarly, when I just came here, I got to know concepts like political correctness that never existed in my home country. So sometimes I might offend other people. And I need to be aware of that. (P14, China, 5 years)

In addition to considering conflict avoidance and relationship management, international students' news-sharing behavior on social media in the host country is also guided by the principle of self-presentation. For example, the participant from Canada expressed that after she shared a piece of news about the health care system in the U.S., her friends might start forming impressions of her and guessing her party affiliations, which was not ideal for building personal images.

Another example is health care. In Canada, it's almost taken for granted that everyone has the right to health care. When it comes to the U.S., I find it's a less popular opinion. And sometimes, when I share it, people are going to say, oh, you're just democratic. (P9, Canada, 3 years)

As a result of previous concerns, some international students expressed preference for sharing in their native language rather than English. Specifically, they feel more confident when sharing on platforms with the content that they can articulate their thoughts and be able to defend their opinions.

Yeah, sharing in Chinese is more comfortable because that's my native language, and it's easier for me to expand or express my thoughts, to the extent debate with others. (P24, China, 8 years)

News Between the Host Country and the Home Country

In addition to reading news in the host country about what happened locally, most international students also keep an eye on the news at home. The experience of getting exposed to news pieces on both their home countries and the host country's channels allow them to spot news pieces that travel from one country to the other, if there are any. I found that international students, especially those from China, reported this common experience of reading Chinese media reporting what happened in the U.S. (12 out of 17).

Theoretically, the news flow between two countries occurs in both directions. However, when it comes to social media news sharing, most of the examples Chinese international students brought up in the interviews were that their families back at home shared news about what happened in the U.S. with them. The news pieces were published by Chinese media outlets. For comparison, none of the participants mentioned experiences that their English native-speaker friends shared news about China with them via social media channels.

When international students' family members share news with them, there were chances that the content was fake and they were able to identify the news veracity upon receiving them or after verification. To further unpack this, I specifically asked about the content of those pieces. A number of misinformation spread on China's social media platforms, according to participants,

came from “self-media”. Reuters (2021) defines self-media as “independently operated accounts that produce original content but are not officially registered with the authorities”. Participants also suggested that a good amount of misinformation that shared with them was exaggeration and twisted facts. After that, they helped the friends and family members back home correct misinformation.

I've encountered multiple articles shared by my families, where the news is exaggerated in a way for news media to get attention on WeChat. My parents shared with me, like the COVID-19 outbreak, different types of hate crime... which I guess, in a way, are happening in the U.S. But at the same time, because of that media portrayal, my family could be worried about me. Though in fact, it's not that common. I'm not saying it doesn't exist, but like the media pushes it to make it sound more prevalent than it is. So, I think that is something I definitely had to confront my parents. (P26, China, 3 months)

International students use various strategies to inform family members back home. Commonly, they choose not to cite credible news sources or directly translate the news due to the limited English proficiency their family members have. Instead, they use their personal experience to communicate similar information. One participant discussed that this process of combating misinformation was also a persuasion effort:

When I have ever seen any misinformation or fake news, I will tell them (my parents) what the reality is, based on my experience in the United States, I'm trying to persuade them to trust me more than trusting the news. I'm also trying to persuade them with some knowledge that I learned from my major and why the news they saw in China is totally different from what actually happened in the United States, so they can understand that what they see on the news in China isn't always the truth. (P12, China, 2 years)

There are also challenges in the persuasion process when correcting misinformation. International students expressed a behavioral tendency that people believed what they saw themselves instead of letting someone else correct their opinions. Especially if their family members back home were constantly exposed to similar misinformation published by self-media, they might believe in what they read was true. This finding also links to previous research on confirmation bias and filter bubbles in news sharing (Waldrop, 2017; Rhodes, 2022). In that case, international students evaluated whether it was worth their time persuading others, especially with the potential risk of debates and conflicts.

It's very hard to convince someone based on what they didn't see through their eyes. Because once they see reality, they will convince themselves to avoid misinformation about the news content online. I will also try to convince them what is really going on here. But sometimes people just insist on their own opinions. And sometimes convincing is not necessary. (P22, China, 2 years)

Personal relevance is another factor influencing international students' intention to correct misinformation back home. If they determined the content was not critical or not related to personal life, the less likely they would make efforts and spent time correcting the information, even if they saw it in their home country's media or others shared the news with them. However, topics like COVID-19 vaccination were perceived as important and international students always wanted to ensure their families got accurate, up-to-date information about this. One participant from the Philippines proposed an example of what he would like to correct:

People in the Philippines in general don't care about what's going on in the U.S. So I don't purposefully correct, unless it's something ridiculously wrong, like Biden is Republican. (P20, Philippines, 2 years)

Lastly, international students also expressed that their peers back home who attended college also had the media literacy to identify misinformation. For example, one participant from Taiwan mentioned that he believed that his friends could read original English sources, and thus be immune to misinformation reported by Taiwan media about the U.S. As a result, they can play as gatekeepers to their family members back at home.

I should also say that I feel like my friends back home are not like regular people in Taiwan. They are mostly college students now. Their English is pretty good for the most part. So there is less of a barrier for them to read English, to the point that they can use English to cross-check if they are hesitant, and help their families as well combat fake news. (P8, Taiwan, 3 years)

Discussion

This section provides a high-level summary of the study results and provides general directions for designing solutions to improve immigrants' and international students' news reading and sharing experiences. It concludes with recommendations for future works to unpack this important research agenda.

First, international students have diverse go-to sources when accessing local news in the host country, ranging from perceived trustworthy media outlets and news websites to word-of-mouth news from their friends and peers. Not surprisingly, all participants mentioned that they had experience reading news from the host country's social media channels, such as Facebook, Twitter, YouTube and Instagram. While international students sometimes actively seek news-related information, they often get exposed to news content on those platforms due to daily use. Their native-speaking peers also use those social media platforms to access news due to its convenience. However, international students have a second set of social media news sources: they continue to

use social media platforms from their home country to keep themselves updated with what happened back home. International students from countries (e.g., China) where the media landscape is distinct from the host country further highlighted that getting exposed to both eastern and western news reporting made them extra cautious about the content published.

