ENGAGEMENT WITH NEWS CONTENT IN ONLINE SOCIAL NETWORKS

A Dissertation in

Mass Communications

by

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ABSTRACT

Reports indicate that as the Internet is displacing traditional news sources, younger users continue to be disconnected from the news. Fortunately, the Internet provides new ways of sharing and discussing news stories with others through social networking sites such as Facebook, which may be important for engaging users in the news they read online. This paper explores the potential benefits of sharing news content, and seeing shared news content, on a social networking site, in terms of engagement in that news content. It was predicted that sharing a news story on Facebook would cause participants to feel more involved in the story. Receiving comments and recommendations on these posts should also enhance their sense of influence. It was also predicted that those who post comments and leave recommendations and even those who are exposed to others’ comments and recommendations on the story would feel more involved in the story and more informed by it as a result of taking an active role. Finally, the specific level at which they broadcast the story on Facebook is explored for its effects on news story involvement, perceptions, and sense of influence.

This study used an experimental design to test the hypotheses. 333 participants, ranging in age 18-63 years and 67% female were in one of 13 news sharing conditions which varied in where they posted the story (news feed, friend’s wall, or direct message), what comment they made (opinion, question, or no comment) and whether they tagged friends; three receiving conditions where they found a story on Facebook and read it, commented on it, or indicated that they “liked” it; or the control condition where they read the story on the original news website. All participants filled out an online questionnaire immediately following the study and again one week later.

Results show that while sharing the story on Facebook as a Messenger compared to only reading it on the news website did not significantly affect their initial involvement in the story,
those who shared the story were significantly more involved in the story one week later. Those who asked a question about the news story when posting it felt a significantly higher sense of involvement in the story than those who posted the story with an opinion. Also, those who tagged friends felt a greater sense of community. Including a comment with the news story and tagging friends also led to a greater number of comments on the post from Facebook friends, which led to a greater sense of influence and greater sense of community. The number of “likes” received led to greater interest, involvement, and feeling informed about the topic. Broadcast level had many interactions with the other independent variables that highlighted the importance of posting on a friend’s wall, asking a question, and tagging friends. Posting the story publicly also led to more positive psychological outcomes, by way of receiving comments that were perceived to be favorable. For those who found a news story posted by a friend on Facebook, commenting on the story did not have a significant effect on their involvement in the story, and seeing others’ comments did not have a significant effect on involvement in the story. Theoretical and practical implications of these results are discussed and recommendations are made for future research and interface design.
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Chapter 1

Introduction

In the last decade, individuals have increasingly turned to the Internet as their primary source of information, leaving behind many other forms of media (Horrigan, 2006; Purcell, Rainie, Mitchell, Rosenstiel, & Olmstead, 2010; Rainie, 2010; Rainie & Horrigan, 2002). The Internet and related mobile technologies have replaced and enhanced the functions of many everyday information tools such as maps, phonebooks, and even novels. One medium that has been particularly affected by the growing use of the Internet as a primary informational tool is the newspaper. In the last decade, the newspaper industry has seen a major decline in sales due to a number of factors, but undoubtedly in large part due to the Internet (Pew Project for Excellence in Journalism, 2010). One journalist (Greenslade, 2009) cites possible causes such as the speed of information in other media, customization of content, and lifestyle factors such as less time overall to read.

If the traditional newspaper is truly being replaced by the Internet, this would suggest that individuals who did or would have read newspapers are increasingly turning to online venues for their daily news. A report by the Pew Research Center (2008) mostly supports this assumption, indicating that from 1994 to 2008, newspaper readership declined from 58% to 34%, but reading news online (at least three days a week) increased during those years from 2% to 37%. However, despite the increase in the number of news sources, as many as 34% of individuals younger than 25 say that they get no news on a typical day, up from 25% just ten years before. So, while use of the Internet for news content is displacing other media sources, younger users continue to be disconnected from the news, indicating that simply moving news content from one medium to
another is not effective in retaining readers. Fortunately, the Internet provides new forms of interaction that may prove essential for engaging users in the news.

Over the last few years, Internet sources of information have also increasingly connected us to other Internet users. That is, we may not turn only to sources such as CNN for information provided by the experts who work there, but also to other users who have contributed information, such as comments, opinions, and photos. Such user-driven content is newer to news websites such as CNN.com, but has been a regular feature of many e-commerce sites since their inception. Amazon.com, for instance, is known for its user reviews and offers many recommendations on which products to purchase based on what “other users” have purchased. Since then, many other websites have taken advantage of this technology called “collaborative filtering,” by displaying other-user information such as other users’ product ratings, reviews, and recommendations for customers to see. Even major brick-and-mortar retailers, such as Target, Walmart, and Best Buy, now have online counterparts where users can leave reviews. Travel-planning sites such as Orbitz (http://www.orbitz.com) and Expedia (http://www.expedia.com) rely at least partly on the recommendations that other users make of the many hotels listed on the site, while travel sites such as TripAdvisor (http://www.tripadvisor.com/) and 43 Places (http://www.43places.com/) run entirely on user ratings, ranking the sites and venues of most of the world’s cities from best to worst based on customers’ reviews.

These e-commerce and news sites rely on networks of users and their inputs, and users in turn rely on the opinions of others to make decisions, but they are not likely seeking to interact with these users for social reasons. This is quite different from social networking sites such as Facebook whose primary purpose is to help users “connect and share with the people in [their lives]” (“Facebook,” as of July 2011.). Originally, Facebook was a place to share information about oneself, and communicate with other friends on the site, but it has embraced the popularity of sharing content. In 2006, Facebook introduced the status update feature as a quick update box
on one’s profile that simply asked “What are you doing?” Users initially used the feature with hesitation about actually stating their current activities, but in the past five years, this feature has become the main focus of the site, with over 35 million users posting over 55 million status updates each day (“Facebook | Statistics,” as of July 2011). The status update has become the key ingredient of the site’s news feed and now allows users to quickly share external content in addition to posting text updates. Now, users share more than 30 billion pieces of content, such as links to news stories and blog posts, with their networks each month.

This access to a variety of external content may well make Facebook a primary information source for its users. When users log in to Facebook, they are greeted by a news feed, detailing their friends’ actions. According to statistics retrieved in July 2011, the average Facebook user spends at least an hour a day on the site (“Facebook | Statistics”), so with an average of 130 friends sharing content, he or she is potentially exposed to quite a lot of information each day. These personal word-of-mouth recommendations about which content is worthy of attention may certainly influence what news content users read and how they react to it. In addition to reading what a friend has posted, a user can also leave comments, potentially sparking a discussion. As one discusses the particular news content, he or she is likely to become more interested in and knowledgeable about the content compared to having only read about it. Alternatively, one may see a friend’s post after another user has already commented on it, thus viewing the original content and the ensuing discussion all at once. Possibly, seeing such discussion about the content, even without taking part, can grab the reader’s interest and engage them further in the content.

This paper explores the potential benefits of both sharing news content and seeing shared news content on a social networking site, in terms of engagement in that news content. First, sharing news content on Facebook may have important empowering effects for those who post links to external content. Further, those who learn of news stories through their friends may also
become more involved in the story. Discussing this content could further engage them, and seeing public discussion by friends could also have such an effect. The following sections present the theoretical background, method, analyses, and discussion addressing these facets of sharing news content on Facebook. Chapter 2 presents the relevant literature which draws from research on the sense of agency derived from acting as an information source, the cognitive mediation model of learning from news through personal discussion, and the credibility of news sources at varying levels of gatekeeping. Chapter 3 describes the experimental method designed to test the hypotheses, the procedures that all participants followed, and the measures used to assess the outcomes of interest. Chapter 4 presents the results of the hypotheses tests, as well as descriptive statistics about participants’ news and Facebook use, and additional tests of the variables of interest. Finally, Chapter 5 provides an interpretation of the findings, discussion about the study’s theoretical and practical implications, and the study’s limitations and suggestions for future research.
Chapter 2

Literature Review

User-distributed news content

There has been much buzz in recent years about the explosion of user-generated content on the Internet in which users can have meaningful influence on sites they participate in, or even control the content on the site entirely. Arguably a leader in the user-generated landscape, YouTube was launched in November 2005 as a place to “broadcast yourself” (“YouTube – Broadcast Yourself,” n.d.) by uploading original video content. Its explosive popularity led to an acquisition by Google and within a month of this event, Time Magazine named “You” as the Person of the Year (Grossman, 2006). Since that time, user-generated content has been a major focus of how users are getting, sending, and sharing information across multiple platforms.

However, any indication of a mass medium full of “produsers” (Bruns, 2007) may be exaggerated; there are still many more consumers of media than there are creators (Hargittai & Walejko, 2008). Van Dijck (2009) cites a Social Technographics Survey conducted by a private research company which categorizes users of user-generated content sites into six levels of participation. Only 13% of users were “active creators,” those users who actually produce and upload content such as videos or photos. About 19% of users were “critics” who provide ratings or evaluations, and 15% were “collectors,” or users who share the content for further distribution, but the majority of users were joiners, passive spectators, or “inactives.”

The reality is that today’s social media may be less about user-generated content and more about user-distributed content. For instance, as of July 2011, Facebook had over 750
million active users (“Facebook | Statistics”) sharing over 30 billion pieces of content per month, most of which is not originally created by the poster. These status updates are the newest form of user-driven media, known as Microblogging: a compact form of multimedia blogging that allows “users to exchange small elements of content such as short sentences, individual images, or video links” (“Micro-blogging,” n.d.). The technology is a hybrid of blogging and instant messaging; updates form a feed, similar to a blog, and allow for quick interaction with other users who can reply to or re-post others’ updates. These status updates have arguably become a primary method of distributing information, such as news stories. In fact, Odden (2008) finds that the most common use for Twitter, the popular microblogging site, is sharing links to items of interest to one’s network; followed by networking for new contacts, reinforcing current network contacts, promoting specific content, and re-distribution of content from a blog or web site. Similarly, an analysis of Facebook links shared revealed that news content was the most popular external content shared by users; only seven percent of content was created by the users (Baresch, Knight, Harp, & Yaschur, 2011).

Thus, Facebook users who share news content via their status updates act as Messengers by passing along information that is already available elsewhere and making it personally relevant to their social network; i.e., they are only the Messengers, not the source of the information. Still, by being the first to break the news to their contacts, these users can be viewed as sources of information and could receive important psychological benefits of acting as such an information provider.

Agency

By posting a news story for friends in the network, the individuals sharing the content, from here on named “Messengers,” will likely feel a sense of agency, or influence over the
distribution of the information. Even though news content from an external site is not originally created by the user who shares it, he or she is in a position to inform his or her friends of the content. The importance of being the first to “break the news” is clear in the anxious feeling we all get in knowing information that others do not, and the disappointment that comes with knowing that someone else in our network may have already disclosed the information. Even if one is not the first to break the news, the role of a gatekeeper of information can by itself give users a profound sense of agency. Indeed, anchorpersons on evening television news enjoy more agency in viewers’ eyes than the reporters who gathered the information and wrote the story.

Sundar (2008a) argues that acting as a source of information is of great importance psychologically, for three reasons: it allows the user to assert his/her identity; by either playing the esteemed role of an editor for a presumed audience (the larger that audience, the greater the agency); and/or by creating and “publishing” original content.

Agency is one of the four affordances of digital technologies that Sundar (2008b) identifies in his MAIN Model: Modality (M), Agency (A), Interactivity (I), and Navigability (N). Originally from the field of ecological psychology, affordances referred to an object’s “action possibilities” (Gibson, 1977), or in the case of technology, the many possibilities that the Internet has provided for communication (Norman, 1999). More specifically, they refer to particular features of the interface which visually suggest to the user what they can do with them. The MAIN model argues that these affordances or capabilities go beyond merely suggesting actions by shaping our perception of content, guiding the nature of our interaction in a given medium, and ultimately influencing the meanings we derive from the substance of our interaction. Each of these classes of affordances possesses a number of cues that trigger various heuristics, which help shape how the user understands or interprets the message or medium. A cue is anything in the context of digital media use that might serve as a trigger for the operation of a heuristic. A heuristic is a quick judgment rule (e.g., “the ability to comment means this news site is
interactive”) that can result in particular decisions about the medium or the content. The bandwagon heuristic, for example, leads individuals to feel the information on a website is credible if others have rated it so.

According to the Agency Model of Customization (Sundar 2008a, Figure 2-1), the affordances of interactivity, modality, and navigability provided by the medium should lead a user to employ a given interface in a way that empowers them with a sense that they are a source of the information. Such agency over the information should lead to outcomes of involvement, identity, and control.

Figure 2-1. Agency Model of Customization (Sundar, 2008a).

These empowering effects of self as source have already received empirical support in the context of blogging (Stavrositu & Sundar, 2008a). The authors surveyed 340 female bloggers about their motivations for blogging and the psychological empowerment that can result from maintaining a blog. Those who kept personal journals about their daily lives felt a sense of community, which resulted in a sense of autonomy and control, one of the factors of psychological empowerment. Furthermore, those who maintained filter blogs, in which they evaluate relevant information on the web and pass it on to their readers, also felt empowered, but through a sense of agency, or a feeling that they have control over their own voice. Additionally, those who received comments on their blogs felt interconnectedness, also by way of feeling a sense of agency. In a follow-up experimental study, the researchers (Stavrositu & Sundar, 2008b)
randomly assigned participants to start and maintain either a personal or filter blog, and then manipulated the number of visits (low or high) and the number of comments (low or high) received by each of the bloggers. Greater numbers of comments and site visits did lead to a higher sense of influence, but only the number of site visits led to this outcome by way of a sense of agency, indicating that reaching a wider audience is an important aspect of gaining a sense of agency.

Facebook status updates can act as compact forms of both personal and filter blogs, but most resemble filter blogs when used to share content such as news stories. As in the previous studies, individuals who use Facebook to share content should feel a sense of control over that content and a sense of influence over their network. Given that they are sharing within an established network of users, they are aware of the potential audience reach of their status updates. By asking “what’s on your mind?” the status message feature cues individuals to think that the site is interactive; it affords a sense of interactivity with others through the network. Also, the feature is equipped with buttons that allow users to share a variety of content types (e.g., photos, links, videos), thus cueing the affordance of modality. In accordance with the Agency Model of Customization (Sundar, 2008a), the Messengers who share news stories through their status updates should experience enhanced involvement in the news content as well as the issue covered in the news story.

H1: Sharing a news story on Facebook through status updates will lead Messengers to feel greater involvement in the content of the news story compared to only reading the news story.

The type of interaction with network friends that may result from posting a news story via one’s status message may lead to further enhancements of these effects. Stavrositu and Sundar (2008b) found that the visible feedback bloggers received on their blogs had a positive impact on their sense of influence. However, site visits and comments functioned differently: whereas
having a larger number of visitors to the blog increased their sense of influence through feeling a sense of agency (SOA), as mentioned previously, receiving more comments increased their sense of influence by increasing their sense of community (SOC; see Figure 2-2). That is, seeing that many others had visited their blog gave users a feeling of control and power over their own voice. On the other hand, reading comments that visitors had left led them to feel they were building a community with their readers.

![Flowchart](https://via.placeholder.com/150)

Figure 2-2. Effects of feedback on sense of influence (Stavrositu & Sundar, 2008b).

On Facebook, there are two ways in which a Messenger can obtain feedback on his or her post from those who see the post, the individuals to be known from here on as “Receivers.” First, just like with blogs, Facebook friends can make visible comments in response to the post. Second, while Facebook has no mechanism for showing users how many others saw their posts, a unique feature is that users can make a recommendation of the post by clicking that they “like” the post, which is publicly displayed (i.e., if I click “like” under a friend’s post, “Anne Oeldorf-Hirsch likes this” will be displayed under the original post). These visible responses function similarly to the comments and site visits that bloggers received in Stavrositu and Sundar’s (2008b) study, so may have similar effects. Receiving several “likes” on a post is evidence that at least that many people saw the post, and are indicating their approval of it, or even recommending it. Thus, the Facebook user could feel a sense of agency similar to a blogger when they feel they have reached a greater number of people with their information. However, “likes,” like site visits, are simply tallied and provide no content for discussion. Receiving comments, on the other hand, can evoke responses from the original poster and from the following posters, sparking a discussion that
causes users to feel they are part of a community of involved friends and readers. Therefore, we hypothesize:

H2a: Receiving comments on shared content will lead Messengers to feel a greater sense of influence than not receiving comments on shared content, by way of feeling a sense of community.

H2b: Receiving recommendations (in the form of “likes”) on shared content will lead Messengers to feel a greater sense of influence than not receiving recommendations on shared content, by way of feeling a sense of agency.

Levels of broadcasting

A key feature of disclosing one’s thoughts in these online social networks is that, unless specifically blocked, even interactions meant for particular individuals are still seen by the rest of the Messenger’s friends in the network. When two friends have a conversation through comments on a status message, it shows up in the news feeds of their friends, making this conversation public and allowing for interaction from a number of other individuals. Not all messages in public social networks are meant for the whole group; one friend may write on another friend’s wall, asking a question and expecting only that friend to respond. However, another friend or acquaintance could respond to the question, shifting the dynamic of the conversation. This is an interesting new variable in the dichotomy of personal and mass communication.

Sundar (2008b) noted how newer interactive technologies such as blogs “challenge the once-sacred distinctions between interpersonal, group, and mass communication.” Microblogging challenges this even further. A status update posted to the network is a relatively mass form of communication (though still limited by the expanse of one’s network). Meanwhile, private messages sent between two users should be considered personal communication. But there is no
clear label for messages that were intended for one Receiver, by posting on that user’s wall, yet still visible to all of the Receiver’s friends, some of whom may not even be friends with the Messenger and cannot see the Messenger’s other shared content.

These various levels of broadcasting can be categorized roughly at three basic levels: public news feed, semi-public wall post, and private direct message. At the most public level, a Messenger can post content in their status update, broadcasting it to their whole network through the news feed. Content can also be shared between users by posting on another’s wall; this information is only in the public feed for mutual friends, and is still visible for others on the Receiver’s profile, but is not necessarily visible to those who are only friends with the Messenger. Finally, the content could be shared at the most private level, through a direct message between specifically selected users.

Technically, these levels are not on a true continuum, as both posting on one’s own news feed and on someone else’s news feed are displayed to other Facebook users, while private messages are not. Likewise, both sending a direct message and posting on a friend’s wall are intended for a specific audience, while a news feed post is not. However, the technical features of posting on a friend’s wall allow it to function as a middle ground between one’s news feed and a private message on two principles: the direct audience size and the level at which the information is targeted at a specific user. For instance, a story I post on my news feed is at the same time broadcast to the greatest number of my friends, but is targeted to no one in particular. Everyone who has access to my profile can see this story, though it is intended specifically for no one. A story posted on a friend’s wall, however, becomes visible to less of my friends, but is targeted more specifically to a subset of mutual friends. If I post a story on my friend Steve’s wall, the story is broadcast to Steve and to anyone who is friends with both of us, and while it seems to be targeted specifically at Steve, by posting it on his public wall instead of sending it privately, it is also targeted to our group of mutual friends. Finally, a news story shared via direct message has
both the smallest audience and is targeted most specifically to certain friends. If I send the news story by private message to Steve, Jane, and Mary, only those three individuals see the story, and yet the story is very clearly targeted at them specifically. Thus, broadcast level can vary at three ordinal levels of audience size (all of one’s friends, one’s mutual friends with another person, or a small group of one’s friends) as well as audience targeting (no one specifically targeted, shared friends loosely targeted, specifically selected friends targeted).

