

## ABSTRACT

Title of Dissertation: THE ROLE OF ACCOUNT FEATURES AND SOCIAL NETWORKS ON PERCEIVED QUALITY OF INFORMATION SHARERS ON SOCIAL MEDIA

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In today's complex social media environments, users are inundated with news and information.

Due to the affordances of the internet, not all content is created equal and much of what exists online is less-than-quality. However, it is important for online users to locate trustworthy and reliable information. It is also important to understand how social media account features and social network connections may mediate users' evaluations of quality on social media. This dissertation presents a multifaceted look at how users evaluate the quality (i.e. trustworthiness and reliability) of news and information sharers on social media.

This work is comprised of three unique, yet complementary studies, that use several methods including survey, social network analysis and statistical analysis. Each study focuses on different types of information sharers—unknown users, network connections, and news organizations. Taken together they suggest that sharers of information are central to users' propensity to trust and rely on information itself.

At a high level, this dissertation suggests the following: (1) when examining unknown information sharers, U.S. audiences are more likely to trust and rely on accounts that are gender-neutral and share a cultural background; (2) there is no relationship between more connected nodes within a person's social network and trust in news shared by that connection, and young adult Facebook users report having low levels of trust in news shared by friends; and (3) news

consumers look for tangible signals of reliability and trustworthiness, like About descriptions and official website links, when assessing news organization social media profiles.

This work shows that beyond the reliability of news content, social media users depend on signals, social ties, and platform features to determine trust and reliability in news sharers. Though users consider many factors when assessing credibility of information on social media (e.g. verification status of the sharer, prior interaction with a sharer) the role and influence of the sharer has not been substantially studied in the evaluative process.

THE ROLE OF ACCOUNT FEATURES AND SOCIAL NETWORKS  
ON PERCEIVED QUALITY OF INFORMATION SHARERS  
ON SOCIAL MEDIA

by

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## Dedication

To Mom, Dad, and Luke. For always believing in me.

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## **Chapter 1: Introduction**

In today's complex and interactive digital and social media environments, users are inundated with news and information. Due to the affordances of the internet, publishing, sharing and spreading content are relatively easy and cheap. This affordance means that not all content is created equal and much of what exists online is less-than-quality information. However, it remains important that users are able to locate trustworthy and reliable information online in order to gather accurate information and make informed decisions. It is also important to understand how social media account features and relationships within social networks may mediate users' evaluations of quality information in social media environments.

In these online spaces, users make judgements about the quality of the information they encounter, and they also assess the sharers of information—be it friends or family members, or more official sharers like organizations and government entities. Beyond deciding to engage with content on social media—by liking, sharing or commenting—users also make decisions about whether or not to trust and rely on the information they encounter. Independent of assessments about content or message, they also evaluate the source, or sharers, of the information for trustworthiness and reliability. Oftentimes, these evaluations are done relatively quickly and seamlessly and are based off of features that are readily available to users, like profile images, cover images, or account descriptions. However, a better systematic understanding of how these features impact users' perceptions of an account's trustworthiness and reliability is an important addition to the scholarship and is especially useful to news and information sharers seeking audience trust online. Deeper knowledge of this issue would benefit multiple stakeholders—including news organizations, other information sharers, and social media site designers—and would allow for the engineering of better, more trustworthy and reliable signals in these spaces.

Trust and reliability, two terms that will be used extensively throughout this dissertation, are flexible theoretical concepts that require defining. The concept of trust has been discussed, researched and operationalized in many disciplines and in many ways. In discussing social trust specifically, Golbeck and Handler suggest it is dependent on many factors. Some of these factors include past experience with a person and one's opinions of the actions that person has taken, psychological factors influenced by past history and events, rumor, influence by someone else's opinion, and motives to gain something else by extending trust (Golbeck & Handler, 2006). The act of trusting assumes some amount of risk and a commitment on the part of the person giving trust (Sztompka, 1999). Golbeck & Handler adopt the following definition: trust in a person is a commitment to an action based on a belief that the future actions of that person will lead to a good outcome (Golbeck & Handler, 2006). For the purposes of this work, the term *trust* relates to an assumption that someone, or something (e.g. an entity, organization, institution) will act in your best interest.

The word reliability is also used in a number of disciplines. From a statistical perspective, something is highly reliable if it produces similar results under consistent conditions. Koops (2004) discusses reliability of information as the probability that information is correct. Vedder and Wachbroit talk about reliable information as justified information, information people would be justified in believing, and information that can be trusted (Vedder & Wachbroit, 2003). They also point to determinations of reliability, like content criteria (content of the information itself) and pedigree criteria (function of the source of the information) (Vedder & Wachbroit, 2003). For the purposes of this study, the word *reliability* refers to the degree to which something can be depended upon to be accurate and consistently good in quality or performance. For the purposes of this study, the term *quality* will be used to encompass both of the

aforementioned terms—trust and reliability. For example, when discussing perceived quality of information, that term is meant to encompass both perceived trust and perceived reliability.

Though there are many things users consider when assessing the trustworthiness and reliability of information on social media (e.g. content preferences, source of information, the verified status of the sharer, existing knowledge of a source or sharer, tie strength), the role of the sharer in the assessment process has not been substantially researched. This work looks specifically at the role of the sharer—both the user’s relationship to the sharer and the online presentation of the sharer—in a user’s assessments of news and information on social media. The studies in this dissertation focus on tangible factors users may consider when evaluating a sharer, like their relationship with that sharer, and social media account features like profile images, account descriptions and @handles. Though there is already research on news sharing and sharers in social media spaces, much of it focuses on news consumption, the characteristics of news sharers (i.e. perceived opinion leadership, Ma, Lee & Goh, 2013; number of followers/friends, Bakshy, Hofman, Mason & Watts, 2011), and the motivations of news sharing (Kümpel, Karnowski & Keyling, 2015). For example, the relationship between account verification (i.e. accounts bearing a blue checkmark badge) on social media and perceived credibility is well-researched, though the findings are not clear cut. Work focused on microblogging sites found that verified accounts were seen as more credible than unverified accounts (Zhang, Peng, Zhang, Wang & Zu, 2014), while other more recent work found no relationship between a verification badge (a marker of authenticity) and perceived credibility or willingness to share a tweet or take action based on the message (Vaidya, Votipka, Mazurek, Sherr, 2019). Additionally, the relationship between trusted news sources and perceived quality of news from those sources is also a well-researched area. A report by the Media Insight Project found that when respondents were shown an article shared by

a news source they did not trust, they found it to be less correct, and less well-reported and trustworthy (Media Insight Project, 2017). Respondents were also less likely to engage (e.g. follow on social media, recommend to friends, sign up for news alerts) with a news source they did not trust (Media Insight Project, 2017). Other research on media trust found that, when asked, people report high levels of trust in their own sources of news and in mainstream media sources, especially when compared to unspecified sources (e.g. when asked about trust in ‘the press’) (Daniller, Allen, Tallevi & Mutz, 2017).

This research, however, will focus on how account features and connections in social networks influence perceived trustworthiness and reliability in information sharers and the information itself. There is a gap in the research regarding the tangible factors of reliability and trustworthiness—like social media account features and relationships within social networks—that users depend on to make these assessments. This work aims to advance the scholarship in this area. Although much of the work in this space focuses heavily on Twitter or a singular social media platform and looks at one type of information sharer (e.g. journalists, influencers, politicians), this dissertation aims to examines a variety of sharers across platforms. This work will add to the literature in a number of disciplines including journalism studies, media studies, information science, and human-computer interaction. This work takes a contemporary look at how trust and reliability are negotiated in today’s interactive and digital environments and focuses on a cross-platform analysis. This dissertation also focuses on news content and information (i.e. content around current events) specifically.

As stated, understanding how users determine the reliability or trustworthiness of news sharers and news content in digital environments has broad implications for a number of stakeholders. It has implications for news organizations and journalists who are working to gain

the trust of the public, for digital platforms who are attempting to surface reliable and trustworthy content on their sites, as well as for educators who are exploring ways to teach valuable media literacy skills. The findings of this study also allow for a deeper understanding of how news and information is shared and spread within digital networks. This goal of this research is to understand how users utilize their relationship with the sharer and the online presentation of the sharer in order to evaluate the trustworthiness and reliability of information and news sharers in social media spaces.

### **Research Questions**

The broad, overarching research question this dissertation aims to answer is as follows: How do online users determine which information sharers are trustworthy and reliable in social media spaces? This work also explores, in part, if that evaluation of content translates into engagement with or sharing of the content.

This research also aims to answer several sub-questions, which will be answered more specifically in each study presented:

- How do users evaluate specific social media profile features to assess the reliability and trustworthiness of unknown users in a Twitter-like environment? [Study 1; Chapter 6]
- What relationships do users rely on to signal trust and credibility in news content within their own Facebook network? [Study 2; Chapter 7]
- Which features of a news organizations' social media account signal trustworthiness and reliability to information consumers? [Study 3; Chapter 8]

In order to explore these topics, this work combines three unique, yet complementary studies. Though each study examines different platforms and uses different research methods, all of the works examine how users negotiate the concepts of trust and reliability of information and information sharers in social media spaces. Broad overviews of each study are as follows:

**Study 1 [Chapter 5]: Names, Profile Photos and @Handles as Signals of Reliability for Information Sharers on Social Media**

This study utilizes a survey method to evaluate the perceived reliability of information sharers in a social media space that resembled Twitter. Participants were asked to rate the reliability of fictional users, and their likelihood to share other information and content from those users, based off of profile features (e.g. name, profile photo, @handle) which were manipulated in order to create randomized conditions.

**Study 2 [Chapter 6]: Facebook Network Connections and User Perception of News Content**

This study uses network analysis and survey methods in order to better understand how participants use the connections in their Facebook network to determine the quality of news content on the platform. In this research, participants were asked to explore their social graphs on Facebook. Using the knowledge generated about their networks, they were asked questions about their relationship to specific individuals, and about their likelihood to trust news and information content posted or shared by that user.

**Study 3 [Chapter 7]: News Organization Social Media Account Features as Signals of Trust and Reliability**

This study examines how news organizations present themselves on social media platforms like Facebook, Twitter and YouTube, and evaluates how these organizations are perceived by news audiences for trustworthiness and reliability. This study focuses on account features (e.g. profile images, cover images, bio and/or account description, account metrics, etc.) and examines how those features are used to evaluate the quality of an account. Participants were asked to assess different news organization accounts for how much they would trust and rely on content from those sources based on a screenshot of the organization's profile.

These studies are examined in full in forthcoming chapters [5, 6, 7]. Before the studies are explored individually, there will be a review of the current state of digital news and information [2], a review of relevant literature and theories [3], and a review of the digital methods used throughout this dissertation [4]. The dissertation will finish with a discussion of implications for journalists and the news media [8] and a concluding chapter [9].

## **Chapter 2. State of digital news and information**

Several polls and studies suggest that public trust in the news media is waning (Fletcher & Park, 2017; Knight Foundation, 2018; Swift, 2016), which makes examining issues of perceived trust and credibility in news content and news sources a topic of central importance. A 2016 Gallup poll found that trust in the news media continues to decline—with just 32 percent of Americans saying they have a great deal or a fair amount of trust in the institution (Swift, 2016). This figure represents one of the lowest amounts of trust in the media reported since Gallup began asking this question in 1972. At its highest point in 1976, 72 percent of respondents reported having a high amount of trust in the news media (Swift, 2016).

More recently, a 2018 Knight Foundation report found that only 33 percent respondents had a positive view of the media, with 43 percent of Americans having a negative view and 23 percent reporting a neutral view (Knight Foundation, 2018). The audience's trust, or lack thereof, in the news might be impacted by a number of factors. For example, when asked about what aspects of the news media they found problematic, more than 70 percent of respondents said inaccurate reporting, followed by sensational coverage (66 percent), bias reporting (65 percent) and selection of stories (64 percent; Knight Foundation, 2018). The same report found that approximately 70 percent of Americans get news at least occasionally from social media and internet platforms, yet they find these tools troubling for democracy because of their algorithmic and recommendation-based nature (Knight Foundation, 2018).

These unfavorable sentiments have a number of consequences. Levels of audience trust and confidence in the news media impact how citizens engage with and consume information. Research using survey data from the Reuters Institute Digital News Report ( $N = 21,524$ ) found that low trust in the news media is associated with a preference for non-mainstream news sources

(Fletcher & Park, 2017). These low trust audiences are also more likely to consume news on social media, blogs, and from digital-only publishers. Conversely, high trust users are less likely to prefer non-mainstream news sources and gravitate towards mainstream outlets (Fletcher & Park, 2017).

Social and digital media technologies may play a role in this waning trust. The current digital environment allows just about anyone to become a news, information and content publisher. This means that biased, sensational, and less-than-professional news organizations are able to exist in the same space as legitimate news organizations, and distinguishing between the two could be difficult for some news consumers. Additionally, consumers have access to a large amount of information and a wide range of perspectives, from both news organizations and other users—some of which may be conflicting and confusing—which could potentially lead to a lack of trust in the media or organizational information sharers.

This chapter will focus on how digital and social media technologies have changed newsroom processes and shifted the role of the audience. This chapter will conclude with a discussion around state of trust and credibility in the news media and the factors that influence both trust and reliability in news content and sources.

### **How Digital Technologies Have Changed Newsroom Processes**

Digital technologies have impacted how newsrooms operate and how journalists do their work. For example, digital tools and platforms have introduced breaking news culture (and immediacy of news content generally), called into question the role of the journalist, increased the level of interaction between journalists and the public, and changed media business models. These impacts, though not an exhaustive list, will be discussed throughout this section.

Today, thousands of media organizations have a digital and social media presence, but

the history of digital journalism only dates back a few decades. In the 1990s, only a small number of newspapers had an online presence that could be accessed by a networked computer (Kawamoto, 2003). At the outset, many traditional outlets weren't taking full advantage of the affordances of the digital medium, and the online content of traditional outlets often mirrored their offline content (Kawamoto, 2003). However, a turning point in online news coverage came in 1995 in the aftermath of the Oklahoma City Bombing (Allan, 2006). Allan writes that "minutes after the bombing, journalists and their editors at online news services were rushing to post whatever information they could about the tragedy" (Allan, 2006, p. 16). Eyewitness accounts posted online by ordinary citizens, along with discussion forums used for information-sharing and community outreach efforts, were also used. Despite this being an early example of breaking news online, the process was still clunky and slow, and many newspapers with an online presence chose to hold information until the end of the day when all facts had been gathered (Allan, 2006). Allan also notes that it was rare for rich media (i.e. photos, videos) to accompany online stories. He adds that ABC News published a 15-second video clip that was grainy and small, yet still took approximately 11 minutes to download (Agrawal, 1995, via Allan, 2006). Despite the rudimentary technologies of the times, these internet affordances changed the breaking news process entirely and began to pave the way for the round-the-clock news coverage seen today.

In the early stages of digital content, traditional news organizations and journalists weren't the only ones to capitalize on and adopt these technologies. Internet and publishing technologies gave rise to digital-only publications and blogs, which became popular ways for individuals unaffiliated with news organizations or traditional publishers to disseminate news and information (Standage, 2013). Blogs initially began as opinionated, political and highly

partisan outlets, managed by individuals who positioned themselves as the alternative to the mainstream media (Standage, 2013). Blogs varied—and continue to vary—in their scope and topical coverage. Blogs can contain political commentary, local news or simply be a personal way of chronicling one's life experiences (Kawamoto, 2003). The debate over whether or not blogs count as journalism continues, even today. While some argue that in order to engage in digital journalism, one must be trained as a journalist and be working on behalf of a news organization, others have a much less restrictive definition (Kawamoto, 2003).

Digital tools have also made journalism more interactive—both the product, and the practice of journalism. Jason Seiken, former editor of washingtonpost.com, suggests that two of the advantages to online news are related to interactivity, including (1) a capacity for greater depth in storytelling, made possible through interactive elements like timelines, links to other pages and primary documents, and (2) a capacity for interactivity, including engagement with the audience through comments and discussion (Allan, 2006). As alluded to in Seiken's latter point, digital and social media platforms have given journalists and the public more ways to interact with one another, which means that journalists can speak directly to their audiences in order to ask questions, enlist their help and gain deeper insight. Conversely, the public is able to ask questions of the journalist, provide direct and immediate feedback or criticism, and request follow up information.

The internet has also completely upended media business models, forcing many publishers to focus on advertisers and advertisements, clicks and web traffic, and the acquisition of news audiences. Through this process, many publishers put focus on speed and being the first to publish the story, producing ‘clickable’ content that often focuses on catchy headlines and interactive graphics to pull audiences in, and what some call ‘churnalism,’ or cheap and

disposable content repurposed from other sources like press releases, social media platforms or other news reports (Silverman, 2015).

Though not an exhaustive list, digital technologies and social media have introduced a need for speed within the industry, increased instances of clickbait-y headlines and sensational stories, and created the roles of non-traditional journalists and bloggers. All of these may impact the public's perception of the media generally, making these a brief discussion of these topics relevant to this dissertation.

### **The Shifting Role of the Audience**

Digital media technology has impacted more than just news organizations and newsroom processes; the role of the audience has also changed dramatically in the past few decades (Bowman & Willis, 2003; Murphy, 2015). These shifts include increased audience interaction with content and content producers, access to information, and the ability to quickly and easily share information. These impacts, though not exhaustive, will be discussed in this section.

Perhaps most importantly for journalists, the features of these tools allow the public to interact with and comment on news content, news organizations and journalists easily, often, and directly (Hille & Bakker, 2014). They are able to quickly and seamlessly share news with others in their network, comment on news topics and ask questions of, and praise or criticize, the journalists who wrote an article. This is in stark contrast to previous iterations of journalism, where stories were published or broadcasted and audiences, often viewed as passive consumers of information, read or watched the story. In the past, from an engagement standpoint, the public could call the news organization or write a letter to the editor, but today's tools and technologies make this interaction simple, quick and easy.

Access to information has also changed. News audiences can now gather information from a variety of media (e.g. television, radio, websites, mobile apps, social media, podcasts, and newspapers) and sources (e.g. mainstream news outlets, blogs, publicly funded organizations, citizen journalists), which provides audiences with autonomy and freedom, but also puts more responsibility on news audiences to make decisions about quality.

Additionally, the features of digital media also allow for quick and easy sharing of information. This affordance means that online publishers are able to disseminate their content quickly through various online platforms, but it also means that internet users are able to find content and information from a variety of sources who are sharing content in the environment. A 2016 report from the Pew Research Center found that nearly 40 percent of American adults often get news online (Mitchell, Holcomb & Weisel, 2016; Mitchell, Shearer, Gottfried, & Barthel, 2016), and while the majority of the news they often consume comes from professional outlets (36 percent), they are also likely to get news from friends and family (15 percent). They also report finding news and information from friends and family more relevant than the information they get from news organizations (Mitchell, Holcomb & Weisel, 2016).

The current, and ever-evolving, digital news and information ecosystem has had a profound impact on how news is accessed, and information is consumed. It has also impacted how both news organizations and audiences understand and negotiate concepts like trust and credibility as they relate to news media. The next section of this chapter will explore research that examines how both news organizations and news audiences have understood these concepts. As a note, the term credibility is used extensively in this section, as it is a word traditionally used to talk about the quality of information disseminated from the news media. However, this term, though used in other research, is not to be used interchangeable with the word reliability, which

is used throughout this dissertation. Credibility means “able to be believed” or “convincing,” whereas, for the purposes of the current work, reliability refers to “the degree to which something can be depended upon to be accurate.”

### **Journalism and the Concepts of Trust and Credibility**

The practices and products of journalism are closely tied to the concepts of both trust and credibility. In their research examining the declining trust in media, Pauwels and Picone note that all parties—news companies, journalists and news users—must be trusted mutually in order for the relationship to work (Pauwels & Picone, 2012). But these relationships are changing given the transformative nature of the news industry where audiences have more autonomy and many forms of journalism are user-driven (Pauwels & Picone, 2012). The authors suggest that journalists and news companies must continue to fulfill their central role of truth teller in order to be seen as authentic, and trusted, by news consumers (Pauwels & Picone, 2012). This section explores how news organizations and news audiences understand the concepts of trust and credibility.