Second, international students face two types of challenges when making efforts to understand the news content they see on social media in the host country: language and culture. Language issues are mainly understanding vocabulary and expressions, especially when they have limited exposure to an English-speaking environment prior to arrival. It should be noticed this language unfamiliarity is reduced over time. International students also experience various cultural-related problems when reading the news. For example, the lack of living experience in the host country makes it hard for them to grasp the complete background information, which they believe to be important for comprehending. They also have concerns about understanding specific topics of news (e.g., healthcare, politics) due to the issue complexity, sensitivity and nuances behind them. As a result, international students tend to be “conservative” in clicking the share button compared with sharing news in their native languages. This self-censoring of sharing perceived inappropriate news content also makes them believe there will be fewer arguments with native speakers. In comparison, though concerns such as self-presentation, image management, and conflict avoidance are also expressed by native-speaker students when they make sharing decisions (Johnson & Ranzini, 2018; Wang & Fussell, 2020), the root cause for international students’ concerns is different: the lack of contextual and relevant knowledge.

When reflecting on the news reading experiences in the host country, international students mentioned two types of misinformation they observed that travel from one country to another. The first type is that the news is fake in the host country, and it is then directly translated by media

outlets back home to their native languages (or vice versa), potentially due to a lack of verification process. The second type is the local media back at home intentionally misreports what happened in the host country. This type of news may have some facts in the content, but the core of the news story is manipulated to achieve goals such as propaganda.

Specifically, Chinese international students in this study reported their friends and family members back home shared both types of misinformation with them via channels like WeChat and Weibo. In response, participants mentioned that they helped them correct misinformation by adopting various strategies for persuasion, such as using their own experiences to provide a personal perspective of the news story. This is an interesting observation – a universal trend for correcting fake news is to deliver facts such as authorities' statements or credible news sources (Williamson, 2016; Vraga & Bode, 2017). However, in international students' context, since their friends and family don't understand English, they rely on international students' help for correction. Additionally, international students are not fixing every piece of misinformation unless it is crucial for establishing the baseline of facts, or relates to themselves or their close ones.

This interview study reveals factors that influence international students' news experiences in the host country, such as the exposure to an English-learning environment before arrival, the length of stay, individual attitudes toward social media news sharing, and the willingness to adapt to the host country. Future quantitative studies can evaluate how those variables contribute to the amount of news international students read and share on different social media channels. In addition, a longitudinal study that tracks international students' news behavior over time will help social platforms determine intervention strategies at various stages to support this user group effectively.

Findings from this chapter provide the empirical basis for future designs for an enhanced news reading and experiences among international students and the immigrant population: (1) considering both language and cultural barriers to understanding the news, social media platforms can explore new tools such as upgraded translation API to help international students at different adaptation stages understand the news content better. By addressing the challenge of understanding news, the less likely international students will fall prey to fake news; (2) it will also be promising for social media platforms to explore ways to help international students share news more confidently by providing positive reinforcements. This intervention is expected to help international students achieve positive goals such as building relationships through news sharing and further facilitating the intercultural adaptation process (Lee & Ma, 2012; Wang & Fussell, 2020). (3) lastly, with the alarming trend that fake news can spread from one country to another, it will be worth examining the plausibility of building an international database for journalists to access and verify news authenticity before publishing. All those designs can be further expanded to the broader immigrant population so that all immigrants can benefit from them.

In this study, I interviewed international students who had recent experiences using social media to read and share the news. To expand the current knowledge, I recommend future scholars to reach out to broader participant groups. First, future studies can include international students who have limited experience using social media or prefer other media outlets to access news. By asking questions such as their concerns about reading news on social platforms, those proposed works can provide a more comprehensive understanding of this user group's news-seeking behavior. Additionally, though international students represent an important portion of intercultural newcomers, there are many other immigrant groups that leave their familiar language and culture environments behind and settle down in a new country. Understanding the more

general immigrant group's news reading and sharing experiences will help social media platforms release functions and designs that are applicable to more users. Specifically, future work can look at: (1) to what extent do the immigrant group care about what is going on in the host country by doing a quantitative study; (2) for those who are not fluent in reading and speaking the new language (when compared to international students), what are their local information sources? Moreover, (3) are they more vulnerable to misinformation spread intentionally targeting those not fluent in the new language?

One may also wonder whether the needs for news should belong to survival needs or recreational needs? Oh & Butler's work (2016) suggested that a significant amount of international students' information-seeking behavior was rooted in their survival needs, such as getting information about directions and finding places to satisfy their most urgent needs, especially at the beginning of their arrival the host country. After initial adaption, they had different information needs: recreational and leisure, like finding recreational venues. However, it remains an open question whether staying informed of news belongs to survival or recreational needs. While it is plausible to assume that knowing news will give international students a comparative advantage in engaging in everyday conversation with their native friends, helping them satisfy leisure needs; one may also argue getting know news about public health (e.g., vaccination information) and politics (e.g., voting) are basics for successful survival.

To sum up, while there has been extensive work looking at the information-seeking behavior among immigrants and international students, and how they use social media to adapt to the host country, less work has been focused on their specific news reading and sharing experiences, especially on social media platforms. This chapter extends the previous knowledge by providing

a first look at those experiences and throws light on future designs to assist the potentially vulnerable group to fake news online.

In this chapter, by interviewing international students, I found that they widely use social media platforms from the host country and continue to use social media services from their home countries to access news. However, when reading news on their social media feed, they experience language and cultural challenges when it is not written in their native language. To fully understand the news content and know whether the news is true or not, they choose methods like machine translation, consulting with friends and cross-validation. With those challenges, international students, in general, are conservative about news sharing due to the consideration of self-presentation and image management. Lastly, international students' experiences helping friends and families correct misinformation highlights the role of established immigrants and bilingual speakers can play in combating fake news that travels from the host country to the home country or vice versa.

Chapter 7: General Discussion

News sharing has become a common user behavior in SNS and has been extensively studied as an emerging community practice by scholars (Lee & Ma, 2012; Bentley et al., 2019; Wang & Fussell, 2020). Millions of users share news to spread information, receive personal rewards like social recognition, and express personal thoughts and opinions. This dissertation aims to enrich the current knowledge of social media news sharing behavior from various perspectives. Specifically, I look at: (1) when people make decisions on social media, what cognitive processes they engage before, during and after sharing; (2) why do college students choose to share news on Instagram over other platforms; (3) could news sharing decisions be reversed when an incentive is given; and (4) what international students' experiences of news reading sharing are when they are apart from the home culture and language environment? In this chapter, I present a high-level summary of key findings from Chapters 3-6, then provide a list of design recommendations to address one of the most urgent social media issues in the digital age: how to mitigate the potential risk of sharing misinformation?

