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From Conversations to Digital Communication: The Mnemonic Consequences of Consuming and Producing Information via Social Media

Charles B. Stone,^{a,b} Qi Wang^c

^a*John Jay College of Criminal Justice, The City University of New York*

^b*The Graduate Center, The City University of New York*

^c*Department of Human Development, Cornell University*

Received 14 August 2017; received in revised form 13 February 2018; accepted 22 February 2018

Abstract

Social media has become one of the most powerful and ubiquitous means by which individuals curate, share, and communicate information with their friends, family, and the world at large. Indeed, 90% of the American adolescents are active social media users, as well as 65% of American adults (Perrin, 2015; see also Duggan & Brenner, 2013). Despite this, psychologists are only beginning to understand the mnemonic consequences associated with social media use. In this article, we will distill this nascent literature by focusing on two primary factors: the type of information (personal vs. public) and the role (producer vs. consumer) individuals play when engaging with social media. In particular, we will highlight research examining induced forgetting for personal information as well as false memories and truthiness for public information. We will end by providing some tentative conclusions and a discussion of areas in need of additional research that will provide a more holistic understanding of the mnemonic consequences associated with social media use.

Keywords: False information; Memory; Personal information; Public information; Retrieval-induced forgetting; Social media

Correspondence should be sent to Charles B. Stone, Department of Psychology, John Jay College of Criminal Justice, City University of New York, 524 West 59th St, New York, NY 10019. E-mail: chstone@jjay.cuny.edu

1. Introduction

As the contributions in this special issue make clear, conversations can have a powerful impact on the way individuals and groups remember the past (e.g., Bietti & Stone, 2018; Hirst & Echterhoff, 2008, 2012; Hirst & Manier, 2008). Notably, over the last 25 years, communication has quickly evolved to include digital forms of communication, in particular, social media. And, while more “analog” forms of communication (e.g., face-to-face conversations) continue to be important in day-to-day life, the need to better understand how social media shapes the way individuals and groups communicate and remember the past has become paramount.

Indeed, social media has become one of the most powerful and ubiquitous means by which individuals curate, share, and communicate information with their friends, family, and the world at large: 90% of the American adolescents are active social media users, as well as 65% of American adults (Perrin, 2015; see also Duggan & Brenner, 2013). The prevalence of social media users has also grown rapidly in the last few years. For example, in 2016, there were 600 million *Instagram* users compared to 90 million users in 2013. Research suggests that this rise in social media use may stem from the fact that sharing information, in of itself, derives value for individuals (Baek, Scholz, O'Donnell, & Falk, 2017; Wang, 2013). Yet, despite this ubiquity and the intrinsic value associated with sharing and consuming information via social media, psychologists are only beginning to appreciate the ways in which social media may shape the way individuals and groups remember the past (e.g., Fenn, Griffin, Uitvlugt, & Ravizza, 2014; Wang, Lee, & Hou, 2016; Zubiaga, Liakata, Procter, Hoi, & Tolmie, 2016). Thus, the aim of this paper was to provide a critical review of the extant research pertaining to the mnemonic consequences associated with social media use.

To this end, we will focus on two primary factors: (a) the type of information on social media and (b) the role individuals undertake when engaging with said information on social media. In terms of type of information, some of this information tends to be more personal or autobiographical, whereas others more public or collective. In terms of role, individuals may be “producers (those providing the content on social media or initiating the sharing of the content) or “consumers (those viewing or interacting with what a producer has posted or shared on social media).¹ The roles of producers and consumers can overlap when one receives information and subsequently reposts it. In our distillation of the literature examining the mnemonic consequences associated with social media use, we focus on two critical areas of research: induced forgetting for personal information and false memories/truthiness for public information. We will end with some concluding thoughts about the importance of these factors in understanding how and when social media shapes the way individuals and groups remember the past and a discussion of avenues for future research. In order to make sense of the mnemonic consequences associated with social media use, we will first connect social media use with the robust literature examining selective remembering.

2. Social media and selective remembering

Interacting with social media is a selective endeavor: From the number and types of pictures one might post from her recent Oktoberfest trip (a producer) to the tweets she reads from various political pundits (a consumer). The totality of an individual's experience can never be captured via social media: It is inherently selective. How might this selectivity on the part of social media use shape the way people remember their personal and public pasts? To a large extent, psychologists have not studied this topic. But they have studied selective remembering of a wide range of other material, in particular, autobiographical material. We apply this work to the case in hand—remembering through social media.