### **Media Trust and Credibility: News Organization Perspective**

News organizations and journalists certainly care about perceptions of trustworthiness and credibility, because they want their stories to be consumed, shared and relied on. Although this dissertation does not deal directly with these perceptions from a news organizations’ perspective, this section provides an overview of these topics in order to acknowledge their importance and provide a more complete understanding of the digital news landscape. There are several relevant research tracks that explore how news organizations interface with the concepts of trust and credibility, including how journalists handle errors and how journalists interact with

the public. Journalistic accuracy and error, both of which are closely related to the concepts of trust and credibility, are well-researched concepts in the journalism studies discipline. Work by Porlezza and Russ-Mohl suggests that journalists, editors and news sources often disagree about what constitutes an error—namely factual versus subjective errors—and about why errors occur (Porlezza & Russ-Mohl, 2013). But the fact that journalistic errors do occur, which could lead to erosion of trust and credibility, is not up for debate among scholars. Several early studies into pre-digital newspaper accuracy over several decades (Brown, 1965; Charnley, 1936) suggest that in the United States, error rates in news articles are between 40 and 60 percent (Porlezza & Russ-Mohl, 2013). Within this area of study, factual accuracy has been classified into multiple error categories including incorrect quotations, spellings, names, ages, incorrect numbers, titles, addresses, locations, times and dates. But McNair (2013) discusses bigger and more damaging errors in the news. In analyzing decreasing trust in journalism, he states that “nothing has damaged trust in journalism more in these past years... than the deliberate fabrication of facts by print and broadcasts journalists of the old media—the invention of stories and sources, the presentation of lies and truth, and the manipulative and deliberately misleading editing of documentaries” (McNair, 2013, p. 85).

The internet has fundamentally changed the way accuracy is approached within the journalism industry and scholars like Porlezza and Russ-Mohl note that the accuracy of information is often overlooked in favor of speed, due to the competitive nature of news in digital environments (Porlezza & Russ-Mohl, 2013). They note that “due to an online-first policy, contributions frequently get checked only after publication,” and they also add that “errors, once published, diffuse everywhere within minutes to do viral distribution” (Porlezza & Russ-Mohl, 2013, p. 55). This is problematic, but unlike traditional (i.e. print) journalism, errors

can also be quickly corrected online—either by the journalists or the audience. The authors state that for news organizations to be taken seriously, they must document changes to errors explicitly so that readers are aware of them (Porlezza & Russ-Mohl, 2013). This transparency and willingness to correct, and call attention to errors and subsequent corrections, can be seen as a way to build trust and credibility with audiences.

Another way journalists may be able to enhance their relationship with the audience is through responsiveness. Brants outlines several types of responsiveness including civic responsiveness, strategic responsiveness, empathetic responsiveness and populist responsiveness (Brants, 2013). Brants' typologies of responsiveness that are applicable to wide audience engagement include *civic responsiveness*, where media organizations and journalists develop ways to listen and connect with the audience, similar to the work of public journalism, and *strategic responsiveness*, which has a commercial or market-driven motive to attract consumers to a product (Brants, 2013). However, all of the typologies imply that a form of interaction, or responsiveness, is beneficial to the journalists-audience relationship.

It is clear, through this brief look into how news organizations and journalists can establish trust and credibility with their audiences, that news organizations do indeed grapple with these idealistic concepts. However, audiences are also required to negotiate these values as they assess news content and sources.

## **Media Trust and Credibility: The Audience Perspective**

News audiences have always had to consider the credibility and trustworthiness of the news sources they consume. In order to feel confident in the veracity, completeness, and fairness of the news content, audiences assume some amount of reliability and credibility on the part of

the media. In a 2016 survey ( $N = 2,014$ ) by the American Press Institute, 85 percent of respondents said accuracy is critical for trusting a news source and 76 percent said having the latest details is a main factor in their trust of a news source (American Press Institute, 2016).

However, in today's busy digital environment, assessing the trustworthiness and credibility of news and information not only becomes more important, but certainly becomes more taxing for audiences, for a variety of reasons. First, the sheer amount of information available to consumers ("Data never sleeps 5.0," 2017) means audiences can't possibly vet every fact and figure they encounter. Additionally, the prevalence of mis- and dis-information means that falsehoods run rampant online and many users may not be able to discern between fact and fiction (Gottfried & Grieco, 2018; Wineburg, McGrew, Breakstone & Ortego, 2016). Lastly, digital media tools allow for the doctoring and misrepresentation of photos, documents, and other primary sources, so consumers may be easily confused (Farid, 2016; Suwajanakorn, Seitz & Kemelmacher-Shlizerman, 2017). This mistrust is so prevalent on digital and social platforms that only 12 percent of Facebook news consumers say they put a lot of trust in what they see on the site (American Press Institute, 2016). However, with so much news consumption happening within social and digital media environments, it's important to examine this media skepticism. There are several factors that influence perceived trust and credibility in news sources and information. The next portion of this chapter will look at the challenges associated with evaluating information online and outline several factors associated with audience trust and credibility in news.

**Challenges to information evaluation in digital media environments.** Interactive online environments have many benefits, but do not exist without concern and consequence.

Technology has presented challenges to the way users interact with information and news content, including issues around information overload and the spread of misinformation.

Social media environments, and the internet more broadly, are full of information and information creators and sharers. When users log onto platforms like Facebook, Twitter, Instagram, Snapchat, or email, they likely encounter streams and feeds full of information, ranging from breaking news, personal correspondences, reminders and announcements, advertisements, and rich media content like videos, audio, and photos. For some users, all of this information can seem overwhelming and lead to information overload (Holton & Chyi, 2012). A 2016 study from the Pew Research Center found that 20 percent of U.S. adults feel overloaded by information (Horrigan, 2016). However, this information inundation impacts various groups and individuals in different ways. For example, American adults with lower incomes and lower levels of education struggle the most with the demands of information (Horrigan, 2016). Nearly fifty percent of adults with a high school education or less and an income of less than \$30,000 per year reported that it is somewhat difficult for them to find the information they need (Horrigan, 2016).

Information overload is not a new phenomenon, of course, but it has been exacerbated in recent years by the growth and wide adoption of the internet and social media platforms. The examination of information overload goes back decades to when Malhotra (1982) found that when consumers have too much information, or too many choices, they make poorer decisions and are distracted from the decision-making process (Malhotra, 1982). Though Malhotra's work does not examine digital information, it does suggest that cognitive processes may be impaired by cognitive overload, which is an important finding for further understanding how humans are affected by saturated news environments.

In order to navigate the drudge of information available within social media spaces, users, either knowingly or unknowingly, deploy strategies to decide what content they trust and consider credible. The existence of “fake news,” or misinformation makes this work more difficult. The affordances of the internet and social media platforms allow for any user to become a content creator, which means information published and made widely available within these environments may not be true or could be largely flawed. A recent report from the Pew Research Center found that 64 percent of Americans agreed that fabricated news stories “cause a great deal of confusion about the basic facts of current issues and events” ( $N = 1,002$ ; Barthel, Mitchell, & Holcomb, 2016). Some respondents (23 percent) even admitted to sharing a fake story on social media—either purposefully or unknowingly (Barthel, Mitchell, & Holcomb, 2016). These figures suggest that many users in these spaces are grappling with, or at least thinking about, the credibility of the sources they encounter online.

For some, the exposure to misinformation may simply be annoying and cumbersome, even if they recognize it as untrue. But for others, the exposure to misleading or false information is not harmless. Some research suggests that after being exposed to a rumor online, people do not actively seek out accurate information (Lee & Choi, 2018). This research also suggests that when users have engaged with incorrect information, it may be hard to correct or alter their opinion. In another study, when users were shown correct information after being exposed to incorrect information, the influence of incorrect information remained, especially for people with lower levels of cognitive ability, though those with higher cognitive abilities were able to adjust more appropriately ( $N = 390$ , De Keersmacker & Roets, 2017).

However, there are many factors that help audiences better evaluate information and information sharers in online spaces. Prior research into these factors and features will be

explored in the final portion of this chapter.

**Factors influencing audience trust in digital environments.** There are several factors that influence the public perception of trust and credibility in the news media. Two types of trust and credibility that will be explored in this section are: (1) medium and/or source trust and credibility; (2) message trust and credibility. The former is related to the medium (e.g. print, television, radio, online, social media) used to disseminate and consume news, as well as the source of the news (e.g., journalists and news organizations). The latter, message credibility, is concerned with the actual message and its quality, the contextual factors related to the message, and how it is presented.

***Factors related to medium and source credibility.*** Media trust and credibility by format has been studied extensively (Fletcher & Park, 2017; Johnson & Kaye, 1998; Kiousis, 2001; Metzger & Flanagin, 2001; Tsafati & Cappella, 2003). Early work by Metzger and Flanagin sought to understand people's perceptions of the credibility of online information, compared to information on other media (Metzger & Flanagan, 2001). The findings of this survey ( $N = 1,041$ ), where data was collected in 1998 and 1999, suggest that newspapers were rated higher in credibility than other media formats (Metzger & Flanagan, 2001). The study also found that their sample rarely to occasionally verifies information on the internet (Metzger & Flanagan, 2001). More work from this decade (1998) by Johnson and Kaye used four dimensions to study media trust and credibility: believability, fairness, bias, and depth (Johnson & Kaye, 1998). In researching four sources (newspapers, newsmagazines, candidate literature and political-issue

oriented sources) separated into two categories (traditional and online), findings suggest that online newspapers and online candidate literature, or information about a political candidate that was available online, were found to be more credible than their traditional counterparts (Johnson & Kaye, 1998). They also found demographic differences in trust: participants who were female, younger and less educated tended to trust online sources more (Johnson & Kaye, 1998).

Another study from 2001 that examined the credibility of online news compared to other media found similar results. Study ( $N = 818$ ) findings suggested newspapers were seen as most credible, followed by online news and then television news (Kiousis, 2001). There was also an association between news use and perceived credibility for both print and online news (Kiousis, 2001). That is, the more a respondent used a certain media for news, specifically print or online, the more credible that medium was perceived.

There is another subset of research in this space that looks into media use and trust by type of media, either mainstream or non-mainstream media. Work by Tsafati and Cappella explored the relationship between media skepticism and news exposure. In their study ( $N = 2,471$ ), mainstream media is defined as national and local television, radio news and daily newspapers, and non-mainstream media is defined as political talk radio, and online political information (Tsfati & Cappella, 2003). They found that if a person is more skeptical about the media, they will limit exposure to mainstream news and are more likely to consume non-mainstream media. More recent work in this space, by Fletcher and Park (2017), suggests that trust influences how people access the news and what types of sources they seek out. In their study, which uses the sample from the 2015 Reuters Institute Digital News Report ( $N = 21,524$ ), they found that high trust in news media is associated with a preference for mainstream news sources (Fletcher & Park, 2017). The opposite is also true: low trust in the news media is

associated with a preference for non-mainstream news sources (Fletcher & Park, 2017). Their work also found that those with low trust were more likely to engage in online news participation, like sharing and commenting (Fletcher & Park, 2017).

Source credibility, wherein the source refers to the journalists or news organization producing the news content, is also well researched (Lee, 2015; Nah & Chang, 2012; Usher, 2017). Work by Nah and Chang (2012) looks at how different types of journalists—namely professional and citizen journalists—are perceived and how social capital plays a role in that negotiation of trust. They suggest that trust is a major component of social capital, which they define as the actual or potential resources linked to the possession of a strong network (Nah & Chang, 2012). They note that online community news sites can bond and bridge social capital both online and off. They hypothesized that social capital (along with social trust and media credibility) would influence perceived role conceptions of journalists. Through their research ( $N = 238$ ), they found that media credibility was related positively to the role of professional journalists, but when they examined the concept of social trust, there was a positive association for the role conception of both professional and citizen journalists (Nah & Chang, 2012).

Another way to examine the public trust in journalism and media is to look at and understand how journalist interact with audiences on social media. Lee examines two normative social media practices that journalists often engage in: self-disclosure, or the discussion of personal thoughts, feelings and experiences meant to build relationships; and interaction with other users, which requires active communication, facilitates interactivity and providing of feedback (Lee, 2015). This research ( $N = 267$ ) found that the more journalists self-disclose and interact with others on social media, the more positively the public perceived the journalist in the personal realm (Lee, 2015). However, more self-disclosure and interaction results in a more

negative perception of the journalist (and the news product associated with them) in the professional realm (Lee, 2015). This suggests that normative social media practices, like self-disclosure and interaction, may not benefit journalists professionally. Other work on journalists, interactivity and Twitter, by Littau and Jahng, however, yielded different results, and their mixed method experimental study found that participants rated highly interactive journalists as more credible than journalists who were less interactive (Littau & Jahng, 2015).

Outside of digital environments, other, more tangible items related to the institutions and organizations of news may also influence public trust. Usher takes a unique approach to trust in journalism by looking at the “objects” of journalism—namely news buildings, the “raw materials” of news like interview transcripts, b-roll and code, and the news products themselves (Usher, 2017). She asserts that these materials matter a great deal to how trust is negotiated (Usher, 2017). News buildings, Usher contests, are important buildings within communities because they are usually near other civic buildings and their presence symbolizes an institution that has an impact on people’s daily lives (Usher, 2017). Other physical representations (e.g. newspaper boxes, sponsorship of local teams) of news are important, too, as they serve as a way integration into the community (Usher, 2017). When news buildings go away, as many have over the last few decades, it marks the disappearance of these institutions from citizens’ daily routines (Usher, 2017). Usher also makes a case for journalists “showing their work” and making the raw materials of news available to audiences (Usher, 2017). Though this practice may concern some journalists and news organizations, showing journalistic metadata (e.g. quotes, headlines, ledes, code, interview transcripts, b-roll) would help audiences to understand journalistic processes more clearly and would make journalism more accessible (Usher, 2017). Finally, the products of news, which Usher describes as things like news apps, interactive elements, websites and

chatbots, could be used to build trust and credibility with audiences (Usher, 2017). As she describes, these tools are often evaluated for success or failure within the newsroom instead of being evaluated for their value to the news user and experience (Usher, 2017). Though medium and source credibility are important factors when examining trust and credibility in news media, other factors like the message and contextual elements also play a role.

***Factors related to message and contextual credibility.*** Studies have also focused on the public perception of trust and credibility in the actual message, and the context in which the messages exist (American Press Institute, 2016; Curry & Stroud, 2017). A report from 2016 examined audience trust in news sources and found that the factors most likely to result in loss of trust were finding a source or message one-sided or biased (26 percent lost trust), followed by finding the source used incorrect facts (25 percent) (American Press Institute, 2016). These are especially interesting findings given the hyper-partisan nature of some popular news sources and the political bias present in many of the messages distributed by these sources.

Other parts of the message delivery may matter too, including how the news content and message are contextualized, especially on websites and within other platforms like mobile apps. The 2016 API report found that several features of the digital environment impact consumers' reliance on a news source. For example, 63 percent of respondents said advertisements not interfering with news was the most important factor in relying on a news source, in addition to the load speed of the site or app (63 percent), followed by the ability of the content to be consumed on a mobile phone (60 percent) (American Press Institute, 2016).

Other contextual elements in online spaces may play a role in the perceived credibility of the message. A report from the Center for Media Engagement examined what transparency-

related indicators affected trust in online news (Curry & Stroud, 2017). Their study examined five indicators: (1) presence of reporter photo and job title; (2) a label indicating type of story (e.g. analysis, opinion, news); (3) footnotes containing source materials; (4) a section entitled “Behind the Story” that explains why and how story was written; (5) information about the news organizations participation in the Trust Project and links to some best practice (Curry & Stroud, 2017). After conducting an online experiment ( $N = 1,183$ ), they found that when these indicators were present, evaluations of news organizations were higher, and evaluations of the reporter were also higher (Curry & Stroud, 2017). The most noticed indicators were the “Behind the Story” section and the information about the Trust Project, and the authors concluded that stories that included these indicators were seen as more trust, reputable and reliable (Curry & Stroud, 2017).

Several factors—including news medium, news source, message context, and the message itself—fluence how audiences perceive news organizations, journalists and news content, both in off- and online spaces. These concepts will be explored further in the remainder of this dissertation.

## **Chapter 3: Review of theory**

As discussed in previous chapters, digital tools have drastically changed how audiences and consumers engage with content, news and information. There are several theories and frameworks that have been used to examine how humans engage with information and media, though the majority of them were created decades ago before the internet was introduced into the mainstream. Though these theories and frameworks are more canonical in nature, with some critical examination, these concepts have been, and can continue to be, adapted to account for behaviors that take place online and in interactive, social spaces.

This chapter will examine scholarship from a number of disciplines and research areas. It will begin by briefly introducing different theories—human-information interaction theory, uses and gratification theory, social cognitive theory, social impact theory—that have been used to explain how users interact with information and behave in online spaces broadly. Then, this chapter will move into a discussion of signaling theory, which provides the broad, overarching theoretical framework for this dissertation. The chapter will conclude with a brief overview of research that examines how users have evaluated information and signals for quality in social media spaces.

### **Overview of Information Sharing and Consumption on Social Media**

The internet, and the digital media tools and platforms it enables, has introduced new modes of communication and interaction, on both large-scale and interpersonal levels. In a 2018 Pew Research Center study, 69 percent of U.S. adults reported using social media (Pew Research Center, 2018). The number of people in the U.S. using these platforms has grown dramatically from 2005, when just 5 percent of adults said they used a social media site (Pew Research

Center, 2018). A popular action on social media platforms—which span technologies like forums, discussion boards, mobile applications and social media sites like Facebook, Twitter and Instagram—is the consumption and sharing of news and information. As for news use specifically, a 2017 report from Pew ( $N = 4,971$ ) found that 67 percent of adults reported getting at least some of their news on social media (Shearer & Gottfried, 2017). A 2012 study ( $N = 1,600$ ) of Canadians found that two-fifths of social media users reporting receiving news from sites like Facebook and one-fifth of the respondents said they get news from a news organization or journalists they follow on these platforms (Hermida, Fletcher, Korell & Logan, 2012). These tools seem to be valuable to users in the news-retrieval space: that same study found that respondents considered social networking sites as a main, and valued, channel for news consumption (Hermida, Fletcher, Korell & Logan, 2012).

Affordances of social media sites and platforms allow users to quickly and easily share news and information with their networks and allow for easily connecting with others. These users make up the ‘networked public,’ wherein *public* denotes a collection of people (boyd, 2012). Networked publics, or publics restructured by networked technologies, are built as a result of the intersection of people, technology and practice (boyd, 2012). These networked publics allow people to come together for a variety of reasons (i.e. social, cultural, civic) and to connect with others outside of their immediate network of friends and family. Within online spaces, networked publics use the affordances of platforms to engage and interact, though platforms often dictate the social practices of the space (boyd, 2012). For example, work on social networking sites and news discussion found that engagement with news content depended largely on the affordances of social platforms (Oeldorf-Hirsch & Sundar, 2015). The study ( $N = 265$ ) focused on Facebook and found greater involvement in news discussions when opinion

leaders were able to ask the network to share opinions and when specific friends could be targeted (Oeldorf-Hirsch & Sundar, 2015). For the news sharer, discussion in the comments section increased their sense of involvement and influence (Oeldorf-Hirsch & Sundar, 2015).

In these environments, networked publics use platform capabilities to post content (e.g. text, links, photos, videos) directly or re-share content that already lives within the ecosystem, through built-in functions like sharing on Facebook or retweeting on Twitter. Any social media user can see that these actions and interactions are taking place daily across platforms. In aggregate, social media users are generating and sharing content, both news and general information, at an extraordinary rate, and it's important for scholars to understand these practices, and the user motivations that precede them, on an empirical level.

### **Theories Used to Understand User Engagement with Information and Media Online**

There are several mass communications and social science theories—focused on individuals, information systems and interactions—that have been used to help explain, at least in part, the information and news consumption and sharing practices that take place within contemporary networked publics and online spaces. According to an article that reviewed 461 scientific, peer-reviewed articles that examined news sharing on social media from 2004 to 2014, the most common theoretical frameworks for this area of research were diffusion of information or innovation (39 percent), theories of social influence (10 percent), interactivity (6 percent), political participation (6 percent) and uses and gratifications (6 percent) (Kümpel, Karnowski & Keyling, 2015).

Several theories, including some listed above, were surveyed for this dissertation, including the human information interaction framework, social cognitive theory, uses and gratification theory, and the theory of social impact.

## **Human Information Interaction Framework**

The human information interaction (HII) framework is simply a paradigm that examines how humans interact with information. Within the framework, Fidel (2012) suggests that information is anything that can be felt by one of the five senses (e.g. sight, smell, hearing, taste, touch). He also notes that in order for something to be classified as information, it must have meaning, be communicated, have an effect and be used for decision making (Fidel, 2012).