Summary of Results

Though news sharing may look like a snap decision on the surface made by social media users, there are complex decision-making processes behind the scenes. In Study 1, I use in-depth semi-structured interviews to discuss the topic of news sharing decision-making with 20 college student social media users. Participants reflect on specific recently shared news pieces, including how the stories attract attention, why they share them, and their behaviors after sharing. This study helps scholars and designers build a picture of news sharers' end-to-end mental models, which is fundamental for developing novel solutions to combat fake news dissemination. Interview results highlight different cognitive processes people engaged in before, during and after sharing. Before

sharing, people assess the content and considered the social value of sharing. During sharing, participants think t about who would be receiving the shared content immediately before clicking the share button. After sharing, participants evaluate different types of feedback and sometimes even retract the content they have previously shared. The study highlights the complexity of a news-sharing decision.

While news sharing has become prevalent on social media services like Facebook and Twitter, recent empirical works (Herrero-Diz, Conde-Jiménez & Reyes de Cózar, 2020; Wang & Fussell, 2020) suggest a growing trend that young adults are using platforms like WhatsApp and Instagram to access and share news. In Study 2, I explore college students' news sharing experience on Instagram through an in-depth qualitative interview. Similar to the interview process in previous study, Study 2 prompts participants to reflect on their recently shared news content on Instagram to understand news types that get circulated, as well as reasons behind the choice of using Instagram for sharing such content. Research results suggest that: news that can help college students to (1) express their opinions, (2) raise awareness of their friends and (3) spark conversations are more likely to be shared on Instagram. The primary mode of sharing is via Instagram stories. Instagram is popular for news sharing because of its convenience of use, easiness of reaching out to peers, and the natural affordance of delivering powerful visual messages. Adopting this work as an empirical basis, I propose features like image and video recognition that link the news to reliable sources to correct potential misinformation exposure on Instagram.

Existing social media news sharing literature suggest that people share news with various motivations (Lee & Ma, 2012; Wang & Fussell, 2020; Paletz et al., 2021). In Chapter 5, I first propose five types of news sharing motivations based on an intrinsic-extrinsic framework: social norms, psychological benefits, personal rewards given by others, social and relational benefits,

and the desire for self-expression. Study 3 first validates this construct and then uses it as the basis of an online experiment, which tries to unpack the relationship between human motivations and the behavior of news sharing decision reversal.

Most current research focuses on understanding how people make news-sharing decisions (Lee & Ma, 2012; Lottridge & Bentley, 2018; Wang & Fussell, 2020). Study 3 takes a different approach and looks at whether sharing decisions can be reversed in an online experiment. Specifically, I introduce a behavior-economic parameter that examines people's willingness to give up original sharing decisions in exchange for extra study compensation. To throw more light on this behavior, I investigate whether the motivations people have during sharing can make them more "resistant" or "fluid" to this additional incentive. Research findings suggest that sharing decisions can be reversed when a strong, external stimulus is given: the higher compensation one gets, the higher the likelihood people will switch the initial decision. Specifically, people are more willing to give up initial sharing decisions than non-sharing choices. In other words, non-sharing decisions are more powerful and resistant to external stimuli, suggesting a different cost estimation in news sharers' minds. This work provides an empirical basis for future system and interface designs to discourage users when they are in the process of making news-sharing decisions.

Lastly, current news-sharing literature often focuses on understanding: (1) how native speakers make sharing decisions and (2) how they deal with misinformation in their familiar cultural environments. However, there is a lack of understanding of how immigrants and international students read and share news in the host country. It is an important area of research because these demographic groups could be vulnerable to misinformation due to unfamiliarity with the language and cultural contexts. Study 4 highlights that international students frequently use social media to access and share news, similar to their native peers (Wang et al., 2015). In the

initial adaptation phase, nonnative English speakers face language challenges in understanding vocabularies and particular expressions. As found in previous studies, this language unfamiliarity is reduced when they stay in the U.S for an extensive time (Ward, Bochner & Furnham, 2001). Another challenge for international students is the knowledge gap in the socio-cultural background of a news piece, such as past-related stories, culturally embedded practices, or political nuances. They adopt a broad range of strategies to figure out the veracity of the news if they do not understand it and think it is important, such as cross-checking and asking native friends for clarifications. When it comes to sharing, international students are cautious about, even self-censor sharing content they are unsure about (e.g., political news pieces) due to the concern of potential debates and conflicts. Lastly, international students who originally come from China report a common experience that their friends and family members back home share with them misinformation about the U.S. As a result, they need to help those friends combat the fake news by using their own observations and experiences in the U.S., which they perceive can make their arguments persuasive. This finding highlights a promising intervention design that social media companies can either recruit dedicated or crowdsource bilingual fact-checkers to spot and flag international misinformation.

In sum, the results from four studies advance the understanding of news sharing and can provide foundations for designing new interventions to help social media users and platforms address the issue of misinformation.

Design Implications

There have been continuing efforts from social media platforms and scholars experimenting with different approaches to combat fake news. Based on the findings in this dissertation, I propose the following design recommendations.

Remind users when they engage in “peripheral” sharing. Across four studies, I found that factors that lead to the news sharing decision are not always fact-based, suggesting a tendency that news sharers process the news content peripherally, regardless of their backgrounds. Specifically, Study 1 revealed that the processes people went through during news sharing varied by person, so did the level of cognitive processing. Some of the news pieces people encountered on their social media timelines were processed in a “central” approach that they scrutinized the content then shared (Petty & Cacioppo, 1986). Yet, some were processed in a “peripheral” fashion where people shared due to personal interest, entertaining value, or trust toward the source. I suggest that the time interval between seeing the story and sharing can indicate which type of information processing someone is engaging in. A longer time between seeing the news and clicking the share button could indicate that people are making efforts to process the news content or digest a comprehensive set of cues. In contrast, a shorter processing time may suggest that people rely on immediately available cues, which are not fact-based. With that, the behind-the-scenes algorithm of social media can first test whether longer processing time correlates with a better assessment of truth, signified by a higher number of sharing true news pieces. If the correlation exists, the system can pop up a window asking if users want to know more about the story when they do not spend sufficient time before clicking the share button.