Recently, Facebook has provided even more customized control over how broadly status updates are shared, by allowing users to indicate specific individuals or lists of individuals who can and cannot see a given status message, but the actual forms of sharing still remain: status update (news feed), wall post, and direct message. These various levels of broadcasting may well have an impact on the outcomes of sharing news stories for Messengers and Receivers, though no specific predictions can be made. Thus, the following research question is posed:

RQ1: What are the effects of various levels of broadcasting (direct message, wall post, and news feed) on the predicted outcomes of sharing news stories on Facebook?

Discussion of news content in social networks

Sharing news content in a network such as Facebook comes with the assumption that others will see it, and that hopefully they will even comment on it, or share it further with their networks. Anything that a Messenger shares on Facebook is open for comments from all friends of the Messenger and this commenting feature invites discussion among a Messenger’s network about the shared item. Discussion of the news provides important benefits for those who provide the news to their friends and for those who find news content shared by their friends.
Opinion leaders

Interpersonal discussion of current events has long been considered an important factor of engagement in news content, but with greater reliance on communication technology, many sociologists have feared the decline of social networks within which to discuss current events (Putnam, 2001). However, a recent report (Hampton, Sessions, Her, & Rainie, 2009) indicates that while physical social networks may have declined in the last 25 years, social networks created by mobile phones, the Internet, and similar technology have increased. Individuals now have broader and more diverse discussion networks, largely because of Internet use in general, and specifically through use of Facebook and similar social networking sites. Therefore, receiving the daily news through social networks could actually prove very beneficial to engaging the younger audience. By utilizing a diverse network of friends, individuals can potentially obtain a wider variety of information than they may find by seeking the news on their own.

The two-step flow model of communication (Katz & Lazarsfeld, 1955) posits that news does not reach the majority of individuals directly from the mass media, but that the news first flows to opinion leaders and then from those opinion leaders to their networks. An opinion leader is informally selected when others turn to that individual for guidance in understanding the situation at hand, such as a political campaign (Lazarsfeld, et al., 1948). These opinion leaders are part of primary groups (Katz & Lazarsfeld, 1955), or close personal groups, such as friends and family, which play an important role in guiding one’s understanding of current events. A given primary group could then have several opinion leaders, each serving as the expert of a particular area of interest for the rest of the group.

On Facebook, individuals may act as experts on a particular subject area, and in sharing news content, they take on the roles of opinion leaders, offering meaningful guidance to interpreting current events. Facebook networks can function as the primary groups users rely on for interpretation of new information. With 130 friends in the average Facebook network
(“Facebook | Statistics,” as of July 2011), there need only be a handful of opinion leaders in each primary group who are deemed experts on various topics to post news in that area. For instance, one friend may be a musician, so she seeks out and shares news about music acts coming to town, interesting new artists, or deals at local music stores. Another friend may share his knowledge and resources about cooking, restaurants, and healthy foods. And yet another friend may actively follow current political events and share those stories with the network. Thus, Facebook may be an ideal venue for the flow of news communication, as it allows news-savvy individuals to share news with their networks, and it offers this news to individuals who may not otherwise get daily news, which is becoming increasingly common (Purcell, Rainie, Mitchell, Rosenstiel, & Olmstead, 2010).

**Learning from the news**

While simply being made aware of the news by opinion leaders can increase an individual’s attention to and interest in that news content, this may not be enough to ensure that they have been properly informed. Just as the distribution of news flows indirectly from mass media to the individual, comprehension of the news is an indirect process. The Cognitive Mediation Model (CMM; Eveland, 2001; Eveland, Shah, & Kwak, 2003) states that people do not learn directly from exposure to news media, but that learning is mediated by processing strategies, or *elaboration*, defined as “connecting new information to other information stored in the memory, including prior knowledge, personal experiences, or the connection of two new bits of information together in new ways” (Eveland, 2001, p. 573). Strategies of elaboration following exposure to a news article could also include more active strategies such as discussing the news, or even passing on the news story to one’s network.
The major components of the model (outlined in Figure 2-3) are as follows: Surveillance seeking should lead individuals to pay attention to the news media and to use processing strategies that will help them learn from that media. Attention to the media is therefore a necessary antecedent to the elaborative process, though not sufficient on its own for learning from that media. Both attention and elaboration should lead to greater learning from the news. Specifically, elaborative processing should lead to greater learning from the news because of the connections made to stored knowledge, and this learning should increase as more time is spent elaborating.

Eveland (2001) found empirical support for the model in the context of political campaigns in which elaboration strategies such as thinking about the news and recalling stories one had seen before mediated the relationship between attention to political news and of knowledge of each candidate’s stance at the time of the 1996 election. Furthermore, McLeod, Scheufele, and Moy (1999) found that discussion of news in interpersonal networks had a significant influence on political participation. Most importantly, interpersonal discussion was the greatest predictor of participation in a civic forum held by local community organizations. This is a strong indicator that peer networks are influential in one’s behavior, beyond the intended effects of mass media.

Figure 2-3. Cognitive Mediation Model (Eveland, 2001).
Elaborative processing

Elaboration about news stories can range from private strategies such as internal reflection on the story, to more public acts such as bringing up the story for discussion with others in a group setting. In any case, they are active strategies of understanding the news stories beyond just reading or watching. Fleming and Thorson (2008) tested two distinct processing strategies and their effect on social capital outcomes, and found that those of elaborative processing were more effective than those of active reflection. Active reflection is defined as the way that individuals work to comprehend the story as they read it. However, elaborative processing focuses on the actions readers may take after reading the news, such as “I often talk with friends about stories…that I have learned about in the news.” As news media move online, new elaboration strategies emerge, such as “interactive civic messaging” (Shah, Cho, Eveland, & Kwak, 2005) which includes actions such as discussing politics with someone via email, emailing a politician, or using email to recruit others or organize community service for a particular cause. Sharing a news story on Facebook is akin to sharing it with others by email, though more public, and is thus already a possible elaboration strategy. However, Facebook offers features that allow users to more actively elaborate on the content they are posting. When users post a link on the site, a box appears that asks them to “say something about this link” and allows them to add their own text. Users can leave this area blank, but posting an opinion about the story requires more active thought about the story, which may involve them more in its content. Because they are posting a story on Facebook that will be seen by all of their friends, posing a question may be an even more involving elaboration strategy, particularly as asking a question requires additional thought about the content. Developing such an opinion or question may also increase the agency derived from being a news opinion leader in their network. Given this, the following hypotheses are proposed:
H3a: Sharing a news story on Facebook with an *opinion* will lead to greater involvement in the content of the news story compared to posting the news story without an opinion.

H3b: Sharing a news story on Facebook with a *question* will lead to greater involvement in the content of the news story compared to posting the news story without a question.

H3c: Sharing a news story on Facebook with a comment or question will lead Messengers to feel a greater *sense of influence* than sharing the news story without a comment or question, and this will be mediated by a *sense of agency*.

Facebook also offers a unique feature called “tagging,” in which a user who posts content can list some of his/her friends in that post in such a way that their names are linked to the post and they are notified that they have been included in that post. This feature is specific to the Facebook platform and has not been tested for its role in communication; thus, its effects on elaboration are unclear. However, tagging friends pushes the information to them and thus at least draws their attention to the story, increasing the sense of influence that users sharing news stories may feel. Tagging friends may also further involve them in the story’s content as they must think of friends who may enjoy that particular story. These predictions lead to the following hypotheses:

H4a: Tagging friends in the post when sharing a news story on Facebook will lead Messengers to feel greater *involvement* in the content of the news story compared to posting the news story without tagging friends.

H4b: Tagging friends in the post when sharing a news story on Facebook will lead Messengers to feel a greater *sense of influence* than not tagging friends, by way of feeling a *sense of community*. 
Many individuals may not post news stories on Facebook and thus may not be actively seeking the news, as assumed by the starting point of the CMM, but content shared would certainly be brought to their attention through Facebook’s news feed. Seeing the content provided by a Messenger—a friend in their network—may already lead to greater interest in the story. However, CMM would claim that it is some form of elaboration that would enhance the knowledge obtained from the story. Thanks to the interactivity affordances on Facebook, elaboration strategies are not limited to intrapersonal methods such as thinking about the news or recalling similar news stories. Upon seeing news content shared by a Messenger, individuals can further use Facebook to carry out at least two active elaboration strategies: they can comment on the shared content, or they can distribute the content further through their network by reposting it on their feed or on others’ walls. Commenting on the news content could act as an active elaboration strategy, increasing the Discussant’s (participant commenting on the story) involvement in the story and how informed they feel, as proposed in the following hypotheses:

H5a: Commenting on a news story shared on Facebook by a Messenger will lead the Discussant to feel more informed about the news content, compared to only reading the news story.

H5b: Commenting on a news story shared on Facebook by a Messenger will lead the Discussant to feel more involved in the news content, compared to only reading the news story.

One feature that makes Facebook unique in terms of its “civic messaging” potential is that any comments made on content are also visible to the network. That is, if my friend shares a news story on Facebook, but other friends of hers comment on the story before I see it, I will receive in my news feed the shared content and all the resulting comments, simultaneously. Reading the additional commentary on the news story, even if I am only a Receiver and have not
contributed, may act as an elaboration strategy as well, and could even motivate me to comment. Thus, the following hypotheses are proposed:

H6a: Viewing others’ comments along with the posted news story will lead the Receiver to feel more *informed* about the news content, compared to only reading the story.

H6b: Viewing others’ comments along with the posted news story will lead the Receiver to feel more *involved* in the news content, compared to only reading the story.

H6c: Viewing others’ comments along with the posted news story will make the Receiver more likely to *comment on the story*, compared to only reading the story.

H6d: Viewing others’ comments along with the posted news story will make the Receiver more likely to *repost the story*, compared to only reading the story.

**Evaluation of news in social networks**

Within social networks such as Facebook where information is constantly redistributed, identifying the original source of that information is an increasingly difficult task. As Sundar and Nass (2001) ask: “Who or what is a source, and how do we know?” They point out that one definition of a source is simply whatever the Receiver imagines the source to be. Upon reading a friend’s tweet about Time Magazine’s summary of new research at a large US university, the Receiver could say they heard the news from their friend, from twitter, from Time, from the university, or even just “on the Internet.” The importance of these source variations lies in how they affect the information. Depending on which friends share the story, it could take on different meanings or be perceived in more or less credible ways.

In the present research, social network users will act as gatekeepers, or *selecting sources*, by passing on the news they read to their social networks. These individuals act as Messengers, by broadcasting the news through the network, and also by acting as the point of contact for
discussion about the news. Exposure to news stories by way of a friend on Facebook may increase an individual’s interest in the story and perceptions that the story is personally relevant, compared to seeing the story on a news site.

**Online news source typology**

Sundar and Nass (2001) identify three layers of sources in the transmission of news in new communication technology: professional gatekeeper as source, technology as source, and Receiver as source. Professional gatekeepers such as news editors have been viewed as sources of information since the beginning of journalism. Technology as a source is much newer, but has become quite explicit in this age of mobile devices and constant Internet access. A mediating technology, such as a website, is the most apparent source, and because it has its own image and influence, users will likely consider this the source, rather than any embedded sources. Finally, Receivers can act as sources of news by selecting the type of information that will be filtered through to them. For instance, instead of simply viewing a variety of news stories that have been selected by editors at a news website such as CNN, users can set up their news feeds to show news of very specific topics of interest, such as politics in Europe, or pet health. In this case, the Receivers are their own gatekeepers, as they have an active role in determining the news that is presented to them. Sundar and Nass (2001) tested the effects of psychological sources using an experiment in which participants read news stories they were told to be from one of four sources: news editors, the computer, other users, or self-selected. All participants read the same six news stories online (those in the self-selected condition actually read the same stories as the other groups no matter what they selected), but were reminded of their attributed source throughout the study. Participants rated each of the stories on their credibility, liking, quality, and representativeness. Credibility was largely unaffected by the source manipulation (ratings across
the four conditions did not differ significantly). However, participants who were told that other users selected the story rated them more highly than other conditions on liking, quality, and representativeness. Clearly, there is an important balance between having to select information yourself and being told by a distant gatekeeper what to read.

With the Internet, sources may be layered such that information is presented not only by one source, but re-distributed a number of times by what is called a selecting source, or those perceived as the gatekeepers of information. In Facebook, the Messengers act as gatekeepers by selecting which stories are appropriate for distribution to their friend networks. When a Messenger posts a story reported on CNN, Facebook readers clearly know that the Messenger is not the original source, but perceive this person as a second source layer in reporting the information.

Hu and Sundar (2010) extended the news typology (Sundar & Nass, 2001) by assessing the effects of both original sources and selecting sources. They measured how users perceived the credibility of slightly controversial health information regarding sunscreen or raw milk, either from doctors or laypersons (original sources). This information was presented to each participant in one of five selecting sources: website, bulletin board, blog, personal homepage, or the Internet. While the selecting source did not have a significant effect on perceived credibility, it did have a significant effect on behavioral intentions: participants indicated greater behavioral intentions in response to the information when it was viewed on a website than if it was viewed on a blog, a homepage, or the general Internet. Participants perceived websites to be more heavily edited and bulletin boards to be more closely moderated than blogs, homepages, and the general Internet.

These findings have potentially important, though mixed, implications for Facebook Messengers as selecting sources. Knowing that “other users” (even though these other users are unknown) have decided what is important seems to make it feel more relevant and interesting, even if it is not necessarily seen as more credible. Receivers may like the news story presented by
the selecting source (in this case, their Facebook friend) more than seeing it on a news site, and may find it more relevant and of higher quality. However, the additional source layer may remove the story too far from its original source and decrease its credibility. This leads to the following hypotheses:

H7a: Receivers will *like* a news story posted by Messengers on Facebook more than those reading the story on a news site.

H7b: Receivers will find a news story posted by Messengers on Facebook to be more *representative* than those reading the story on a news site.

H7c: Receivers will find a news story posted by Messengers on Facebook to be of higher *quality* than those reading the story on a news site.

H7d: Receivers will perceive news stories posted by Messengers on Facebook as less *credible* than those reading the story on a news site.

Given Facebook’s sharing and commenting features, it functions well as a recommendation system. In addition to offering the ability to comment on a user’s post, Facebook users can also indicate their approval by clicking the “like” option, which displays their name as someone who likes that status or other content posted. This functions as a rating system, as more “likes” under posted content indicates greater interest by the network in the content. In the case of a news story that has been shared, seeing more names listed may grab the reader’s attention, enhance perceived importance of the story, and therefore make him or her more likely to click the link and read more.

Knobloch-Westerwick, Sharma, Hansen, and Alter (2005) specifically explored such recommendations of news stories in an experiment where users read online news stories that were recommended either explicitly (average rating of the story), or implicitly (number of times story was viewed), or no recommendations were made at all. Higher ratings of news stories led to longer reading times. However, the number of times the story was viewed produced a curvilinear
effect such that those with the lowest and the highest views resulted in longer reading times. Again, seeing which stories others have selected to read or rate has a significant influence on what is deemed worthy of reading. Those that had been read least often were likely seen as the newest news stories, so selecting to read these meant being among the first to get the latest news. This is an important factor in sharing news with friends, as Messengers will likely want to feel that they are the first to break the news to their networks.

Sundar, Knobloch-Westerwick, and Hastall (2007) found similar curvilinear effects of news cues. The site of interest was Google News, which offers three cues: source, number of related articles (NRA), and recency of the posted stories. The lowest and highest NRA led to greater credibility and perceptions of newsworthiness. The same curvilinear effect resulted for recency, but only for the stories with low source credibility. These cues were related in complex ways in what the authors call a “cue-cumulation” effect where certain cues (such as how recently the story was posted) become even more important when accompanied by other cues (how many times the story was shared).

**Bandwagon effects**

These various word-of-mouth cues impact users’ decisions by way of a mental shortcut identified as the bandwagon heuristic: the idea that if someone else likes or is doing something then “I should too” (Sundar, 2006). That is, users are informed of the current trends and are encouraged to “jump on the bandwagon.” In recent experiments about such effects in e-commerce sites (Sundar, Oeldorf-Hirsch, & Xu, 2008; Sundar, Xu, & Oeldorf-Hirsch, 2009), users were shown a version of an Amazon.com cell phone or camera product page that was manipulated to show a low or high star rating; low, medium, or high number of reviews; and a low or high sales rank. Actual reviews of the product were not shown, yet participants were more likely to buy products with a higher star rating and a higher sales rank, regardless of product details (which were identical in all conditions). Most importantly, the relationship between these product cues
and their purchase intention was fully mediated by bandwagon perceptions, meaning that these cues first led them to think about others’ opinions about these products, and that in turn is what increased their likelihood to buy them. Greater bandwagon perceptions also led participants to view the product more favorably, and perceive it as more credible, of higher quality, and of greater value.

In Facebook, these bandwagon cues are transmitted explicitly by the number of “likes” that are added. That is, if several friends indicate that they “like” the story shortly after it is posted, this will be displayed (e.g., “5 people like this”), which is a direct cue that this story must be worth reading because many others have deemed it so. Such an explicit recommendation of the news story is more likely to encourage other friends to get involved in the story, i.e., “jump on the bandwagon,” by following the link and reading more of the story.

H8a: The higher the number of recommendations posted in response to a news story link shared by a Messenger, the greater the likelihood that Receivers will follow the link and read more of the news story.

H8b: The higher the number of recommendations posted in response to a news story link shared by a Messenger, the greater the Receiver’s involvement in the story.

In summary, sharing a news story on Facebook should cause Messengers to feel a sense of agency by acting as a gatekeeper, and thus they should feel more involved in the story. Receiving feedback on these posts should enhance a Messenger’s sense of influence, by way of a greater sense of community when they receive comments, or a greater sense of agency when they receive recommendations. Similarly, the Receivers who post comments on the story should also feel more involved in the story and more informed by it as a result of taking an active role. Receivers who are exposed to others’ comments simultaneously with the story are likely to feel more informed because of the extra information posted, and also more involved due to seeing their friends discuss the story. Furthermore, seeing this discussion is predicted to encourage the
reader to join in by adding a comment or reposting the story. Seeing the news story posted by a friend is an implicit recommendation of the story, which is likely to increase the Receiver’s liking, sense of representativeness, and level of quality of the story, but may make it seem less credible than if it had come from a professional gatekeeper. Additionally, any explicit recommendations made about the post (in the form of “likes”) will likely cause the Receiver to read more of the story and feel more involved in the topic of the story.
Chapter 3

Methods

To test these hypotheses, an experiment was conducted using a 3 (Broadcast Level: News Feed vs. Wall Post vs. Direct Message) x 3 (Elaboration: Opinion vs. Question vs. No Comment) x 2 (Involving Friends: Tag vs. No Tag) between-subjects experimental design. However, the conditions are not fully crossed because tagging is not an option in the Direct Message conditions, and friends were not tagged in the posts where no opinion or question about the story was added. Therefore, 13 “Messenger” conditions exist, as illustrated in Table 3-1 and detailed below. In addition to these conditions, some participants were randomly assigned to one of three “Receiver” conditions: Discussant, Recommender, or Reader. The remaining participants were randomly assigned to a control condition, for a total of 17 study conditions.

Table 3-1. Messenger conditions.

<table>
<thead>
<tr>
<th></th>
<th>News Feed</th>
<th>Wall Post</th>
<th>Direct Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>No comment</td>
<td>(No tagging)</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Opinion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without tag</td>
<td>2</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>With tag</td>
<td>3</td>
<td>8</td>
<td>N/A</td>
</tr>
<tr>
<td>Question</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without tag</td>
<td>4</td>
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</tr>
<tr>
<td>With tag</td>
<td>5</td>
<td>10</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Participant recruitment

Individuals were recruited for a study about “news content in online social networks” from the local community primarily through the Penn State Faculty/Staff and Student Newswires,
mailing lists that all students, faculty, and staff on the Penn State main campus are subscribed to. This announcement was then also further shared by some participants on mailing lists to which they had access. To be eligible for the study, individuals had to be at least 18 years of age and consider themselves to be active Facebook members. The incentive for participating was a chance to win a $100 Visa gift card.