According to Fidel, within the HII discipline, there are two established research areas: *information-seeking behavior*, which is concerned with how people look for information; and *information retrieval*, which investigates retrieval models and mechanisms for computer systems that retrieve information as requested by users (Fidel, 2012). Related work on information flow examines the places where information is exchanged, and scholars have long-studied these places, which are often described as ‘information grounds’ (Fisher & Naumer, 2006; Oldenburg, 1999). These physical gathering places are accessible, neutral spaces, like coffee shops and beauty parlors, where conversations take place and information is exchanged. Though scholars have previously examined physical, real world spaces where people met face-to-face, social media platforms like Facebook and Twitter, discussion boards, messaging platforms and mobile apps might also be considered information grounds where information flows and is constantly exchanged.

Though studies about social media that use the HII paradigm explicitly are limited, some models related to information sharing and consumption have been developed in this space, like the information acquiring-and-sharing (IA&S) model and the model of information seeking in everyday life (ELIS).

Though the HII paradigm does help researchers to understand the processes and places of human interaction with information online and off, it does little to explain the motivations behind consumption and sharing in social networks.

### **Uses and Gratification (U&G) Theory**

The theory of uses and gratification has been used widely in media studies to explain audience media choice and media impact. Contrary to some older theories of media effects, the U&G paradigm assumes an active audience, rather than a passive one, however it also acknowledges that media and media content are indeed influential (Blumler & Katz, 1974; Rubin, 2009).

Blumler and Katz argued that audiences consume media to gratify certain needs, including diversion (i.e. media offer an escape from everyday life), personal relationships (i.e. media like television offer companionship and conversation), personal identity (i.e. media offer role models and allow audiences to compare their own lives), and surveillance (i.e. media offer important information about environment) (Blumler & Katz, 1974). However, these effects, or gratifications, are mediated by individual differences and media (and media content) may fulfill different needs for different people. Within this framework, motivation is an especially key component, as “it influences the selective and active manner in which we participate in communication and the possible outcomes of the encounters” (Rubin, 2009, p. 150).

Though the uses and gratification framework has been used for decades to study radio, television and newspaper use, more recently the framework has also been adapted to study user engagement with new media formats. The strength of this theory in examining practices and behaviors related to information consumption and sharing on social media is the focus on individual motivation and gratifications sought, which can provide researchers with insights about why users engage with certain media and media content, especially if this data is gathered en masse.

In recent scholarship, the U&G theory has been used to study why users engage on social media platforms and with digital content. Much of the research in this area attempts to understand the motivations of users, which include the original needs proposed by Blumler and Katz, but introduce other needs like socialization, entertainment, information-seeking, status seeking and social media efficacy, to name a few. However, in a review of the literature, two gratifications or needs related to social media sharing surface with significant frequency: information-sharing and socialization (or affiliation).

Several studies suggest that information needs and gratifications (both the seeking and sharing of information) influence social media use. In a study ( $N = 203$ ) on news sharing on social media, researchers Lee and Ma found that users who are driven by the information seeking gratification were more likely to share news on social media (Lee & Ma, 2012). Another more recent study ( $N = 396$ ) looking at hyperlink-sharing on Twitter found that information-sharing was the most salient motivating factor (Holton, Baek, Coddington & Yaschur, 2014). Similar work ( $N = 217$ ) on link-sharing on Facebook also found information-sharing to be the most influential motivating factor for users on the platform (Baek, Holton, Harp & Yaschur, 2011).

Other studies have found that socializing, or social affiliations, is a strong motivating factor for social media sharing and social media use. One study ( $N = 203$ ) that examined news sharing on social media from both the U&G and social cognitive theory perspectives found that the two factors most associated with social sharing were prior social media experience and the gratification of socialization (Lee & Ma, 2012). Another study ( $N = 308$ ) from 2015 focused on motivations for information sharing on social networking sites among college students and found that the expectation of positive social outcome and the perceived strength of network ties predicted sharing (Kim, Lee & Elias, 2015). Work in 2015 ( $N = 433$ ) by researchers Syn and Oh identified ten factors related to sharing on Facebook and Twitter and found that social engagement was the second largest indicator of sharing information (behind learning) in these social spaces (Syn & Oh, 2015).

Studies that look at other online spaces—including online learning sites and listservs—also suggest social motivations are key to information sharing (Ma & Chan, 2014). Earlier work from 2007 looking at listserv activity and motivations for participation and sharing in these spaces found that the most common motivation was reciprocity, followed by collectivism (Hew & Hara, 2007). Both of these motivations speak to the building of communities and social relationships.

Broadly, the U&G theory is helpful in understanding individual usage of social media in terms of motivations and gratifications sought. It examines a variety of factors motivating user sharing—information-sharing, socialization, entertainment, status-seeking—which makes it a flexible and expansive paradigm. However, it lacks depth in that it does not take into consideration societal or contextual factors preceding the motivations which would allow researcher to better explore why users might be motivated by these gratifications or needs.

## **Social Cognitive Theory (SCT)**

In its inception as the social learning theory in 1977, social cognitive theory (SCT), coined by Bandura in 1986, began as a theory of social learning and behaviorism, but has since been applied to other disciplines and phenomena (Ormond, 2010). SCT takes into account cognitive factors when examining how people learn, why they behave in certain ways, how they interpret what they see, how they form expectations about future events and how they assess their abilities to complete tasks (Ormond, 2010). The key concepts of SCT, some of which will be discussed here, are reciprocal causation and personal agency, expectations and self-efficacy, modeling and self-regulation (Bandura, 2001; Bandura, 2002; Pajares, Prestan, Chen & Nabi, 2009). Though this theory was not originally used to examine behavior in digital environments, tenants of the theory have been adapted to more thoroughly understand user behaviors and practices within social media environments.

Within his framework, Bandura refers to humans as “agentic,” or having agency and the ability to act, self-organize, self-reflect, and self-regulate (Bandura, 2001; Bandura, 2002). Through concepts like vicarious and social verification, people—including social media users, in this context—are able to observe the performances of other users in order to better understand and evaluate the expected outcomes associated with their potential actions (Bandura, 2001; Bandura, 2002). Bandura also suggests that modeling behaviors within social environments can have an impact on others. That is, the process of acting out certain behaviors has been shown to influence other agents, in the same social environment, to act in a specific manner (Bandura, 2001; Bandura, 2002). Social cognitive theory also takes into account a socially constructed version of reality, which ties in directly to the role of the media. Though Bandura does not write

from a strong media effects perspective, where audiences are passive receivers of information, his theory does suggest that agents (i.e. humans, users) can be influenced (Bandura, 2001; Bandura, 2002).

Though Bandura wrote his theory before the creation of social media, he points to print and television media as having the ability to shape reality (Bandura, 2001). He also suggests that exposure to media representations alters media users' understanding of the "authentic state of human affairs" (Bandura, 2001, p. 281). But media itself may not be enough to influence agents within an environment, as he suggests that people can be influenced directly by the media, or they can be influenced via a socially-mediated pathway (Bandura, 2001). These socially-mediated pathways link people together in social networks and communities, which facilitate social support and guidance. It is within these networks that people learn, are prompted to change their behavior, influence one another multi-directionally, share and shape meaning and gain understanding (Bandura, 2001; Bandura, 2002). Additionally, Bandura suggests that the more social ties a person has, the more likely they are to adopt innovation (Bandura, 2001; Bandura, 2002). Social media technologies, platforms, and communities all allow these transactions to happen more quickly and across various networks and geographic locations.

Several studies have used social cognitive theory in order to understand user behavior in social media spaces (Chen, Sin, Theng & Lee, 2015; Chiu, Hsu & Wang, 2006; Khang, Han & Ki, 2014). One study examined how multiple social cognitive determinants influence use of social media (Khang, Han & Ki, 2014). The determinants under examination were self-efficacy (the belief in one's ability to complete a task or achieve goals), habit strength (representing individual behavior patterns), and deficient self-regulation (one's failure to self-regulate) (Khang, Han & Ki, 2014). Their study ( $N = 603$ ) findings suggest that habit strength was the

sole and direct precursor to social media use, which suggests that the act of using social media is highly habitual (Khang, Han & Ki, 2014). However, deficient self-regulation, past experience with social media, activity and social outcomes all contribute to a habit mindset and influence the use of social media (Khang, Han & Ki, 2014). Self-efficacy, however, which is central to SCT, did not prove significant to social media use, habit strength or past experience, though the study did find support for social outcomes as an influencing factor for use, and outcome expectations, as discussed above, are a key concept of the theory (Khang, Han & Ki, 2014). Other work ( $N = 310$ ) related to outcomes and information sharing in virtual communities using the theories of social capital and social cognition suggest that community-related outcomes play a role in knowledge sharing as it relates to quality and quantity (Chiu, Hsu & Wang, 2006).

Social cognitive theory was also used in a study that examined the spread of misinformation on social media platforms (Chen, Sin, Theng & Lee, 2015). The work attempted to discourage the spread of false information using outcome expectations from SCT (Chen, Sin, Theng & Lee, 2015). The research also used an intervention to modify use expectations. In an online experiment ( $N = 131$ ), participants were presented with an intervening message highlighting the negative consequences of misinformation, and the findings from this research suggest that such interventions have the potential to be effective, as the number of “likes” and “shares” were reduced when participants in the experimental group were shown the intervention message( Chen, Sin, Theng & Lee, 2015). The results of this study suggest that internet users’ behaviors are guided, at least in part, by these expected outcomes.

These studies showcase how SCT has been used contemporarily in research related to social media and information sharing. SCT is a relevant theory to the discipline because it allows researchers to look at the behaviors that precede action in social media environments (i.e.

consuming, sharing, engaging). For example, in an SCT framework, information consumption and sharing on social platforms can be seen as learned behaviors, as these practices are acted out publicly throughout networks, and the practices are modeled, or repeated, because their outcomes are seen as positive. Since most social media environments are relatively public spaces, SCT should be used more extensively to understand how groups of people, or communities, behave in online ecosystems given the socially-constructed norms, learned behaviors and anticipated outcomes users have witnessed from others in the community.

Although this framework takes into account societal, cultural and behavioral factors rather than focusing on only individual intrinsic motivations and desires, it may be too simplistic to account for all the motivations behind behaviors and actions taken online.

## **Social Impact Theory**

Social impact theory, rooted in the psychology discipline, was introduced in 1981 by Latané and suggests that people have an effect on other individuals (Latané, 1981). Within this framework, people can be the source of influence, or the target, and the impact is determined by the strength of the impact, immediacy of the impact, and the number of other people involved (Latané, 1981).

Though this theory originated in the early 1980s before the wide use of the internet and socially-intertwined technologies, it has been applied to the study of social media and online interactions. For example, signals of collective opinion—which are often innate to social platforms in the form of “likes,” “shares,” or “retweets”—have been shown to influence users’ opinions of statements, regardless of their truth or falseness (Li & Sakamoto, 2014). Drawing on the tenants of social impact theory, which suggests people affect one another in social settings,

the authors found that when statements related to health information were accompanied by a rating of their truthfulness (based on “others like you”), respondents were more likely to adopt the collective truthfulness judgement (Li & Sakamoto, 2014). That is, regardless of whether or not a statement was true, or the collective opinion rating was correct, participants aligned their evaluation with the collective opinion rating, which suggests people are highly influenced by others in online spaces (Li & Sakamoto, 2014).

Research into collective opinion and its influence on online news consumers ( $N = 98$ ) found that participant’s decisions about interestingness of news stories was influenced by the rating that appeared alongside the stories (Sakamoto, Ma & Nickerson, 2009). If the pseudo-rating showed was low, the participant rated the story less interesting, and the opposite was also true if the pseudo-rating was high (Sakamoto, Ma & Nickerson, 2009). Another experiment ( $N = 78$ ) by the same authors examined collective opinion in the form of “likes,” and news stories from Digg were shown alongside a note about how many previous users liked the story (Sakamoto, Ma & Nickerson, 2009). Findings suggest that other people’s decisions greatly impact the preferences of other users (Sakamoto, Ma & Nickerson, 2009).

Another more recent study ( $N = 364$ ) confirms the concept of social influence online (Turcotte, et al., 2015). The study that examined news exposure and social relationships found a significant relationship between the perceived opinion leadership of the sharer of the information and the positive perception of the news outlet from which the information originally came (Turcotte, et al., 2015). That is, the more trustworthy the opinion leader, the more trust for the news outlet. The opposite is also true for untrustworthy actors in the network (Turcotte, et al., 2015). The findings also suggest that when users get a news recommendation from a friend, they are more likely to seek out information from that content provider (Turcotte, et al., 2015). This

work solidifies the ideas that the sharer of the information has a significant influence on the perception of the information shared as well as the news outlet from which it comes (Turcotte, et al., 2015).

This theory is helpful in examining the influence of other users on individuals in social media spaces, but doesn't take into account other societal, cultural and algorithmic factors that could be playing a role in the impact and influence. It also does not take into account the content or message of the "impact." Aspects of the theory and social cognitive theory, along with signaling theory, will be used to build the broader framework of this dissertation.

## **Summary of Theories**

Though these theories are relevant to some aspects of user behavior on social media, ultimately, the studies in this dissertation will use signaling theory, and aspects of social cognitive theory and signaling theory, in order to understand user evaluation of information and news sharers in social media spaces.

## **Framework for Current Study**

In online spaces where information is being shared, being considered a trustworthy and reliable source is important and beneficial for reputable sharers of information and news. Within these environments, these sharers, knowingly or unknowingly, deploy signals that give others clues about their quality, or lack thereof. This dissertation will draw largely upon signaling theory, which has not been used extensively in media or journalism research but has roots in the 1970s in the economics and biological science disciplines. This section will first briefly examine scholarship around trust and trust development in online spaces, and then move into a review of signaling theory and its relationship to concepts of trust and reliability.

## **Trust Development in Online Spaces**

Several levels and types of trust have been studied, and scholarship that examines the nature of trust in online social networks (OSNs) suggests that layers of trust exist. Institutional trust, or trust in the fundamental mechanisms of the environment (e.g. the social platform, the internet), is the first level (Grabner-Kräuter & Bitter, 2015; McKnight & Chervany 2002). Once institutional trust is established, users shift their focus to other users in the environment and they base this level of trust off of their knowledge about other parties and their prior experiences with them (Grabner-Kräuter & Bitter, 2015; Lewicki & Bunker, 1995). Related to information sources specifically, Kelton writes “Trust in information may develop through a process of prediction if one has prior experience with an information source” (Kelton, 2008, p. 369). Past research has suggested that social connections and tie strength impacts what information is trusted and relied on in social media spaces (Bapna, Gupta, Rice & Sundarajan, 2017; Levin, Cross & Abrams, 2005; Pan & Chiou, 2011). That is, if a user has an existing connection with a news organization, or other source, on social media, they may be more (or less) likely to trust that source and the information they disseminate, based on their prior experience.

However, if a user encounters an unknown information sharer in a social media environment, they cannot call on past experiences and interactions. Therefore, in these situations, users have to make an assessment about the quality of the sharer based on the signals and cues presented through a user’s social media account and profile. Cues are any features of the world that act as a guide to future action (Donath, 2011; Hasson, 2000; Maynard Smith & Harper, 2003) and signals are cues meant to indicate some quality (i.e. honesty, strength, suitability), and are meant to communicate (Donath, 2011). Throughout the remainder of this dissertation, the

two terms will be used interchangeably and the intent of cues and signals to communicate something is implied.

Research ( $N = 152$ ) on online consumer reviews and trust in reviewers examined how personal profile characteristics—or cues—impacted source credibility (Xu, 2014). The findings of the study suggest that reputation cues (number of trusted members) influenced multiple dimensions of trust (affective and cognitive), but the cue of a profile image (versus no profile image) impacted only affective trust (Xu, 2014). This suggests that profile images elicit more emotional (or affective) responses, which is in-line with the social presence theory, which is concerned with the degree to which a person is perceived as ‘real’ in mediated communication (Gefen & Straub, 2003; Short et al., 1976).

In regard to news specifically, consumers gather signals from news organizations in order to determine trustworthiness both online and off. Some of these signals, the ones Usher calls the “objects of journalism,” include news buildings, the “raw materials” of news (e.g. data, b-roll, interviews), and digital news products (e.g. apps, news alerts, databases) (Usher, 2018).

However, work on cues by Karlova and Fisher (2012) discusses the diffusion of misinformation and cues of credibility. They note that cues to credibility are important for both users and creators of information, as these cues communicate “legitimacy and trustworthiness to an audience” (Karlova & Fisher, 2012, p. 11). They also note that cues of credibility may be manipulated in order to deceive. As an example, the work talks about phishing emails that claim to come from legitimate companies, using a believable domain name, the company’s logo and font, and the company’s physical mailing address, all of which are cues of credibility (Karlova & Fisher, 2012). The authors note that the ease with which deception occurs may suggest that cues to credibility are too easily faked, or malleable (Karlova & Fisher, 2012). The cues and signals

often discussed in trust development literature are core to signaling theory, which serves as the overarching framework for this dissertation.

## **Review of Signaling Theory**

Michael Spence introduced signaling theory to the economics field in 1973. His work examined the job market and how employers decide to hire, and what to pay, potential employees (Spence, 1973). He suggests that employers are playing the lottery when hiring new employees because they can't know how the employee will produce on the job, however, employers can base decisions about hiring on "personal data in the form of observable characteristics and attributes of the individual" (Spence, 1973, p. 357). Of these attributes, there are some that are fixed and cannot be altered (e.g. race, age) which Spence calls *indices* (Spence, 1973). But he is interested in what he calls *signals*, or the characteristics that can be manipulated (e.g. education level) by an applicant (Spence, 1973). Spence also discusses *signaling costs* that are associated with some signals (Spence, 1973). For example, the signaling costs associated with a signal like education level would be the money and time spent on gaining said education.

Within his theory, Spence talks about an information feedback loop, wherein employers adjust their probabilistic beliefs about signals and the capabilities they indicate (Spence, 1973). For example, after an employee is hired, the employer will make judgements about whether or not their assumptions about a candidate, based off of indices and signals, were correct. Though this feedback loop certainly happens on an individual level, it also works on a larger scale. If employers are continually pleased with the education level (signal) of certain applicants, perhaps they will seek out more employees with that education level, as they find it to be a reliable

measure of productivity. This impacts who is sought out, given priority in hiring processes and eventually hired.

A few years after Spence's signaling theory was published, evolutionary biologist Zahavi also examined the idea of signaling, but approached it from the context of mate selection in the wild (Zahavi, 1975). In his work he argues that sexual selection is effective because it allows the selecting sex to detect quality in their partners (Zahavi, 1975). In his theory of mate selection, he states that this process is beneficial to both parties, in that the selecting sex can assess and be assured of the quality of its mate and the selected sex can better advertise its qualities and attract a better mate, or more mates (Zahavi, 1975).

In his work, Zahavi presents the handicap principle, which looks at traits that may 'handicap' an animal in the wild—like large, colorful feathers (Zahavi, 1975). Zahavi notes that in many bird species, the male has colorful feathers and the females' feathers are more subdued (though the size and colorfulness of male feathers varies), but at a basic level, the male's large, colorful feathers are said to intimidate predators and attract females. Zahavi also notes that having colorful feathers makes certain birds more of a target for predators in the environment (i.e. a handicap) (Zahavi, 1975). Because of this notion, Zahavi suggests, however, that a mature, colorful male is of better quality than a male lacking large, colorful feathers, because it signals that they have successfully fended off predators and proven themselves against other males, which indicates quality to mating females (Zahavi, 1975). The ability to survive in the wild with such a handicap suggests that the signal of quality is reliable.

More contemporarily, scholars like Judith Donath have looked at signaling theory alongside social networking sites and user behaviors, that include adding friends and evaluating the reliability of users' self-presentation (Donath, 2007). Her work suggests that certain

strategies affect how publicly-displayed networks on social media sites can help establish trust, identity and cooperation in these spaces (Donath, 2007). She also notes that much of what people want to know about others is not directly observable (Donath, 2007). For example, we cannot see people's hidden qualities, their beliefs, experiences, or what they really think. Instead, we rely on signals like "facial expressions, consumption patterns, or the statements they make on their profiles in order to infer these qualities" (Donath, 2007, p. 233).

## **Signaling Theory and Reliability**

Signaling theory is inherently concerned with the quality and reliability of signals. In many social situations—like hiring in the job market, mating in the wild, or friending on social media—there are reasons for deception and motivations for presenting dishonest signals. The theory looks at how signals are presented and assessed for quality and it categories types of signals: assessment signals and conventional signals.

*Assessment signals* are inherently reliable because the signal is dependent upon possessing the indicated quality (Donath, 2007). This speaks directly to Zahavi's idea of a handicap principle: only someone who has an excess of a given resource can afford to show it off in an extravagant display (Donath, 2007; Zahavi, 1977). An example of this offered by Donath is a person lifting a 500-pound weight, which is a reliable signal of strength, since a weak person would not be capable of doing it (Donath, 2007). Zahavi might suggest that someone would need to have an excess of strength in order to willingly lift 500 pounds.