Work with “central” users on a norm of sharing accurate news in the network. News sharing on social media is not an individual, isolated behavior. Instead, when people make sharing decisions, they not only consider those who share it (the source), but also take social relationships into consideration when imagining the potential audience of news sharing (Litt & Hargittai, 2016; Lee & Tandoc Jr., 2017). Moreover, news sharing can be used as a strategic tool to advance social relationships. Taking that into consideration when designing to reduce misinformation sharing,

while it is not typical to prefer fake news in a social group (though some groups share fake news deliberately to drive engagement), it is possible that group and community members like to share information from group influencers without further validation, which poses a risk of sharing misinformation if the influencers share fake news. Therefore, in a networked group, it is helpful to work with those “star” users who are central to the group, including well-connected ones. I suggest that the platform communicate with or educate group influencers to make them aware of their critical roles in spreading news, which could be done by showing a visualization of how information cascades from them to their followers (Cheng et al., 2014), or by designing an interface to indicate their social media impact and audience sizes (Bernstein et al., 2013). After making them realize the social impact they have, it will be more persuasive to communicate the importance of sharing true, unbiased news. As a result, their behavior of adhering to true, unbiased content would then influence other group members’ sharing behavior.

When necessary, alert users when others share for tricking or humor. Among factors that lead the sharing behavior, a frequent one mentioned by interview study participants is that they share news for humor and entertaining purposes. While this can be relaxing - some information that is funny to the sharer may not be to others, or to the extent that the content is not considered as humor but a fact. By modeling one user’s pattern of sharing based on historical data and machine learning (Sukthankar et al., 2014), the social media platform might be able to project the motivations behind a particular act of sharing and alert news readers to these intentions (Taylor & Mazlack, 2005; Barbieri & Saggion, 2014). For example, when someone continually shares fake news pieces, they may do so with the motivation to trick others. This poses a threat if this entertainment motive is misinterpreted by those who have little background on the news topic. Therefore, I suggest that when a system determines that the sharing motivation is to trick or

mislead, it could flag this motive when the audience receives the news, so that they will be alerted and ready to fact check to decide the truthfulness of the piece.

Encouraging the spread of truthful information. While reducing the dissemination of misinformation is important, this issue can be examined from a different lens of encouraging the circulation of truthful news pieces. Social media services have adopted various designs and algorithms to promote news sharing among their user bases, such as curating newsfeeds based on demographics and users' interests, which has successfully increased the sharing rate (Radar & Gray, 2015). In Chapter 5, however, I observed an interesting trend where participants were less willing to share news topics that were widely known even though the content was informing. With that, I suggest that when “focusing” events (e.g., election, war, public health issue) occupy a lot of attention on social media, the platform can intentionally provide truthful news items that are not redundant and repetitive to its users to accelerate the information dissemination, much as many current newsfeed algorithms do. It should also be noticed the underlying mechanism of how “focusing” events demotivates sharing remains to be explored. Thus, interventions to diversify news sharing topics must be carefully evaluated before deployment. At the same time, positive feedback is one of the design principles that many social media platforms have adopted. If a platform wants to promote the true news sharing behavior, such positive reinforcement after sharing will be essential. In the future, one might also investigate how different rewarding mechanisms, such as specific nudges tailored to that individual's motivational structure, may facilitate the circulation of true information.

Combating misinformation should also consider the specific platform's design and affordance. For example, TikTok studies suggested that the platform engaged with and educated users about fake news through fun challenges (Klug, 2020) or influencers (Abidin, 2020).

Moreover, recent works point out that news sharing is widespread in semi-private and private channels and platforms such as Instagram messaging, WhatsApp and Facebook Messenger (Lottridge & Bentley, 2018). However, the ethical and privacy concerns regarding correct misinformation when it is being shared privately remain to be discussed.

Lastly, with increasing global connectedness, after the news has been published in one language, it will likely be translated into a different language (Bielsa & Bassnett, 2008). During this process, mistranslation or content manipulation can happen (Zou, 2021). In Chapter 6, interviewees (e.g., Chinese international students studying in the U.S.) reported that they had experiences reading “distorted” versions of news translated from their native languages to English or vice versa. They also helped friends and family members back home combat such misinformation by sharing personal observations. I recommend that social media platforms identify and then reach out to experienced bilingual speakers who are familiar with both home and host country’s cultural contexts and news sharing practices. Their experiences of getting exposed to (fake) news in both contexts can give them unique advantages as fact-checkers helping the social media platform flag misinformation spread from one country or language to another.

Limitations

Consideration of the future directions of this work requires evaluating some of its specific limitations. First, for qualitative studies of this dissertation, I interviewed students at a large U.S. university across different levels (undergraduate, graduate, and professional students) because they represented a significant proportion of social media users. However, due to this use of a student sample, additional work is needed to evaluate whether the findings in these chapters are generalizable to a broader population. Specifically, for Chapter 3, I suggest future work to recruit a broader spectrum of participants of different age groups, socioeconomic statuses, personal

interests, or geo-locations to determine whether they take similar considerations into account when deciding to share the news. This information will be fundamental to designing universal or specific strategies to mitigate the spread of misinformation. For Chapter 4, I intentionally limited my participants to those college students who used Instagram to get more first-hand insights about why the platform is popular among them. It will be interesting to see whether the results can be generalized to other emerging platforms, such as TikTok and Snapchat. Lastly, Chapter 6 provides a first look at international students' news reading and sharing experiences in the host country. However, it is unknown whether their experiences are similar or different when compared to the broader immigrant population. Therefore, future works can recruit immigrants who are diverse in origin groups and education backgrounds to extend the current knowledge.