**Experimental conditions**

**Messengers**

All participants assigned to one of the 13 factorial conditions are termed “Messengers” because of their role in sharing the news story with their Facebook friends. Messengers were assigned to various levels of broadcast, elaboration, and involving their friends.

**Broadcast level**

Messengers were randomly assigned to share a CNN news story of their choice on Facebook by one of three methods: sending a direct Facebook message to six friends, posting it on a friend’s Facebook page, or posting it on their own Facebook page. These broadcast levels vary in how publicly they are displayed on the site for others in the network to see. Sharing the news story by direct message means that it can only be seen by the exact people that the Messenger has sent it to, making this the most private option for sharing content on Facebook. Posting the news story on one’s own wall causes it to appear in the news feed—an aggregated chronological feed of all Facebook friends’ activities—for all of that person’s Facebook friends to see (barring particular privacy restrictions or news feed settings), so it is the most public option
for sharing content on Facebook. Posting the news story on a friend’s wall falls between these two in terms of how publicly it is displayed. When a Messenger posts the news story on a friend’s wall, the post can be viewed by all Facebook friends of the person on whose wall the story is posted, but it does not show up in either the Messenger’s or the friend’s news feeds except to their mutual friends. This makes it more public than a direct message, as others may still have access to the post, but less public than posting it on one’s own page which, by default, broadcasts the post to all friends in the network.

*Elaboration*

Within each of the Broadcast Level conditions, Messengers were randomly assigned to one of three Elaboration conditions: Sharing the story without any comment, sharing the story and asking others’ opinions about the story, or sharing the story with their own opinion about the story. This variable explores various possible levels of elaborating about the story. Those who post the story without a comment do not need to actively think about the story’s content. Those who post an opinion about the story must give the content some thought in order to form the opinion. Asking a question about the story and sharing it requires the highest amount of elaboration about the story’s content.

*Involving Friends*

One method of involving friends in discussions about shared content on Facebook is to “tag” them in the post, which means to mention particular friends in the post in such a way that links them to the post and notifies them that they are part of the post. This feature is not available when sending direct messages because messages are sent directly to the specific individuals of
interest, so this condition only exists for those within the News Feed and Wall Post conditions. Messengers in these conditions were randomly assigned to tag friends in their post, or not to tag any friends in their post. Those in the tagging condition were told to tag six friends because that is the maximum number allowed per post by Facebook.

**receivers**

Participants who did not belong to one of the 13 Messenger conditions or the control condition were in one of three “Receiver” conditions. These participants were randomly assigned to be Readers, Discussants, or Recommenders. Receivers were asked to find a CNN story shared by one of their friends on Facebook and complete one of three actions: Follow the link and read the story on CNN (Readers), read the story and then recommend the story by clicking that they “like” it on the friend’s Facebook post (Recommenders), or read the story and then discuss it by making a comment on the friend’s Facebook post (Discussants). Similar to the Messengers’ three levels of elaboration, these three conditions vary in their involvement in the news story posted.

**measures**

All participants completed a questionnaire immediately following their participation in the study (Time 1). One week after their participation (Time 2), they completed another shorter questionnaire which repeated some measures from the first questionnaire to measure for change over the week, and included items that asked the participants to report current information about the news story post.
Manipulation checks

Given the limited control over participants’ actions and interactions in their real Facebook networks, manipulation checks were necessary to assure that individuals in each condition participated in the study in the desired way. Messengers were asked to provide the URL of the news story they shared (to check that it was a CNN news story), state where they posted the story (news feed, wall post, or sent via direct message), if they wrote something about the post, and how many friends they tagged. They were also asked on a 7-point scale how widely they think they shared the news story as a psychological check on how widely the post was broadcast (Very few people will see it – Very many people will see it). Receivers were asked if they found a CNN news story shared by a friend on Facebook, to provide the URL of news story, if they posted a comment about the story, if they clicked that they “like” the story, and if they followed the URL to the full story on CNN.

Dependent variables

All participants were asked about their news content perceptions, source perceptions, cognitive and emotional involvement, behavioral outcomes of reading the story, news consumption, Facebook usage, and demographic information. Additionally, Messengers were asked to complete measures of sense of influence, sense of agency, and sense of community.

Empowerment

Psychological empowerment (sense of influence) was measured (for Messengers only) using 11 items from Stavrositu & Sundar’s (2008) scale which were modified to capture empowerment broadly instead of referring specifically to the outcome of posting on Facebook.
Items included “I have a deep sense of self-awareness” and “I feel able to share knowledge with others,” measured on 9-point scales ranging from “Not at all” to “A lot” with “Somewhat” as the middle point. These measures were taken when completing the original questionnaire at Time 1 and again in the follow-up questionnaire at Time 2. The reliability for this scale was high: $\alpha = .90$ at Time 1 and $\alpha = .91$ at Time 2. Stavrositū & Sundar’s study found Sense of Agency (Agency) and Sense of Community (Community) to be important mediators between blogging and empowerment, so these same concepts were measured here with items also reworded to reflect these variables without referring specifically to the act of sharing content on Facebook. The Agency scale was expanded from three items to six and included items such as “I have a distinct voice” and “I can exercise my free will.” The original 22-item Community scale was reduced to nine items, including “I feel like I have a support network in case I need help” and “It is very important for me to interact with others.” Both Agency and Community were measured on 9-point scales ranging from “Not at all” to “A lot” with “Somewhat” as the middle point. These measures were also taken at Time 1 and again at Time 2. Reliability for the Agency measure was high on both questionnaires: $\alpha = .88$ at Time 1 and $\alpha = .89$ at Time 2. The Community scale was also reliable at both measurements: $\alpha = .73$ at Time 1 and $\alpha = .70$ at Time 2. All measures can be found in Appendix A.

**News topic perceptions**

Two 7-point Likert-type scale items (Strongly disagree – Strongly agree) were created to measure interest in the news story’s content: “I am interested in the topic” and “I would like to know more about the topic.” A third item on the same scale measured how informed they felt about the topic: “I feel informed about the topic presented in the story.” At Time 2, participants
completed these measures again as well as a 7-point scale that asked them how well they remember the details of the news story they had read (Not at all – Very well).

**Perceptions of news story**

*Credibility* of the story and perceptions of *Liking, Quality, and Representativeness* were measured using items from Sundar and Nass (2001). Each of the four concepts was measured with various adjectives on 7-point scales ranging from “Describes very poorly” to “Describes very well.” Credibility was measured with the adjectives Accurate, Believable, Biased (reversed), Fair, Objective, and Sensationalistic (reversed). Reliability for this scale was initially low (α = .66) so Sensationalistic was dropped, increasing the reliability to α = .78. Liking was measured using the adjectives Boring (reversed), Lively, Enjoyable, Interesting, and Pleasing, and was reliable: α = .74. Quality was measured with the adjectives Clear, Coherent, Comprehensive, Concise, and Well-written, and showed high reliability: α = .84. Representativeness was measured using the adjectives Disturbing, Important, Informative, Relevant, and Timely and was reliable: α = .82.

**Involvement**

*Involvement* was measured with modified items from Perse’s (1990) scales of cognitive and emotional involvement. One subset of the Cognitive Involvement scale is Elaboration, which was measured here using the original five items, but on a 7-point scale ranging from “Not at all” to “Very much.” Items include: “I thought about what should be done,” and “I thought about how the story related to other things I know.” This scale was reliable when measured at Time 1 (α = .86) and a Time 2 (α = .92). All measures can be found in Appendix A. The original Emotional
Involvement scale consists of 15 Likert-type items that assess various aspects of happiness, anger, and sadness about the news content. In this study, these three emotions and three additional emotions (excited, worried, and hopeful) were measured with just one item each on a 7-point scale ranging from “Not at all” to “Very much.” Emotional elaboration was measured only at Time 1.

**Behavioral outcomes**

The manipulation checks for both Messengers and Receivers double as measures of behavioral outcomes. Messengers stated where they posted the story, if they added a comment, and how many friends they tagged. Receivers were asked if they commented on the story, if they “liked” the story, if they followed the link to the full news story, and if they reposted the news story on Facebook. Receivers were also asked to indicate how many comments were already posted and how many people had “liked” the story. At Time 2 Messengers were asked to record how many people “liked” their post (and how many of these were by tagged friends or the friend on whose wall the story was posted, when applicable) and how many comments were made on the post (including how many were made by the Messenger, how many were made by tagged friends, and how many were made by the friend on whose wall the story was posted, when applicable). Similarly, Receivers were asked how many comments and “likes” the post they originally found now had, how many comments were made in follow-up to their previous comment (if they made one), and if they commented on or “liked” the post, and if they followed the link to the full story or reposted it on Facebook today, at Time 2. Finally, all participants were asked to rate the comments on a 7-point Likert-type scale (Strongly disagree – Strongly agree) on how relevant, thoughtful, engaging, and superficial they were.
**Control variables**

Several control measures were included to gauge how accustomed participants were to posting news stories on Facebook, and how this activity compares to their normal news consumption and overall Facebook usage. After completing the instructions on sharing or finding a CNN news story on Facebook, participants were asked to rate how easy or difficult the instructions were to follow. Additionally, Receivers were asked how representative the news story they found is of the friend who posted it, and how close they are to that friend. Messengers were asked how likely they would be to post a story like this outside of the study context and also how likely they would be to comment on / “like” / repost / follow the link to read more of this news story themselves if they saw it posted by someone else, while Receivers were asked how likely they would be to post the story they found on Facebook. Messengers were also asked to rate how likely it is that their Facebook friends will read this story, and how likely they are to read their posts in general. Finally, demographic variables including age, gender, ethnicity, and occupation (or class standing) were included as control variables.

**News consumption**

All participants were asked “How familiar were you with this topic before reading about it today?” (1 = Not at all familiar – 7 = Very familiar). They were also asked to rate on a 7-point scale ranging from “Never” to “Frequently” how often they get their news from television, newspapers, radio, magazines, the Internet, mobile applications, social media, and personal communication. Finally, they were asked to rate, on the same scale, how often they share news content on any site.
Several items were used to measure participants’ regular Facebook use habits: how often they log in to the site, how many minutes they spend on the site per day on days they log in, how many friends they have on the site, how long they have been members of the site, how often they restrict their posts so they cannot be seen by all friends, and how often they partake in a variety of Facebook activities: posting status updates, sharing news stories, sharing other websites, tagging friends in posts, sending direct messages to friends, commenting on posts, liking posts, uploading photos, uploading videos, and playing games. The extent to which Facebook plays a major role in the participants’ lives was measured with the Facebook Intensity Scale (Ellison, Steinfeld, & Lampe, 2007) which consists of six 7-point Likert-type items (Strongly disagree – Strongly agree) such as: “Facebook is part of my everyday activity” and “I feel out of touch when I haven’t logged onto Facebook for a while.” This scale showed high reliability: α = .88.

Posting content and activity

In addition to the measures that were completed by participants, information about the news story posts that Messengers made on Facebook were recorded, including: when the post was made, what news story was posted, where it was posted, if an opinion or question was added to the link, how many friends were tagged, and how many comments and likes it received within the week, as well as the content of the comments received. These data were collected to verify the information provided by participants, and to provide extra data for coding. The news story was coded for its topic category, based on CNN’s categories, and modality, such as text or video. This information could not be collected for all Messengers because of the privacy restrictions that some had in place (e.g., limiting access to their wall), especially if the link was shared on a
friend’s wall. For those in the Direct Message conditions, this information was not tracked at all, since the direct messages they sent were private and thus not visible on their Facebook pages.

**Procedures**

Individuals who chose to participate in the study and followed the link provided in the recruitment advertisement were directed to the informed consent form online and asked to click the link to continue to the study if they consented to participate. Upon clicking the link, they were randomly assigned to one of the 17 conditions using a script on the website that randomly selects one of the 17 questionnaire URLs to load. All study instructions and questionnaire items were hosted on SurveyMonkey (http://www.surveymonkey.com). Those who ended up in one of the 13 Messenger conditions were given detailed instructions on how to share a CNN news story on their Facebook page. Those in one of the three Receiver conditions were given detailed instructions on how to find a CNN news story posted by one of their friends on Facebook and complete a specific action regarding that story. Participants in the control condition were asked to select a CNN story and read it, but did not use the Facebook site. After completing the instructions regarding the news story, participants in each condition completed a questionnaire about the news story and their posting activity. All participants were asked to create a unique 8-digit code consisting of their birthday and initials (e.g., 020583AO) as their identifier for this study, which served as a way to match up follow-up responses gathered from participants one week later. See Figure 3-1 for a visual summary of the procedures followed by all participants.
Figure 3-1. Procedures followed participants.

**Messengers**

Participants in any of the Messenger conditions were first asked to add the researcher as a friend on Facebook. The account they saw was one set up specifically for this research study and had maximum privacy settings such that no participant could see any of the other participants as Facebook friends on this account. Being connected on Facebook allowed for participants’ posts and subsequent comments and “likes” to be tracked and recorded, and provided a method for sending participants the appropriate follow-up questionnaire one week later. After sending the friend request on Facebook, participants were asked to provide their full name, which was used to verify that the friend requests received on Facebook were from study participants and to link details from each participant’s news story post to their questionnaire data. Next, participants were
instructed to follow a link to CNN’s website (http://www.cnn.com) and select a story which they found interesting from the “Latest News” section on the site and read that story. Once they read the story, they returned to the questionnaire to follow instructions on how to share the story on Facebook, depending on their condition.

**News Feed conditions**

Those in the News Feed conditions were told to copy the news story’s URL and paste it in the link-sharing option on their Facebook homepage (see Figure 3-2). Content shared here appears on the user’s wall, an area on their profile that lists the user’s Facebook activity and shared content in chronological order. Content posted here also appears in the News Feed, the primary homepage on Facebook which lists all of one’s friends’ posts and activities in chronological order, seen by each of that user’s friends. If they were also in the Opinion condition, they were asked to add text to the link sharing their opinion about the news story. In their post, this text appeared as a status update with the link to the story below it. If they were in the Question condition, they were asked to add text to the link asking their friends what they think of the story, but not sharing their own opinion. Those in the No Comment condition did not add any text to the link before sharing it.

![Figure 3-2. Link sharing option on Facebook.](image)

For participants in the Tagging condition, they were also told to think of six friends who would find the news story relevant and were instructed on how to “tag” these friends in the post (see Figure 3-3). The tagged friend’s name appears as part of the post on the original poster’s
wall, notifies the tagged user that he or she has been included in a post, and depending on the tagged user’s settings, also shows the post on his or her wall.

![Figure 3-3. Tagging friends in a Facebook post.](image)

**Wall Post conditions**

Participants in the Wall Post conditions were given the same instructions as those in the News Feed conditions, but instead of posting the link to the news story on their own wall, they were instructed to post the link on a friend’s wall. They were told to think of one friend on Facebook who would find the story relevant, navigate to that user’s profile using the search function (see Figure 3-4) and then share the story link on that friend’s wall using the same procedures as those in the News Feed conditions. Instructions for those in the Opinion or Question condition and those in the Tagging condition were identical to the instructions given to the News Feed participants in these conditions.
Figure 3-4. Searching for a friend’s profile on Facebook.

**Direct Message conditions**

Those in the Direct Message conditions were told to send a message titled “Recent news story” to six of their Facebook friends and attach the news story link to the message (see Figure 3-5). Direct messages sent to friends are not visible on the News Feed or any user’s wall, but are sent privately to the recipients in an inbox similar to email. Facebook allows more than six recipients per message, but six was chosen as the number of recipients to match the number of friends tagged in the other conditions. Participants in the Opinion condition were told to add their opinion about the story in the Message box, while those in the Question condition were told to ask their friends’ opinions in the Message box without providing their own opinion, and those in the No Comment condition were told to leave the Message box blank.
After sharing the news story on Facebook as instructed, participants continued with the questionnaire and then were directed to a page where they could provide their information to enter the $100 gift card drawing. One week after completing these procedures, each Messenger was sent a link to the follow-up questionnaire by private message. The link to the second questionnaire matched the condition to which they were assigned, as found in the data collected where they verified their Facebook name.

**Receivers**

Those in the Receiver conditions did not add the researcher on Facebook or post a story on Facebook, but were instead asked to find a CNN news story that one of their friends may have posted. They were given detailed instructions on how to search Facebook for “cnn.com” and then filter the results using the “Posts by friends” option (see Figure 3-6). Of these results they

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1 Originally, Messengers’ Facebook friends were recruited to act as the Receivers, thus allowing them to comment on the stories posted by the Messengers in this study. However, in pretests, potential Receivers could not be contacted through Facebook by direct message as planned due to security issues. In a minor revision, Messengers were asked to recruit their friends to participate (actually inviting them to the Receiver conditions), but this method proved unsuccessful. In the current design of the study Receivers are treated as an exploratory condition and recruited separately.
were asked to select one of the news stories and read it. Those in the Reader condition were asked only to read the story. Those in the Discussion condition were asked to read the story, return to the Facebook post by their friend and leave a comment on the post about the news story. Those in the Recommender condition were asked after reading the story to return to their friend’s post and “like” the post, which shows their name on the post as one of the people who like the story. After completing their instructed actions, those in each of the Receiver conditions continued to the questionnaire. They were first asked if they even found a story, as some may not have if none of their friends had shared a CNN news story on Facebook. Those who answered “Yes” continued to the main questionnaire, whereas those who answered “No” skipped to the questions regarding their news consumption and Facebook habits. At the end of the questionnaire they were directed to a page where they could provide their information to enter the $100 gift card drawing. All Receiver participants were also asked to provide their email address at the end of the questionnaire which was used to send each participant the appropriate link to the follow-up questionnaire.

Figure 3-6. Search option to filter results by Posts by Friends.
Control group

Those in the control condition were instructed to follow a link to CNN’s website (http://www.cnn.com) and select a story they found interesting from the “Latest News” section on the site and read that story. Once they read the story, they completed the questionnaire and were then directed to a page where they could provide their information to enter the $100 gift card drawing. Like those in the Receiver conditions, they were also asked to provide their email address and were contacted one week later to complete the follow-up questionnaire.
Chapter 4

Results

Sample characteristics

In total, 560 questionnaires were collected, but only 333 were completed; the remaining 228 were abandoned after the initial instructions, mostly in the Messenger conditions. It is unknown how many participants initially clicked the link to start the study, as the first point of data collection was the 8-digit unique ID that each participant entered at the start of the study. Based on these codes collected, 34 responses were duplicates and triplicates, leaving 526 unique responses. Each of the participants who started the study multiple times continued past the instructions only once, indicating that a technical issue likely caused their questionnaire to restart. Table 4-1 displays the details of participants lost at various stages in the study.

Table 4-1. Participant attrition during the study (N).