There are also *conventional signals*, which are less inherent and obvious and are a matter of social convention (Donath, 2007). Donath offers providing an age on one's social media profile as an example because it is a signal, but it is easy to be deceptive even though it may be

socially unacceptable to lie about one's age (Donath, 2007). Costs are put in place to discourage deception in social media environments, but they may not be high enough, or harsh enough, to force honesty, Donath says (Donath, 2007). In an environment where information exchange occurs, reputation and the ability for information receivers to punish deceptive signal-producers, both play a role (Donath & boyd, 2004). For example, in environments where identity is exposed and interactions are repeated, if deceptive signals are used, receivers can call attention to the deception and damage the reputation of the user, making it harder for them to forge connections and be seen as reliable in the future. This presents a higher cost on the signaler, because they may be called and punished for bad and deceptive behavior. However, on platforms based around anonymity and singular interactions (think Reddit or the now-defunct YikYak), receivers must rely on signals alone. In this scenario, the cost and risk to the signaler is lower and they may be more willing to be deceptive.

Much of the information available about users in social media spaces (e.g. photo, affiliations, interests, other personal details) falls into the category of a conventional signal, in that much of it can be faked or exaggerated. For example, it's incredibly easy on most platforms to lie about one's age, employment status or hometown. Donath suggests the connections to other profiles, however, makes an account appear more reliable, because it suggests other members of the community have vetted the information as true (Donath, 2007). In this way, social networks begin to play a role in signaling.

Donath also talks about trust, which is not directly observable, and also falls into the category of a conventional signal. Instead, trust can be inferred through cues and signals (Bacharach & Gametti, 2001). Work by Donath and boyd suggests that trust and network connections on social media are closely related, and that network connections are one way

reliability can be signaled (Donath & boyd, 2004). When establishing trust in a new relationship or connection, knowing that person is connected to other people a user already knows is beneficial (Donath & boyd, 2004). Users can also infer information about another person based on their connections. Within networks, there are strong and weak ties: strong ties represent close and active relationships, whereas weak ties represent mere acquaintances and less-frequent interactions (Granovetter, 1977). Close networks of strong ties are generally homogenous and tend to reinforce the existing beliefs of the community, whereas weak ties tend to introduce novel, new ideas into a community (Donath, 2007; Granovetter 1977). In social media environments, both of these relationships—strong and weak—exist, and Donath argues that stronger ties bring reliability to profiles, but weaker ties expand the scale and scope of one's network (Donath, 2007).

As stated, creating deceptive signals is quite easy online when compared to deception in the real world, as behaviors like creating new accounts, different pseudonyms and changing core parts of identity (e.g. gender, age, location) are done with a simple click of a button (Donath & boyd, 2004). But Donath and boyd suggest that the existence of connections on social media sites keep users accountable and will mostly prevent them from over-exaggerating, or lying, about their interests, accomplishments or attributes (Donath & boyd, 2004).

In addition to signaling theory, the theoretical grounding for this dissertation also takes into account some aspects of social impact theory and social cognitive theory. Social impact theory, discussed previously in this chapter, suggests that that people have an effect on other individuals (Latané, 1981) and those who are the targets of impact can be influenced in certain ways. This basic tenant of the theory is assumed throughout the dissertation. Social cognitive theory, also discussed in the earlier section of this review of literature, assumes that people learn

through watching others in their own environments (Bandura, 2001; Bandura, 2002). That is, users in social media spaces observe the behaviors of others, interpret and evaluate the expected outcomes associated with those behaviors, and make decisions about their own potential actions. The behaviors, or performances carried out in the social media spaces, in this equation can be thought of as the signals core to signaling theory. Since social media spaces are often public, especially with regards to the sharing of news content, both signalers and receivers learn, through this process described in SCT, what signals are honest, reliable, quality and worthy of investment and they signal—or don't signal—accordingly.

Signaling theory serves as the backdrop for this dissertation because all of three studies are concerned with how information and news sharers in social media spaces are perceived for trustworthiness and reliability. Each individual study draws on niche areas of scholarship around how users evaluate information and information sharers online, and each deals with ‘signals’ that users assess in online environments, which makes signaling theory a fitting backdrop for the dissertation. The three distinct, but related, areas of scholarship relevant to each chapter are as follows: (1) specific factors influencing credibility in social media environments, (2) social media connections and their influence on trust, and (3) assessing account features and visual signals on social media. The specific focus areas of scholarship will be discussed further in each study chapter.

### **Summary of Literature Review**

There are several canonical theories that can be applied to how humans behave in networked and interactive spaces online, including human information interaction, uses and gratification, social cognitive theory, social impact theory, and signaling theory. For the purposes of this dissertation, I will focus on signaling theory to examine how humans engage on social

media and assess the quality of information sharers in these spaces. However, each individual study relies on distinct areas of scholarship, which will be reviewed within each chapter.

## **Chapter 4. Review of methods**

With millions of people using the internet, the amount of digital data created every day is extraordinary. For example, in 2017 alone, 2.5 quintillion bytes of data were created each day (“Data never sleeps 5.0,” 2017), and in 2016, according to World Bank data, nearly half of the world’s population had some access to the internet (International Telecommunication Union, World Telecommunication/ICT Development Report, 2016). In the U.S. alone, 89 percent of adults were online in 2018 (Pew Research Center, 2018). Every online action creates a data point—Googling a healthy symptom, clicking “like” on a Facebook post, and commenting on Instagram—and these seemingly small, insignificant, individual interactions add up in aggregate.

The availability of big datasets allows social scientists to study online users and their behaviors easily, quickly and thoroughly. *Big data*, or simply “very large datasets,” can reveal insights into questions about human behavior and allows researchers to observe social phenomena (Tufekci, 2014). Tufekci notes that many human activities leave imprints online, and with the popularity of social media sites and other online communities in recent years, these sources of data have multiplied (Tufekci, 2014).

Online environments, including social media platforms like Twitter, Facebook, Instagram and YouTube, search engines like Google, Yahoo and Bing, and websites like e-commerce and news sites, are full of data and information. Data retrieval from these sites is dependent on platform access and the technical skills of the researcher. Each social media platform has an API (or application programming interface), but the amount of data available to the public, and researchers, varies widely, and different metrics are available from different platforms (Giglietto, Rossi & Bennato, 2014). For example, YouTube data is available for audience interactions (e.g. how many times a video or channel is viewed), social interactions (e.g. comments posted, likes)

and platform interactions (e.g. metadata obtained from uploaded videos including title, date, description, category) (Giglietto, Rossi & Bennato, 2014). Facebook, though it is the most popular social media site in the world with more than 2.2 billion monthly active users (We Are Social, 2018), provides very limited access to user data. However, data for Facebook pages, reserved for public figures, businesses, and organizations, is easier to obtain. Twitter data—both tweet content data and user data—is perhaps the most available to researchers as it has “always been freely available, public by default, mainly textual and easily understandable” (Giglietto, Rossi & Bennato, 2014, p. 8).

Because of this variance in accessible data, some platforms get researched more than others regardless of platform popularity or size. Tufekci argues that big data research focuses too much on Twitter, largely because data from the platform is more widely available than Facebook data (Tufekci, 2014). However, many platforms that limit public access to data also have behavior and engagement metrics that are visible to users (e.g. likes on a Facebook post, comments on a news article, retweets on a tweet) but these are harder to gather in large quantities due to the manual nature of aggregation.

Gathering and analyzing secondary data is only one of the ways researchers can collect information online. Researchers can also gather their own data from internet users by creating and administering surveys and experiments (Atkeson & Alvarez, 2018; De Vaus, 2014). Web-based surveys, which can be distributed through a variety of platforms online, often focus on understanding participants’ attitudes, behaviors and experiences.

There are several benefits and drawbacks to using social media data and online survey data for research. This chapter will explore some of those benefits and drawbacks broadly and

will continue into a discussion of the specific digital research methods that are used in this dissertation.

### **Benefits of Online and Social Media Data and Research Methods**

There are many practical benefits to online-based research methods. Some strengths of the method, which will be the focus of this section, include access to participants, access to closed or hard-to-reach spaces, and savings in both cost and time.

Access to participants is a notable advantage of online research (Mann & Stewart, 2000). Researchers are able to access participants in a variety of geolocations with a range of experiences and viewpoints. Online research also enables access to harder-to-reach populations (Marpsat & Razafindratsima, 2010), like underserved populations, people with disabilities, and vulnerable individuals who may wish to conceal their identities, like undocumented immigrants and sex workers, for example.

The internet also gives researchers the opportunity to “enter” closed or restricted spaces (Mann & Stewart, 2000). For instance, participants in places with limited access (e.g. hospitals, prisons, government offices, military bases) can be reached more easily via online platforms. Additionally, researchers can be involved in communities where they may not otherwise be welcomed physically because of age, gender, race or socioeconomic status (Mann & Stewart, 2000). They are also able to access data and discussions taking place in potentially dangerous places, like war zones or sites of disease and illness. Both relative anonymity and the lack of geospatial constraints make accessing people in these places—and their narratives and experiences—for research purposes more manageable (Mann & Stewart, 2000). This ability to

access these hard-to-reach communities also encourages research that focuses on these sub-populations and cultures.

Research conducted on the internet—and in social media environments, specifically—is often lower-cost and less time consuming than traditional qualitative methods like observation, in-person interview, or traditional ethnography (Mann & Stewart, 2000). In these traditional methods, there are travel, venue and recording costs, and of course, all of these processes take a substantial amount of time (Mann & Stewart, 2000). The internet allows for free, or inexpensive, means of communication across time and space (Fielding, Lee & Blank, 2008). Research conducted online and in social media spaces is often quicker than more traditional research methods, because when using online research methods, large amounts of data can be collected and analyzed in short periods of time (Fielding, Lee & Blank, 2008; Mann & Stewart, 2000).

### **Challenges of Online and Social Media Data and Research Methods**

Internet research adds value, diversity and depth to the social science research community, and several related disciplines including information studies, media studies and sociology, for many of the reasons listed above, though that list was not exhaustive. However, this method of data gathering is not without its challenges and pitfalls. One challenge noted by Mann & Stewart is the technical barrier that may exist for some researchers, who are not well-versed in internet technology or online data collection (Mann & Stewart, 2000). Other challenges include bias in population samples, the reliability of internet data, and ethical and privacy issues related to the gathering of internet data (Mann & Stewart, 2000; Sloan & Quan-Haase, 2017).

Population samples on the internet, and within specific digital communities and social media platforms, may not be representative of the general population (Mellon & Prosser, 2017;

Wojcik & Hughes, 2019). Therefore, making generalizations about human behavior based on data gathered from the internet may be problematic. For example, only a small percentage of the population uses Twitter, and that population is not representative, which makes the findings based on Twitter data alone ungeneralizable (Tufekci, 2014; Wojcik & Hughes, 2019). Additionally, not everyone engages in computer-mediated communication, and these technologies may be inaccessible to specific groups of people, including people with disabilities, people with lower socioeconomic status, and people living in geographic locations with limited internet connectivity. Some people also just prefer not to engage in these spaces (Mann & Stewart, 2000). The unrepresentativeness of Internet access is what Mann & Stewart call “the greatest problem for data collection” (Mann & Stewart, 2000, p. 31).

In addition to issues with population samples, data collected on the internet may be unreliable or incomplete (Sloan & Quan-Haase, 2017). User data retrieved from social media sites may not be representative of actual users of the site, as users may provide false information, or they may not update their profiles regularly. On many social media platforms, users also have the ability to remain anonymous, which may alter the nature of conversation on the site (Schlesinger A., et al., 2017; Zhang & Kizilcec, 2014). User anonymity also means there is very little user demographic data available to researchers, and this type of information is already hard to gather and analyze on platforms like Twitter (Lee, Spiro, Shojaie, McCormick & Cesare, 2017). In addition to anonymity impacting behavior on social media sites, researchers must also keep in mind that even when users utilize their ‘real names,’ they may still behave in certain ways online because of the public nature of the platform. Research has shown that social media users engage in ‘impression management’ or ‘status seeking behavior’ in these spaces, which suggests that they attempt to influence the way others perceive them or gain status among their

peers (Chen & Sin, 2013; Lee & Ma, 2012; Paletz, Auxier & Golonka, 2019). For example, users may “like,” share, tweet, or post things simply to appear knowledgeable, educated, cool or in-the-know. Users also share content for a variety of reasons (Paletz, Auxier & Golonka, 2019), and engagement and interaction-level data from social media sites offer little insight about sharing motivation. A user may share the link to a fake news story on Facebook because they find it humorous, not because they actually believe it, but the data won’t tell us that. Researching conversation and communities on specific platforms may not paint a complete picture or give full insight into public reaction to a social event or phenomenon, as often times these conversations take place across multiple platforms (Roy, Mei & Zeng, 2014).

Keeping all of these potential pitfalls in mind, if researchers decide to access and analyze online information, it’s important to note that publicly-available data from many social media sites is not representative of all of the data on the platform (Sloan & Quan-Haase, 2017). Twitter, for example, provides only a certain percentage of their data through the publicly-accessible API (Ruths & Pfeffer, 2014). Online platform design may also be a limitation of internet research. The design and affordances of the individual platform often impacts and drives specific behaviors, so analyzing behaviors outside of the context of the platform may over or understate the frequency of certain behaviors (Ruths & Pfeffer, 2014). On Facebook and Twitter, sharing and retweeting are built-in features, but this type of share functionality is not core to platforms like Instagram and YouTube. While users are certainly sharing content from YouTube and Instagram, they often do it off-platform or in ways that are not easily collected via publicly-available metrics. Online data is also explicitly missing some information (Tufekci, 2014). The data tells researchers about how many people watched a video, “liked” a post and commented on

an article, but the data does not include information about who saw a post or article and took no action (Tufekci, 2014).

Bots and nefarious actors are also commonplace on social media sites and both Facebook and Twitter have acknowledged this issue. In 2017, Facebook noted that as many as 60 million accounts on the platform could be fake, and Twitter's general counsel suggested that 16 million fake accounts could exist on their platform (Shane & Isaac, 2017). Recently, Twitter suspended more than 70 million accounts flagged as fake and suspicious in just two months (Timberg & Dwoskin, 2018). If a researcher is looking at engagement metrics on Twitter, for example, it's possible that some interactions are driven by bots deployed to boost the virality of a tweet. These interactions are not genuine interactions, but researchers must decide how to deal engagement metrics that may be inflated by bot behavior. It's essential to keep these challenges to reliability in mind when collecting and analyzing data from social media.

Ethical concerns, related to privacy and confidentiality issues, are also challenges of researching and collecting data online (Sloan & Quan-Haase, 2017). Though much of the information from social media sites is publicly-accessible data, questions related to ethics may arise, including: do ordinary users of these platforms fully understand that their accounts and content may be used for research purposes?; should researchers always use pseudonyms and aliases to mask user identities?; would users behave differently in these online spaces if they knew they were being studied and analyzed? Internet researchers must grapple with these issues and handle them appropriately and carefully.

Privacy concerns online, though discussed often in the media, may have little impact on users' disclosure of information in digital spaces. Tufekci's work found little-to-no relationship between privacy concerns online and information disclosure on social networking sites

(Facebook and Myspace) and found that young audiences, university students specifically, manage privacy concerns by adjusting privacy or visibility settings and by using nicknames, yet the information within the profile is not restricted (Tufekci, 2008). Though some users may not be concerned with privacy or may not understand how to manage their privacy in these spaces, researchers are responsible for protecting the privacy of their study participants.

### **Exploring Methods Used in this Dissertation**

This dissertation uses two distinct methods in order to answer the research questions posed: online survey and social network analysis. Both of these methods will be explored throughout the remainder of this chapter.

#### **Online Surveys as Research Method**

All of the studies in this dissertation utilize online surveys to ask participants about their behaviors and attitudes on social media, though the survey designs in each vary greatly. Study one uses conditions that have been manipulated in order to randomize the exposures within the survey, study two uses actual user data (obtained via secondary data collection and social network analysis) in order to individualize the surveys for each participant, and study three asks participants to react to screenshots of actual social media profiles of news organizations.

**Overview of online surveys.** Often times researchers want to understand online behavior, but instead of using observation, or secondary, existing datasets, they simply ask participants to recall their experiences, thoughts or behaviors (Walliman, 2011). Surveys are used often in disciplines that are concerned with people, including but not limited to social science, politics, business and healthcare (Walliman, 2011). Surveys may ask participants to

simply recall attitudes and behaviors and respond to questions, but within the survey method, researchers can create an artificial, or experimental, setting online and ask participants to behave “naturally” within the environment, while collecting the data associated with their actions or thoughts (Walliman, 2011). Walliman notes that experiments are aimed at gathering “data about causes and effects—to find out what happens if you make a change, why and when it happens and how” (Walliman, 2011, p. 103). Often times in this process, a control group is used, wherein the researcher does nothing to manipulate the independent variables. By comparing the experimental groups to the control groups, findings become clearer, more robust and more reliable (Walliman, 2011). Surveys (experimental and otherwise) are commonly used in qualitative and quantitative research and come with both strengths and weaknesses.

**Strengths of online surveys.** There are many benefits to using online surveys as a method for research and data collection, some of which will be explored in this section. The method is low-cost and can be quickly distributed to a large number of participants (Andrews, Nonnecke & Preece, 2003). That is, researchers can get a large amount of data in a short timeframe, and that data can be easily and directly transferred into a database, which makes the process relatively quick, easy and avoids aspects of human error. The authors note that several software applications and tools (e.g. Qualtrics, Survey Whiz, SurveyMonkey) make survey administration easy, even for researchers lacking advanced technical skills (Andrews, Nonnecke & Preece, 2003; Fielding, Lee & Blank, 2008). Administering surveys online (as opposed to paper or e-mail surveys) allows for additional control over coding and formatting, which enables more flexible designs (Andrews, Nonnecke & Preece, 2003). The authors note, however, that if web pages are not designed well, novice online users may be discouraged from participation (Andrews, Nonnecke & Preece, 2003), so user experience should be considered when designing surveys.

**Challenges of online surveys.** There are several challenges and limitations associated with surveys administered online and a few will be explored briefly in this section. The first challenge involves user recall. That is, users may find it difficult to remember their actions accurately or recall past behavior, which could lead to inaccuracies in data (Andrews, Nonnecke & Preece, 2003; Garton, Haythornthwaite & Wellman, 1997; Lunich, Rossler & Hauser, 2014). Accuracy can be improved by combining this method with other methods like observation, interviews, and supplements surveys, however it may not always be feasible to combine methods due to time or cost constraints.

From a workload standpoint, surveys take time and skill to develop and design (Walliman, 2011). Creators must pay close attention to the length and complexity of the survey, which, if not carefully designed, could impact processes and findings (Walliman, 2011). Additionally, online survey methods are also not easy to replicate. Standardization may be difficult because each platform, or application, has a different design and different inherent functionalities (Lunich, Rossler & Hauser, 2014).

Aside from the design challenges associated with surveys and experiments, there are also time and contextual constraints involved in this method. When participants are asked to complete a task in a given time, in an environment that lacks social context where no actual interaction takes place, the realness of the experience is taken away and “can hardly be considered a parallel to observing the social richness and interactional complexity of an established online group” (Mann & Stewart, 2000). For example, if participants are asked whether or not they would share a fictional news article with a friend, their response may be affected by their realization that they don’t actually have to share anything in real life.

Surveys also present challenges from a sampling standpoint. In online surveys, the sample is a self-selected audience in that they have all agreed to willingly participate in the study (Andrews, Nonnecke & Preece, 2003). The samples are also limited to internet users and those with technological self-efficacy. Surveys and other web-based research may miss entire populations of people because of the technology involved in their deployment.

**Surveys in previous social media research.** Surveys are used often in both qualitative and quantitative research related to social media topics (Hughes, Row, Batey & Lee, 2012; Rudat & Buder, 2015; Morris, et. al, 2012). Most pertinent to this research are studies the combine

surveys and experimental manipulation of conditions, like the work of Rudat and Buder (2015), which aimed to understand the influence of perceived agent awareness and informational value on retweeting behavior (Rudat & Buder, 2015). The researchers added stars to some of the posts to signal that other users found the post helpful or relevant in order to understand the impact of social recommendation in these spaces (Rudat & Buder, 2015). They examined the effect of this signal on user attitudes.

Work similar to the research conducted in study two of this dissertation used a survey to gauge people's perceived credibility of information sharers based on account features (Morris, et. al, 2012). However, for part of this study, social media account features were simply listed, and participants were asked to assess how that specific feature may impact credibility (Morris, et. al, 2012). Another portion of the study assigned participants to study condition groups in order to expose them to different user images as they would appear on social media (Morris, et. al, 2012).