The online experiment in Chapter 5 mimicked Facebook users' news reading and sharing experience. Using different deception strategies, I tried to evoke participants' real sharing intentions and their accurate responses on whether they would like to reverse a sharing decision or not. In this controlled experiment, participants only see news content and default buttons, excluding social cues such as: who shared the news, and the number of comments and likes. This poses a threat to generalizability, as these factors matter when one forms the sharing decision. Future works can quantitatively model decisions of sharing and reversal when those social-related factors are presented at different levels or are manipulated to show different intensities. At the same time, this study directly recruited participants via Facebook Ads rather than using MTurk, a platform where "workers" tend to be more incentive-driven (Buhrmester, Kwang & Gosling, 2016). Yet, sole use of Facebook may limit the application of findings to other social networks where news sharing is also prevalent.

In Chapters 3 and 4, I helped study participants recall their experiences at the moment of sharing by asking semi-structured interview questions. However, their responses may not accurately reflect the actual thinking process when making those decisions due to the time gap between the sharing decision and the interview. In addition, some participants may have felt pressured by social desirability (Nederhof, 1985), especially regarding their efforts to fact-check news stories, whereas other empirical studies have shown low rates of fact-checking among news sharers. A think-aloud methodology thus will be helpful to address the potential bias presented in those in-person interviews.

Future Directions

Future research works can examine news sharing in the following additional promising areas. First, when deciding whether to share a news piece or not (“shareability”), how is an individual’s judgment on its truthfulness contribute to that decision? Stefanone et al. (2019) found that if people perceive the news as credible, then they are more likely to share it. Yet, literature also suggests that the relationship is more complicated. Not all news stories individuals think are true will be shared. In addition to the consideration of the truthfulness, to get shared, the news content needs to align with the motivations people have. Some individuals also intentionally share fake news to entertain or upset others (Chadwick et al., 2018; Hannan, 2018). Moreover, though previous work generally assumed a temporal order that when the cognitive state of believability judgment is established, it then shapes the upcoming sharing decision (Li & Sakamoto, 2014; Stefanone et al., 2019): this correlation can exist in a reversed fashion that the news piece is believed to be true – because it is shared. There are good theoretical reasons (e.g., self-perception theory) to explain that once users have decided to share (due to various factors that make the content sharable), this behavioral decision distorts their belief systems to maintain cognitive

consistency and accountability to others (Bem, 1972). In this case, users draw inferences from sharing decisions made, then make or alter belief judgments that align with their sharing behaviors. Thus, a promising direction of future research is to test the relationship between these two, including the causal relationship between them.

Second, current news sharing studies mainly investigated this behavior on platforms like Facebook, Twitter, and emerging SNS like Instagram and TikTok (Vázquez-Herrero, Negreira-Rey & López-García, 2020; Li et al., 2021). However, it is less known how news pieces (including fake ones) circulate on polarized social networks, such as Truth Social, which attracted more than two million users after launching (Brandon, 2022). It might also be interesting for future scholars to understand how information flows from one platform to another.

Third, common fake news topics include politics, public health, local news, business, sports, entertainment, etc. (Flintham et al., 2018). I suspect that some types of misinformation, when get widely shared, may have higher risks when compared with less harmful ones. Yet, the definition and the level of “harmful” are fluid and can vary by individual. For example, a piece of misinformation about public health, such as vaccination of COVID-19, may lead to undesirable consequences and put the news-reading audience into a dangerous health situation if they believe so (Nakov & Da San Martin, 2021). Moreover, few previous works tried to quantify the impact of misinformation sharing other than providing metrics such as online impressions. Future work can attend to specific metrics measuring misinformation dangers.

Lastly, this dissertation approaches the news-sharing research from both qualitative and quantitative lenses. To capture more insights, it would be interesting if future works use techniques such as bio-measurements to examine the relationship between emotions and the sharing behavior.

In addition, new methods like eye-tracking (Vergara, 2021) could be adopted in news sharing studies to understand what types of content will attract social media users' attention first.

Chapter 8: Conclusion

This dissertation presents four studies extending current news sharing knowledge and providing promising new directions for future investigation. After conducting 20 semi-structured interviews with college students and learning their most recent news-sharing experiences, I summarize that news sharing is a complex process instead of a snap decision. There are different cognitive processes pre, during, and after- one clicks the sharing button. The second study examines college students' news sharing practice on Instagram. Results suggest that Instagram is popular among them because it is easy to use and visually appealing and allows easy connection to peers. Existing works mainly look at the reasons that lead to the sharing decision yet seldom examine whether it can be reversed. The quantitative survey study results suggest that when a monetary incentive is given, there are chances the sharing decision can be reversed. This finding can translate into design implications for platforms to de-motivate users from sharing particular news pieces. Lastly, I study international students' news reading and sharing experiences. Results suggest that they face language and cultural barriers when reading news in the host country and adopt various strategies such as cross-referencing and asking native speakers to identify the veracity of the news piece. International students can also opt to play as fact-checkers for friends and families back home to combat fake news spreads from the host country to their home country.

In sum, this dissertation enriches existing works on understanding social media news sharing through various lenses. It does not only provide the first insight of news sharing as a process but also innovatively uses an experiment to look at whether sharing news sharing decisions can be reversed. Understanding a potentially vulnerable group's experience (immigrants, specifically international students) also throws light on future work to shift focus to underrepresented user demographics in news sharing research. Furthermore, this dissertation calls

for future collaboration of various disciplines such as information science, computer science, communication and psychology. Lastly, to reduce misinformation sharing, this study further provided recommendations that scholars and designers can test to see to what extent those newly proposed mechanisms will solve the urgent social issue.

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Appendix A: Interview protocol for Study 1

Ice breaker questions

1. What's your major of study?
2. Which social media platform do you use most? Why do you like this social media platform rather than others?
3. Since you're major in *[Q1 answer]*, do you always keep an eye of the news in that field? How do you get the news of the field?

Part I. Opening questions

Thanks for participating our interview about your social media news sharing experience.

1. How you define news?
The following question is based on your definition of news.
2. Which online platforms do you use to get the news feed?
3. Why do you go to this platform to get news?
4. Could you describe which topic of news you share the most? Why?

Part II. Social media news sharing questions

[Ask participants to open their Facebook/Social Media feed on the computer or mobile phone, and locate the latest piece of shared news - ask for permission if they can share the screenshots]

1. Looking at the news piece you just shared, what is it about and why did you share it?
2. Could you talk about how important this news is to you?
3. How did it attract your attention?
4. Did you find the content interesting? Why did it interest you?
5. Is this news related to your work, or life experience? If so, how?
6. Is this news related specifically to your culture background? Can you elaborate on that?
7. Some people will comment on the news before sharing, did you share it and comment on it? Why?