2.1. *Selective remembering*

There are reasons to believe that the literature on selective remembering also applies to instances of producing and consuming information on social media, even though it has not been explicitly studied. For instance, Conway and Pleydell-Pearce (2000) argued that selective remembering occurs, in part, because remembering is goal-directed. They averred that self-goals governing any act of remembering aim to serve the current “working self”: If people view themselves as shy, they may then remember past events that support that view. When it comes to posting on social media, one can similarly speak of a “working virtual self,” which reflects the individual's online identity. What individuals post on social media will be selective to the extent to which such sharing and consuming coheres with the individual's “working virtual self” at any given point and time. Critically, this “working virtual self” need not perfectly align with one's “non-virtual” self (for a review, see Bullingham & Vasconcelos, 2013). In particular, what is selectively remembered online may differ systematically from what might be selectively remembered offline given the public, interactive, and multimedia characteristics of online communications (for a detailed discussion, see Wang, 2013). For instance, the “realities” social media users present to the world often tend to be an idealized version of the “non-virtual” self (Page, 2013). In addition, how this “working virtual self” manifests across individuals may vary. For example, extraversion has been found to be positively associated with social media use, whereas emotional stability for men has been found to be negatively associated with social media use (Correa, Hinsley, & De Zuniga, 2010). That is, those individuals who are more outgoing and those men who are less emotionally stable are more likely to use social media. Extraverts also tend to share more intimate, self-revealing information online than introverts (Hollenbaugh, 2011). Thus, self-goals and personality traits may manifest in the “working virtual self” and affect how often and how much information is selectively produced, shared, and consumed online.

Furthermore, people use social media to serve a variety of purposes (Hollenbaugh, 2011; Whiting & Williams, 2013). Research on memory function has shown that people use memory to understand themselves (self), connect with important others (social),

comfort emotional wounds (therapeutic), and learn lessons to inform current and future behavior (directive) (Baddeley, 1988; Bluck & Alea, 2002). These functional usages of memory are similarly reflected in online communications as well (Wang, 2013). In turn, depending on one's purpose of communication at a given point and time, an individual may selectively produce, share, or consume information on social media.

Selective remembering can also arise because of audience tuning. That is, people tailor what they remember to the audience that they are addressing (Marsh, 2007; see also Echterhoff, Higgins, & Groll, 2005; Pasupathi, Stallworth, & Murdoch, 1998; Tversky & Marsh, 2000). Thus, for example, people often share articles and/or pictures on Facebook that will align with their friends' political beliefs or interests (see, e.g., Del Vicario et al., 2016). Wang (2013) further suggests that online posting is a *dialogical* process in which people selectively share information with an intended audience and the readers then selectively affirm or defy the posted information through their likes/responses or their absence of participation. Such selectivity in information processing may shape the mnemonic consequences of social media use.

The extant literature has shown that selective remembering may lead to enhanced recall of the information selectively remembered (e.g., Karpicke & Roediger, 2007, 2008; Roediger & Karpicke, 2006a,b), induce forgetting of related information (e.g., Anderson, Bjork, & Bjork, 1994; Cuc, Koppel, & Hirst, 2007), and even implant false memories (see, e.g., Loftus, 2005, for a review). Whether such mnemonic consequences also reflect the selectivity inherent in social media use remains unclear. Regardless, the selective remembering research provides a suitable theoretical and empirical scaffold from which to begin to understand the mnemonic consequences associated with social media use.

2.2. *Distinctions: Role, information type, and veracity*

In examining and understanding how selective social media use shapes the way individuals remember the past, three distinctions are pertinent: (a) the role an individual undertakes while engaging with social media; (b) the type of information processed on social media; and (c) the veracity of the information processed on social media. We will briefly discuss the relevance of each in turn.

First, the mnemonic consequences associated with selective social media use may depend on the role undertaken by the user. Within the field of social memory, especially conversational research, researchers make a distinction between the speaker and the listener (see Hirst & Echterhoff, 2008, 2012). Almost by definition, the speaker must undertake the retrieval processes. Listeners, however, do not. Thus, the extent to which processes between the speaker and listener differ, we would also expect mnemonic differences (again, see Hirst & Echterhoff for a review). Similarly, we can make a distinction between a producer (think, speaker) of social media content and a consumer (think, listener) of social media content. While the producer, presumably, is undertaking selective retrieval as she posts social media messages, the consumer may or may not engage in processes of selective encoding as well as other social-cognitive processes such as liking and commenting. In addition, unlike an occurrent conversation, responses between the

producer and consumer via social media may lack that immediacy in terms of response and counter-response.

Second, the extant literature suggests an important distinction between public and personal information in considering the impact of social media on memory. Here, we define public information as information about events taking place in the larger community or society that may be accessed outside of the social media platform (e.g., a new report in the *New York Times*). Alternatively, personal information is information about events taking place in an individual's personal life and, by and large, is not publicly accessible outside of the social media platform or, at least, not without personal communication outside of social media with the individual producing the information (e.g., an individual's trip to Miami with her boyfriend).

Last, the veracity of the information disseminated via social media is of direct relevance to the mnemonic consequences. For the present purposes here, we define true information as "objectively" true and false information as "objectively" false regardless of the individual's access, or lack thereof, to the true information (see Maswood & Rajaram, this issue, for a more detailed discussion of true and false information).

Thus, in what follows, we examine the mnemonic consequences associated with selective media use in terms of the role the individual undertakes at any given moment on social media, that is, a producer or a consumer, whether that information produced or consumed is personal or public in nature, and whether that information is true or false.