<table>
<thead>
<tr>
<th></th>
<th>Started study</th>
<th>Added researcher as Facebook friend</th>
<th>Found story on Facebook</th>
<th>Provided story URL</th>
<th>Completed questionnaire</th>
<th>Completed follow-up questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Messengers</td>
<td>407</td>
<td>308</td>
<td>N/A</td>
<td>230</td>
<td>230</td>
<td>183</td>
</tr>
<tr>
<td>Receivers</td>
<td>81</td>
<td>N/A</td>
<td>46</td>
<td>31</td>
<td>68</td>
<td>36</td>
</tr>
<tr>
<td>Control</td>
<td>39</td>
<td>N/A</td>
<td>N/A</td>
<td>35</td>
<td>35</td>
<td>26</td>
</tr>
<tr>
<td>Total</td>
<td>526</td>
<td>296</td>
<td>333</td>
<td>245</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Messenger condition lost the most participants, with 43% not completing the study, while the Receiver condition lost only 15%, and the control group only 10%. Within the
Messenger conditions, attrition did not differ greatly depending on where participants had to share the story: 42% dropped out of the Direct Message condition, 47% dropped out of the News Feed condition, and 39% dropped out of the Wall Post condition. Eighty percent of the Messengers and 74% of the control group completed the follow-up questionnaire one week later, while only 53% of the Receivers returned for the second questionnaire. However, in considering only those Receivers who found a story during the study, their return rate was also 80%.

The final sample contained 333 individuals, ranging in age from 18 to 63 years ($M = 27.34$, $SD = 9.72$), with 67% being female. Seventy-nine percent of the sample was White, 11% was Asian, 5% Black, 2% Hispanic, 6% Native American, and 1% identified as “other,” mainly South Asian. Approximately two-thirds of the participants were students (64% full-time, 4% part-time) and the non-students were employed mostly in a university setting with occupations ranging from professors to administrative staff. Of the original participants, 245 (74%) completed the one-week follow-up questionnaire. This sub-sample was 70% female, on average 28 years old ($SD = 10.02$), and 65% students.

**Manipulation checks**

Manipulation checks were run on each independent variable to assure that participants followed the directions as stated (see Table 4-2). Messengers were asked where they posted the story, and this was tested against their Broadcast Level condition in a contingency table. Four participants in the News Feed condition and eight participants in the Wall Post condition indicated that they shared the story somewhere other than instructed, so they were excluded from analyses. Messengers were also asked “Did you write something about the link in your message?” Three of the participants in the No Comment condition indicated that they did write something about the link, while six in the Opinion condition and 19 in the Question condition indicated that
they did not write anything about the link. These participants were also excluded from analyses.

Finally, those in the Wall Post and News Feed conditions were asked if they tagged any friends in their post. Two participants in the No Tag condition indicated that they did tag friends, and four participants in the Tag condition indicated that they did not tag their friends, so these participants were also excluded from analyses. This left 184 participants in the Messenger conditions, with each condition ranging from 11 to 18 participants (with the exception of one condition which only had eight participants).

Table 4-2. Manipulation checks for Messengers (N).

<table>
<thead>
<tr>
<th></th>
<th>Passing successive manipulation checks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Original participants</td>
</tr>
<tr>
<td>Messengers</td>
<td>230</td>
</tr>
</tbody>
</table>

For participants in the Receiver conditions, manipulation checks were run to assure that they read, commented on, or “liked” the story they found as instructed. Only 46 of the 68 Receivers found a story posted by a friend on Facebook. Of the 15 participants in the Discussion condition, eight stated that they did not leave a comment, so were excluded from analyses. Of the 16 participants in the Like condition, five indicated that they did not click “like” on the post, so were also excluded from analyses. Of those in the Read condition, none posted a comment or “liked” the post, so none were excluded. This left 33 participants in the Receiver conditions. See Table 4-3 for details. The control condition contained 34 participants and required no manipulation checks.

Table 4-3. Manipulation checks for Receivers.
<table>
<thead>
<tr>
<th></th>
<th>Original participants</th>
<th>Found news story</th>
<th>Posted a comment</th>
<th>“Liked” the post</th>
<th>Participants remaining for analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussants</td>
<td>22</td>
<td>15</td>
<td>7</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Recommenders</td>
<td>24</td>
<td>16</td>
<td>0</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Readers</td>
<td>22</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Receivers Total</td>
<td>68</td>
<td>46</td>
<td>7</td>
<td>12</td>
<td>33</td>
</tr>
</tbody>
</table>

**Group differences**

Because one-third of the Receivers who indicated whether they found a story stated that they could not find a CNN story posted by any of their friends on Facebook, it is possible that those whose friends shared CNN news stories differed from those who did not. Those who found a story and those who did not were compared on their demographics, news consumption habits, and Facebook use. Those who found a CNN story posted by a friend shared news online significantly more often themselves, $t(63) = -2.04, p < .05, R^2 = .06$, and also posted news stories significantly more often on Facebook, specifically, $t(63) = -2.11, p < .05, R^2 = .07$. The two groups did not differ on demographics, or where they got their news, except that those who found a story posted by a friend got significantly more of their news from magazines than those who didn’t find a story: $t(62) = -2.76, p < .01, R^2 = .11$. Those who read more news magazines consumed more news overall, as frequency of receiving news from magazines was significantly positively correlated with frequency of receiving news from all other media measured, but the two groups (those who found a story on Facebook and those who did not) did not differ significantly on receiving news from any other sources, or from receiving more news overall.

These results indicate that participants who are more involved in sharing news have online social networks of friends who do the same, yet they are not likely to consume more news. No
demographic data could be collected for Receivers who may not have found a story but did not complete the questionnaire to indicate this. Likewise, no demographic data are available for Messengers who quit the study upon being asked to add the researcher as a Facebook friend or share a news story, and thus cannot be compared to those who completed these tasks.

**Descriptive results**

**News reading habits**

All participants were asked to rate how often (1 = Never – 7 = Frequently) they get their news from various sources: television, newspapers, radio, magazines, the Internet, mobile applications (“apps”), social media, and personal communication. Of these, the Internet was the most popular source for news ($M = 6.00$, $SD = 1.36$) while mobile apps were the least popular ($M = 3.07$, $SD = 2.34$). See Table 4-4 for all results.

Table 4-4. Frequency of various media use for news.

<table>
<thead>
<tr>
<th>News Source</th>
<th>$M$</th>
<th>$(SD)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet</td>
<td>6.00</td>
<td>(1.36)</td>
</tr>
<tr>
<td>Personal Communication</td>
<td>5.30</td>
<td>(1.35)</td>
</tr>
<tr>
<td>Social Media</td>
<td>5.12</td>
<td>(1.82)</td>
</tr>
<tr>
<td>Newspapers</td>
<td>4.23</td>
<td>(2.04)</td>
</tr>
<tr>
<td>Television</td>
<td>4.17</td>
<td>(2.14)</td>
</tr>
<tr>
<td>Radio</td>
<td>3.61</td>
<td>(1.98)</td>
</tr>
<tr>
<td>Magazines</td>
<td>3.25</td>
<td>(1.85)</td>
</tr>
<tr>
<td>Mobile apps</td>
<td>3.07</td>
<td>(2.34)</td>
</tr>
</tbody>
</table>
Because the sample included students ($M_{age} = 23.15, SD = 5.37$) and non-students ($M_{age} = 36.55, SD = 10.72$) who differed significantly in age ($t(244) = -13.08, p < .001, R^2 = .41$), these distributions were analyzed for each group separately to assess whether the younger students rely on certain news sources more than their older non-student counterpart, and whether one group shares news online more often. Students turned to the radio for news significantly less than the non-students, $t(243) = -5.97, p < .001, R^2 = .13$, and also used the Internet significantly less for news than the non-students, $t(244) = -2.45, p < .05, R^2 = .02$. However, students used mobile apps for the news significantly more often than non-students, $t(244) = 2.37, p < .05, R^2 = .02$. In terms of sharing news online, non-students did so significantly more often than students: $t(245) = -2.89, p < .01, R^2 = .03$. Comparisons between groups for each source can be seen in Figure 4-1.

Figure 4-1. News sources for students and non-students.
**Facebook use**

Overall, participants were very active Facebook members ($M = 6.48$ on 1-7 scale of use, $SD = 1.07$) and had a high involvement in the site (Facebook intensity $M = 5.35$, $SD = 1.21$). Each time participants logged in to Facebook, they spent an average of 15 minutes on the site (median; $SD = 33.95$) and this number ranged from three minutes to three hours for each session. Nearly all participants (98%) had been on Facebook for at least one year, and the majority (76%) had been using it for at least three years. On average, participants had 400 friends (median, $SD = 336.44$), though this number ranged widely from 31 friends to over 1,000 friends. Individuals participated actively in most regular Facebook activities, as measured on a 1-7 scale, shown in Table 4-5.

<table>
<thead>
<tr>
<th>Facebook Activity</th>
<th>$M$</th>
<th>$(SD)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Like” a friend’s post</td>
<td>5.81</td>
<td>(1.41)</td>
</tr>
<tr>
<td>Comment on a friend’s post</td>
<td>5.60</td>
<td>(1.25)</td>
</tr>
<tr>
<td>Post a status update</td>
<td>4.89</td>
<td>(1.67)</td>
</tr>
<tr>
<td>Send a private message to friends</td>
<td>4.36</td>
<td>(1.48)</td>
</tr>
<tr>
<td>Upload photos</td>
<td>4.12</td>
<td>(1.84)</td>
</tr>
<tr>
<td>Post a link to a website (other than news)</td>
<td>4.07</td>
<td>(1.74)</td>
</tr>
<tr>
<td>Post a link to a news story</td>
<td>3.54</td>
<td>(1.70)</td>
</tr>
<tr>
<td>Tag friends in a post</td>
<td>3.02</td>
<td>(1.64)</td>
</tr>
<tr>
<td>Play games</td>
<td>2.45</td>
<td>(2.03)</td>
</tr>
<tr>
<td>Upload videos</td>
<td>2.22</td>
<td>(1.52)</td>
</tr>
</tbody>
</table>

As with media use, students and non-students were analyzed for any differences in their Facebook use. The student participants had significantly more Facebook friends than the non-
students \((t(244) = 5.95, p < .001, R^2 = .13)\), had used Facebook for significantly longer than the non-students \((X^2(3, N = 246) = 17.48, p < .001, R^2 = .03)\), and spent more time on Facebook each time they logged in, \((t(244) = 1.90, p = .06, R^2 = .01)\). However, while students were significantly more likely to tag their friends in a post \((t(244) = 4.11, p < .001, R^2 = .06)\), non-students were significantly more likely to post a link to a news story \((t(243) = -2.22, p < .05, R^2 = .02)\), send a private message to friends \((t(244) = -3.43, p < .001, R^2 = .05)\), comment on a friend’s post \((t(244) = -2.30, p < .05, R^2 = .02)\), upload photos \((t(243) = -2.83, p < .01, R^2 = .03)\), and play games \((t(244) = -2.10, p < .05, R^2 = .02)\).

**News stories selected**

Participants had some freedom in choosing the CNN story they read, although the circumstances were slightly different for participants in each of the three roles (Messenger, Receiver, Control). Messengers were asked to find a story to read and share on Facebook, while those in the control group could select any story of interest without the extra consideration of what to share on Facebook, and Receivers were limited to those stories they found on Facebook. For all participants, stories from CNN’s World and U.S. categories were most popular. Messengers selected news equally from these two categories. Those who selected a story to read on Facebook selected U.S. stories more often, whereas those who selected a story to read on CNN tended to select World stories more often. Overall, those news stories shared on Facebook were from a greater variety of categories than those read on CNN’s website, as seen in Table 4-6. These results differ from those of the content analysis done by Baresh, et al. (2011) which found that the most popular topics shared were sports/art/entertainment (40% of all links shared).
Table 4-6. Percentage of news stories in each content area read by participants in each role

<table>
<thead>
<tr>
<th>Category</th>
<th>Shared on Facebook (Messengers)</th>
<th>Found on Facebook (Receivers)</th>
<th>Found and read on CNN (Control)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business</td>
<td>.5%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Entertainment</td>
<td>10.3%</td>
<td>6.7%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Health</td>
<td>7.5%</td>
<td>6.7%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Justice</td>
<td>8.9%</td>
<td>3.3%</td>
<td>17.7%</td>
</tr>
<tr>
<td>Living</td>
<td>.9%</td>
<td>3.3%</td>
<td>--</td>
</tr>
<tr>
<td>Money</td>
<td>4.7%</td>
<td>3.3%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Opinion</td>
<td>.5%</td>
<td>3.3%</td>
<td>--</td>
</tr>
<tr>
<td>Politics</td>
<td>6.5%</td>
<td>6.7%</td>
<td>11.8%</td>
</tr>
<tr>
<td>Sports</td>
<td>1.4%</td>
<td>--</td>
<td>2.9%</td>
</tr>
<tr>
<td>Tech</td>
<td>11.2%</td>
<td>10.0%</td>
<td>--</td>
</tr>
<tr>
<td>Travel</td>
<td>5.6%</td>
<td>3.3%</td>
<td>5.9%</td>
</tr>
<tr>
<td>U.S.</td>
<td>15.9%</td>
<td>33.3%</td>
<td>17.7%</td>
</tr>
<tr>
<td>World</td>
<td>17.3%</td>
<td>16.7%</td>
<td>35.3%</td>
</tr>
<tr>
<td>(Other News)</td>
<td>7.5%</td>
<td>3.3%</td>
<td>--</td>
</tr>
</tbody>
</table>

**Feedback received**

Messengers were asked in the follow-up questionnaire how many likes and comments they received, as well as how many of those comments were made by them, how many were made by the friend on whose wall they posted the story (if applicable) and how many were made by friends they tagged (if applicable). Overall, Messengers did not receive many likes in response to their news story posts ($M = .45, SD = 1.01$), with 73% receiving none at all, 19% receiving only one, and just eight percent receiving two to six likes. The number of comments (or replies in
the case of those who sent the story by direct message) received were more varied ($M = 1.45$, $SD = 2.71$) but 51% received no comments at all, and the rest received two or more comments, up to 18 comments. On average, 59% ($SD = .40$) of the comments made about a news story posted on a friend’s wall were made by that friend to whose wall the story was posted. For the posts in which friends were tagged, about 62% ($SD = .41$) of the resulting comments came from the tagged friends. Across all Messenger conditions, 26% ($SD = .53$) of the comments made on the news story post were made by the Messenger him/herself.

Recorded observations of the actual comments received could only be made for those Messengers in the News Feed condition, as their posts were visible on their own public wall. In the News Feed condition, 27 (of 54, i.e., 50% of) Messengers indicated that they did receive comments on their post. In observation, comments were found and recorded for 26 (96%) of these participants, providing a nearly perfect sample of all comments made in this condition. In the Wall Post condition 48% said they received comments, and in the Direct Message condition 47% said they received comments. These differences between the conditions were not significant: $X^2(2, N = 136) = .08, p = .96$. However, in comparing the number of comments Messengers stated that they received in each condition, those in the News Feed condition received significantly more comments than those in the Direct Message condition (Wall Post condition did not differ from either), $F(2, 133) = 3.55, p < .05, R^2 = .05$ (see Table 4-7).

Table 4-7. Average number of comments received in each Messenger condition, $M$ ($SD$).

<table>
<thead>
<tr>
<th></th>
<th>News Feed</th>
<th>Wall Post</th>
<th>Direct Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>No comment</td>
<td>.08 (.29)</td>
<td>1.13 (1.73)</td>
<td>.86 (1.66)</td>
</tr>
<tr>
<td>Opinion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without tag</td>
<td>1.09 (1.38)</td>
<td>1.14 (1.86)</td>
<td>.75 (.71)</td>
</tr>
<tr>
<td>With tag</td>
<td>2.33 (2.34)</td>
<td>1.00 (1.94)</td>
<td>--</td>
</tr>
<tr>
<td>Question</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without tag</td>
<td>2.61 (2.79)</td>
<td>1.06 (1.49)</td>
<td>.77 (.93)</td>
</tr>
<tr>
<td>With tag</td>
<td>4.75 (6.55)</td>
<td>1.11 (1.90)</td>
<td>--</td>
</tr>
</tbody>
</table>
According to the Messengers’ ratings of the comments received, they were generally favorable, though moderately superficial (see Table 4-8). However, perceptions of comments received differed significantly across the three broadcasting conditions. Comments received in the Direct Message condition were considered less relevant \((F(2, 79) = 20.36, \ p < .001, \ R^2 = .34)\), less thoughtful \((F(2, 79) = 6.68, \ p < .01, \ R^2 = .14)\), and less engaging \((F(2, 77) = 5.15, \ p < .01, \ R^2 = .12)\) than in the other conditions. Thus, the sample of comments recorded from the News Feed condition may not be representative of those received in the Direct Message condition.

Table 4-8. Average rating of adjectives describing comments received.

<table>
<thead>
<tr>
<th>Description of comments</th>
<th>News Feed</th>
<th>Wall Post</th>
<th>Direct Message</th>
<th>Overall (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevant</td>
<td>6.29\textsubscript{A}</td>
<td>5.96\textsubscript{A}</td>
<td>4.09\textsubscript{B}</td>
<td>5.34 (1.74)</td>
</tr>
<tr>
<td>Thoughtful</td>
<td>4.78\textsubscript{AB}</td>
<td>5.39\textsubscript{A}</td>
<td>3.84\textsubscript{B}</td>
<td>4.59 (1.69)</td>
</tr>
<tr>
<td>Engaging</td>
<td>4.96\textsubscript{A}</td>
<td>5.05\textsubscript{A}</td>
<td>3.81\textsubscript{B}</td>
<td>4.54 (1.71)</td>
</tr>
<tr>
<td>Superficial</td>
<td>3.67\textsubscript{A}</td>
<td>3.49\textsubscript{A}</td>
<td>3.52\textsubscript{A}</td>
<td>3.56 (1.73)</td>
</tr>
</tbody>
</table>

*Note.* Means with different subscripts within a row differ significantly, \(p < .05\)

The 26 Messengers whose comments were recorded received a combined total of 92 comments. Although a full content analysis on these comments is beyond the scope of this study, the comments were coded roughly for focus of the comment: the story’s content, the Messenger, curiosity about the post being made, or other matters. About 62% of the comments were related to the story content, although they ranged greatly in length and sentiment from comments as short and generic as “OMG that is horrible. 😞” to those that were several sentences in length analyzing the factual details of the story. About 10% were related to the person who posted the story, mostly teasing remarks, with just one comment expressing surprise at the Messenger’s interest in the topic they shared a story about. Interestingly, only on one story did the comments (4% of
total) bring up who was tagged and why, which developed into a thread of its own. On none of the other stories posted did anyone question the story, who was tagged, or any comments made by the Messenger. The remaining 24% of comments were about various things, such as other people and unrelated topics. Generally, the comments appeared to be most thoughtful when the Messenger asked a question, even as simple as “thoughts?” which was the extent of the question asked in many of the posts. Comments were rated equally thoughtful and engaging across the Elaboration conditions, but they were rated as significantly more relevant by those Messengers who asked a question than those who posted no comment at all, \( F(2, 79) = 3.28, p < .05, R^2 = .08 \). Thus, less than two-thirds of the comments made were relevant to the new story specifically, but Messengers still viewed them as fairly favorable overall. Based on the similarities between the News Feed and Wall Post conditions, it is likely that the nature of the comments were similar for the stories posted on a friend’s wall, which could not be observed. However, the nature of the comments made in response to stories sent by direct message are unknown, though it is clear that less comments were received, and that they were perceived as generally less favorable.