The aforementioned studies use methods similar to those used in this dissertation. However, this studies that follow rely more heavily on experimental design, where participants were asked to assess quality of information and information sharers based on features that were manipulated.

**Justification for online survey use and contribution to the method.** Online surveys were central to all three of the studies conducted for this dissertation. Online surveys were a natural choice, as internet and social media users were the target of study. Studies one and three use an experimental design survey in order to expose participants to different conditions. This allows participants to react to information and information-sharing accounts in a space that

mimics a real social media environment, instead of simply asking them to recall how they usually act or make a guess about how they would act.

A more traditional survey was used in conjunction with social network analysis methods for study two. This survey does rely on some participant recall, but also asks about attitudes towards news consumption on social media platforms.

Overall, this dissertation uses surveys in unique and complex ways, including experimental design and in combination with social network analysis. This is a strength of the dissertation in that the studies combine multiple methods and means of inquiry.

### **Social Network Analysis as Research Method**

The second study in this dissertation relies heavily on social network analysis and asks participants to retrieve data from their actual Facebook account, using an application called Lost Circles. Social network analysis is central to this study as this work aims to understand which network connections are seen as providing more reliable and trustworthy information in social media environments.

**Overview of social network analysis.** Put simply, social network analysis can be described as the study of relations and ties (“Social network analysis,” 2009). The analysis of social networks allows social science researchers to better understand the role of strong and weak ties, to trace the diffusion of information and ideas throughout a network, and to examine the role of networks and ties in social organizations (Granovetter, 1983). Social network analysts are interested in understanding who talks to who and about what, how relationships and ties are maintained, how status impacts connections, and who is included or excluded from communities,

among other things (“Social network analysis,” 2009). These dynamics can be explored through gathering information about people and the communities in which they exist, engage and operate.

Data used to analyze social networks can be gathered in a number of ways including questionnaires, interviews, focus groups, observation and ethnography (“Social network analysis,” 2009). Using the connections forged online and on social media platforms, these connections can also be pulled directly from the interactions and behaviors of users in these environments. For example, for public accounts, researchers can see who talks to whom on Twitter, who is friends with another user on Facebook, and who comments on another user’s post on Instagram.

**Strengths of social network analysis.** There are many benefits and advantages to social network analysis when examining online and social media communities, a few of which will be discussed in this section. For example, when examining online connections, this data can be gathered relatively quickly and easily, and in large quantities. Rather than having to ask participants about their network connections and recalling their interactions with those connections, their connections and interactions can be gathered programmatically, though permission may be needed from participants or account holders. Additionally, gathering data electronically allows researchers to directly observe behaviors like the frequency of users' communication with others (Garton, Haythornthwaite & Wellman, 1997). If a researcher wanted to examine the @mention behaviors of politicians on Twitter, they could use the Twitter API to access specific politicians' tweets, and then analyze the content of those tweets, rather than asking politicians to recall their @mention behavior. Though this may cut down on recall bias, the authors note that the best approaches use a combination of methods including observation as well as questionnaires and interview (Garton, Haythornthwaite & Wellman, 1997).

**Challenges of social network analysis.** Though there are several concerns and challenges that accompany social network analysis, primary concerns exist around privacy issues. There are a number of potential privacy concerns involved with collecting electronic data, like email communication or social networking information (Garton, Haythornthwaite & Wellman, 1997). As stated above, user permission may be needed depending on the social platform being used. If no permission is required, researchers should take care to de-identified users in order to avoid privacy issues and eliminate confidentiality concerns (Garton, Haythornthwaite & Wellman, 1997). In addition to protecting user identities, researchers must also decide whether or not they choose to identify themselves as researchers within the public

forums they are studying (Garton, Haythornthwaite & Wellman, 1997). They must also decide if they will inform the users their data and content will be collected, analyzed and used for a study.

**Social network analysis in previous research.** Some previous work has looked at how Facebook network connections play a role in news and information consumption. For example, work done in conjunction with Facebook researchers looked at network connections on the platform and how that influenced the political diversity of content shared on the site (Bakshy, Messing & Adamic, 2015). This work did not, however, put a focus on the connections between users, and it did not look at a user's trust or reliability in actual content shared. In the same year, work by Turcotte and colleagues gathered information on participants profiles (e.g. friends, location) via the Facebook API to show participants manipulated news stories that looked like they were recommended to them by one of their friends (Turcotte, et al., 2015). In order to determine which friend each participant was shown, the researchers selected a friend with whom the user had a history of frequent Facebook interactions with, who also lived in the same state as the participant (Turcotte, et al., 2015). It does not appear that any social network analysis metrics were used in this study or in the crafting of the manipulations.

Both of these studies are valuable and contribute to the discipline, but they use social network analysis in different ways that focuses more on shared content and the source of said content, rather than the network connection, which study two of this dissertation aims to do.

**Justification for social network analysis use and contribution to the method.** The method of social network analysis is critical to study two because it looks at network statistics (like degree, betweenness centrality and closeness centrality) alongside other more qualitative assessments like relationship type (e.g. friend, classmate, parent) in order to determine which relationships and network connections elicit the strongest feelings of trust and reliability in news content. The use of participants' actual Facebook connections, along with the network statistics for those connections, adds value to the discipline as this is not a widely-used method for studying social media networks. Lost Circles, which is a Chrome extension used to retrieved participants' Facebook graphs, has not been used widely in academic research. Social network analysis is strengthened as a method in this dissertation, because it is combined with participant feedback through the administration of a survey that draws upon the network statistics.

## **Conclusion**

A more comprehensive look at the methods for data collection and data analysis and the samples for each study will be examined in more detail in each respective chapter. However, this chapter acknowledges explicitly (and broadly) a few of the strengths and weaknesses of each method used and allows for an understanding of why certain methods were used. It also discusses how this dissertation, and the methods used, contribute to the field.

## **Chapter 5: Names, profile photos and @handles as signals of reliability for information sharers on social media**

News and information flood digital and social media environments, and the ready access to information and diverse sources these technologies provide can be seen as positive developments that benefit users. With so many messages and sources available to users online, it

may be challenging to distinguish between a reliable and trustworthy source, and a nefarious or bogus one. This focus of this study is to examine how users determine whether or not other, unfamiliar accounts in the environment are reliable sharers of information.

Several studies have examined the adverse effects of all of the available information in these environments, including perceived information overload. A Pew Research Center study found that only 20 percent of Americans reported feeling overloaded by information (Horrigan, 2016). However, U.S. adults with lower incomes and lower levels of education struggle the most with the demands of information. Forty four percent of adults with a high school education (or less) and an income of less than \$30,000 per year reported that it is somewhat difficult for them to find the information they need. The findings of previous research suggest information overload leads to information anxiety, (Bawden & Robinson, 2009, Kennedy, 2001; Wurman, 1989), selective exposure (Lee, Lindsey & Kim, 2017), and difficulty with decision-making (Malhotra, 1982). Other studies have examined how users customize their digital news environments in order to tailor the content they consume (Kang & Sundar, 2016; Sundar & Marathe, 2010) and combat information overload. However, even with these customization options and within these tailored news environments, users must make decisions about what other users (or information sharers) to deem reliable and what content to trust as fact.

News consumption on social media platforms is common and in 2017, 67 percent of Americans reported getting at least some of their news on social media (Shearer & Gottfried, 2017). However, the same study finds that only 5 percent of U.S. adults who use the internet have a lot of trust in the information they get on social media (Shearer & Gottfried, 2017). These findings suggest that users rely on social media to access and consumer news, perhaps because of

the ease of use, immediacy and diversity of content, but they have low trust in the information they encounter on these platforms.

Since news consumption is proving to be a central activity on social media sites, it's important to understand how users find and evaluate reliable sources in these spaces. Of course, there are many clearly credible sources on social media—news organizations, verified journalists, non-profit organizations. However, this study aims to examine how reliability is determined when users are confronted with information and news content from unknown sharers.

When users are confronted with unofficial sources of information, they have to make decisions about who to deem a quality source. In order to do this, users rely on signals, or cues meant to indicate some quality (i.e. honesty, strength, suitability), and are meant to communicate something to the receiver (Donath, 2011). This research explores signals used in social media profiles, including names, @handles, and avatars, and breaks down the signals into categories in order to better understand the types of signals that are perceived as being trustworthy and reliable.

### **Specific Factors Influencing Credibility in Social Media Environments**

There are several practical factors that may impact a user's reliability, trustworthiness, and credibility in social media spaces and some of these influencing factors are well-researched. Factors of credibility related to the current study are naming characteristics (and @handles), user features (like avatars, number of followers), tweet content (i.e. what users are tweeting) and tie strength or network connections.

#### **Names**

Several scholars have examined names and how they impact perceived credibility, trust and professionalism. Research into names and perceived credibility found that people with easily pronounced names and their claims were evaluated as more favorable—and their associated with more familiarity, less risk and less danger—when compared to people with “difficult names” (Newman, et. al, 2014). The study also suggests that the pronounceability of names extends beyond a judgement of the name and influences the judgement of information associated with the person (Newman, et. al, 2014). Another study on names and the labor market found that resumes containing White sounding names received 50 percent more callbacks for interviews than resumes bearing African American names (Bertrand & Mullainathan, 2004). A similar study found that applicants with Asian names were discriminated against in the Canadian labor market (Banerjee, Reitz & Oreopoulos, 2017). Though these studies look at the labor market, they are important additions to the literature on names and their perceptions. Research looking directly at usernames on social media and found that content from unknown names was rated lower than content from known names (like @CNN) (Pal & Counts, 2011). They found that factors like gender, name type (individual versus organizational) and topical relevance impact name bias (Pal & Counts, 2011). Similarly, research ( $N = 266$ ) into tweet credibility and usernames found that ‘internet style names’ were less credible than topically relevant names (Morris, Counts, Roseway, Hoff & Schwarz, 2012).

## User Features

Aspects of social media user profiles—like follower count, length of usernames and avatars—may also impact perceived credibility. In a survey and quasi-experiment ( $N = 256$ ), the researchers examined user perceptions of tweet credibility. They found that the use of a default

(egg), cartoon or avatar image, and an unbalanced following to follower count all signaled low perceived credibility (Morris, Counts, Roseway, Hoff & Schwarz, 2012). Another study by the same authors found that user image type had no significant impact on credibility or author credibility ratings, however, the use of a default Twitter icon significantly lowered the content ratings and marginally lowered the author ratings (Morris, Counts, Roseway, Hoff & Schwarz, 2012). Older work from 2005 found that avatars were not shown to improve trust from users (Rigelsberger, Sasse, & McCarthy, 2005).

The study by Morris and colleagues also found that features that most enhanced tweet credibility were mostly concerned with author features, including author influence, which was measured by follower, retweet and mention count. Work by Gupta & Kumaraguru (2012) found that the content-based features are as important as source based features when it comes to assessing credibility on Twitter during high impact news events. They determined that user-based features, like number of followers and username length, were prominent features (Gupta & Kumaraguru, 2012).

## **Tweet Content**

The content of social media posts can play a role in perceived credibility. Tweets containing URLs may signal credibility to users (Morris, Counts, Roseway, Hoff & Schwarz, 2012) and the existence of an external link may moderate the impact of argument quality on users' attitudes towards tweets they encounter (Ha & Ahn, 2011). Additionally, tweets that use non-standard grammar and punctuation were associated with low credibility perceptions (Morris, Counts, Roseway, Hoff & Schwarz, 2012). Work on perceived trustworthiness in online dating profiles by Toma (2010) found that textual cues were rated higher in trustworthiness than

photograph cues (Toma, 2010). Other work on cues of expertise on social Q&A sites also found that text cues lead to higher trust (Golbeck & Fleischmann, 2010). The concept of cues of expertise suggests that the content of the text content (or tweet in this current work) is in fact an aspect of perceived trustworthiness.

## Research Questions

This research explores the elements of unknown social media accounts that signal trustworthiness and credibility. Different aspects of the account, including names, @handles and avatars, are examined and evaluated for their perceived quality. Two major research questions were addressed in this study and will be examined in full throughout the remainder of this chapter.

**RQ1:** How does perceived reliability change when user factors, like names, @handles and avatars, are manipulated?

**H1:** Western male names, human avatars, and @handles that use real names (as opposed to screen names, or internet-style names), will increase the reliability of social media accounts and information shared from those accounts.

**RQ2:** How does a participant's propensity to share information from a given user change when user factors like names, @handles and avatars, are manipulated?

**H2:** Participants will be more willing to share information from a user with a Western and male name, a human avatar and a real name @handle.

## Methods

In order to create exposures and sample tweets for participants to rate, several factors were thoughtfully constructed for the survey: names, @handles, avatars and tweets.

Several factors were examined for account names, including gendered names, Western and non-Western names, and names written in something other than the Roman alphabet. Name

typologies with examples of each can be found in Table 1. Based on these factors, I determined six name categories: Western female names, Western male names, non-Western or “foreign” female names, non-Western or “foreign” male names, neutral gender names and names written in a non-Roman alphabet. Each category contains five unique names. The distinction between Western and non-Western names was made because this study used U.S.-based participants. We wanted to understand if participants favored information from sharers whose names matched their cultural background. A list of “Top Names Over the Last 100 Years” from the Social Security Administration (SSA) was used to determine Western male and female names (“Top names over the last 100 years,” 2018). Western last names were taken from the 2010 Census Bureau’s list of “Top 15 Most Popular Last Names in the U.S. by Rank” (“Most popular surnames in the United States,” 2016).

*Table 1: Examples of names used in study one*

<b>Naming typologies</b>	<b>Examples</b>
Female Western names	Mary Smith, Jennifer Johnson, Elizabeth Jones
Male Western names	James Smith, Robert Johnson, John Williams
Non-Western female names	Yevegeny Dherzhinsky, Shobha Bhattacharya, Yu Zhenglong
Non-Western male names	Hur Hye-seong, Czeslaw Ratynska, Shagnik Ravunniarath
Gender-neutral names	Casey Smith, Jessie Johnson, Avery Brown
Names in non-Roman alphabet	慧星怎么样, Евгений Держинский, Свеа Гелоуич

To determine the top gender-neutral names, we consulted an article from a popular data blog, FiveThirtyEight—which also used SSA data—entitled “The Most Common Unisex Names in America: Is Yours One of Them?” ([Flowers, 2015](#)). The same Western last names were also paired with these gender-neutral names.

Non-Western names were lifted from a list of “difficult to pronounce names” from Newman, et. al, 2014. These names come from various regions including East Asia, West Europe, Middle East, South Asia and East Europe (Newman, et. al, 2014). These same names

were also used for the character names and were translated using Google translate. The East Asian names were translated into Chinese, West Europe names were translated into Bulgarian, Middle East names were translated into Persian, South Asian names were translated into Hindi and East Europe names were translated into Russian.

Two different categories of @handles were created for each name combination: a “real name” @handle and a “screen name” @handle. For example, a real name @handle would be @marysmith or @michaeljones. Screen names were randomly selected using the website fantasynamesgenerator.com. Examples include @gamer, @crazytechy, and @daydreamleaf.

Within this study design, there were several avatar categories: human avatars (real human faces), cartoon avatars (real human faces that have been “cartooned”), non-human object avatars (i.e. animals, objects like books, cartoon characters), logo avatars (a designed graphic) and an egg (the default avatars from both Twitter and Facebook were used). Each avatar category included seven options, with the exception of the egg, or default avatar, which only has two—one from Facebook and one from Twitter. The categories of avatars were as follows: male human avatars, female human avatars, male cartoon avatars, female cartoon avatars, non-human object avatars, logo avatars, and egg (or default) avatars.

Lastly, 10 links to news articles were gathered to create 30 sample tweets. Three tweets were written for each respective link. The news articles were gathered using Google News. In choosing the news articles themselves, we avoided using highly political or partisan articles or news organizations. To craft the actual copy accompanying the link, we focused on writing generic, summarizing copy. Some of the tweets use @mentions, but none of them use hashtags or other Twitter lingo. When appropriate, quotes were pulled straight from the stories, so they were straight-forward, newsy and not opinionated.

Our web-based experimental platform randomized the combinations and order of names, @handles, avatars and tweets (see Figure 1). For a given condition (e.g. a Western female name with a “real name” screen name and cartoon avatar), the name, screen name, and avatar were randomly selected from a pool of possible options. Thus, two subjects seeing this condition may see it with different names, photos, and handles. The tweet text paired with each condition was also randomized.



**Casey Smith** @fuzzyrabbit · 39m  
The foam cups will be replaced by a new double-walled paper cup.  
<https://www.cnbc.com/2018/02/07/dunkin-donut ...>  
7:12 PM - 12 Mar 2018

*Figure 1: A sample condition from this study*

Before participants began the survey, they were shown an example of the exposure and questions. They were also provided with a definition of “reliability” to consider: consistently good in quality or performance; able to be trusted.

Then, each participant was shown 30 different combinations. Thirty exposures were chosen in order to limit participant fatigue. For each condition, they were asked two questions: (1) On a scale from 1-7, how would you describe this user account? (2) How likely are you to share information from this user /account? After users were shown all 30 conditions, they were asked general questions about their consumption of news on social media. In order to recruit participants, the survey was posted to Mechanical Turk with a compensation of \$1. In order to be eligible for participation, Turkers had to answer three screening questions: (1) Are you over 18 years old? (2) Are you located in the U.S.? and (3) Have you used social media to access or consume news at least once in the past week?

We focused our sample on American news consumers in order to understand how this audience would gauge the reliability of information from information sharers with American names versus non-American sounding names, though we understand this limits the findings, as these results would vary from country to country.

A total of 261 participants were surveyed (see Table 2). The average age of the sample was 33.78 and the sample skewed male (60.9 percent). The majority of the sample had a bachelor's degree (45 percent), lived in a suburban locale (46 percent) and earned an income of less than \$44,999 per year (50.6 percent).

*Table 2: Demographics of sample (N = 261)*

<b>Age</b>	<i>Mean</i>	<i>SD</i>
	33.78	9.48
<b>Gender</b>	<i>N</i>	<i>Percent</i>
Female	99	37.9
Male	159	60.9
Other/prefer not to say	1	0.4
<b>Frequency of news consumption on social media</b>	<i>N</i>	<i>Percent</i>
Multiple times per hour	31	11.9
Multiple times per day	151	57.9
Once per day	5	1.9
A few times per week	28	10.7
Once per week	5	1.9
Never	2	0.8
<b>Preferred social media site for news consumption</b>	<i>N</i>	<i>Percent</i>
Facebook	194	74.3
Twitter	41	15.7
Instagram	5	1.9
Reddit	16	6.1
Snapchat	2	0.8
Other	3	1.1
<b>Income</b>	<i>N</i>	<i>Percent</i>
Less than \$30,000	58	22.2
\$30,001-\$44,999	74	28.4
\$45,000-\$59,999	48	18.4
\$60,000-\$74,999	30	11.5
\$75,000-\$100,000	36	13.8
More than \$100,000	15	5.7
<b>Education</b>	<i>N</i>	<i>Percent</i>
Completed high school	75	28.7
Associate degree	41	15.7
Bachelor's degree	119	45.6

The majority of respondents used social media for news consumption multiple times per day (57.9). In terms of sites and platforms most

Graduate degree	26	10.0
<b>Location</b>	<i>N</i>	<i>Percent</i>
Rural	47	18.0
Suburban	120	46.0
Urban	94	36.0

frequently used for news consumption, the vast majority (74.3 percent) preferred Facebook for this function, followed by Twitter (15.7 percent). Full sample demographics can be found in Table 2.

## **Findings**

The first research question related to user reliability (On a scale from 1-7, how would you describe this user account?), was answered on a 7-point Likert scale, with 1=Very Unreliable and 7=Very Reliable. The average reliability score across all conditions was 4.32 ( $SD = .911$ ), which suggests participants found all conditions moderately reliable. The condition with the lowest mean related to reliability was the name in non-Roman alphabet — real name handle — egg avatar condition ( $M = 3.64$ ,  $SD = 1.75$ ). The condition with the highest score was the gender-neutral name — screen name handle — human female avatar condition ( $M = 4.80$ ,  $SD = 1.38$ ).