8. Who is your imagined audience (audience in your head) will be reading this news piece?
9. Did you open the hyperlink to read the full news before clicking the sharing button?
 - a. Why did you read the full news?
 - b. Why did you to share it immediately without reading the full news?
10. Did you think about the truthfulness of the news before sharing it?
 - If so, did you find the news believable?
 - a. Why did you think the news is believable?
 - b. Why did you think the news is NOT believable?
 - c. Why did find it hard to make the judgement?
 - If not, try to consider the believability of the news now.
 - a. Why did you think the news is believable?
 - b. Why did you think the news is NOT believable?
 - c. Why did find it hard to make the judgement?
11. Since you decided to share it – what are some other factors you considered before sharing this particular piece of news, in addition to believability and interestingness?
12. Did you feel any emotions when sharing this news article? If so, could you describe your feelings?
13. Did you expect any feedback from your friends when they saw this piece of news? If so, what?
14. You shared this news piece publicly on Facebook, did you think about sharing it privately with your friends? If so, why? How?
15. Since we're looking at the news you recently shared, if you could make choice now to share it or not to share it, what would be your decision?
16. This is a post you shared Facebook, do you also have a Twitter account? If you saw this news on Twitter, would you still want to share it to your Twitter followers? Why?

Part III. Fake news sharing questions

[Show participants one true news piece, and one fake news piece and ask the following 1- 6 questions repeatedly]

We'll show you two screenshots we just had from another researcher in our lab. She always shares news online. Suppose you add her to your friends to your social media,

1. At a first glance, did the news attract your attention? If so, how did it attract your attention?
2. Did you find this news we just showed you interesting? If so, why did it interest you?
3. Is this news related to your work, cultural background, or life experience? If so, how?
4. If this post showed up on your Facebook feed, would you share it?
 - a. So you just decided to share it, what drives you to make the decision?
 - b. So you just decided NOT to share it, what drives you to make the decision?

Inform participants: "actually, this is a true/fake news." Then:

When we show them fake news,

- a. *[If they decide to share in Part III – Q4]* Now, you're told this is a fake news, what will you do on your social media since it has been posted on your timeline? Will you delete it or post something to correct it?
- b. *[If they decide not to share in Part III – Q4]* You won't share this fake news online. If you spot a potential news on social media like this, what would you always do? Would you report it as a fake news?

When we show them true news,

- a. *[If they decide to share in Part III – Q4]* Now, you're told this is a true news, and you shared a true news, will you have the intention to always share the true news?
- b. *[If they decide not to share in Part III – Q4]* You won't share this true news online. Will you change your idea now since we told you it is true now?

Part IV. Closing questions

1. Media talks a lot about fake news issue now. In your opinion, what is the definition of the fake news?
2. To stop the spreading/dissemination of the fake news, what are some recommendations you have? Try to think about different stakeholders (users, government, social media platforms)?
3. Do you identify yourself as a sharer who always want to share true news?
4. Do you have any comments and feedback on news sharing, fake news, and interview we just did?

Appendix B: Interview protocol for Study 2

Ice breaker questions

1. What's your name and major of study at Cornell?
2. Which social media platform do you use most?
3. What do you mainly use this media platform for?
4. Why do you like this social media platform rather than others?
[If the answer is not Instagram, repeat questions 3 – 4 for Instagram]

Part I. Opening questions

Our conversation today will be about your news sharing experience on social media.

1. What social media do you use most to get and access news? why?
2. What social media do you use most to share news? why?
3. Could you describe which topic of news you share most? Why?
4. Let's talk about Instagram. Could you share with us what are some of the news pieces you have seen on Instagram?
5. What are the reasons that you choose Instagram to share news rather than other social media platforms?

Part II. Instagram news sharing questions

[Ask participants to open their Instagram on mobile devices, and locate the latest piece of shared news article, which can be a story, a post, or a direct message - ask for permission if they can share with us the screenshot if it is a public sharing]

1. Looking at the latest news piece you just shared, could you share with us the nature of this post? Is it a direct message, a story, or a post in your main profile?
2. What is this news story about?
3. Could you talk about how important this news is to you?
4. Is this news related to your work, background, or life experience? If so, how?

5. What is the original source of this news? Could you briefly walk us through the process from the moment you see the news at its source, to the moment of sharing it on Instagram?
6. Why do you share this piece of news?
7. In addition to the news itself, what content do you add on when you share it?
8. Who do you think on Instagram will be able to see this news piece?
9. Do you think they will be interested in this piece of news you shared and why?
10. How did your friends respond to this particular news? What are your feelings toward those feedbacks?
11. What are some of the benefits that sharing this particular piece of news can bring?
12. Are there any potential risks of sharing this particular piece of news?
 - a. Yes - could you describe those potential risks?
 - b. No - could you recall an experience that you weigh in the risks of sharing a news on Instagram when making the decision?
13. Did you consider the risk of losing followers because of some news you shared on Instagram before? Please explain.
14. Did you feel any emotions when sharing this news article? If so, could you describe your feelings?
15. Why do you choose Instagram to share this particular news piece, rather than other social media platforms?

Part III. Closing questions

1. Would you continue use Instagram to share news in the future, why?
2. What are some functions that you think will be helpful for you to use Instagram as a news sharing tool?
3. Do you have any comments and feedback on news sharing, fake news, and interview we just did?