**Condition comparisons**

Although participants were placed in one of 17 conditions that differed systematically on independent variables, there are a number of complex similarities and differences across conditions that may lead to various outcomes as well. For instance, while Messengers share a story and Receivers find a shared story, both Messengers in the Wall Post condition and Receivers must go specifically to a friend’s wall to discuss a news story. Thus, these two conditions share an experience that other conditions do not. Likewise while those in the control condition differed from all experimental conditions in the use of Facebook, they had a news story selection experience similar to the Messengers who selected a story from CNN’s website, but not
to Receivers, who selected the story from a sample of stories found on Facebook. Given the many possible cross-comparisons that are not tested by the hypotheses, Table 4-9 provides the descriptive statistics (means and standard deviations) for all conditions on all psychological outcome variables.
Table 4-9. Means and standard deviations for all conditions on psychological outcomes.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Informed</th>
<th>Want to know more</th>
<th>Interest</th>
<th>Involvement</th>
<th>Liking</th>
<th>Credibility</th>
<th>Quality</th>
<th>Representativeness</th>
<th>Empowerment</th>
<th>Agency</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>M: NF/NC/NT</td>
<td>5.46 (.105)</td>
<td>5.54 (.88)</td>
<td>5.77 (.93)</td>
<td>4.14 (1.85)</td>
<td>3.72 (1.36)</td>
<td>4.85 (1.21)</td>
<td>5.02 (.96)</td>
<td>5.26 (1.22)</td>
<td>6.79 (.74)</td>
<td>7.18 (1.01)</td>
<td>6.65 (.94)</td>
</tr>
<tr>
<td>M: NF/O/NT</td>
<td>5.20 (1.15)</td>
<td>4.73 (1.22)</td>
<td>5.07 (1.16)</td>
<td>3.67 (1.09)</td>
<td>3.64 (1.06)</td>
<td>4.73 (.99)</td>
<td>4.60 (1.14)</td>
<td>4.23 (1.71)</td>
<td>6.65 (1.25)</td>
<td>7.06 (1.38)</td>
<td>6.45 (.87)</td>
</tr>
<tr>
<td>M: NF/O/T</td>
<td>5.25 (1.16)</td>
<td>4.75 (1.49)</td>
<td>5.00 (1.60)</td>
<td>3.58 (1.50)</td>
<td>4.33 (1.34)</td>
<td>4.55 (.72)</td>
<td>4.73 (1.16)</td>
<td>4.50 (.68)</td>
<td>6.73 (.73)</td>
<td>7.31 (1.09)</td>
<td>6.97 (.92)</td>
</tr>
<tr>
<td>M: NF/Q/NT</td>
<td>5.44 (.92)</td>
<td>4.72 (1.27)</td>
<td>5.17 (.99)</td>
<td>3.84 (1.46)</td>
<td>4.10 (.91)</td>
<td>4.96 (.94)</td>
<td>4.92 (.84)</td>
<td>4.48 (1.44)</td>
<td>7.09 (1.15)</td>
<td>7.36 (1.19)</td>
<td>6.66 (1.15)</td>
</tr>
<tr>
<td>M: NF/Q/T</td>
<td>5.33 (1.50)</td>
<td>4.92 (1.44)</td>
<td>5.33 (1.30)</td>
<td>4.08 (1.51)</td>
<td>4.05 (1.19)</td>
<td>4.48 (.67)</td>
<td>4.62 (.94)</td>
<td>4.78 (1.20)</td>
<td>6.80 (1.52)</td>
<td>7.18 (1.66)</td>
<td>6.96 (1.02)</td>
</tr>
<tr>
<td>M: WP/NC/NT</td>
<td>5.27 (1.39)</td>
<td>5.33 (1.11)</td>
<td>5.47 (1.19)</td>
<td>4.29 (1.63)</td>
<td>4.47 (.82)</td>
<td>4.97 (1.02)</td>
<td>4.78 (.78)</td>
<td>4.69 (1.14)</td>
<td>7.05 (1.36)</td>
<td>7.13 (1.51)</td>
<td>6.90 (1.22)</td>
</tr>
<tr>
<td>M: WP/O/NT</td>
<td>5.40 (.83)</td>
<td>4.53 (1.64)</td>
<td>5.13 (1.73)</td>
<td>3.34 (1.55)</td>
<td>3.99 (.93)</td>
<td>5.01 (1.22)</td>
<td>5.11 (.88)</td>
<td>4.21 (1.61)</td>
<td>7.18 (1.02)</td>
<td>7.49 (.82)</td>
<td>6.90 (.77)</td>
</tr>
<tr>
<td>M: WP/O/T</td>
<td>5.36 (1.12)</td>
<td>4.45 (1.37)</td>
<td>5.36 (1.57)</td>
<td>3.16 (1.02)</td>
<td>4.05 (1.19)</td>
<td>4.69 (1.19)</td>
<td>4.45 (.91)</td>
<td>4.02 (1.58)</td>
<td>6.89 (.79)</td>
<td>7.26 (.83)</td>
<td>6.97 (.74)</td>
</tr>
<tr>
<td>M: WP/Q/NT</td>
<td>5.94 (.83)</td>
<td>5.82 (1.38)</td>
<td>6.12 (.93)</td>
<td>4.81 (1.26)</td>
<td>4.38 (1.15)</td>
<td>5.59 (.84)</td>
<td>5.19 (1.08)</td>
<td>5.40 (1.09)</td>
<td>7.15 (.80)</td>
<td>7.91 (.87)</td>
<td>7.21 (.85)</td>
</tr>
<tr>
<td>Condition</td>
<td>Mean</td>
<td>SD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M: WP/Q/T</td>
<td>5.38 (.77)</td>
<td>5.31 (.95)</td>
<td>5.42 (.90)</td>
<td>4.40 (.98)</td>
<td>4.22 (1.16)</td>
<td>4.88 (.66)</td>
<td>5.23 (.72)</td>
<td>5.15 (1.23)</td>
<td>7.29 (.82)</td>
<td>7.79 (1.09)</td>
<td>7.04 (.97)</td>
</tr>
<tr>
<td>M: DM/NC</td>
<td>5.29 (.77)</td>
<td>4.71 (1.31)</td>
<td>5.18 (1.38)</td>
<td>3.96 (1.19)</td>
<td>3.95 (.89)</td>
<td>5.01 (1.10)</td>
<td>5.11 (1.05)</td>
<td>4.60 (1.07)</td>
<td>7.30 (1.08)</td>
<td>8.03 (1.04)</td>
<td>7.12 (.98)</td>
</tr>
<tr>
<td>M: DM/O</td>
<td>5.19 (1.64)</td>
<td>4.63 (1.71)</td>
<td>5.00 (1.46)</td>
<td>4.20 (1.89)</td>
<td>3.66 (.90)</td>
<td>5.33 (1.28)</td>
<td>5.13 (1.31)</td>
<td>4.69 (1.86)</td>
<td>7.20 (.87)</td>
<td>7.56 (.96)</td>
<td>6.99 (.95)</td>
</tr>
<tr>
<td>M: DM/Q</td>
<td>4.50 (1.51)</td>
<td>4.71 (1.20)</td>
<td>4.93 (1.07)</td>
<td>3.84 (1.45)</td>
<td>3.76 (1.34)</td>
<td>4.14 (1.32)</td>
<td>4.23 (1.27)</td>
<td>4.59 (1.15)</td>
<td>6.99 (.95)</td>
<td>7.43 (1.10)</td>
<td>6.73 (.82)</td>
</tr>
<tr>
<td>Read</td>
<td>5.73 (.88)</td>
<td>4.53 (1.51)</td>
<td>4.6 (1.50)</td>
<td>3.76 (1.60)</td>
<td>3.93 (1.26)</td>
<td>5.43 (1.03)</td>
<td>5.40 (1.24)</td>
<td>4.35 (.88)</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Recommend</td>
<td>5.64 (.92)</td>
<td>5.09 (1.64)</td>
<td>5.45 (1.51)</td>
<td>3.78 (1.44)</td>
<td>4.27 (1.34)</td>
<td>5.32 (1.09)</td>
<td>5.08 (.81)</td>
<td>4.91 (1.07)</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Discuss</td>
<td>5.43 (.79)</td>
<td>4.86 (1.77)</td>
<td>5.14 (1.35)</td>
<td>3.91 (1.36)</td>
<td>4.17 (1.31)</td>
<td>5.06 (.88)</td>
<td>4.91 (1.60)</td>
<td>4.63 (1.30)</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Control</td>
<td>5.58 (1.00)</td>
<td>4.91 (1.38)</td>
<td>5.45 (1.18)</td>
<td>4.36 (1.35)</td>
<td>3.49 (.78)</td>
<td>5.26 (.94)</td>
<td>4.97 (1.06)</td>
<td>5.25 (.91)</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

**Notes.** For Messenger (M) conditions: NF = News Feed, WP = Wall Post, DM = Direct Message, NC = No Comment, O = Opinion, Q = Question, NT = No Tag, T = Tag. All measures are taken at Time 1. Informed, Interest, Know More, and Involvement were measured on 7-point scales. Empowerment, Agency, and Community were measured on 9-point scales. Empowerment, Agency, and Community were not measured for Receiver or Control conditions.
Hypothesis Testing

Although the student and non-student groups differed in several ways regarding their media and Facebook use, the two groups did not differ significantly on the psychological outcomes posed in the hypotheses: interest in the topic (Interest), feeling informed about the topic (Informed), wanting to know more about the topic (Know More), involvement in the story (Involvement), sense of influence (Empowerment), sense of community (Community), or sense of agency (Agency). Student status also did not act as a significant moderator for the effects of the independent variables (Broadcast Level, Elaboration, Involving Friends) on these outcomes. Therefore, the following analyses include the full sample of participants.

Hypothesis 1 stated that sharing a news story on Facebook through status updates will lead Messengers to feel greater involvement in the content of the news story compared to only reading the news story. To test this, Messengers were compared to the control group on Involvement in an ANOVA, controlling for gender, age, their previous familiarity with the topic, how often they share news, all the sources from which they normally get news, how often they use Facebook, Facebook Intensity, and how often they participate in all of the Facebook activities measured. No significant effect was found on Involvement by their role in the news story: \( F(1, 171) = 1.08, p = .30 \). However, testing the effect on Involvement at Time 2 produced a significant result, \( F(1, 130) = 3.96, p < .05, \omega^2 = .02 \), with those in the Messenger condition feeling significantly more involved in the story one week later (\( M = 3.46 \)) than those in the control group (\( M = 2.92 \)). Thus, Hypothesis 1 is partially supported. The MANOVA also assessed if the number of
comments and “likes” received during that week by the Messengers had a significant effect on 
Involvement, but neither did, indicating that these are not the cause of tempering the decline in 
involvement over the week. ANOVA with the same control variables was also used to test the 
effect of role in the story (Messenger vs. Control) on how interested they felt in the topic 
(Interest), how informed they felt about the topic (Informed), and if they wanted to know more 
about the topic (Know More), but these also did not yield significant results.

**Messengers**

Hypotheses 2 – 4 and Research Question 1 refered specifically to the Messengers in this 
study and are tested only with these participants. Hypothesis 2a states that receiving comments on 
shared content will lead Messengers to feel a greater sense of influence (Empowerment) than not 
receiving comments on shared content, by way of feeling a sense of community (Community) 
and Hypothesis 2b states that receiving recommendations on shared content will lead Messengers 
to feel a greater sense of influence than not receiving recommendations on shared content, by way 
of feeling a sense of agency (Agency). A repeated-measures MANOVA was run using all 
Messengers to test whether the number of comments received by Facebook friends over the week, 
the number of comments made by the Messenger in that time, or the ratings of the comments 
(Relevant, Thoughtful, Engaging, and Superficial) had an effect on the change in Empowerment 
from Time 1 to Time 2. The results indicate that Empowerment did not change significantly from 
Time 1 to Time 2: $F(1, 73) = .57, p = .45$. Furthermore, there were no significant interactions 
with number of comments, comments made by the Messenger, or comment ratings. The same test 
was run with Agency at Time 1 and at Time 2 and showed no significant results: $F(1, 73) = 1.00, 
p = .32$, and no significant interactions with the other variables. Likewise, there was no
significant change in Community from Time to Time 2: $F(1, 73) = .36, p = .55$, and no significant interactions with the comment measures. These results do not show support for H2a.

Recommendations in the form of “likes” could only be received by the Messengers in the Wall Post and News Feed conditions since there is no such option in the Direct Message condition. Furthermore, participants in the Wall Post and News Feed conditions reported on the number of comments that were visible in response to their post whereas those in the Direct Message condition reported on the number of replies they received as private messages in response to their private message. To test Hypothesis 2b and to test for any possible differences in the comment effects between these Messenger groups, MANOVAs were run again on these groups separately. For the test of H2b, MANOVAs were run again only for those in the Wall Post and News Feed conditions using comments measures, and also a measure of the number likes received, but showed no significant effects of Time on Empowerment ($F(1, 41) = .62, p = .44$), Agency ($F(1, 41) = .61, p = .44$), or Community ($F(1, 41) = 1.08, p = .30$), or any of the interactions with the comment or like measures. Therefore, H2b is not supported.

Hypotheses 3a and 3b stated that sharing a news story on Facebook with a comment or question will lead to greater involvement in the content of the news story compared to posting the news story without an opinion or question. To test these hypotheses, an ANOVA was run, controlling for gender, age, their previous familiarity with the topic, how often they share news, all the sources from which they normally get news, how often they use Facebook, Facebook Intensity, and how often they participate in all of the Facebook activities measured. Elaboration had a significant effect on Involvement: $F(2, 142) = 4.50, p < .05, \eta^2 = .02$, such that those who asked a question about the news story in their post felt significantly greater involvement ($M = 4.33$) than those who posted their opinion about the story in their post ($M = 3.55$). Those who made no comment in their post about the news story did not differ significantly from the other groups (see Figure 4-2). This finding provides no support for Hypotheses 3a, which proposed that
posting an opinion would lead to greater involvement than posting no comment, and provides weak support for 3b, which states that posting a question will lead to higher involvement than posting no comment.

Figure 4-2. Effects of Elaboration on Involvement with significantly different conditions circled.

Hypothesis 3c stated that sharing a news story on Facebook with either a comment or question will lead Messengers to feel a greater sense of influence (Empowerment) than sharing the news story without a comment or question, by way of feeling a sense of agency (Agency). This hypothesis was tested using an ANOVA with the same control variables included for Hypotheses 3a and 3b. First, the effect of Elaboration was tested on Empowerment, which did not produce a significant result: $F(2, 143) = .68, p = .51$. Next, the effect of Elaboration on Agency was tested with an ANOVA using the same control variables, but the results were not significant: $F(2, 143) = 1.16, p = .32$. Therefore, Hypothesis 3c is not supported.

Hypothesis 4a stated that tagging friends (Involving Friends) in the news story post would lead to greater involvement in the story compared to not tagging friends. Tagging is not an available feature for those in the Direct Message condition, and there were no News Feed or Wall Post conditions in which participants tagged friends but not also make a comment, so the
following analysis was run only for those in the News Feed and Wall Post conditions who also included an opinion or question in their post. An ANOVA was conducted with the same control variables as used in previous hypotheses (gender, age, their previous familiarity with the topic, how often they share news, all the sources from which they normally get news, how often they use Facebook, Facebook Intensity, and how often they participate in all of the Facebook activities measured) to test for an effect of Involving Friends on Involvement. Involving Friends did not have a significant impact on Involvement in the news story: $F(1, 74) = .01, p = .91$. Hypothesis 4a is therefore not supported.

Similar to Hypothesis 3c, Hypothesis 4b stated that tagging friends (Involving Friends) in the post when sharing a news story on Facebook should lead Messengers to feel a greater sense of influence (Empowerment) than not tagging friends, in this case by way of feeling a sense of community (Community). Again, an ANOVA was run with the same control variables to test the effects of Involving Friends, this time on Empowerment. Tagging had no significant effect on Empowerment: $F(1, 74) = .08, p = .78$. Involving Friends was tested with an ANOVA for its effects on Community, and the results show a trend toward significance: $F(1, 74) = 2.74, p = .10$, with those who tagged their friends feeling a higher sense of community ($M = 7.00$) than those who did not tag their friends ($M = 6.87$). These results indicate that Hypothesis 4b is largely unsupported, though there is a weak effect on sense of community.

To further explore the outcomes of Involving Friends, an ANOVA with the same control variables was run with Agency as an outcome, but did not have a significant effect: $F(1, 74) = .04, p = .85$. To test the possible interaction between Elaboration and Involving Friends on Involvement, Empowerment, Agency, and Community, a 2 (Elaboration: Opinion or Comment) x 2 (Involving Friends: Tag or No tag) factorial ANOVA was run with all previous control variables, but no significant interactions were found.
Broadcast levels research question

The research question asked what the possible effects may be of the various levels of broadcasting (Broadcast Level) on the outcomes of sharing news stories on Facebook. To test this research question regarding Broadcast Level, Elaboration, and Involving Friends, those in the Direct Message and No Comment conditions were excluded to yield a 2 (Broadcast Level: Wall Post or News Feed) x 2 (Elaboration: Question or Comment) x 2 (Involving Friends: Tag or No tag) factorial ANOVA, run with all prior control variables on Time 1 measures of Involvement, Empowerment, Community, Agency, news story perceptions (Liking, Representativeness, Quality, and Credibility), and the three measures that ask how informed they feel about the topic (Informed), how interested they are in the topic (Interest), and if they want to learn more about the topic (Know More). Broadcast Level had a significant main effect on Credibility, \( F(1, 68) = 10.63, \ p < .01, \eta^2 = .08 \), such that those in the Wall Post condition rated the story significantly more credible (\( M = 5.09 \)) than those in the News Feed condition (\( M = 4.74 \)). Broadcast Level also had a significant main effect on perceptions of Quality: \( F(1, 68) = 7.12, \ p < .01, \eta^2 = .07 \). Those in the Wall Post condition found the news story to be of significantly higher quality (\( M = 5.06 \)) than those in the News Feed condition (\( M = 4.71 \)). Broadcast Level’s effect on Representativeness approached significance, \( F(1, 68) = 3.52, \ p = .06 \), with those in the Wall Post condition rating the story as more representative (\( M = 4.71 \)) than those in the News Feed condition (\( M = 4.45 \)).

The analysis revealed a significant two-way interaction between Broadcast Level and Involving Friends on Community: \( F(1, 68) = 5.79, \ p < .05, \eta^2 = .04 \). As shown in Figure 4-3, tagging friends did not make a difference in feeling a sense of community for those who posted the news story on a friend’s wall, but for those who posted it on their own news feed, those who did not tag friends felt a significantly lower sense of community that those who did tag friends.
Another two-way interaction between Broadcast Level and Elaboration on wanting to know more about the story, approached significance: $F(1, 68) = 3.10, p = .08$. As shown in Figure 4-4, for those who asked a question about their news story, they were more interested in knowing more about the topic if they had posted the story on a friend’s wall.
The analysis also yielded a three-way Broadcast Level x Elaboration x Involving Friends interaction on Quality that approached significance: $F(1, 68) = 3.88$, $p = .05$. As shown in Figure 4-5, for those in the News Feed condition, those who posted an opinion about the story found the story to be of higher quality when they tagged friends, while those who asked a question found the story to be of higher quality when they did not tag friends. In the Wall Post condition, the opposite was true, though there was a greater difference between tagging and not tagging for those who posted an opinion with their story than for those who posted a question with their story.

![Figure 4-5. Three-way Broadcast x Elaboration x Involving Friends interaction on Quality.](image)

To further assess potential Broadcast Level effects also including the Direct Message conditions and No Comment conditions, which could not be tested when assessing Involving Friends, a 3 (Broadcast Level: Direct Message, Wall Post, or News Feed) x 3 (Elaboration: Opinion, Question, or No Comment) factorial ANOVA with all control variables was run on the following indices: Involvement, Empowerment, Community, and Agency; as well the news story perceptions of Credibility, Liking, Quality, and Representativeness; and the Informed, Interest, and Know More measures.
Broadcast Level had a significant main effect only on Liking: $F(2, 135) = 3.86$, $p < .05$, $\eta^2 = .05$, such that those who posted the story on a friend’s wall (Wall Post) liked the story significantly more ($M = 4.24$) than those who posted the story on their own news feed (News Feed; $M = 3.86$), while those who sent the story via direct message did not differ from either of the other two conditions ($M = 3.85$). See Figure 4-6. The effect of Broadcast Level on Credibility was also trending toward significance, $F(2, 135) = 2.89$, $p = .06$, with those in the Wall Post condition finding the story more credible ($M = 5.06$) than those in the Direct Message condition ($M = 4.89$) and those in the News Feed condition ($M = 4.73$).