The second research question related to sharing propensity (On a scale from 1-5, how likely are you to share information from this user /account?), was answered on a 5-point Likert scale, with 1=Very Unlikely and 5=Very Likely. The average propensity to share across all conditions is 2.67 ( $SD = .776$ ), which suggests a moderate level of share propensity across conditions. The conditions with the highest mean for participants' propensity to share content from that user were the western male name — real name handle — non-human avatar condition ( $M = 2.89$ ,  $SD = 1.16$ ) and the gender-neutral name — real name handle — cartoon female avatar condition ( $M = 2.89$ ,  $SD = 1.23$ ). The condition, non-Roman alphabet letters — real name

handle — egg avatar, had the lowest mean score ( $M = 2.27$ ,  $SD = 1.18$ ). Some conditions, the two with the highest means and two with the lowest means for reliability (Q1) and sharing propensity (Q2), along with standard deviations, are presented in Table 3.

After being separated into groups by factors like name (gendered and gender neutral; Western, non-Western and non-Roman alphabet names), @handles (screen name or real name) and avatar type (cartoon, human, non-human, logo and egg; gendered cartoons and gendered humans), multiple ANOVAs were performed in order to find statistical difference between the groups for both research questions.

*Table 3: Conditions with the highest (2) and lowest (2) means for Q1 and Q2*

<b>Condition</b>	<b>Reliability Mean (Q1)</b>	<b>Reliability SD (Q1)</b>
Gender neutral name—@screenname—human female avatar	4.80	1.39
Gender neutral name—@realname—cartoon female avatar	4.71	1.43
Name in non-Latin alphabet—@realname—egg avatar Q1	3.64	1.75
Name in non-Latin alphabet—@screenname—human male avatar	3.92	1.74
<b>Conditions</b>	<b>Sharing Propensity Mean (Q2)</b>	<b>Sharing Propensity SD (Q2)</b>
Western male name—@realname—non-human avatar	2.89	1.16
Gender neutral name—@realname—cartoon female avatar	2.89	1.23
Name in non-Latin alphabet—@screenname—human male avatar	2.42	1.16
Name in non-Latin alphabet—@realname—egg avatar	2.27	1.18

## **Research Question One Findings**

The first research question examined how perceived reliability of information sharers changed when factors—like names, avatars and @handles—are manipulated within the conditions.

**Research question one findings, names.** Western names ( $M = 4.45$ ,  $SD = 1.54$ ), or names that match the cultural background of the U.S.-based participants, were seen as more

significantly more reliable ( $F(2, 261) = 21.337, p < 0.001$ ) than non-Western names ( $M = 4.24, SD = 1.59$ ). When comparing all names written in non-Roman alphabet ( $M = 3.93, SD = 1.71$ ) and all Western names ( $M = 4.45, SD = 1.54$ ), Western names were significantly more reliable ( $F(2, 261) = 89.65, p < 0.001$ ). Gendered names ( $M = 4.34, SD = 1.57$ ) were also perceived as significantly less reliable ( $F(2, 261) = 29.58, p < 0.001$ ) than gender-neutral names ( $M = 4.61, SD = 1.45$ ). The difference between the perceived reliability of male ( $M = 4.32, SD = 1.57$ ) and female ( $M = 4.36, SD = 1.56$ ) account names was not statistically significant.

**Research question one findings, avatars.** When comparing male human avatars ( $M = 4.37, SD = 1.59$ ) and female human avatars ( $M = 4.51, SD = 1.55$ ), female avatars were perceived as significantly more reliable ( $F(2, 261) = 4.27, p < 0.0387$ ). When comparing all male avatars ( $M = 4.32, SD = 1.58$ ), cartoon and human, and all female avatars ( $M = 4.48, SD = 1.54$ ), cartoon and human, female avatars were again perceived as more reliable ( $F(2, 261) = 10.069, p < 0.0015$ ). Comparing the differences between all human avatars ( $M = 4.43, SD = 1.57$ ) and non-human avatars ( $M = 4.46, SD = 1.50$ ) was not significant.

**Research question one findings, @handles.** When comparing real names in @handles ( $M = 4.28, SD = 1.59$ ) and screen name @handles, ( $M = 4.36, SD = 1.58$ ), screen names were rated statistically more reliable ( $F(2, 261) = 5.36, p < 0.0205$ ).

**Research question one findings, regression.** A multiple regression suggests that ten of the features showed at least some relationship with the dependent variable (perceived reliability) at a level of .5 and above. Over 87 percent of the variance ( $F(10, 250) = 175.85, p < .001$ ) in the

dependent variable is explained by the model, which includes the following variables: gender neutral names, gendered names, all human avatars (male and female), nonhuman avatars, cartoon male avatar, egg avatars, all Western names, all character names and all foreign names. Within the model, the variable with the strongest unique contribution to the model is gender-neutral names ( $\beta = .213, p < .001$ ).

## **Research Question Two Findings**

The second research question examines how participants' willingness to share information from unknown information sharers changes when factors—like names, avatars and @handles—were manipulated within the conditions.

**Research question two findings, names.** Users were significantly more likely to share information ( $F(2, 261)=8.04, p < 0.004$ ) from accounts with Western names ( $M = 2.73, SD = 1.19$ ) when compared to non-Western names ( $M = 2.64, SD = 1.19$ ). When comparing all names written in non-Roman alphabet ( $M = 2.44, SD = 1.21$ ) and all Western names ( $M = 2.73, SD = 1.19$ ), information from accounts bearing Western names was more likely to be shared ( $F(2, 261) =52.74, p < 0.001$ ). Information from accounts with gendered names ( $M = 2.68, SD = 1.19$ ) were also perceived as significantly less likely to be shared ( $F(2, 261) =10.32, p = 0.001$ ) than information from accounts with gender-neutral names ( $M = 2.81, SD = 1.19$ ). The difference between the propensity to share from male ( $M = 2.66, SD = 1.18$ ) and female ( $M = 2.71, SD = 1.20$ ) account names was not statistically significant.

**Research question two findings, avatars.** When comparing the propensity to share information from male human avatars ( $M = 2.62$ ,  $SD = 1.21$ ) and female human avatars ( $M = 2.75$ ,  $SD = 1.22$ ), participants were more willing to share from female human avatars ( $F(2, 261) = 5.944$ ,  $p < 0.014$ ). When comparing all male avatars ( $M = 2.63$ ,  $SD = 1.19$ ), cartoon and human, and all female avatars ( $M = 2.74$ ,  $SD = 1.22$ ), cartoon and human, information from female avatars was perceived as more shareable ( $F(2, 261) = 8.39$ ,  $p < 0.003$ ). Comparing the differences between all human avatars ( $M = 2.69$ ,  $SD = 1.22$ ) and non-human avatars ( $M = 2.81$ ,  $SD = 1.19$ ), participants were more likely to share content from the non-human avatar accounts ( $F(2, 261) = 6.46$ ,  $p < 0.011$ ). Sharing was also more likely from non-human avatars ( $M = 2.69$ ,  $SD = 1.22$ ) when compared to logo avatars ( $M = 2.67$ ,  $SD = 1.16$ ) ( $F(2, 261) = 6.94$ ,  $p < 0.0084$ ).

**Research question two findings, @handles.** When comparing participants' willingness to share information from real names in @handles ( $M = 2.65$ ,  $SD = 1.20$ ) and screen name @handles, ( $M = 2.67$ ,  $SD = 1.19$ ), there was no significant difference.

**Research question two findings, regression.** A multiple regression was used to determine that ten of the features showed at least some ability to predict the propensity to share content from the unknown sharer at a beta level of at least .11 or above. Over 91 percent of the variance ( $F(11, 249) = 236.88$ ,  $p < .001$ ) is explained by the variables in the model which include: male names, female names, gender-neutral names, human male avatars, cartoon male avatars, egg avatars, logo avatars, non-human avatars, human avatars, female avatars. Within the model, the variable with the strongest unique contribution to the model is gender-neutral names ( $\beta = .195$ ,  $p < .001$ ).

## **Discussion**

Saturated digital news environments and the pervasiveness of dis- and misinformation in these spaces make finding reliable sources of information increasingly important. This research contributes to the existing research on reliability and trust in online and social spaces and suggests that different user features can and do contribute to perceived reliability and willingness to share information. It also builds on research about how users interact with news and information in these environments and contributes to the literature related to trust and credibility of users in social media spaces. Though similar studies (Morris, Counts, Roseway, Hoff & Schwarz, 2012) exist in this space, the social media landscape has changed so drastically in the last few years, that new research is warranted.

These results have implications for how journalists, news organizations, politicians—and anyone looking to be seen as reliable on social media—manage their social media accounts and optimize them for trustworthiness and credibility. For example, for foreign journalists tweeting to a U.S. audience, using the Roman alphabet for names will likely improve perceived reliability. This may be something that an account owner wants to take advantage of, or it may be something they want to fight against. Taking advantage of other indicators of reliability, like verification, may help counter perceptions that non-Roman alphabet names are less reliable.

These results may also inform users interested in developing an account that would be considered a reliable source for certain types of information, whether news-related or not. While more work is necessary, it is possible that the perceptions we found in this study will carry over into other domains. This could suggest ways users can engineer their profiles to appear most reliable or highlight factors that may be reducing their perceived reliability.

## **Limitations and Future Work**

There are a few limitations to this work. This study presented the conditions to participants using an interface that looked similar to the Twitter interface, which could limit the applicability and generalizability of the findings. However, this study lays a solid foundation for future, related work. Future work could build on this research by creating an algorithm to detect reliable sources and information in social media spaces. Combining factors predicting trust in social media textual content (i.e. copy, links) with computational linguistics could provide a framework for an algorithm with the ability to detect credible users and information on social media. With the proliferation of fake news in digital spaces, this type of classification algorithm could be invaluable.

## **Conclusion**

In this study, we asked 261 U.S.-based participants to rate their perception of the user reliability and their willingness to share news-related tweets from unknown users. We varied the username, @handle, gender, and avatars to measure differences in how these factors affected subjects' perceptions. Our results showed that Western-style names were perceived as more reliable and shareable than non-Western names and names in non-Roman alphabets. Gender-neutral names were more reliable and shareable than gendered ones. For avatars, female avatars were more reliable and shareable than male.

## **Chapter 6: Facebook network connections and user perception of news content**

As stated in previous chapters, social media platforms, like Facebook, are widely used by news consumers in the U.S. However, more than half (57 percent) of respondents expect the news they see on social media to be largely inaccurate (Shearer & Gottfried, 2017), which suggests that trust in content encountered on social media is low.

Past research has shown that message content and context can influence the perception of reliable and trustworthy content (American Press Institute, 2016; Curry & Stroud, 2017; Golbeck & Fleischmann, 2010; Ha & Ahn, 2011; Morris, Counts, Roseway, Hoff & Schwarz, 2012; Toma, 2010), however, this chapter will examine how network connections in social media spaces play a role in news consumption and users' trust in and willingness to rely on news and information shared by those connections. Past studies have shown that social relationships matter in news consumption practices. For example, respondents in a 2018 Pew Research Center survey noted that they like getting news on social media because it's convenient (21 percent) and they enjoy interacting with others (8 percent; Matsa & Shearer, 2018). Yet, a separate report from Pew (2017) found that only 15 percent of Americans trust the information they get from friends and family *a lot*, with 61 percent reporting they trust friends and family as sources *some* (Bialik & Matsa, 2017).

Understanding how news consumers utilize personal connections to determine the trustworthiness and credibility of news content is important to a number of stakeholders including social media platform designers, content publishers, and news aggregation services, among others. This study utilizes network analysis and survey methods in order to better

understand how participants use the connections in their Facebook network to determine the quality of news content shared on the platform.

### **Social Media Connections and Influence on Trust in Online Spaces**

Previous research suggests that network connections—both online and off— influence how users consume news and information. As discussed in previous chapters, there are many layers, levels, dimensions and types of trust established in the scholarship. Scholars who examine the nature of trust in online social networks (OSNs) suggest that users must first have institutional-based trust in the environment (e.g. the social platform, the internet) (Grabner-Kräuter & Bitter, 2015; McKnight & Chervany 2002), and after that trust is met, users look to other participants in the OSN. They base this level of trust off of their knowledge about the other party and their past experiences with them (Grabner-Kräuter & Bitter, 2015; Lewicki & Bunker, 1995). The highest level of trust is identification-based trust, which is restricted to interpersonal trust and is built and influenced by shared values, goals, collective identities and proximity and closeness (Grabner-Kräuter & Bitter, 2015; Lewicki & Bunker 1995; Ratnasingham, 1999; Shapiro et al., 1992).

Granovetter's early work on social networks talked about strong and weak ties: where strong ties represent the connections people have with close friends, and weak ties are connections with acquaintances (Granovetter, 1973). More recent conceptual work suggests that while weak ties provide more useful, non-redundant and innovative information and knowledge (Levin et al, 2002; Grabner-Kräuter & Bitter, 2015), strong ties are related to “thick” trust that forms as a result of frequent contact between people who know each other well (Ferlander, 2003; Grabner-Kräuter & Bitter, 2015). The affordances of social media allow for the formation and maintenance of both strong and weak ties.

The connections maintained in these environments may play a role in the information and news users encounter and are exposed to. For example, more empirical studies suggest that social media users may exist within echo chambers and are largely exposed to conforming opinions (Bakshy, Messing, & Adamic, 2015). Another study found that users were less likely to engage on Facebook if they thought their networks were more diverse, but the opposite was true for those who perceived their networks connections as being similar to them (Grevet, Terveen, & Gilbert, 2014). Though this study does not take into the account the ideological affiliation of the users or their connections, it does discuss how network connections influence exposure to information and user interaction on social media platforms.

Work on a conceptual model from a marketing perspective by Chu & Kim (2011) found that tie strength may be positively related to consumers' intentions to seek out and pass on information in social media, especially as it related to products. Their research ( $N = 363$ ) goes against much previous research and states that consumers were less likely to engage in opinion-seeking and opinion-passing behaviors when their networks were homogenous (Chu & Kim 2011). However, their work suggests that users were more likely to engage in opinion-sharing, opinion-giving and opinion-passing behaviors if they had a high level of trust in their social connections (Chu & Kim, 2011).

More work ( $N = 284$ ) in the marketing and electronic word-of-mouth space examined online information-seeking and information cues, and suggests that perceived social relationships are important cues when assessing the credibility of information (Pan & Chiou, 2011). They found that people trust online messages—both positive and negative—about experience goods (i.e. hotel services) more when it is posted by stronger social ties, as opposed to those they have a weaker social relationship with (Pan & Chiou, 2011). Their study also found that sentiment

matters: negative messages about experience goods, in general, are seen as more trustworthy (Pan & Chiou, 2011).

Other studies that look specifically at news content examine network connections and the role they play in what content users find trustworthy and reliable. Work by Turcotte and colleagues ( $N = 364$ , 2015) found that Facebook connections have an impact on user trust in news sources and found that when friends are perceived as poor opinion leaders, there was a negative impact on the respondents' trust in the news outlet the that was recommender (Turcotte, et. al, 2015). The opposite, however, was also true: when recommendations came from someone perceived as an excellent opinion leader, there was a positive effect on trust in the news source (Turcotte, et. al, 2015). An earlier 2012 study ( $N = 1,600$ ) of Canadians found that more than 40 percent of social media users reported receiving news from family, friends or acquaintances they follow on social media platforms, whereas only 20 percent of the respondents noted receiving news from a news organizations' or journalists account (Hermida, Fletcher, Korell & Logan, 2012). Respondents in this study were twice as likely to prefer news links and recommendations from friends and family, as opposed to news from journalists or news organizations, which leads to the authors' suggestion that social networks are becoming increasingly important to the way people experience and interact with the news (Hermida, Fletcher, Korell & Logan, 2012). More recent survey work by Pew Recent Center looks at social connections and trust and suggests that a small percentage of Americans (15 percent) have a lot of trust in the information they get from friends and family, with 61 percent reporting they trust friends and family as sources *some* (Bialik & Matsa, 2017).

Most of the current studies in this field examine how news and information from friends and family are perceived versus news and information that comes from more official sources,

like news organizations and journalists in social media spaces. However, little work has been done to explore how different interpersonal connections influence perceptions of news and information in different ways. Said another way, there is little to no research into whether or not some network connections in social media environments seen as more trustworthy and reliable than others when it comes to the sharing of news content.

**RQ 1:** Within Facebook networks, what types of connections (i.e. strong versus weak ties) are seen as providing the most trustworthy and reliable news content?

**H1:** Strong ties—those with the highest harmonic closeness and betweenness centrality statistics—within an individual’s Facebook network will be seen as more trustworthy and reliable in regard to news content.

**RQ2:** On Facebook, which information sharers are seen as the most trustworthy and reliable “official sources” like news organizations, businesses, government organizations and journalists, or friend connections?

**H1:** Participants will find news content posted or shared by “official sources” (e.g. news organizations, businesses, government organizations, journalists) to be more trustworthy.

## Methods

Participants ( $N = 97$ ) were recruited through undergraduate classes at universities in the mid-Atlantic region of the United States. Students were recruited through their professors, who offered the exercises (outlined in brief below) as an in-class assignment or extra credit opportunity. All students signed consent forms before data was collected by the researchers.

The mean age of participants in the study was 21.4 years of age. Since the sample consisted of undergraduate and graduate students, it’s unsurprising that a large majority (83 percent) make a yearly income of less than \$30,000 and many (60 percent) had only completed high school, though twenty-seven percent of the sample had completed an associate's or

bachelor's degree. A majority (69 percent) also report living in a suburban area, with 23 percent calling their home location urban.

The participants were relatively heavy news consumers, with 50 percent of respondents reporting they consume news on social media multiple times per day. Another 25 percent said they consume news on social media multiple times per hour. More than a third of participants (36.5 percent) see news in their feed once every few sessions, and 29 percent see news in their feed once per session. Twenty eight percent see news in their feed multiple times per session.

In order to participate, students pulled their Facebook network using the free application, Lost Circles. The adjacency file produced was processed through Gephi, a free network analysis tool. Several network measures (e.g. centrality, degree, betweenness centrality, harmonic closeness) were calculated in Gephi. The data file created in Gephi was run through a Perl script to extract 10 nodes from each individual network graph: highest betweenness centrality nodes (2), highest closeness (harmonic) centrality nodes (2), highest degree nodes (2), randomly selected nodes (4). An explanation of each of these terms can be found in Table 4. The names associated with these 10 nodes were stored on a secure platform and either printed off and given to students, or to them sent electronically. The 10 names were used to complete the survey, where they were asked questions related to each person (e.g. What is your relationship to this person?; Do you find the news content posted by this person to be reliable?; If this person were to post news content on Facebook, what action would you likely take?).

*Table 4: Definitions of network statistics*

Network statistic	Definition
Degree	Simply refers to the number of edges (or connections) a person, or node, in the network has (Golbeck, 2013).

Harmonic centrality (or valued centrality)	A variant of closeness centrality, which calculates the nodes centrality in a network, that deals with undirected graphs (Rochat, 2009). This metric accounts for how close the node is to other nodes in the network and is calculated by determining the average shortest path from the node to every other node (Golbeck, 2013). Therefore, the shorter the path length (and the smaller the number), the more central the node (Golbeck, 2013).
Betweenness centrality	Determines how important a node is to the flow of information throughout the network. It is calculated, in part, by examining the shortest paths between two nodes and determining how many of those shortest paths include the node in question (Golbeck, 2013).

Since each participant analyzed ten of their network connections for the study, a total of 628 network connections (Facebook accounts) were analyzed. Some cases were removed from this portion of the analysis because students did not complete the process properly or entirely, or the data contained missing values, which is a certainly a limitation of using publicly-available social media data. A portion of the network statistics are available for a smaller number of cases, but as many were retained for the analysis as possible.

In addition to the assessment of the 10 Facebook connections, the survey asked general questions about participant interactions with news content on Facebook (e.g. How often do you encounter news on Facebook per session?; Who are you most likely to trust news and information from on Facebook?).

The data gathered was analyzed using statistical methods and social network analysis and was completed using Excel and SPSS (v.24).

## Findings

### Research Question One Findings

The first research question is concerned with the type of connections that participants perceived as sharing or posting the most trustworthy and reliable news content.

The network connections studied in this research had an average degree of 72.23 ( $N = 590$ ,  $SD = 106.794$ ). The harmonic closeness mean of all connections was .5829 ( $N = 628$ ,  $SD = 1.03$ ) which suggests they are moderately central to the network—meaning that most nodes studied were not at the center of the network, but they are not peripheral to the network either. The mean betweenness centrality was 5205.071 ( $N = 611$ ,  $SD = 35855.202$ ) which suggests the average node is serving as a moderately essential bridge between several other nodes. The minimum betweenness centrality in the sample is 0 and the maximum is 625793.404, which puts the overall average at the lower end of the spectrum.

When asked about the nature of these relationships, the most common labels were friend (31.2 percent), acquaintance (30.4), classmate (18.5), coworkers (5.9), relatives like cousins, aunts and uncles (5.3 percent) and immediately family members including parents and siblings (3.7 percent).