Appendix C: Survey questions for Study 3

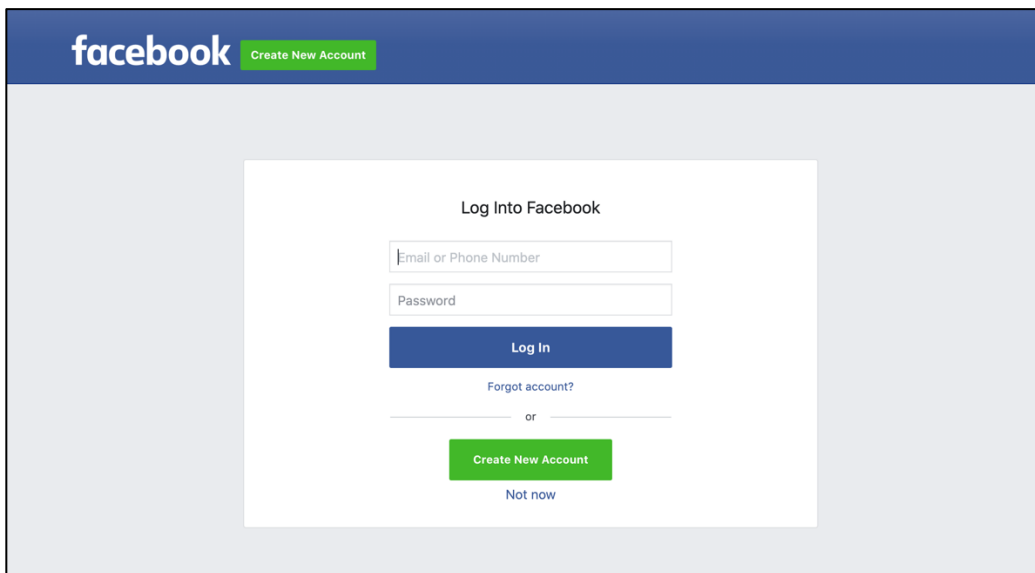
[Welcome users who are interested in the study]

[Page 1 – consent form]

[Page 2]


In this step, you will need to authenticate your Facebook account. No personal information will be collected in this process. Please click the button  at the right corner to proceed to the Facebook authentication page.

[Page 3]



The image shows a screenshot of the Facebook login interface. At the top, there is a dark blue header with the Facebook logo and a green button labeled "Create New Account". Below the header, the main content area is light gray. In the center, there is a white box titled "Log Into Facebook". Inside this box, there are two input fields: "Email or Phone Number" and "Password". Below these fields is a blue button labeled "Log In". Underneath the "Log In" button, there is a link for "Forgot account?". Below that, there is a horizontal line with "or" in the center. At the bottom of the white box, there is a green button labeled "Create New Account" and a link labeled "Not now".

[Page 4]

Your Facebook account has been successfully verified. Thank you! Please click the button  at the right corner to proceed.

[Page 5]

1. Please select your gender.
 - Female
 - Male
 - Prefer not to say

2. Please select the category that includes your age.
 - 18-24
 - 25-34
 - 35-44
 - 45-54
 - 55-64
 - 65 or Above

3. What best describes your level of education?
 - Some high school
 - High school graduate or equivalent
 - Trade or Vocational degree
 - Some college
 - Bachelor's degree
 - Graduate or professional degree
 - Prefer not to answer

4. In which state do you live? (Drop-down menu question)

5. Number of years use Facebook (range)
 - Under 1 year
 - 1-3 years
 - 3-5 years
 - 5 years or more

6. Number of Facebook friends (range)

- No friends
- 1-100 friends
- 101-250 friends
- 251-500 friends
- More than 500 friends
- Prefer not to answer

7. What category of content interests you when you read news? (Multiple choice allowed)

- Business and finance
- Politics
- Environment
- Arts
- Sports and/or entertainment
- Lifestyle
- Technology
- Health
- International
- Non-news (memes, etc.)
- Other

[Page 6]

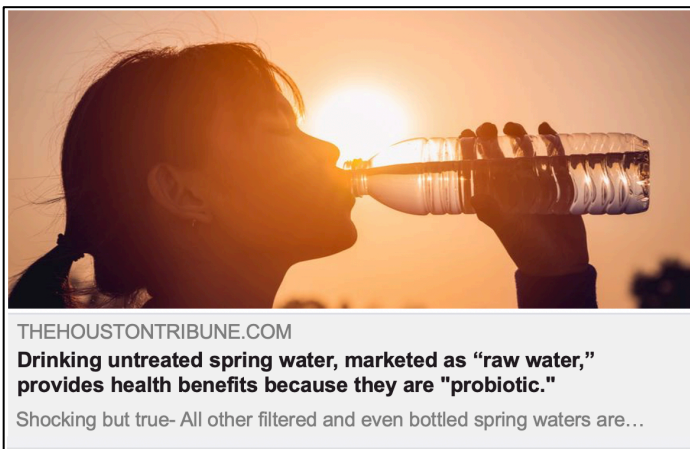
Please select the option below that best represents your experience using Facebook.

	Several times a day	Once a day	A few times a week	About once a week	Less frequent than once a week
How often do you check your Facebook page?					
How often do you post status updates, photos, etc.?					
How often do you use Facebook to access news?					
How often do you use Facebook to share news?					

[Page 7]

Are you willing to share the content below with your friends on Facebook?

***If you choose to share, it will be scheduled to post 30 minutes after you finish this study.*



- Yes, I will share this news to my Facebook newsfeed.
- No, I will NOT share it to my Facebook newsfeed

[Page 8]

What's your interest level in this piece of news' content?

- Not at all interested
- Slightly interested
- Moderately interested
- Very interested
- Extremely interested

[Page 9]

You mentioned you are going to share the news. For the news item you just saw, to what extent do you agree with the following statement? Choose one score that is close to your opinion.

Statement

- (1) This story is important for my Facebook friends to know about
 - (2) Sharing it reflects my desire to spread information about truth/reality, or correct misinformation
 - (3) Sharing this news helps me pass time, relax, escape from pressure & combat boredom
 - (4) I am confident in my ability to provide knowledge that others consider valuable
 - (5) Sharing this news helps me get social and emotional support for one another
 - (6) It helps me to gain status and recognition when sharing it
 - (7) My Facebook friends are likely to interact with me (share, like, comment on) this story
 - (8) My friends will be entertained/upset by this story
 - (9) Sharing it makes me express my own opinion on that issue
-

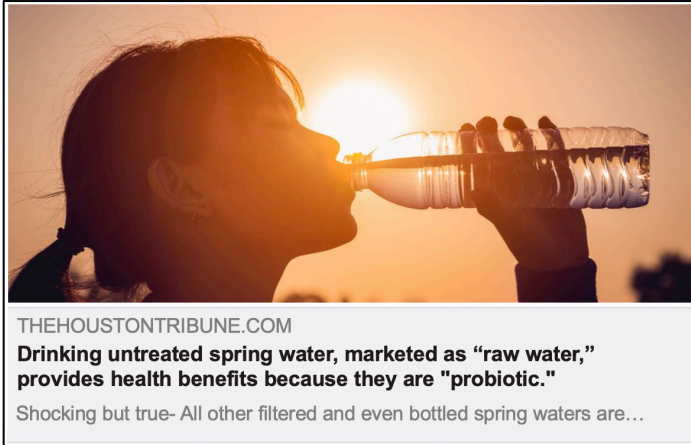
**Participants need to rate the statements above on a Likert scale:

Strongly disagree, disagree, neither agree nor disagree, agree, strongly agree

[Repeat the procedure above for two remaining pieces]

[Page 10]

For the content below, you selected “Yes, I will share this news to my Facebook newsfeed”.