![Figure 4-6. Effects of Broadcast level on Liking with significantly different conditions circled.](image)

**Receivers**

*Commenting and recommending effects*

Hypotheses 5a and 5b stated that commenting on a news story shared on Facebook by a Messenger will lead the Discussant to feel more informed about and more involved in the news content, compared to only reading the news story. To test this, the three Receiver conditions (Reader, Discussant, and Recommender) were compared in a one-way ANOVA for their effect
on Involvement, how informed they feel about the topic (Informed), and also how interested they are in the topic (Interest), and if they would like to know more about the topic (Know More).

Control variables included gender, age, sources from which they normally get news, frequency of Facebook use, Facebook Intensity, how often they comment on or like a Facebook post, and how representative they perceived the story to be of what that friend usually posts. The effect of Receiver condition on Informed was not significant, \(F(2, 12) = 2.03, p = .17\). There was also no significant effect of Receiver condition on Involvement: \(F(2, 12) = 1.40, p = .28\). Therefore, neither Hypothesis 5a nor hypothesis 5b received support.

Hypotheses 6a – 6d stated that viewing others’ comments along with the posted news story will lead the Receiver to feel more informed about, more involved in, more likely to comment on, and more likely to repost the news story, compared to only reading the story. To test whether seeing others’ comments caused Receivers to feel more informed about and involved in the topic, Informed and Involvement were regressed on Number of Comments (seen at the time of finding the story), with gender, how often they use Facebook, and how often they get news from various sources as control variables. Number of Comments did not have a significant effect on Informed, \(\beta = -.31, t(13) = -1.46, p = .17\), providing no support for Hypothesis 6a. Number of Comments did not have a significant effect on Involvement, \(\beta = -.05, t(13) = -.19, p = .85\). This finding does not provide support for Hypothesis 6b. Only Discussants were instructed to comment, but some Discussants failed to leave a comment, while some in the other two Receiver conditions did leave a comment even though not instructed to do so, so all Receivers were used to test effects of commenting behavior. Logistic regression was used to test whether Number of Comments affected their commenting behavior, but there was no significant effect: \(\chi^2(1, N = 41) = .00, p = 1.00\), providing no support for Hypothesis 6c. Logistic regression was also used to test the effect of Number of Comments on whether participants reposted the story, but yielded no significant result: \(\chi^2(1, N = 16) = .00, p = 1.00\), providing no support for Hypothesis 6d. Number
of comments was also tested for its effects on Informed, Interest, and Know More, but did not have a significant effect on any of these measures.

Similarly, Hypotheses 8a and 8b stated that the higher the number of recommendations (Number of Likes) posted in response to a news story link shared by a Messenger, the greater the likelihood that other readers will follow the link and read more of the news story, and the greater the reader’s involvement in the story. Logistic regression was used to test the effect of Number of Likes on whether participants followed the link to the full story. The result was not significant: $\chi^2(1, N = 30) = .00, p = 1.00$. A regression was run to test the effect of Number of Likes on Involvement, with the same control variables used for Hypotheses 6a – 6d, but did not yield a significant result: $F(1, 13) = .11, p = .74$. Thus, neither Hypothesis 8a nor 8b were supported. The same regression was also run to test effects of Number of Likes on Informed, Interest, and Know More, but did not have a significant effect on any of these outcomes either.

**News story perceptions**

Hypotheses 7a – 7d compared the perception of news stories of those who see the story on Facebook to those who see it on the news website, and are thus tested with all Receiver conditions against the control condition. A one-way ANOVA tested the effect of participant’s role (Role) on Liking, Representativeness, Quality, and Credibility, controlling for age, gender, previous familiarity with the topic, the various news sources they use, how often they share news, how often they use Facebook, and how often they post news stories on Facebook. The effect of Role on Liking was significant, $F(1, 46) = 7.93, p < .05, \eta^2 = .09$, with those in Receiver condition liking the story significantly more ($M = 4.11$) than those in the control condition ($M = 3.53$). This provides support for Hypothesis 7a.
The effect of Role on Representativeness also approached significance: $F(1, 46) = 3.91, p = .05$, but with those in the control condition finding the news story more Representative ($M = 5.19$) than those in the Receiver condition ($M = 4.55$). This effect contradicts Hypothesis 7b, which states readers will find a news story posted by Messengers on Facebook to be more representative than the same story posted on a news website.

Role did not have a significant effect on Quality: $F(1, 46) = .17, p = .68$. Therefore, support is not found for Hypothesis 7c which predicts a higher rating of quality for those in the Receiver condition. Role did not have a significant effect on Credibility either, $F(1, 46) = .10, p = .76$. Thus, hypothesis 7d, which predicted that Receivers would find the story less credible than those reading the story on a news site, is also not supported.

**Confirmatory factor analysis**

Given the high correlations between many of the individual Involvement, Empowerment, Agency, and Community items, it was expected that the full scales for these outcomes were also highly correlated. Table 4-10 shows the correlation between the four scales as measured at Time 1, Time 2, and overall scores averaged over both times. The only scales not significantly correlated at any time are Involvement and Agency.

| Table 4-10. Correlations between Involvement, Empowerment, Agency, and Community scales. |
|------------------------------------------|----|----|----|----|----|----|----|----|----|----|
| 1. Involvement T1                        | -- |    |    |    |    |    |    |    |    |    |
| 2. Empowerment T1                        | .18|    |    |    |    |    |    |    |    |    |
| 3. Agency T1                             | .12| .70|    |    |    |    |    |    |    |    |
| 4. Community T1                          | .23| .61| .47|    |    |    |    |    |    |    |
| 5. Involvement T2                        | .75| .18| .13| .20|    |    |    |    |    |    |
A confirmatory factor analysis (CFA) was performed on all items from the Involvement, Empowerment, Agency, and Community scales, as measured at Time 1 (from which the most data are available). First, a Missing Values Analysis was conducted on the data. Missing data was less than 4% for each variable and results from Little’s MCAR test indicated that data was missing completely at random: $X^2(517) = 318.25, p = 1.00$. Therefore, missing values were imputed using the Expectation-Maximization algorithm to allow AMOS to produce modification indices for the model produced. Involvement, Empowerment, Agency, and Community were entered into AMOS as latent variables and their respective items were mapped as observed variables (five for Involvement, 11 for Empowerment, six for Agency, and nine for Community). All latent variables were covaried. Goodness of Fit was evaluated using the following criteria: minimum discrepancy by its root mean square error of approximation (RMSEA) < .08, comparative fit index (CFI) > .90, and standardized root mean square residual (SRMR) < .05. The original model (shown in Figure 4-7) had poor fit: $X^2 = 1363.00, df = 428, p < .001$, SRMR = .0777, CFI = .685, RMSEA = .098 (90% CI: .092-.104).
Figure 4-7. Confirmatory factor analysis: Original measurement model.
Before checking modification indices, items that did not load strongly onto their predicted factors were assessed. Empowerment items 1 – 4 and 11 loaded strongly onto the Empowerment variable (> .70) while items 5 – 10 had loadings of .55 - .65. Items 6 – 11 seemed to capture the original concept of sense of influence with measures such as “I feel that I can influence the way other people think” while items 1 – 5 measured aspects of understanding of oneself, such as “I feel that I know myself well.” Therefore, items 1 – 5 were moved to a separate factor, which resulted in better fit: $\chi^2 = 1065.278$, $df = 424$, $p < .001$, SRMR = .0681, CFI = .835, RMSEA = .081 (90% CI: .075 - .087). All items loaded strongly onto their respective factors, except for Empowerment item 5 (“I feel autonomous”) which had poor loading when tested on either factor and was dropped. Thus, Empowerment became two separate variables: Influence and Self-awareness.

The Community variable had a number of problematic items. Only items 7 and 8 had substantial loadings on the variable, while all others were low. Items 1, 7, and 8 focused more on the network as a whole (e.g., “I feel part of a larger community”), whereas items 2 – 6 and 9 accounted for relationships with specific others (e.g., “I can anticipate how some will react to certain issues I raise”), so Community was tested as two factors on these items, which did not improve model fit. The two-factor solution also did not improve poor loadings for items 1 – 6 or 9 so these items were removed, though this did not improve overall model fit: $\chi^2 = 737.127$, $df = 242$, $p < .001$, SRMR = .0686, CFI = .857, RMSEA = .095 (90% CI: .087 - .102).

The modification indices (MI) showed strong evidence for correlated residuals between Empowerment items 6 and 7: MI = 126.98. This is likely due to the very similar wording of the items: “I can motivate others to take action” and “I can motivate other people to become more involved in social issues.” Allowing these errors to covary greatly improved model fit: $\chi^2 = 571.594$, $df = 241$, $p < .001$, SRMR = .0603, CFI = .904, RMSEA = .077 (90% CI: .069 - .086). No other MIs approached such a large value, and a few with a value greater than 20 could not be
covaried across factors or did not warrant covarying on theoretically meaningful grounds. The updated model with Empowerment split into Influence and Self-awareness factors and Community reduced to three items (presented in Figure 4-8) did not achieve ideal fit on all criteria, but met acceptable fit on the CFI (.904) and RMSEA (.077).
Figure 4-8. Confirmatory factor analysis: Updated model.
**Hypothesis re-analysis**

In light of updates to the factor model, all hypotheses pertaining to Empowerment and Community outcomes were tested again with the new Self-awareness ($\alpha = .90$), Influence ($\alpha = .88$) and Community ($\alpha = .74$) scales created according to the CFA. The analyses were run again for Hypotheses 2a, 2b, 3c, 4b, and Research Question 1.

Hypothesis 2a stated that receiving comments on shared content will lead Messengers to feel a greater sense of influence than not receiving comments on shared content, by way of feeling a sense of community. As before, a repeated-measures MANOVA was run using all Messengers to test the effects of the number of comments received, the number of comments made by the Messenger, and the ratings of the comments, this time on the two new subscales of Empowerment: Influence and Self-awareness. The results indicate that Influence did not change significantly from Time 1 to Time 2: $F(1, 73) = .04, p = .84$. Self-awareness did not change significantly either, from Time 1 to Time 2: $F(1, 73) = 1.59, p = .21$. Again, there were no significant interactions with number of comments, comments made by the Messenger, or comment ratings. Finally, the same MANOVA was run to test for changes in the new Community outcome, but did not produce significant results: $F(1, 73) = .08, p = .78$, and there were no significant interactions with the other variables. Thus, Hypothesis 2a remains unsupported.

Hypothesis 2b stated that receiving recommendations on shared content will lead Messengers to feel a greater sense of influence than not receiving recommendations on shared content, by way of feeling a sense of agency. The measure of Agency was not changed, so MANOVAs were run again to test only for effects on Influence and Self-awareness for those in the Wall Post and News Feed conditions (where participants could receive “likes”) using comment measures and the measure of the number of likes received. There were no significant effects of Time on Influence ($F(1, 40) = .11, p = .74$) or Self-awareness ($F(1, 40) = .80, p = .38$),
and there were no significant interactions with the number of “likes” received. Therefore, Hypothesis 2b also remains unsupported.

Hypothesis 3c stated that sharing a news story on Facebook with either a comment or question will lead Messengers to feel a greater sense of influence than sharing the news story without a comment or question, by way of feeling a sense of agency. This hypothesis was tested again using an ANOVA with the same control variables used previously to test for the effects of Elaboration on Influence, which did not produce a significant result: $F(2, 143) = 1.07, p = .35$. The test of effects of Elaboration on Self-awareness also was not significant, $F(2, 143) = .07, p = .92$. These results provide no additional support for Hypothesis 3c.

Hypothesis 4b stated that tagging friends in the post when sharing a news story on Facebook should lead Messengers to feel a greater sense of influence than not tagging friends, by way of feeling a sense of community. An ANOVA was run again with the same control variables to test the effects of Involving Friends, this time on Influence and Self-awareness. Tagging had no significant effect on Influence, $F(1, 74) = .55, p = .46$, or Self-awareness, $F(1, 74) = .23, p = .64$. Involving Friends was tested with an ANOVA for its effects on the new Community variable, and did not produce significant results: $F(1, 74) = 1.72, p = .19$. Thus, Hypothesis 4b also remains unsupported.

The previously tested effects of Broadcast Level were also re-analyzed with the three new outcome measures. The same 2 (Broadcast Level: Wall Post or News Feed) x 2 (Elaboration: Question or Comment) x 2 (Involving Friends: Tag or No tag) factorial ANOVA was run with all prior control variables on Time 1 measures of Influence, Self-awareness, and the new Community measure. As before, the analysis revealed a significant two-way Broadcast Level by Involvement Friends interaction on Community (in this case the new measure): $F(1, 68) = 7.00, p < .05, \eta^2 = .06$. However, no significant main effects or interactions were found on Influence or Self-awareness. As before, to further assess potential Broadcast Level effects also including the Direct
Message conditions and No Comment conditions, which could not be tested when assessing Involving Friends, the same 3 (Broadcast Level: Direct Message, Wall Post, or News Feed) x 3 (Elaboration: Opinion, Question, or No Comment) factorial ANOVA with all control variables was run on Influence, Self-awareness, and the new Community measure. Broadcast Level had no significant effects or interactions with Elaboration on these new outcomes. There, no additional results were obtained regarding Broadcast Level.

**Summary**

In summary, a participant’s role in the news story (i.e., sharing it on Facebook as a Messenger compared to only reading it in the control condition) did not significantly affect their initial involvement in the story, though Messengers were still significantly more involved in the story one week later than those in the control condition. This provides some support for Hypothesis 1. Receiving comments and recommendations (“likes”) during the week after posting the story did not lead Messengers to feel a greater sense of influence, agency, or community, providing no support for Hypothesis 2a or 2b. Those who asked a question about the news story when posting it felt a significantly higher sense of involvement in the story than those who posted the story with an opinion, but neither differed significantly from posting no comment at all. This provided no support for Hypothesis 3a which predicted greater involvement for those posting an opinion than those making no comment, and only weak support for Hypothesis 3b which predicted greater involvement for those asking a question than those making no comment. Sharing the news story with a comment or question did not lead to a greater sense of influence through a sense of agency, as predicted by Hypothesis 3c. Tagging friends in their post did not have a significant effect on Messengers’ involvement, thus denying support for Hypothesis 4a. Tagging friends did not lead to a greater sense of influence either, though its effect on sense of
community approached significance. These results do not fully support Hypothesis 4b, but provide some support for effects of tagging on sense of community.

The research question about Broadcast Level revealed many interactions with the other independent variables. A significant interaction between Broadcast Level and Involving Friends on sense of community revealed that those in the News Feed condition felt a greater sense of community if they tagged friends, but those in the Wall Post condition felt an equally high sense of community whether or not they tagged friends. There was also an interaction with Elaboration on wanting to know more about the story such that those who posted on a friend’s wall indicated that they wanted to know more about the story if they asked a question instead of posting an opinion, whereas this did not make a difference if posting the story on their own news feed. A significant three-way interaction revealed that for those in the Wall Post condition who asked a question, tagging friends led them to rate the story as having higher credibility, whereas posting an opinion made the story more credible only if they did not tag friends. Largely consistent with the interaction effects, Broadcast Level had a consistent main effect on the news-story perceptions, such those who posted the news story on a friend’s wall like the story more, found it to be significantly more credible, of significantly higher quality, and more representative (approaching significance).

For Receivers (who found a news story on Facebook posted by a friend), commenting on the story did not have a significant effect on feeling informed about the topic, contrary to Hypothesis 5a. No significant effect was found between commenting on the story and feeling more involved in the story, as predicted by Hypothesis 5b. Furthermore, seeing others’ comments already posted on the story did not cause them to feel more informed about the topic or to feel more involved in the story, thus not supporting Hypothesis 6a or 6b. Seeing others’ comments also did not make them more likely to comment on or repost the story, as predicted by Hypotheses 6c and 6d. Similarly, seeing others “like” the story showed no significant effect on
likeliness to follow the link to the full story (Hypothesis 8a) or to feel more involved in the story (Hypothesis 8b). Receivers liked the news story significantly more than those in the control condition, supporting Hypothesis 7a. However, those in the control condition found the story to be more representative of news than those in the Receiver condition, an effect opposite to that predicted in Hypothesis 7b. Receivers were not found to rate the news story they read to be of significantly higher quality or lower credibility than the control condition, thus lending no support to Hypotheses 7c or 7d. Table 4-11 summarizes the results for each hypothesis and the research question.

Table 4-11. Hypothesis and research question results summary.