Related to each connection, participants answered a series of questions, outlined in Table 5, about their likelihood to trust and rely on content posted by the ten network connections shown to them. Three questions related to my definition of trust, and three questions related to my definition of reliability. On a five-point Likert scale (1=Never, 5=Always), participants report placing a relatively moderate amount of trust and reliability in their network connections overall (full breakdown of means and standard deviations for each question in Table 5). However, one question, about depending on the news shared by others in their network, had a mean well below the others.

*Table 5: Respondent trust and reliability levels in their network connections*

<i>Trust Measure</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Do you trust the quality of the news content posted by this person?	626	2.80	1.196
Do you think this person would act in your best interest?	627	2.85	1.273

Does you think the news content posted by this person is in your best interest?	625	2.69	1.170
Computed trust variable	627	2.78	1.114
<i>Reliability Measure</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Do you find the news content posted by this person to be reliable?	627	2.85	1.149
Does this person post accurate and high-quality news content?	625	2.66	1.130
Do you depend on the news content posted by this person?	627	1.79	1.015
Computed reliability variable	627	2.43	.940

After performing correlations between the network statistics and the dependent variables of trustworthiness and reliability, there was no significant relationship between any of the measures. Correlations were computed using the network statistics themselves (i.e. harmonic closeness, betweenness centrality, degree) and the log of each number, and neither yielded a significant correlation. The log of each number was used to account for the fact that these values generally follow a power law distribution and are not linear.

## **Research Question Two Findings**

Several survey questions were asked related to the second research question, which aimed to understand which types of information sharers are perceived as being most trustworthy and reliable on Facebook.

When asked about encountering news on Facebook and who is most often the sharer of that information, many participants (44 percent) stated that friends were the primary sharers of news and nearly 20 percent said they primarily see news from news organizations (19.8 percent). Organizations and businesses were primary sharers for 18.8 percent of participants, and family members were primary sharers for 10 percent. Only 3 percent of participants report encountering news shared by journalists most often on Facebook.

Though a large portion of participants saw news from friends in their Facebook feed, 58 percent of respondents are most likely to trust news on Facebook that comes from news organizations. Only 5 percent identified friends as being the most trustworthy sharers of news.

Participants were also asked about what makes the news information they see on Facebook appear more trustworthy. Again, participants identified official sources ( $M = 4.24$ ,  $SD = .830$ )—news organizations, politicians and organizations—as being the most salient indicator of trustworthy information. They identified information shared by close friends as being the next most reliable ( $M = 3.33$ ,  $SD = .904$ ), followed by information shared by a family member ( $M = 3.02$ ,  $SD = .984$ ). As expected, information posted by someone the participant doesn't immediately know or recognize was seen as untrustworthy ( $M = 1.86$ ,  $SD = .829$ ). Full results are in Table 6. Results from an ANOVA and individual t-tests suggest that participants trust these four groups of sharers at different levels that meet statistical significance, with p values of 0.02 or less.

*Table 6: Perceived signals of trust on Facebook (M, SD)*

<b>On Facebook, news information seems more trustworthy when _____.</b>	<b>Mean</b>	<b>SD</b>
It is posted by an official source (i.e. news organization, politician, organizations).	4.24	.830
It is posted by a close family member.	3.02	.984
It is posted by a close friend.	3.33	.904
It is posted by someone you don't immediately know or recognize.	1.86	.829
The post has been shared many times.	2.78	1.018
The post has been liked many times.	2.63	.990
The post has a lot of comments.	2.44	.892
The post includes a link to an official news website.	3.95	.773
The post includes a link to a blog.	2.35	.920

## **Discussion**

This results from our study found no statistically significant connection between a connections' placement in the network and the participants' propensity to trust or rely on news from that connection. This lack of a significant relationship might be explained by the nature of the Facebook platform itself. For example, the network statistics (i.e. harmonic closeness and betweenness centrality) simply refer to how ingrained the connections are within the participants network of friends, rather than how central or influential the nodes are to the entire network of Facebook. These network statistics may not be indicative of someone's relationship with the connection. For example, I may be very close to my mother and trust and rely on the news content she shares, but she may not be central to my Facebook network (i.e. she is not friends with all of my friends). Conversely, someone who is highly connected in my network (an acquaintance, for example, with whom I connected through many social ties) may not be someone I would trust or rely on to share quality news content.

The concept of homophily suggests that people in social networks are similar to one another (McPherson, Smith-Lovin & Cook, 2001), and it would be easy to assume that users trust and rely on the information shared in those networks because of their similarities and shared connections with other users. Facebook connections are largely built off of friendships and social ties—the majority of the network connections in the sample (61.6 percent) were defined as ‘friends’ or ‘acquaintances’—and this work suggests that those friendships may be independent and disconnected from willingness to trust and rely on the information and news shared by these types of connections.

This study also found that when many participants see news in their feed on Facebook, it is being posted by friends. However, participant trust in the news being shared by friends is low.

Participants put significantly more trust into news shared by official sources like news organizations, politicians and other organizations). Facebook users surveyed are also more likely to trust news and information on Facebook if it is shared by close friends, as opposed to family members.

### **Limitations and Future Work**

There are limitations to this work. One limitation of this work lies in the sample size. The sample is relatively small and relies on a convenience sample of college students (both undergraduates and graduates) from universities in the mid-Atlantic region. In the future, this sample could be substantially broadened to be more representative of Facebook's user population. Our sample was also limited in the data-gathering process, which relied on participants consenting to data collecting and required them to pull the data themselves, which led to some incomplete and missing data. In the future, an application or browser plug-in could be built to more reliably and seamlessly gather data. Ideally, the application would ask participants to rate their trust and reliability in their Facebook network connections in real time.

### **Conclusion**

The goal of this study was to better understand how participants use the connections in their Facebook network to determine the quality of news content shared on the platform. These findings suggest that Facebook users rely on connections in their networks to different degrees based on their relationship with the sharer of information. This study also uses the Lost Circles application, a relatively novel tool in the empirical research space, which advances the data collection methods used for social media research.



## **Chapter 7. News organization social media account features as signals of trust and reliability**

Consumers have many options when it comes to accessing news and information—both online and off. Those who look to social media for news have multiple platforms to choose from, including Facebook, Twitter, YouTube, Instagram, and Reddit, just to name a few. Within many of these spaces, users can tailor their experiences and choose which news sources are shown to them by following accounts, joining groups, and subscribing to updates. For example, users can choose to favor unofficial sources of information, like family, friends, or social media influencers (like celebrities), or more “official” information sources like news organizations, journalists, government entities, or organizations.

This work is focused on one of those official sources—news organizations—and specifically examines the social media accounts of news organizations. The purpose of this research is to better understand which elements of a news organization’s social media account users look to when evaluating whether or not to trust and rely on an account. Additionally, this work will examine the types of visual signals (profile and cover images) on social media accounts that suggest trustworthiness and reliability. Though examining the profile image, cover image and other profile features—like a short, written biography or account metrics (i.e. number of followers, number of followees, etc.)—may seem futile, in social media spaces where users are often required to determine the trustworthiness and reliability of news sharers by their profile attributes and content alone in a short amount of time, these account features become important cues of quality.

These assessments and evaluations of news sharers and their signals are important in social media environments. Due to the sheer volume of information available online, users have

limited time to make decisions, and these evaluations and assessments have become even more important considering the concern for mis- and disinformation online (Barthel, Mitchell, & Holcomb, 2016). In order to avoid overload and the need to spend a great deal of time deciphering between reliable and unreliable sharers, users of social media may depend on cues and signals embedded in the platform to make these assessments.

News organizations—and brands across industries—use their social media accounts for a variety of reasons, including to boost sales, increase awareness, drive traffic to a website, promote products and services and more (Mangold & Faulds, 2009; Safko, 2012; Turner & Shah, 2011). Online, there are presumably competitors for each and every brand, which means that companies and organizations have to stand out in order to gain valuable consumers, audiences, and users.

On social media, users rely on signals displayed by other users and accounts in order to make decisions about quality, as they may not have many other attributes to evaluate. This makes the features of social media profiles important, because other users are judging the quality of the account-holder—and the information and content disseminated from that account—based on signals portrayed. This evaluative process is pertinent to news organizations hoping to establish trust and reliability with their audiences. It is also important to recognize that “fake news” organizations, or nefarious actors, can manipulate their signals in order to seem more reliable and more trustworthy in these spaces and to trick users.

This study will examine what elements of a news organization’s social media profile, across social media platforms like Facebook, Twitter and YouTube, news consumers rely on to assess source trustworthiness and reliability. Signaling theory (which has been discussed at length in previous chapters) is used as a backdrop to explore how news organizations can best

*signal* reliability and trustworthiness to their audiences using visual elements and social media platform features.

### **Account Features and Visual Signals on Social Media**

Many news organizations and other companies with a presence online go to great lengths to manage their accounts and digital assets in ways that signals they are trustworthy and reliable accounts. These signals of quality may be considered even more important in today's environment given the prevalence of mis- and dis-information and the presence of less-than-credible sources.

There is limited scholarly research on the importance and impact of signals (e.g. visual elements, account features) for brand social media profiles. However, these are lively topics of conversation across industry blogs focused on social media, branding and online marketing. Simple Google searches for “importance of a profile image (or cover image) for brands on social media” or “best profile picture for a business social media account” yield plentiful results. Many of these articles are focused on providing best practices for brands utilizing social media for marketing or awareness. One blog suggests that brands choose a singular color palette for all visual elements and use the same logo and avatar across all social networks (Jackson, 2017). For Facebook cover images specifically, one blog suggests keeping the cover image relevant to the brand because images are processed faster than text (Dychko, 2017). Another suggestion includes treating the cover photo like a shop window for the rest of the brand’s page (Dychko, 2017).

Other advice, focused on profile images, urges businesses to “choose a profile picture that represents your brand,” as users should easily be able to connect that image to your company (Rose, 2012). The MBA-holding business writer offers some specific suggestions for image

selection: avoid using a photo of the company's building, use the company's logo if it's well-known, or use a photo of the product or another relevant image (Rose, 2012).

However, there is limited empirical research and guidance related to the type of imagery that is best to use for a profile or cover image (i.e. logos, photographs of people, cartoons, pictures of objects, illustrations) and there is limited knowledge about how brands (especially news organizations specifically) can gain the trust and reliability of the audience using these visual signals and the account features on social media accounts. This research hopes to fill those gaps in knowledge.

### **Research Questions**

The research will explore which elements of a news organization's social media account audiences look to when evaluating whether or not to trust or rely on an account. This work will also examine which types of visual signals (profile and cover images) used by social media accounts in order to understand their ability to successfully signal trustworthiness and reliability. It will also examine participants ability to use these signals (account features) to identify social media accounts as real or fake.

**RQ 1:** Are specific features of a news organizations' social media account used more regularly than others to assess the trustworthiness and reliability of the account?

**H1:** Some account features will signal trustworthiness and reliability more than others. Profile images and cover images will be the first places users look to assess the reliability of an account. They will also look at the description provided by the account.

**RQ2:** Does the type of visual element used for a profile image and cover image make a difference in perceived reliability and trustworthiness of the news organization?

**H2:** For profile images, the category with the most positive impact will be full name logos. For the cover images, newsroom and news building (news artifact) photos will have a positive impact on perceived trustworthiness and reliability.

**RQ3:** Are users able to distinguish between real and fake social media accounts based on social media account features (i.e. profile image, cover image, account metrics) alone?

**H3:** Participants will be able to successfully distinguish between real and fake social media accounts of news organizations based on account features.

## Methods

Participants ( $N = 1860$ ) were recruited via Amazon's Mechanical Turk and paid \$1 for their participation. The average age of the participants was 37 years old and the sample was slightly more female than male (52.4 percent to 47 percent). The majority of the sample (65 percent) has an annual income of less than \$59,999, and a large portion of the sample (approximately 60 percent) has earned at least a bachelor's degree. About 50 percent of the sample lives in a suburban setting, followed by 30.8 percent who live in an urban location. A full breakdown of the sample can be found in Table 7.

*Table 7: Demographics of sample ( $N = 1860$ )*

<b>Gender</b>	Female	52.4%
	Male	47%
	Prefer not to say	.5%
<b>Age</b>	<i>Min</i>	18
	<i>Max</i>	81
	<i>Mean</i>	37.22
	<i>SD</i>	11.75
<b>Income level</b>	Less than \$30,000	28.6%
	\$30,000 - \$44,999	18.5%
	\$45,000 - \$59,999	18.5%
	\$60,000 - \$74,999	13.9%
	\$75,000 - \$99,999	11.9%
	More than \$100,000	8.5%
<b>Education</b>	Less than high school	0.70%
	Completed high school	23.8%
	Associate degree	16.6%
	Bachelor's degree	44.5%

	Graduate degree	14.5%
<b>Location</b>	Urban	30.5 %
	Suburban	50.2%
	Rural	19.4%

The participants in the sample reported a moderate level of general trust and reliability in news organizations they encounter in social media. On a 5-point Likert scale (1=Never, 5=Always), the sample stayed in this moderate range across all five questions about trust and reliability (Table 8) with a mean range between 2.57 and 3.02.

*Table 8: Respondent trust and reliability in news organizations*

Survey measure	M	SD
Do you trust the news organizations you encounter on social media platforms?	2.77	.714
Do you believe the news organizations you encounter on social media act in your best interest?	2.62	.782
Do you believe the news organizations you encounter on social media platforms are reliable?	2.84	.749
Do you depend on the news organizations you encounter on social media platforms?	2.57	.990
Do you believe news organizations post accurate, high-quality news content?	3.02	.769

A large portion of the survey used screenshots of specific news organizations' social media accounts. In order to construct this portion of the survey, I used crowdsourcing, asking my Twitter followers to provide a link to their local newspaper or news station. Large, well-known media entities (i.e. *Washington Post*, *Chicago Tribune*) were avoided in hopes of gathering news sources that were relatively unknown to most participants. Additionally, fake news organizations were included in the batch. I gathered fake news organizations at random from a list of fake news websites on Wikipedia (List of fake news websites, n.d.).

Once these 21 news organizations (16 real, five fake) were identified, I took screenshots of the news organizations' social media accounts. All of the screenshots were taken from a desktop computer in the same browser window size in order to achieve uniformity. The

screenshot represents what a user would initially see in a browser window, without scrolling, when they visit the social media profile of a news organization on Twitter, Facebook or YouTube.

In the first section of the survey, I used the heat map function in Qualtrics and participants were shown 18 separate exposures (i.e. screenshots of social media accounts) along the following prompt: “When assessing whether or not to trust this account, click on the first place you look to evaluate trustworthiness.” Underneath each heat map, they were also asked if they thought the account belonged to a real or fake news organization. Each platform (Facebook, Twitter, YouTube) was represented 6 times in this section.

In the second portion of the survey, only the profile (account) image was visible in each screenshot, and the rest of the profile elements were blurred. The third portion of the survey was similar, except only the cover image was visible to the participants, with the other elements being blurred. For each of these sections, 15 exposures were shown (5 from each platform). The question underneath each exposure read: “Does this element (profile/cover image) make the

news organization seem reliable?” Answers were given on a 5-point Likert scale (1=Very Unreliable, 5=Very Reliable). For each of these accounts, the profile and cover images were categorized into

Profile image category	Example	Cover image category	Example
Full name logo		Logos	
Abbreviated logo		News artifacts	
Picture logo		Photo of landscape or nature	

Figure 2: Examples of profile and cover image categories

typologies in order to make analysis valuable. The 15 profile images shown fell into three categories: (1) full name logo, (2) abbreviated logo, (3) picture (photo or illustration). Examples of each are shown in Figure 2. For the 15 cover images shown, the categories were as follows: (1) logos, (2) news artifacts (i.e. photo of the news building or newspaper), (3) photo of landscape or nature. These categories were identified through an open-coding process. Examples of each are shown in Figure 2.

In the final section of the survey, I hoped to gain a broader understanding of user behavior and information consumption in online spaces. For example, we asked participants questions about their general trust in the news content and news organizations they encounter in social media spaces. It also asked them about their process for evaluating news content and news organization in these environments.

The data collected from the survey was analyzed using Qualtrics reports, SPSSStatistics (v24), and R (v3.3.2). Both quantitative (statistical analyses; ANOVAs, t-tests) and qualitative (content analysis) were used to analyze the data. Mixed-methods were used to analyze data related to all three research questions.

## **Findings**

### **Research Question One Findings**

Findings related to the first research question suggest that some elements of a news organizations' social media account are used more frequently than others when assessing whether or not to trust and rely on an account. The heat map portion of the survey asked participants to identify, or click on, the first place they would look to evaluate the reliability of the account on the news organization account screenshot. Before answering any questions in this

section, participants were offered the definition of reliability in order to ensure uniform understanding of the term: “*reliability (reliable)* refers to the degree to which something can be depended upon to be accurate and is consistently good in quality or performance.”

A qualitative analysis of the heat map visualizations showed that participants looked most often to the “About” tabs, links to a corresponding website, the name of the account, the follower and following metrics, and the account descriptions to assess the reliability of an account.

When broken down by platform, the most reliability-signaling features of a Twitter account were the website link (which was consistently the most-clicked-on) followed by features like “follower” and “following” metrics, account descriptions and name of the account (see Figure 3). On Facebook, the features examined the most for account reliability are the About tab (always the most clicked on element), followed by the website link, the name of the account, the “like” and “follow” metrics and reviews (see Figure 4). On YouTube, participants in the study consistently looked to the About tab and the name of the account (see Figure 5). Other elements that were often selected were the related channels column, the number of subscribers and the profile image.



Figure 3: Twitter account heat map results



## **Research Question Two Findings, Profile Images**

Related to the second research question which focused on the types of profile images used, results from an ANOVA suggest a significant difference in the perceived reliability of profile images, across the three types of imagery studied: abbreviated logos, full name logos, or pictures ( $F(2, 27,882) = 212.43, p < 0.001$ ). Overall, profile images that used pictures were seen as most reliable ( $M = 3.21, SD = 0.014$ ) and those that used abbreviated logos were seen as the least reliable ( $M = 2.78, SD = 0.012$ ).

*Figure 5: YouTube account heat map results*

A paired sample t-test suggests that there was a statistically significant difference between two groupings of profile categories. Profile images that use full name logos were perceived as more reliable ( $M = 2.94, SD = 0.0109$ ) than those that use abbreviated logos ( $M = 2.78, SD = 0.012; t(9294)=4.207, p < 0.001$ ). Additionally, profile images that used pictures were seen as significantly more reliable ( $M = 3.21, SD = 0.014$ ) than those that used an abbreviated logo ( $M = 2.78, SD = 0.012; t(5,576)=26.795, p < 0.001$ ). There was no statistically significant difference in perceived reliability between profile images that use full name logos and those that use pictures.

When asked about what characteristics participants found important when assessing the profile or cover image of a news organization's social media profile, a majority (80.4 percent) said being able to quickly know which news organizations the account is connected to, followed by image quality (13.8 percent). Very few respondents (3.9 percent) cared about the photograph being aesthetically pleasing. Some other responses received that showed up with frequency included professional-looking logo or graphic design work, and photo of a news building.

## **Research Question Two Findings, Cover Images**

Also related to the second research question which focused on the types of cover images used, ANOVA results suggest a significant difference in the perceived reliability of cover images, dependent on the three types of imagery studies: logo, landscape or news artifact (i.e. news building or newspaper) ( $F(2, 27,882)= 1790.21, p < 0.001$ ). Overall, cover images that depicted news artifacts were seen as most reliable ( $M = 3.71, SD = 1.09$ ) and those that depicted landscapes were seen as the least reliable ( $M = 2.71, SD = 1.1$ ).

Findings from a paired sample t-test suggest that a statistically significant difference exists between all pairings of cover image categories. Logo cover images ( $M = 3.01, SD = 1.18$ ) were seen as significantly more reliable than those that used landscapes ( $M = 2.71, SD = 1.10; t(9294)=17.557, p < 0.001$ ), news artifact cover images ( $M = 3.71, SD = 1.09$ ) were rated as being significantly more reliable than landscapes ( $M = 2.71, SD = 1.1; t(7435)= -60.654, p < 0.001$ ), and news artifact images ( $M = 3.71, SD = 1.09$ ) were also seen as significantly more reliable than logo cover images ( $M = 3.01, SD = 1.18; t(7435)=42.04, p < 0.001$ ).

## **Research Question Three Findings**

Related to the third research question, participants were shown 18 screenshots of news organization social media accounts (13 real, five fake) and were asked: “By your assessment, is this account associated with a real news organization? Or is it associated with a fake news organization?”