Now, we are offering you an opportunity to reconsider this choice.

If you give up the original choice, and make an opposite decision instead “No, I will NOT share it to my Facebook newsfeed”, we would like to give you an extra 1/3 amount of your base compensation. Would you like to accept this offer?

- Yes. I will change my original sharing choice.
- No. I will keep my original sharing choice.

[Repeat the procedure above for two remaining pieces]

[Page 11]

Please provide your email address below so that we can send you the Amazon gift card. We will only use the email address for distributing gift card purposes.

[Page 12]

Thank you for participating in our study. Please expect your compensation in your email FIVE business days from today.

Appendix D: Correlations tables in Study 3

	S1	S2	S3	S4	S5	S6	S7	S8
S2	.62							
S3	.37	.36						
S4	.50	.47	.43					
S5	.49	.44	.52	.42				
S6	.35	.32	.48	.37	.57			
S7	.57	.44	.49	.44	.53	.49		
S8	.33	.22	.45	.26	.44	.47	.48	
S9	.61	.56	.41	.48	.48	.43	.50	.33

A1. Correlation table of different motivational statements, for sharing decisions

	S1	S2	S3	S4	S5	S6	S7	S8
S2	.36							
S3	.44	.25						
S4	.47	.32	.29					
S5	.41	.24	.58	.38				
S6	.42	.28	.53	.38	.59			
S7	.41	.30	.32	.37	.39	.35		
S8	.39	.30	.36	.43	.41	.42	.48	
S9	.60	.42	.46	.43	.46	.44	.45	.38

A2. Correlation table of different motivational statements, for non-sharing decisions

Appendix E: Logistic regression results in Study 3

	Est.	SE	P(> z)
(Intercept)	4.78758	1.92826	0.013 *
Interest level in the news (1-5)	-0.28802	0.23524	0.2208
Compensation condition	1.01624	0.4465	0.0228 *
News sharing decision being highly motivated	-0.73392	0.58143	0.2069
News being focusing event	0.52391	0.44717	0.2413
News display order in the study	-0.45591	0.2465	0.0644
Age	-0.07158	0.02816	0.011 *
Gender: M (F as baseline)	-0.80146	0.71313	0.2611

B1. Logistic regression for the sharing decision reversal, with coefficients and p-values. For initial sharing decisions

	Est.	SE	P(> z)
(Intercept)	-4.31675	2.90408	0.1372
Interest level in the news (1-5)	0.1414	0.33785	0.6756
Compensation condition	2.49977	1.12233	0.0259 *
News sharing decision being highly motivated	-4.54638	1.58052	0.004 **
News being focusing event	-0.81057	0.68925	0.237
News display order in the study	0.47697	0.34514	0.167
Age	-0.13211	0.06482	0.0415 *
Gender: M (F as baseline)	-2.61844	1.53273	0.0876

B2. Logistic regression for the sharing decision reversal, with coefficients and p-values. For initial non-sharing decisions.

Appendix F: Interview protocol for Study 4

Ice breaker questions

1. What's your name and major of study at Cornell?
2. Which social media platform do you use most?
3. What do you mainly use this media platform for?
4. Why do you like this social media platform rather than others?
[If the answer is not Instagram, repeat questions 3 – 4 for Instagram]

Part I. Opening questions

1. Where do you originally come from? What's your native language? How long have you been living in the United States?
2. Which U.S. based social media platform do you use most when you're in the US? Why?
3. What types of news content are you most interested in reading in your spare time (politics, sports, business)?
4. Let's talk about news. Where do you normally get your news from when you're in the U.S.?
5. Which U.S. based social media platform do you use for sharing news most frequently?
6. Could you tell us what motivates you to share news in the U.S.?
7. Why do you choose this platform to share news over other platforms?

Part II. News reading and sharing experiences

1. Are there any barriers for you to understand news in the U.S.? If so, what are they?
2. If you are having trouble understanding a piece of news on this platform written in English, what would you normally do?
3. Would you consider the news truthfulness before sharing it? Could you walk me through your process of identifying if a news piece is fake or not?

4. How would you think being an international student influences your experience in identifying if the news is true or not?

Let's dive deeper into a news piece you recently shared. A news item is a piece of content that reports on a current issue, not a personal status update or image/video upload.

Part III. Deep dive the most recent news sharing piece

1. Looking at this news piece, could you briefly share with us what it is about, who published/posted it, etc.?
2. Why did you choose to share this specific piece of news?
3. When you share this piece of news, who do you have in mind? Why do you think this news piece is useful or valuable to them?
4. What about the number of likes and comments this shared news piece received (if there are any)?
5. Is this the response you expect to receive? If so, why? If not, why?
6. Could you tell us if you think this piece of news that you shared is true or not? How do you make that decision?

Part IV. News sharing: a comparison between social media platforms

1. Do you still use social media platforms from where you come from?
 - a. If so, which platform do you use most and what do you use it for?
 - b. If not, why?
2. Could you tell me which home social media platform you use most for accessing news, why?
3. Could you tell me which home social media platform you use most for news sharing, why?
4. What are some of the differences in your news sharing behavior on your native social media platform when compared to a U.S. based platform, in terms of: content being shared, sharing frequency, expected audience, and any other differences we didn't cover?

5. If you read a piece of news on a home social media platform that indicates it is originally reported/written in English, would you go to the original source to double-check the content?

Part V. Closing questions

1. What do you think qualifies as fake news, for news pieces you read on this platform?
2. To stop the spreading/dissemination of the fake news, what are some recommendations you have?
3. Do you have any comments and feedback on news sharing, fake news, or the interview we just did?