<table>
<thead>
<tr>
<th>Prediction</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 Sharing story → Involvement</td>
<td>Partially supported</td>
</tr>
<tr>
<td>H2a Receiving comments → Empowerment via Community</td>
<td>Not supported</td>
</tr>
<tr>
<td>H2b Receiving “likes” → Empowerment via Agency</td>
<td>Not supported</td>
</tr>
<tr>
<td>H3a Sharing story with opinion → Involvement</td>
<td>Not supported</td>
</tr>
<tr>
<td>H3b Sharing story with question → Involvement</td>
<td>Partially supported</td>
</tr>
<tr>
<td>H3c Sharing with question/opinion → Empowerment via Agency</td>
<td>Not supported</td>
</tr>
<tr>
<td>H4a Tagging friends → Involvement</td>
<td>Not supported</td>
</tr>
<tr>
<td>H4b Tagging friends → Empowerment via Community</td>
<td>Partially supported</td>
</tr>
<tr>
<td>H5a Commenting on story → Informed</td>
<td>Not supported</td>
</tr>
<tr>
<td>H5b Commenting on story → Involved</td>
<td>Not supported</td>
</tr>
<tr>
<td>H6a Seeing others’ comments → Informed</td>
<td>Not supported</td>
</tr>
<tr>
<td>H6b Seeing others’ comments → Involved</td>
<td>Not supported</td>
</tr>
<tr>
<td>H6c Seeing others’ comments → Comment on story</td>
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<tr>
<td>H6d Seeing others’ comments → Repost story</td>
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</tr>
<tr>
<td>H7a Read story on Facebook → Liking</td>
<td>Supported</td>
</tr>
<tr>
<td>H7b Read story on Facebook → Representativeness</td>
<td>Not supported</td>
</tr>
</tbody>
</table>
Additional analyses

In addition to the hypotheses tested, all pair-wise relationships between the independent variables, dependent outcomes, and measurements of likes and comments were tested for Messengers. The independent variables were dichotomized such that Broadcast Level (Where Posted) was either Direct Message or Wall Post (which combines the original Wall Post and News Feed conditions as public options), and Elaboration (Include Comment) is either no comment made with the post or any comment made (combining the “question” and “opinion” conditions). Involving Friends (Tag Friends) was originally a dichotomous variable (yes = tagged friends, no = did not tag friends), so it was unchanged. The number of likes received on the post (Number of Likes), number of comments received on the post (Number of Comments), and ratings of the comments received as Relevant, Thoughtful, Engaging, and Superficial were taken at Time 2; story perceptions of Liking, Representativeness, Quality, and Credibility were measured at Time 1; and all outcome variables (Informed, Interest, Involvement, Know More, Empowerment, Community, and Agency) are tested at Time 1 and Time 2. As shown in Figure 4-9, including a comment with the post led to significantly more comments received than not including a comment ($t(134) = 2.01, p < .05, R^2 = .03$), as did tagging friends compared to not tagging friends ($t(100) = 2.09, p < .05, R^2 = .04$). Tagging friends also led to the news story being
perceived as significantly less credible, $t(134) = -2.07$, $p < .05$, $R^2 = .03$. Those who posted the story on a Facebook wall felt significantly more informed at Time 1 ($t(182) = -2.08$, $p < .05$, $R^2 = .02$) than those who sent it by private message, and also more informed at Time 2 ($t(143) = -1.83$, $p = .07$), though this effect only approached significance. Those who posted the story on a wall also felt significantly more interested at Time 2 than those who sent it via direct message, $t(141) = -2.30$, $p < .05$, $R^2 = .04$. A higher number of likes received led to feeling more informed ($\beta = .25$, $t(99) = 2.62$, $p < .05$, $R^2 = .06$), wanting to know more about the topic (approaching significance: $\beta = .18$, $t(99) = 1.83$, $p = .07$), being more interested in the story ($\beta = .22$, $t(97) = 2.24$, $p < .05$, $R^2 = .05$), feeling more involved in the topic ($\beta = .25$, $t(99) = 2.56$, $p < .05$, $R^2 = .06$), and also increased feeling of empowerment ($\beta = .21$, $t(98) = 2.09$, $p < .05$, $R^2 = .04$) and sense of community ($\beta = .24$, $t(98) = 2.48$, $p < .05$, $R^2 = .06$). Receiving more comments led Messengers to feel a greater sense of empowerment ($\beta = .17$, $t(133) = 1.97$, $p = .05$) and a greater sense of community, effects which approached significance: $\beta = .17$, $t(133)$, $p = .06$. 
Messengers rated the comments they received in terms of how relevant, thoughtful, engaging, and superficial they were. Relevant, Thoughtful, and Engaging were highly correlated with each other ($\alpha = .86$) and were therefore combined into one measure of Comment Favorability. As seen in Figure 4-10, Messengers who posted the news story on a Facebook wall (their own or a friend’s), perceived the comments they received as more favorable than those who shared the story via direct message, $t(80) = -4.86, p < .001, R^2 = .23$. Similarly, Messengers who included any comment in their post (either an opinion or a question) also found the comments to be more favorable, $t(80) = 2.23, p < .05, R^2 = .06$. Messengers who received more favorable comments felt significantly more informed about the topic at ($\beta = .46, t(80) = 4.67, p < .001, R^2 = .21$), wanted to know more about the topic at ($\beta = .28, t(80) = 2.65, p < .01, R^2 = .08$), were more
interested in the topic at ($\beta = .32, t(80) = 2.99, p < .01$, $R^2 = .10$), and felt greater involvement in
the topic at (approaching significance: $\beta = .20, t(80) = 1.87, p = .07$).

Figure 4-10. Pair-wise relationships between independent variables, ratings of comments received, and outcomes.

**Tests of indirect effects**

To test for mediating effects of Number of Comments, Number of Likes, and Comment Favorability between the predictors (Where Posted, Include Comment, and Tag Friends) and outcome variables (interest in the topic (Interest), feeling informed about the topic (Informed), wanting to know more about the topic (Know More), involvement in the story (Involvement), sense of influence (Empowerment), sense of agency (Agency), and sense of community (Community), a bootstrapping method for testing indirect effects of mediators developed by Preacher and Hayes (2008) was run with 5000 bootstrap samples. First, Where Posted (coded as 0 = wall, 1 = direct message) was entered as the predictor (with Number of Comments as a covariate) and Comment Favorability was entered as the proposed mediator. Number of Likes was not tested as a mediator in this case because clicking “like” is not an option in the direct
message condition. The analysis was run for each of the outcomes: Interest, Informed, Know More, Involvement, Empowerment, Agency, and Community. The results indicate that the indirect effect of posting on a Facebook wall on feeling more informed through receiving comments perceived as more favorable was significant, with a point estimate of -.4422, and 95% BCa (bias-corrected and accelerated) bootstrap confidence interval (CI) of -.9716, -.1635. The indirect effect of posting on a Facebook wall on wanting to know more through receiving comments perceived as more favorable was significant, with a point estimate of -.3744, and 95% BCa CI of -.9233, -.0372. The indirect effect of posting on a Facebook wall on greater interest in the topic through receiving comments perceived as more favorable was significant, with a point estimate of -.4001, and 95% BCa CI of -.9164, -.0906. The indirect effect of posting on a Facebook wall on greater involvement in the story through receiving comments perceived as more favorable was significant, with a point estimate of -.3512, and 95% BCa CI of -.8903, -.0145. Finally, the indirect effect of posting on a Facebook wall on a greater sense of influence (Empowerment) was significant, with a point estimate of -.1619, and 95% BCa CI of -.4131, -.0056. The indirect effect of posting on a Facebook wall on a greater sense of community or agency through receiving comments perceived as more favorable was not significant because the 95% BCa CI for these tests contained zero. Therefore, the new community measure was tested as a mediator. The indirect effect of posting on a Facebook wall on greater sense of community (new measure) through receiving comments perceived as more favorable was not significant because the 95% BCa CI for this indirect-effect path coefficients contained zero. All significant indirect paths for Where Posted with Comment Favorability are illustrated in Figure 4-11.
Then, Where Posted was entered as the predictor (with Comment Favorability as a covariate) and Number of Comments was entered as the proposed mediator. Only the indirect effect of posting on a wall on sense of community (new measure) through a higher number of comments was significant, with a point estimate of -.1484, and 95% BCa CI of -.3000, -.0391 (see Figure 4-12). Where the story was posted did not have a significant indirect effect on any of the other outcomes through the number of comments received, as the 95% BCa CI for each point estimate contained zero.
Figure 4-12. Indirect effects of where a news story is posted on sense of community through number of comments as a mediator.

Next, Include Comment (coded as 0 = no comment included, 1 = comment included) was entered as the predictor (with Number of Likes and Comment Favorability as covariates) and Comment Favorability was entered as the proposed mediator. The analysis was run for each of the same outcomes. The indirect effect of including a comment on sense of community (new measure) through a higher number of comments was significant, with a point estimate of .1373, and 95% BCa CI of .0189, .3215 (see Figure 4-13). This procedure was repeated with Number of Likes as the proposed mediator (and Number of Comments and Comment Favorability as covariates) and with Number of Comments as the proposed mediators (and Number of Likes and Comment Favorability as covariates). There was no significant indirect effect of including a comment on any of the outcomes through these mediators, as the 95% BCa CI for each point estimate contained zero.

Notes. Where Posted coding: 0 = wall, 1 = direct message. Comment Favorability was entered as a covariate. Numbers on paths are unstandardized coefficients for each regression. Coefficients in parentheses reflect the direct paths after the mediating variables were included.
Figure 4-13. Indirect effect of including a comment on sense of community through number of comments as a mediator.

Lastly, Tag Friends (coded as 0 = did not tag, 1 = tagged) was entered as the predictor (with Number of Likes and Comment Favorability as covariates) and Number of Comments was entered as the proposed mediator. The analysis was again run for each of the same outcomes. The indirect effect of tagging friends on sense of community (new measure) through receiving a greater number of comments was significant, with a point estimate of .1312, and 95% BCa CI of .0035, .3526 (see Figure 4-14).

Figure 4-14. Indirect effect of tagging friends on sense of community through number of comments as a mediator.

This procedure was repeated with Number of Likes as the proposed mediator (and Number of Comments and Comment Favorability as covariates). The indirect effect of tagging
friends on feeling a lesser sense of community through receiving less likes was significant, with a point estimate of -.1055, and 95% BCa CI of -.5520, -.0005 (see Figure 4-15). This procedure was repeated with Comment Favorability as the proposed mediator (and Number of Likes and Number of Comments as covariates), but this yielded no significant effects, as the 95% BCa CI for each point estimate contained zero.

Figure 4-15. Indirect effect of tagging friends on sense of community through number of likes as a mediator.

**Indirect effect of involvement**

The measure of Involvement included in this study consist of items (e.g., “I thought about the story over and over again”) that are very similar to measures of elaboration used in past research, such as recalling news later and tying stories to other information (Eveland, 2001). While this index was considered as an outcome, it could serve as mediator, functioning as an operationalization for “elaborative processing” that was theorized in the Cognitive Mediation Model (CMM; Eveland, 2001; Eveland, Shah, & Kwak, 2003) to drive engagement in the news. Because the independent variables (Broadcast Level, Elaboration, and Involving Friends), did not have significant direct effects on Involvement (at Time 1 or at Time 2; see Figure 4-8), Involvement was tested as a mediator using the same bootstrapping method for testing indirect
effects, run with 5000 bootstrap samples. Involvement (as measured at Time 1) was tested as a mediator between the independent variables of Where Posted (0 = wall, 1 = direct message), Include Comment (0 = no comment included, 1 = comment included), and Tag Friends (0 = did not tag, 1 = tagged) on the outcomes of Interest, Informed, Know More, Empowerment, Agency, and Community, as well as the new measures of Influence, Self-awareness, and Community (all tested at Time 1). There were no significant indirect effects of any of the independent variables on any of the other outcomes through involvement as a mediator because the 95% BCa CI for each point estimate contained zero.

Summary

In summary, posting the story publicly on a Facebook wall had a direct, positive effect on feeling informed, being interested in the topic, and receiving comments that were perceived more favorably (as being relevant, thoughtful, and engaging). Additionally, the greater the favorability of the received comments, the greater the indirect effect posting the story on a wall had on feeling informed, wanting to know more, greater interest, involvement, and sense of influence.

Additionally, a greater number of comments led to an indirect effect of posting on a wall on a greater sense of community. Where the story was posted, however, was not found to affect the number of likes or number of comments received about the post. Including a comment with the post had a positive effect on the number of comments received, and indirectly led to a greater sense of community through the greater number of comments received; including a comment also led to receiving more favorable comments. Similarly, tagging friends led to receiving more comments and indirectly to feeling a greater sense of community through receiving more comments, yet tagging friends led to lesser number of likes and therefore reduced sense of community. While none of the predictors (where the story was posted, if a comment was
included, and if friends were tagged) had a significant effect on the number of likes received, receiving more likes on their posts led Messengers to feel more informed about the topic, have greater interest in the topic, feel more involved in the story, and feel greater sense of empowerment, and a greater sense of community.
Chapter 5

Discussion

Interpretation of results

Overall, the study results show mixed support for the hypotheses. As a group, Messengers (those who shared the news story on Facebook) did not feel any more cognitively involved in the news stories than those in the control condition (who just read the story on CNN without sharing it on Facebook) at the time of reading and posting the story. That is, even though they selected the story to share with others and took on the role of the news source, they did not think about the information any more intently than those who found it already shared. One week later, however, they felt more involved than those in the control condition. This effect was not explained by interactions between time and comments and “likes” received over the course of the week, so it may be that having received notifications over the course of the week on Facebook about activity on the post or seeing the post in one’s activity could have sustained their involvement in the story. Alternatively, the effect could simply be a result of looking at the news story again: Messengers were asked to find their post again one week later and record how many people had commented and clicked “like,” while those in the control condition did not have such a reminder of their story. When testing the direct effect of number of likes received, more likes did lead to higher involvement at Time 2, indicating that the volume of likes served to stem the decline in Messengers’ level of involvement in the story over time.

Similarly, Messengers’ sense of influence, sense of community, or sense of agency did not increase significantly from Time 1 to Time 2, but they also did not significantly decrease over the course of the week (with all differences = -.09 or less), as might be expected simply as the
effect would wear off over the week. It seems possible that while receiving the comments and likes over the week did not increase the Messengers sense of influence, community, and agency, they did have an effect in maintaining those feelings. Again, direct tests show that as both the number of comments received and the number likes received increased, so did sense of influence and sense of community at Time 2. A repeated-measures MANOVA using a measure of whether or not they received comments at all revealed no significant interaction with time for any of these measures, indicating that sense of influence, sense of community, and sense of agency did not decrease significantly less for those who received comments than those who did not. Therefore, this minimal change in these outcomes over time is likely due to one of two factors. One possibility is that, like with involvement, simply looking at their post again one week later caused them to feel the same level of influence, community, and agency again. A second possibility is that these measures assessed stable individual differences that were not affected by the behaviors in the study. The original sense of influence, sense of community, and sense of agency measures (Sundar & Stavrositu, 2008a, 2008b) more explicitly referred to the independent variable—e.g., “Blogging makes me feel I have control over my own voice”—whereas for this study, wording referring specifically to the manipulation was removed—“I have control over my own voice”—possibly gauging a more general assessment of feelings of influence, community, and agency not as clearly influenced by the news sharing task that participants just completed.

Beyond the effects of simply using Facebook as a platform to share news stories, the type of elaboration that Messengers engaged in had an impact on their level of involvement in the news story. While it was predicted that either adding an opinion or posing a question about the story for one’s friends would lead to greater involvement than sharing the story without any comment at all, it was actually the case that asking a question was significantly more involving than offering one’s opinion. Making no comment about the story was less involving than asking a question, but more involving than sharing an opinion, though not significantly different from
either. This finding is interesting in terms of elaboration because it may be expected that simply asking their friends “what do you think of this story?” – as many participants in this condition did – would take less effort than forming one’s own opinion about the story, and thus have a lesser effect on involvement. It is possible that because asking their online friends to share their opinion invites involvement from their network, it also led to greater feelings of involvement for the Messengers. Those who asked a question did receive the most comments on average compared to those who posted an opinion and those who did not post any comment, and this may have been anticipated by the Messengers. Indeed, posting any comment (either opinion or question) did lead to a higher number of comments received. Those who posted a comment with their story also rated the comments they received as more relevant, more thoughtful, and more engaging.

Surprisingly then, if Messengers did anticipate this, elaboration did not have a significant impact on sense of community, and also did not have a significant impact on sense of influence, but did have an effect on the measure of agency that states “I have a distinct voice.” Agreement with this statement was highest for those who asked a question and lowest for those who stated an opinion. While initially counter-intuitive, this result indicates that in addition to increasing one’s involvement in content, opening the discussion up to other viewpoints also builds strength in one’s own voice on the topic. This way of communicating reflects the very nature of social media which has users turning to their social networks for reifying their personal ideas.

In addition to offering users the ability to share a comment for discussion about the content they share, Facebook allows users to include specific friends in their posts more directly by tagging them. Interestingly then, tagging friends did not cause Messengers to feel more involved in the news story. Tagging also did not have a significant effect on influence, but those who tagged their friends did feel a greater sense of community. This could be the result of making one’s available social network salient. By being asked to select friends who they thought would find the story relevant, participants were actively reminded of friends who are similar
because they are interested in similar content. And, just like posting a comment with their news story, tagging friends also led to a higher number of comments from their friends and had an indirect effect on sense of influence and sense of community, mediated by the number of comments received. Thus, tagging friends for the discussion of a news story may not do much to directly engage Messengers in the content, but it does engage their friends (by leaving more comments) and ultimately builds a sense of influence and a sense of community.

The level at which participants shared the news story on Facebook (Broadcast Level) was included as an exploratory variable with no specific hypotheses about its effects, but it had a significant impact on news story perceptions, and also moderated the effects of elaboration and tagging friends in several ways. Overall, sharing a news story on a friend’s wall led to the most favorable outcomes and was often enhanced by sharing the story with a question, and by tagging friends, supporting many of the previous findings. Liking, credibility, quality, and representativeness were all rated highest for those who shared the news story on a friend’s wall. A three-way Broadcast Level x Elaboration x Involving Friends interaction highlights the combined effect on credibility, which was enhanced by tagging friends for those asking a question when posting on a friend’s wall. Sharing on a friend’s wall also had an indirect effect on sense of community such that those who shared on a friend’s wall had a sense of community at a level that was only met in the News Feed condition by tagging friends. Thus, when the story was posted on the Messenger’s own news feed, actively involving the friends via tagging is necessary to build a sense of community, whereas this is not necessary when posting directly on a friend’s wall because the sense of community is largely determined by the act of reaching out to a friend’s wall and therefore does not increase further by tagging friends. It is also possible that these effects are simply due specifically to being in the Wall Post condition because Messengers were asked to read the full set of instructions before starting the task of selecting the story to read, and thus may have picked a story that they had more favorable perceptions of knowing that they
would be sharing it directly on a friend’s wall. However, posting the news story on any wall (one’s own or a friend’s) instead of sending it privately led indirectly to greater interest and involvement in the story, feeling more informed about the topic, wanting to know more about the topic, and a greater sense of influence and a greater sense of community, by way of receiving comments that were perceived as favorable. Even though sharing the story more publicly did not lead to a greater number of comments, the comments that friends left were thought to be more relevant, thoughtful, and engaging. This finding highlights the importance of the expected audience and their feedback.

Overall, using Facebook’s sharing features for distributing news stories has some unique effects compared to simply reading the story on a news site. Sharing a story led to greater continued involvement in the topic, as did using the option to ask Facebook friends their opinion about the story. While broadly asking friends to share their opinions about the story did not build a greater sense of community, selecting specific friends to read the post by tagging them did. Finally, sharing on a friend’s wall led to more favorable perceptions of the news story and led to a greater sense of community, particularly when also asking that friend a question about the story. Thus the key role of using Facebook to share news is, not surprisingly, the various features that allow Messengers to include their friends in the post. These results highlight the importance of the feedback received from the network. While most of the actions taken by the Messengers in posting the news story did not have direct effects on their psychological outcomes, the comments and likes they received positively affected many of the anticipated outcomes: interest, involvement, feeling informed, and wanting to know more. More importantly, receiving this feedback led to a greater sense of influence in their network and a greater sense of community.

While the effects of sharing news with one’s online social network were of greatest interest, this study also explored those who read the news on Facebook (Receivers). These results were mixed and the predicted effects of seeing the story shared by a friend on Facebook were
largely unsupported. Those who found the news story on Facebook liked it more than those who read it directly on CNN’s site. This replicates Sundar and Nass’s (2001) finding that users like a story more when it has been selected for them by peers rather than journalists. However, they did not find it to be of higher (or lower) quality when it came from a Facebook friend, and they actually found it to be less representative when found on Facebook. Because participants in both conditions were asked to find a story of interest to them, it is possible that searching for a story but then being limited on Facebook to possibly few CNN stories that had been shared by friends limited their sense of choice. Representativeness specifically referred to a story being relevant and timely, but stories on Facebook could be older. Even if they are relatively new, when found through a search on the site, they do not cue the same urgency as a news story on the homepage of the news website. Interestingly, stories found on Facebook were not found to be of lower credibility than those found on CNN, indicating that the extra source layer of Facebook and/or one’s friend did not have a negative effect on the credibility of the story’s original source. While reading a news story shared by a friend had a positive effect on liking, no other aspects of interacting with the story on Facebook had a significant impact.

Finding a story that already had a discussion posted about it in the form of others’ comments did not cause Receivers to feel more informed about the topic, and seeing more comments did not increase their involvement. It may be that seeing comments others had already posted stifled their own elaboration about the topic. Possibly, it made them less motivated to add anything, as though arriving to the discussion too late. Given the importance of the feeling of agency derived from “breaking the news” it is not surprising that finding someone else’s posting does not elicit a strong response. Half of those who were supposed to comment on another person’s story did not, yet of those who had to post a story of their own, those who had to post on someone else’s wall were no more likely to drop out than those who were instructed to post the story on their own wall. Thus, having to post on someone else’s profile is not a problem, but
being the one to break the news is key. In social media especially, information becomes “old news” very quickly, which may explain many of the lack of Receiver effects.