I found that, in aggregate, participants were often able to correctly distinguish between real and fake accounts. However, for two of the organizations, the majority of participants misidentified the account as fake when they were indeed real. The two accounts that were

misidentified were the MoCo Show, a local news organization based out of Montgomery County, Maryland, and *The Blade*, a newspaper in Toledo, Ohio.

Additionally, some accounts were also assessed as being significantly more real or fake than others. For example, the Times Herald (Port Huron, Michigan) Facebook account page was perceived to be the most “real” out of the batch ( $M = 1.13$ ,  $SD = 0.34$ ) with 86.6 percent of participants assessing it as a real news organization. On the flipside, the most “fake” news organization was the Liberty Writers News YouTube account ( $M = 1.86$ ,  $SD = 0.34$ ), with 86.2 percent of the participants assessing it as fake. It was indeed a fake account. The full results of this portion of the survey can be found in Table 9.

*Table 9: Assessment of real and fake news organizations*

<b>Real news organizations</b>	<b>Percent assessed account as real</b>	<b>Percent assessed account as fake</b>
Daily Record	86.18	13.82
Times Virginian	84.03	15.97
TV 6 & Fox UP	84.41	15.59
Daily Mountain Eagle	83.76	16.24
MoCo Show	46.56	53.44
Times Herald	86.61	13.39
Green Bay Press Gazette	59.68	40.32
Mining Journal	78.92	21.08
Times Villager	72.15	27.85
American Press Photography	60.81	39.19
Times Herald-Record	84.35	15.65
Daily Record NW Florida	83.60	16.40
The Blade	39.62	60.38
<b>Fake news orgs</b>	<b>Percent assessed account as real</b>	<b>Percent assessed account as fake</b>
Your News Org	30.34	69.66
Daily Info	30.38	69.62
Liberty Writers	13.76	86.24
World Truth TV	24.95	75.05
UMP	36.47	63.53

In order to better understand their evaluative processes, we asked participants about the first step they would take to verify an account if they suspected it may be connected to a fake news organization. The responses varied: 25.5 percent said they would search for a website that

matches the name of the social media account, 23 percent said they would look for a bio on the organizations' social media account, and 21 percent said they would check to see if the account was verified on the platform. Smaller shares of participants said they would click on the links posted or tweeted by the organization (14.9 percent) or look at account metrics (i.e. number of followers) (13.3 percent).

## **Discussion**

This research adds knowledge about the importance of specific features of news organizations' social media accounts to the literature and looks closely at the visual branding used within these features (profile and cover images, specifically). This study touches on a largely uncharted area of journalism scholarship, which examines how news organizations participate in reputation management and branding online and on social media platforms.

First, this study stressed how important it is for news organizations to have a complete social media account. Many participants clicked on the "About" sections on Facebook and YouTube to assess the reliability and trustworthiness of the account, which suggests it's important for managers of these accounts to pay special attention to that tab and the contents of it. Additionally, on Twitter, the link to the organization's website was the most frequently chosen as a place they would look to assess the reliability and trustworthiness of the account. Making sure that element is present, and correct, will benefit news organizations.

This study also adds to the scholarship on visual branding and explores what types of images are best used as profile and cover images, as there is limited research in this space. My findings suggest that picture (photographs, illustrations) profile images are used most to assess reliability, which is surprising given the ambiguous nature of many of the pictures used. However, perhaps users were drawn to the aesthetically pleasing nature of the profile images

presented. My findings also suggest that cover images bearing news artifacts (i.e. news buildings or newspapers) strongly signaled reliability. This finding is in conversation with Usher's work on the objects of journalism and their role in media trust (Usher, 2018).

Using these visual cues and account features, overwhelmingly, news audiences were able to make accurate judgements about the real or fake nature of the accounts they were shown. However, it is important to note that sometimes participants got it wrong, and the majority of respondents misidentified two real news organizations as being fake. Despite having over 20,000 followers and likes at the time the screenshot was taken, the MoCo show Facebook account was incorrectly identified as fake. The Facebook page uses a logo and collage combination for the cover image and a logo for the profile image. The Blade's YouTube account does not show a subscriber count, but it has a cityscape photograph as the cover image and a "B" logo as the profile image. However, the single-letter logo looks similar to a default avatar that might be assigned to a YouTube account without a profile photo, and this may have impacted the perceived reliability. From these misidentified accounts, it's important to recognize the importance of signals and cues and how they are interpreted by audiences. Ensuring audiences don't place trust in fake accounts is important, but perhaps equally pertinent is the need to ensure audience place their trust in real, quality news sharers when it is warranted.

All of these findings add to the limited body of literature on how news organization social media profiles can impact trust and reliability with news audiences. This research also expands conversations about digital corporate branding and impression management to the journalism discipline.

## **Limitations and Future Work**

There are limitations to this work in that users were exposed to news organization social media profiles in a limited, static, unnatural survey environment instead of in their natural, interactive browsing environment. We also acknowledge that, although we attempted to choose news organizations that were relatively regional and unknown to a large majority of the population, some participants may have been previously familiar with these organizations, therefore limiting the results of research question three, about identifying accounts as real or fake.

Though the heatmap feature in Qualtrics was used for this study, future work could use eye-tracking technology in order to understand where users look first to evaluate a social media account. Additionally, this work could be expanded to include more exposures and more cover image and profile image types. The work could also be expanded to include social media accounts from different industries, like government, health or education, to see if these evaluative processes and assessments are uniform across domains.

## **Conclusion**

This study examines how news organization's social media profiles are evaluated by users and explores how different visual elements used for profile and cover images of social media accounts are perceived by news audiences. Participants consistently looked to the "About" tabs and corresponding website links on social media to assess the reliability of accounts. Participants also rated picture (e.g. photos, illustrations) profile images and news artifact (e.g. newspaper, news building) cover images as being most reliable and trustworthy. Additionally, a large majority of participants in the sample were able to correctly identify a social media account

as belonging to a real or fake news organization by simply looking at a screenshot of the account profile.

This work suggests that news organization social media managers should pay close attention to the completeness of their online presence. The findings also suggest that news audiences associate different levels of trust and reliability with different types of imagery.

## **Chapter 8: Takeaways for the journalism industry and news audiences**

There is a consistent gap between academic knowledge and research and related industries (Barrows & Walsh, 2002; Rynes, Bartunek & Daft, 2001; Smith, Kitzinger, Oosthuizen & Von Solms, 2005), and the journalism scholarship and industry is not exempt from this trend (Franklin, 2014; Lewis, 2018). That is, often times academic scholarship focuses on news organizations, newsroom practices, news audience consumption habits, and media effects, but these findings rarely make their way to newsrooms and journalists, though these stakeholders could certainly find such research valuable.

This dissertation presents a multifaceted look at how users evaluate the quality (i.e. trustworthiness and reliability) of news and information sharers in social media spaces. Though the three studies focus on different types of information sharers (unknown users, network connections and news organizations), overall, this work suggests that the source of the information is central to users' propensity to trust and rely on the information itself. At a high level, this dissertation suggests the following: (1) when examining unknown information sharers, U.S. audiences are more likely to trust and rely on accounts that are gender-neutral and share a cultural background (i.e. Western names), (2) more connected nodes within a person's social network do not translate into more trust in news shared by that connection, and respondents reported having low levels of trust in news shared by their friends; and (3) news consumers look for tangible signals of reliability and trustworthiness, like "About" descriptions and official website links, when assessing news organization social media profiles.

One purpose of this dissertation is to provide news organizations, journalists, and social media managers with findings that have practical, real-world applications and are connected to action items and best practices that could be implemented quickly and easily. In addition, there

are several implications and practical takeaways for average news consumers and online audiences around how information and information sharers are evaluated and perceived in social media spaces.

The takeaways for the news industry and news audiences come from the three individual studies conducted for this dissertation. Throughout this chapter, each study is reviewed at a high level and is followed by a discussion of the implications and takeaways for the news industry and news consumers.

### **Review of Study One: Names, Profile Photos and @Handles as Signals of Reliability for Information Sharers on Social Media**

Study one explored what account features (e.g. names, avatars, @handles) signaled reliability and which accounts participants were likely to share future information from. Findings from study one suggest that participants were more likely to trust accounts associated with Western and gender-neutral names, female avatars and screen name-type @handles. Additionally, participants were likely to share content from accounts with Western and gender-neutral names, female avatars, and non-human avatars. Information from accounts with logo avatars was not likely to be shared by the participants.

### **Takeaways for News Industry**

This work has significant implications for journalists who use social media and hope to gain audiences, build trust, and promote their work across platforms. In today's journalism industry, journalists must be seen as reliable and trustworthy online in order to be successful. Related to this is journalists' use of social media and their ability to gain a following. If account features are preventing them from attracting audiences and earning trust, this could be detrimental to their

personal brand, their work and the mission of their employer. This study has several implications for journalists, which are as follows:

- This work has specific implications for journalists working in the U.S., aiming to reach U.S. news consumers, who do not have traditionally Western-sounding names. Across both questions (“Would you rely on this account for information?” and “Would you share information from this account?”), accounts that were associated with non-Western names were evaluated lower than their Western-named counterparts. Of course, journalists should not alter their online personas or drastically change their profiles to account for these biases, but acknowledging and understanding them could be helpful.
- This work also has implications for journalists who have very gender-signaling names. Findings from this study suggest that accounts with gender-neutral names were seen as more reliable and information from those accounts more shareable. Additionally, this work found that accounts with female avatars were seen as more reliable and more shareable. This is of particular interest for male journalists who may be at a disadvantage simply because of their avatars. Again, we do not condone the alteration or fabrication of online personas, but these findings allow journalists to be mindful of profile characteristics that may be impacting their reliability and the shareability of their social media content
- This work found that information shared by accounts using logo profile images was not seen as highly shareable. This suggests that journalists, and other information sharers, should avoid using logo profile images.

- The work also found that screen names were seen as more reliable than real name @handles. This has potential implications for journalists just creating their accounts or creating new accounts on different platforms.

## **Takeaways for News Consumers**

This study may give news consumers insight into who they choose to trust and rely on within social media environments when they encounter new, or unknown, users. With the knowledge that accounts with Western names, gender-neutral names, and female avatars were most trusted and most likely to be shared, users may be able to examine their own networks on social media. This study's implications for news consumers are as follows:

- News consumers should would to actively diversity social media networks to include accounts associated with a variety of genders and nationalities.
- If consumers are hoping to share information or join the citizen journalism movement, they should be mindful of these user preferences (i.e. avoid logo or cartoon avatars) in order to increase the likelihood of being trusted or having information shared.

## **Review of Study Two: Facebook Network Connections and User Perception of News Content**

Study two examined how the Facebook users' network connections impact their likelihood to rely on news content shared on the platform. Findings from this work suggest that Facebook users most often encounter news on the platform that is shared by friends, but their trust in news shared by friends is low. Findings also suggest that though only 20 percent of the

sample report seeing news shared by news organizations most often in their feed, 58 percent of participants were most likely to trust news on Facebook that comes from news organizations. Additionally, only 3 percent of the participants report encountering news shared by journalists most often on Facebook. The study also found that a nodes placement in the participant's network does not appear to correlate to trust or reliability in news content shared by that connection.

## **Takeaways for News Industry**

These findings stress the importance of network connections on social media as they related to trust and the perceived reliability of news content, as these connections play a role in what content a user sees in their feed. News organizations should focus on the communities that already exist in social media environments in order to spread content, raise brand awareness and build trust in news products.

- Journalists should utilize Facebook to share their own stories and stories from other reputable news organizations. Since participants didn't recall seeing news from journalists in their feed very often, this is a potential area of growth. Journalists could also consider creating an official page for themselves on Facebook, where they can connect with audiences, gain followers, and build trust.
- News organizations should continue to invest in Facebook as a news-sharing and audience-building platform. The Facebook users in our sample trusted news from news organizations most often but didn't recall seeing much of it in their feeds.
- News organizations should create Facebook groups for their organizations—or longer-term reporting projects—that would attract new followers.

- Encouraging sharing of content is important on Facebook because it impacts what news users encounter on the platform, but the study found that news directly from news organizations is more trusted, so news organizations should work to engage new audiences, build their following and direct connections on the platform.

## **Takeaways for News Consumers**

This study also provided news consumers with insights about the nature of news quality within their social network. With these findings, audiences should take care when viewing news on social media sites, especially when it has been shared by “unofficial” sources, like friends, acquaintances or family.

- Users are most likely to see news from friends in their Facebook feed, but trust in that content is low. And while news organizations are trusted most, respondents did not often see news from these official sources on Facebook. Users should purposefully follow a wide range of news organizations on social networks in order to get reliable, trustworthy news in these environments.
- Very few respondents reported seeing news from journalists on Facebook. Users should seek out journalists to follow in order to welcome trusted news into their Facebook feed. Many journalists have Facebook pages that users can follow.
- Since there is no correlation between placement (centrality) in the network and trust or reliability in news content shared by that connection, users should be careful when

placing trust in someone who seems very well-connected in their social network, as these connections may not be the most reliable source of trusted news content.

### **Review of Study Three: News organization social media account features as signals of trust and reliability**

Study three aimed to examine several elements of a news organizations' social media presence. More specifically, the work aimed to understand which elements of a news organization social media profile users look to in order to assess the quality of an account and what type of cover and profile images were seen as most reliable. Findings from study three suggest that users consistently look to the "About" tabs and corresponding website links on the social media profiles of news organizations. They also looked often at biographical information (on Twitter, specifically) and account metrics (e.g. number of followers, number following, number of likes). The findings also suggest that picture (photos, illustrations) profile images were perceived as being the most reliable. Abbreviated logo profile images were seen as the least reliable, which is in-line with the findings from study one regarding logos and low perceived reliability. The analysis also showed that news artifact images (those depicting news buildings, newspapers) were the most reliable cover images.

### **Takeaways for News Industry**

The findings from study three have significant and practical implications for the news industry, journalists, and managers of news organization social media accounts. The best practices established as a result of this study are as follows:

- Ensure the "About" section of the organization's profile is filled out thoroughly.

- Be mindful that the link provided in the “website” section of the profile is correct and updated.
- Make sure the metrics (i.e. followers, following, likes) on the account don’t look off-balanced or questionable. Generally, reputable news organizations will have significantly more followers than followees.
- Across platforms, but especially on Twitter, make sure the section designated for biographical information is filled out, complete, and updated.
- Be mindful about the visual branding associated with the profile. To increase reliability of the profile, use a news artifact picture (i.e. newspaper, news building) or a logo as the account’s cover image. To signal reliability, use a relevant image or a full logo as the profile image for the account.

## **Takeaways for News Consumers**

Though this study is largely focused on news organizations and how they can better present themselves in social media environments, there are also practical takeaways and tips for news consumers looking to assess the reliability and trustworthiness of accounts on social media. Fake news, and the prevalence of mis- and disinformation, continues to be a concern for many online news consumers, but these tips may be helpful for evaluation processes.

- When evaluating a news organization’s account on social media for quality, look to the “About” tabs and look for a corresponding website link on the page. If the news organization is reliable and established, these will be completed, updated, and accurate.
- When examining accounts across social media platforms, look to the biographical information and the account metrics. Often times, an account will have many more

followers than people they follow. If this number is imbalanced in the opposite direction, be cautious.

- Profile images and cover photos should be examined when assessing the quality of the news organization social media account. Profile images bearing pictures (photos, illustrations) and cover photos with news artifacts (news building, newspapers) were perceived as most reliable in the study.

### **Conclusions**

Rigorous, academic, empirical research should be shared with those in relevant industries and the public in order to combine knowledge, improve research efforts, and broaden the scope of the work, both in the scholarship and in industry. This dissertation was written in hopes that it could be shared with broader audiences, namely the news industry and news consumers, to provide practical takeaways, learnings and findings to those who are most influenced by the findings.

## **Chapter 9: Conclusions, limitations, future work**

This purpose of this work—which is a multifaceted look at how users evaluate the quality (i.e. trustworthiness and reliability) of news and information sharers in social media spaces—is to showcase that beyond the reliability of news content, social media users depend on signals, social ties, and platform features to determine trust and reliability in news sharers, and these evaluative decisions occur across social platforms and across a range of news sharers, including unknown users, known social connections and news organizations.

Though I am aware that online users consider many factors when assessing credibility of information on social media—including their content preferences, the source of the information, their previous interactions with a sharer, etc.—the role of the sharer in the evaluative process has not been substantially studied. As stated earlier in this work, this research fills a gap in the existing knowledge. A review of literature from 2004 to 2014 in two databases found that while news sharing and sharers in social media spaces have been studied, much of this research focuses on news consumption, the characteristics of news sharers (i.e. perceived opinion leadership, Ma, Lee & Goh, 2013; number of followers/friends, Bakshy, Hofman, Mason & Watts, 2011), and the motivations for news sharing (Kümpel, Karnowski & Keyling, 2015). This work looks specifically at the role and influence of the sharer—including the user's relationship to the sharer and the online presentation of the sharer—in a user's evaluation of news and information on social media. The findings from this specific research area advance the field and our understanding of how user's evaluate sharers of news on social media.

All three studies yielded at least some statistically significant results. To summarize, results from study one showed that in a Twitter-like environment, Western-style account names were perceived as more reliable and shareable than non-Western names and names in non-

Roman alphabets, and gender-neutral names were more reliable and shareable than gendered ones. For profile images, female avatars were more reliable and shareable than male. Study two found that a node's placement in the participant's network has no relationship to the level of trust or reliability in the news content shared by that connection. It also found that although participants most often see news in their Facebook feeds from friends, the trust in news shared by friends is low. Conversely, a smaller number of people report often seeing news in their feed from news organizations, yet a majority of participants report being most likely to trust news shared by news organization. Lastly, the results from study three found participants consistently looked to the "About" tabs and corresponding website links on social media profiles to make decisions about the reliability of the account. Participants also rated picture (e.g. photos, illustrations) profile images and news artifact (e.g. newspaper, news building) cover images as being the most reliable and trustworthy. Additionally, a large majority of participants in the sample were able to correctly identify a social media account as belonging to a real or fake news organization by simply looking at a screenshot of the account profile.

### **Limitations of the Work**

Generalizability is a limitation of all three of the works. Across all studies, the limitations include the sample (size and representativeness) and the social media platforms examined. Study one focused on a broad audience, but the conditions shown to participants mimicked a Twitter-like environment, which limits the broad applications of these findings across other platforms. Study two was limited in its population, as it focused only on a convenience samples of college students at universities located in the mid-Atlantic region. The size of the sample was also limited by the accessibility of the Facebook API, which rightfully limits researchers' access to

user data. This meant we had to engage participants in retrieving their own network data from the platform, then have them consent to participation, and finally, share the data with us. If these barriers weren't in place, or a different data collection method was used, our sample would likely be much larger. The second study also focused on participants' connections and network statistics on Facebook only, and did not take into account other social platforms. Study three, though the sample was the largest of the three studies, focused on three platforms (Twitter, Facebook, YouTube), but the findings may not be generalizable to other popular social media platforms like Instagram, Snapchat or Reddit.

Additionally, since all of the studies involved surveys, respondents were asked about their behaviors (i.e. willingness to trust content, willingness to rely on a social media account, etc.) in a hypothetical situation. That is, aside from the network statistics gathered from the participants in study two, we did not collect any behavioral data (i.e. social media data) from the participants. This is a potential limitation of the work in that respondents were not in a natural social media environment, but instead, they were given images, or prompts, and asked how they would hypothetically act in a real social media environment.

### **Future Research**

Future research could use all three studies conducted as a framework for continued study, but samples could be expanded to include more respondents and be more representative of the population at large, or platform user populations. Additionally, the studies all examine specific social media platforms, though the studies could be examined and reworked to examine other social media platforms relevant in the news consumption space, including Instagram, Snapchat and Reddit.

In addition, study three identified a substantial gap in the literature around news organizations and their branding strategies and impression manage behaviors on social media. Though this is a popular topic across industry blogs, little empirical research exists in this space. Further examination of these practices and behaviors could be a potentially interesting and valuable area of inquiry across several disciplines, including journalism, business, public relations and information studies.

This work also focused solely on news and current information and the sharers of such information. Future work could focus on other domains of information and sharers, including medical information, political and civic information, or financial information. I plan to pursue this work as it pertains to government information and entities sharing such information. I also plan to look into fitness and health information and sharers (and social media influencers who are active in this domain). Other future research worthy of study (which I plan to explore), could involve looking further into issues like information overload and its impact on decision making, the adverse effects of customization and personalization, and deficiencies in users' media literacy, as I believe these are all involved in the evaluative processes studied in this work.

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