It may also be the case that the comments on the story were made by people the Receiver does not know and therefore is not as interested in, since the comments would have been posted by the Messengers’ friends who are not necessarily also the Receivers’ friends. However, not even adding their own comments to the post impacted the Receiver’s involvement in the story or how informed they felt. It is certainly likely that commenting on another person’s post simply does not increase their involvement in the news story, particularly because the people that will comment on it may not be their friends. The Receivers’ overall lack of investment in the story may also be an effect of the role itself. Selecting a story to post on one’s news feed or to share even more personally on a friend’s wall or via private message and thus becoming a source of that information creates greater accountability for the content than simply responding to it when someone else has posted it.

The general lack of effects may be due to the inauthentic nature of the experience. It simply may not be the norm to post news stories on Facebook for this group of participants. Baresch et al. (2011) found that those in the 25-34 year old age group posted the most news content on Facebook. In this study, about two-thirds of the participants were students and their average age was 23. The non-students in the sample were on average 36 years old, and already posted news on Facebook significantly more often. However, overall the whole sample did not share news on Facebook very frequently: $M = 3.55$, on a scale of 1-7. In fact, when asked how likely they were to post a story such as this on their own, Messengers indicated that they were not very likely to do so: $M = 2.56$, on a scale of 1-7. Interestingly, they stated they were more likely to comment on it if they saw it posted by someone else ($M = 3.66$), but less likely to repost the link to their own wall ($M = 2.76$). This disinclination to use Facebook as a place to share and discuss news is affirmed by those in the Receiver condition. Only about two-thirds of the
Receivers could even find one CNN story posted on Facebook, despite having an average of 491 friends and accessing the site frequently. Additionally, the refusal rate was high for engaging with the news content. About half of those who were supposed to leave a comment about the story they found did not. However, they continued on with the questionnaire, thus not dropping out of the study completely, but choosing for some reason not to leave a comment.

It is at best unlikely that sharing news stories is normal Facebook behavior for these participants, but unfortunately, asking them to complete this task may also have been the cause of the high attrition rate in the Messenger condition. While only 15% of Receivers dropped out after starting the study (and presumably largely due to not finding a story), the Messenger condition lost 43% of its participants. The Messengers in the study were undoubtedly asked to carry out the most tasks to complete the study. First, they had to send a friend request to the researcher, whom they did not know, which was not a requirement in the other conditions. This was likely a major deterrent for the many Messengers who dropped out, as friend requests were received from only 75% of the participants who started the study. If they continued on, they had to select a news story to read and share with their network. In contrast, Receivers only needed to see if any stories were already posted by others and select one available to read. Also, unlike the control group participants who selected the story from the website and read it privately, Messengers likely considered news stories in light of how they would represent them to their friends. Again another 25% of the remaining sample dropped out at this point. Furthermore, there were a number Messengers who did not follow the directions given in the study. For instance, they posted the story on a friend’s wall when they were supposed to share it on their own wall. It is likely that the lengthy process of this study for Messengers exhausted them or confused them and this may be a primary reason for the higher rate of participants dropping out in the condition.
Theoretical implications

The results from this study provide important implications for theoretical work on engagement with the news, elaboration and understanding of the news, and online source credibility. First, the results here highlight how the features of Facebook and similar sites can have a significant impact on involvement in the news. While posting a news story on Facebook did not lead to greater involvement than reading it on the original news site, it did help to sustain involvement over the course of a week. Furthermore, utilizing Facebook’s feature to “say something about this link” led to significantly higher involvement for those sharing the story, though only if they used this feature to ask their network a question about the story. However, this form of elaboration had no effect on how informed they felt about the topic. This lends no support to the Cognitive Mediation Model (CMM; Eveland, 2001), which states that the audience learns from the media by way of elaborative processing. Given the generally vague and shallow nature of the questions asked by the Messengers with their post, it is certainly possible that this was simply not a strong manipulation of elaboration. However, even testing the mediating potential of the measure of involvement – which had items very similar to those used in previous CMM research (Eveland) – produced no significant results. In this study participants conceivably had other opportunities for elaboration: sharing the story, including a comment, and participating in any resulting discussion, and it was only these that had any effect on feeling informed. Participants did end up feeling more informed when they posted the story publicly (on their wall or a friend’s wall) instead of sending it through a private message, if they received comments they viewed favorably, despite a large number of those comments being unrelated to the content. Additionally, they wanted to know more about the topic, felt more interested in the topic, and were more involved in the topic because of these favorable comments when they posted publicly. So while interpersonal discussion is an important part of the CMM (McLeod, Scheufele, & Moy, 1999), its effects are more complex on Facebook.
This study also did not lend clear support to previous findings regarding the effects of self as source on empowerment. While Stavrositu and Sundar’s (2008a) study found that blogging significantly increased a sense of empowerment, by way of community for those who kept personal journals, and by way of agency for those who maintained filter blogs, sharing information as a source on Facebook did not have the same effect. However, while participants did not feel a greater sense of agency as a result of sharing the story, receiving feedback in the form of comments and likes led to a greater sense of influence and community, which highlights the importance of the social network in building the Messenger’s feelings of empowerment. Receiving more comments led directly to a greater sense of empowerment. Additionally, posting on a wall (one’s own or a friend’s), including a comment with the post, and tagging friends each led indirectly to a greater sense of community, specifically the sub-measure regarding the larger network as a whole, through receiving a greater number of comments. In the Facebook network, the use of all interface affordances that led to drawing in a greater number of comments increased a sense of community. However, tagging friends led to a lesser number of likes, which then led to a lower sense of community. Possibly, by targeting certain individuals by tagging them, people who were not tagged were less likely to comment on the post, resulting in a lower number of likes and thus a lowered sense of community. Therefore, this study acts as an extension of Stavrositu and Sundar’s work by showing that in a social networking site context, self-as-source is not sufficient in realizing a sense of influence, but rather it is the ability to actively involve their network through asking questions and tagging friends. Most importantly, it was the interface affordance of making these comments and likes visible to the Messenger that led to a greater sense of influence, verifying Stavrositu and Sundar’s findings with respect to the importance of network feedback in shaping users’ psychological empowerment.

This study is also an extension of previous news source typologies (Sundar & Nass, 2001; Hu & Sundar, 2008), with the Facebook Messenger as a selecting source. This is an even
more personal source layer than previous work which looked at more distant sources such as "others," news editors, and machines. Those who found a story shared by a friend on Facebook did indeed like the story more than those who selected a story to read from the CNN website, supporting previous findings that stories selected by others were rated more favorably.

Conversely, reading a story selected by a friend lowered representativeness and had no significant effect on quality or credibility. There may be a difference between the anonymous others from Sundar and Nass and known others that are part of one’s network. A generic group of “peers” may function as a relatable group who can be trusted to select relevant information. However, on Facebook, the stories found were posted by specific others who the Receivers know and have formed relationships with, or at least opinions about. The impressions of the stories in this study could have been shaped in many ways by liking or disliking or a variety of other feelings toward the Facebook connection who shared the story. Also, finding a story on Facebook actually offered two source layers over those who read the story on CNN: Facebook and additionally the friend who posted it on Facebook. Thus, it is hard to tease out which of these two layers most shaped the impression of the story. Just as in Hu and Sundar (2010), credibility was not significantly impacted by the selecting source such that those who found the story on Facebook did not find it more or less credible than those who found it directly on CNN. For those acting as a source, where on Facebook they shared the story had interesting effects on how they perceived the story. Those who posted the story on a friend’s wall rated all perceptions (liking, credibility, representativeness, and quality) significantly higher. This finding provides an interesting extension to previous works, indicating that even when one is their own news source, their views of the source credibility are enhanced by sharing it specifically with one friend rather than broadcasting it to a network.
Design implications

This study also brings up important design implications for Facebook and similar social networking sites in terms of news content sharing. At this point, Facebook has already put major focus on their content sharing feature by clearly attaching photo, link, and video sharing features to the status update option on the homepage. Outside of Facebook, many news sites and other websites have taken advantage of this with embedded options to “like” and share their content. Most recently, Facebook changed the interface such that “liking” a piece of content will automatically share that on one’s wall. Given the concern for the younger generations’ disconnectedness from news and current events, these features could play a crucial role in gaining and maintaining readers. Based on the findings of this study, Facebook could do even more to encourage the discussion of news. First, a key factor in story enjoyment and involvement was posting the story on a friend’s wall rather than on one’s own wall. Until shortly after this study was completed, however, Facebook’s option for recommending a story by “liking” it on a news site such as CNN posted the story to one’s own wall by default with no other options, and the other “Share” features only allow the story to be posted to one’s wall or be sent as a direct message. In order to actually share a news story on a friend’s wall, a user had to take the steps given in this study: copy the URL from the news website, navigate to Facebook, search for their friend’s profile (also not a very clear process), then paste the link to their wall. The very recently changed sharing feature that allows users to directly find and select a friend may increase content sharing with specific friends. Ideally, the site would allow for simultaneously sharing with multiple friends who they think would find the story interesting, which could significantly increase sharing of news content, interest in that content, and the discussion that ensues.

Facebook could also implement more features in the interface that encourage meaningful discussion, given that the number of comments, and also the perception of discussion as being relevant, thoughtful, and engaging were important indicators for how involved and interested
Messengers were in this study. For instance, Facebook could allow Messengers to set up polls to assess friends’ opinions on the issue in the news story or rate the story in terms of its quality (e.g., 1-5 stars). Also, all comments made on a post show up in a long un-indented thread that often makes the target of the reply (and thus the flow of the conversation) unclear. Instead, Facebook could adopt the indented form of threads long ago adopted by Internet message boards where replies clearly follow the posts for which they were intended. To this end, Facebook could offer the “reply” feature not only on the original post but on each comment that is made. Users could then be notified if someone made a comment about their comment specifically, as is done now when someone “likes” a specific post. This would allow comments to be more meaningful as they would refer to specific previous comments, and would likely increase the amount of commenting given that users would know that the following comment was directed specifically at them, driving a response to the comment.

As it stands, Facebook is not a good site for social bookmarking. Posts quickly get lost in the archived news feed and short of clicking “Older posts” several times on one’s own feed or a friend’s feed, it is hard to find posts made even within the past week if one’s network is active. The search feature is unknown to most users and requires the user to remember the title or source of the post to search for it successfully. While almost all Messengers could find their original post again in this study, Receivers had more difficulty in finding their friend’s posts again, particularly those who did not leave a comment or click that they “like” the post, excluding them from any follow-up notifications. Thus, given that posting on Facebook had an effect on keeping people more involved in news content they shared there, the site could do well to collect all links shared in a section on the site, similar to how photos and videos are sorted into albums. The sidebar that holds notifications about new messages in groups and the inbox could also keep a record of how many new CNN or other stories have been posted. Users could even set up an option to collect all stories about a certain topic that friends had posted. Participants in this study rated the Internet as
their most-used source for news, followed by personal communication and social media, which were even more important for younger participants. Thus, setting up Facebook to more easily access news stories and discuss them more effectively could be the key to engaging younger news readers.

**Limitations**

As an experimental study, the current research has a number of limitations. First, participants were asked to choose their own news story, which created wide variation in the topic and format of the news they selected. Most importantly, this did not allow for the assessment of knowledge about the topic in the form of factual questions about the content, which are vital in assessing their learning. This also limited the ability to gauge how involved participants may get in an issue because not all topics shared prompted a need for civic engagement (e.g., entertainment news). In the initial design, participants were all asked to share the same story, but in pretests many were quite averse to posting a story on Facebook or sending it directly to friends if they had not selected the content and it did not represent the content they would normally share. Thus, evaluations of their learning from content were limited to a subjective evaluation of how involved in and informed they felt about the topic after reading the story, which is further limited by the fact that they likely selected stories they were already moderately informed about and involved in. Given this limitation, more measures could have assessed how informed they felt, how well they actually understood the topic, and their intent to get involved in the issue, if applicable.

In following up on the news story, Messengers and Receivers had an advantage in remembering the story over those in the control condition: they were asked to find their post again and record how many people had commented and clicked “like,” which was not applicable
to the control condition. Thus, the control condition actually differed from the others in two ways: they were not asked to be actively involved in the story, as intended, but they also did not have the same access to the story through Facebook. To keep the conditions equal, the control condition should also have been given some way to look back at the story they read one week earlier.

Because of the script used to randomly assign participants to one of the 17 conditions, not many people ended up in Receiver conditions because they only make up three of the 17 conditions, while the Messenger conditions make up 13 of the total conditions. So, while each individual condition contained a satisfactory and relatively equal number of participants, when assessing participants broadly on their role (Messengers vs. Receivers), the conditions were unequal in sample size. Furthermore, given that several Receivers did not find a CNN story posted by a friend (about one-third of the sample did not), they should have been over-sampled. Of those who found a story, some did not follow the directions (i.e., not leaving a comment when they were instructed to do so), leaving a small sample of Receivers, thereby reducing the power of the hypotheses tests involving them.

In this design, Receivers and Messengers were also separate samples rather than Receivers interacting directly with the posts made by the Messengers in this study. This does not allow for an assessment of the Receivers’ experience in relation to the condition that the Messenger was in. In an earlier design of the study, Receivers were in fact recruited from Messengers’ friends, but several technical issues during pretesting kept this design from working, and thus Receivers were analyzed as a separate group.

Finally, this study did not take into account network effects. For each user, information was recorded about the size of their network as well as how many mutual friends they had within the sample. However, this does not explain their role in their network and how influential they may be among their Facebook friends. To run such a network analysis, it would be necessary to
gather a full dataset of number of friends and communications between them for each participant. There exists a Facebook application called Netviz which does just this, but when it was tested, it downloaded information about the full network of friends excluding the user him/herself, thus not allowing assessment of their role in the network. Also, had this or another application worked properly, getting this data for each participant would require that they install the application on their own profile, run it, download the file, and email it to the researcher, which was quite a large task to add to an already full set of directions for completing the sharing activity and the sizable questionnaire at the end.

**Future research**

The current study used an experiment to test the effects of sharing, discussing, and viewing news content on Facebook by asking participants to share in particular ways using specific features. However, it is not an assessment of how users realistically employ the site. It is worth understanding what type of content Facebook users are sharing, how often, how much attention it gets from friends, and what aspects of the content make users more likely to comment on or repost the news they receive in this interface. Also, it would be beneficial to understand the characteristics that make an individual an opinion leader in their Facebook network, so that these individuals can be identified and news can be disseminated through them to their networks effectively.

Future research should also further explore those who find news information on Facebook and the effects on learning from the news and keeping up on current events. This study primarily focused on acting as a news Messenger through Facebook, but more people are still content receivers than distributors, and younger people are turning more to social media for news.
It is worth understanding if getting their news from Facebook and similar sites instead of from the news websites positively impacts their understanding of and engagement in the news.

Facebook is constantly adding and redesigning features, so it is important that future research keep up with the type of communication available on the website. For instance, just after data were collected for this study, Facebook introduced a new feature that allows for tagging friends even when making comments, not just when making original posts. This feature alone could vary how engaged participants are in the discussion about news. Websites have also become increasingly integrated with Facebook through Facebook Connect, which allows web developers to have users log into their websites via their Facebook accounts and to communicate between the accounts. This could very well change how individuals use non-Facebook sites and influence the type of content they share and how they share it. Just as using specific features of Facebook (e.g., tagging) influenced their perceptions of the news story in this study, changing interface features on a website linked to Facebook could change users’ impressions of the news content and what they do with it.
References


Appendix A

Measures

**Empowerment**

I have a sense of control over my life
I feel that I know myself well
I am able to cope with my problems
I have a deep sense of self-awareness
I feel autonomous
I can motivate other people to become more involved in social issues
I can motivate others to take action
I am able to provide information that can benefit others
I feel that I can influence the way other people think
I feel able to share knowledge with others
I am able to meet similar others

**Sense of agency**

I have control over my own voice
I have the ability to assert myself
I have a distinct voice
I have control over my actions
I can exercise my free will
I have control over the information I find
**Sense of community**

I feel part of a larger community

Very few people know me personally (reversed)

I care about what others think of my views and actions

It is very important for me to interact with others

People I know generally don't get along with each other (reversed)

I can anticipate how some will react to certain issues I raise

I feel like I have a support network in case I need help

Some of the people in my network are friends with each other

I feel obligated to help others

**Involvement**

I thought about what should be done

I thought about the story over and over again

I thought about what this will mean to me and my family

I thought about what this will mean to other people

I thought about how the story related to other things I know
Appendix B

Additional results table

See next page.
Table B-1. Correlations between individual Involvement, Empowerment, Agency, and Community items.

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<tr>
<td>A6. I have control over the information I find</td>
<td>.51</td>
<td>.39</td>
<td>.37</td>
<td>.44</td>
<td>.48</td>
<td></td>
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<tr>
<td>C1. I feel part of a larger community</td>
<td>.28</td>
<td>.24</td>
<td>.22</td>
<td>.27</td>
<td>.32</td>
<td>.49</td>
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</tr>
<tr>
<td>C2. Very few people know me personally</td>
<td>-.13</td>
<td>-.19</td>
<td>-.16</td>
<td>-.10</td>
<td>-.15</td>
<td>-.22</td>
<td>-.30</td>
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</tr>
<tr>
<td>C3. I care about what others think of my views and actions</td>
<td>.05</td>
<td>-.03</td>
<td>.11</td>
<td>.12</td>
<td>.01</td>
<td>.09</td>
<td>.25</td>
<td>-.07</td>
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<tr>
<td>C4. It is very important for me to interact with others</td>
<td>.13</td>
<td>.24</td>
<td>.24</td>
<td>.14</td>
<td>.25</td>
<td>.22</td>
<td>.40</td>
<td>-.41</td>
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</tr>
<tr>
<td>C5. People I know generally don't get along with each other</td>
<td>-.20</td>
<td>-.23</td>
<td>-.13</td>
<td>-.20</td>
<td>-.16</td>
<td>-.05</td>
<td>-.13</td>
<td>.25</td>
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<td>-.23</td>
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<tr>
<td>C6. I can anticipate how some will react to certain issues I raise</td>
<td>.20</td>
<td>.11</td>
<td>.14</td>
<td>.17</td>
<td>.18</td>
<td>.21</td>
<td>.25</td>
<td>-.12</td>
<td>.25</td>
<td>.23</td>
<td>.01</td>
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<tr>
<td>C7. I feel like I have a support network in case I need help</td>
<td>.38</td>
<td>.39</td>
<td>.23</td>
<td>.30</td>
<td>.29</td>
<td>.33</td>
<td>.49</td>
<td>-.28</td>
<td>.13</td>
<td>.27</td>
<td>-.17</td>
<td>.17</td>
<td></td>
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</tr>
<tr>
<td>C8. Some of the people in my network are friends with each other</td>
<td>.34</td>
<td>.34</td>
<td>.22</td>
<td>.42</td>
<td>.29</td>
<td>.42</td>
<td>.48</td>
<td>-.19</td>
<td>.25</td>
<td>.37</td>
<td>-.26</td>
<td>.31</td>
<td>.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C9. I feel obligated to help others</td>
<td>.27</td>
<td>.31</td>
<td>.32</td>
<td>.28</td>
<td>.20</td>
<td>.28</td>
<td>.38</td>
<td>-.33</td>
<td>.22</td>
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<td>-.17</td>
<td>.20</td>
<td>.42</td>
<td>.39</td>
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</tr>
</tbody>
</table>

Notes. \( r \geq |.15|, p < .05; r \geq |.20|, p < .01; r \geq |.25|, p < .001. \) II-5: Involvement items, E1-11: Empowerment items, A1-6: Agency items, C1-9: Community items; Bolded items appear in Tables 4-5 and 4-6.
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