2.3. *Personal information on social media*

2.3.1. *Role of consumer*

When consuming true, personal information via social media, the relevant evidence suggests that social media enhances recognition of the information. For example, in two experiments, Mickes et al. (2013) found that when information came from a Facebook post (i.e., crafted specifically for Facebook, although not presented as coming from Facebook), individuals had better recognition of this information than human faces or when the information came from a book. In a third experiment, the researchers compared recognition for breaking news and entertainment news in terms of comments about the news, headlines, and sentences from an online article. They found that participants recognized more entertainment news than breaking news and more comments were remembered than headlines or random sentences from the article. The authors argued that one possibility for why Facebook posts are so memorable is because they are "gossipy" (similar to entertainment news) and complete thoughts (similar to the comments) or, to put it their way, Facebook posts may just be more "mind-ready" (p. 488) and, in turn, more cognitively sticky. Regardless of the mechanism, this line of research suggests that consuming information, at least in the format commonly used by Facebook users, enhances the ability of individuals to recognize the information.

What about when the consumed personal information is false? To date, there has yet to be research examining this question within social media. However, the extant false memory research suggests that consuming false personal information should lead to false

memories in the consumer (e.g., Garry, Manning, Loftus, & Sherman, 1996; Mazzoni & Memon, 2003; see Loftus, 2005, for a review) and/or, at the very least, should lead the consumer to believe the information to be more truthful (Fenn, Newman, Pezdek, & Garry, 2013).

2.3.2. *Role of producer*

There are reasons to believe that the selective sharing of personal information may lead to enhanced recall of the posted information much like the aforementioned selective remembering literature. Indeed, selectively retrieving and sharing information has been shown to reinforce the subsequent recall of this information (see, e.g., Carrier & Pashler, 1992; Karpicke & Roediger, 2007, 2008; Roediger & Karpicke, 2006a,b; Roediger, Zarnomb, & Butler, 2009; Stone, Barnier, Sutton, & Hirst, 2013). Merely retrieving an event from memory helps ensure subsequent recollections of that “same” event, and when it is done in the context of social sharing, the effect is even more pronounced. Imagine being the first human to walk a path in a forest. The path may initially be overgrown and difficult to transverse. However, with each subsequent visit, the path becomes clearer and easier to navigate. Retrieving and sharing a memory is similar. With each subsequent retrieval and sharing, the memory of any particular event becomes easier and easier to recollect.

This mnemonic benefit of selectively producing also appears to extend to sharing personal information on social media. Wang et al. (2016) examined the mnemonic consequences of sharing autobiographical events on social media (*Facebook*, *Twitter*, etc.). In their study, participants were asked to record their life events in a diary, and the events were coded as posted online or not posted online. They found that 98% of the posted events were rated more important and highly emotional than un-posted events, suggesting that online posting is highly selective. More important, participants recalled more memories of those that were posted online than those that were not, independent of the characteristics of the memories. Sharing personal stories online thus enhanced memory retention. Wang et al. (2016) suggested that the Internet/social media provided a platform for individuals to rehearse memories and to denote meaning to the externalized memories. In other words, social media may provide a means by which an individual can reflect on the personal importance of the posted events and, in turn, have better recall of them. However, it is worth noting that a limitation of the Wang et al. (2016) study is that participants were able to self-select what they posted online. Thus, the posted events may have been “inherently” memorable and not necessarily more memorable because they were, in and of themselves, shared online. Further research is needed to examine the exact mechanisms leading to this enhanced recall.

2.3.3. *Induced forgetting*

Selective producing of personal information on social media may lead to better recall of the shared information (Wang et al., 2016), but it may also induce forgetting of related but unproduced information. Anderson and his colleagues initially examined this type of forgetting using word-paired associates in what they called the retrieval practice paradigm

(Anderson et al., 1994). This paradigm consisted of three sequential phases: (a) study phase, (b) retrieval-practice phase, and (c) final recall phase. In the study phase, participants were presented with a series of category-exemplar paired associates (e.g., *fruits-apple*, *fruits-banana*, *professions-police*, *professions-nurse*). The participants were instructed to study the paired associates. During the retrieval-practice phase, participants selectively retrieve half of the exemplars from half of the categories. To control which items the participants retrieved, they were provided the category with the first two letters of the exemplar (e.g., *fruits-ap*). The participants then retrieved the exemplar (i.e., *apple*). After a brief delay, the participants completed a final recall whereby they were presented with all the categories and had to retrieve all the exemplars from the study phase.

The selective nature of this retrieval paradigm created three types of memories: Rp+, practiced items from a practiced category (e.g., *fruits-apple*); Rp-, unpracticed items from a practiced category (e.g., *fruits-banana*); and Nrp, unpracticed items from an unpracticed category (e.g., *professions-police*, *professions-nurse*). At final recall, not surprisingly, participants recalled more Rp+ items relative to Nrp items (i.e., $Rp+ > Nrp$). However, more surprisingly, participants recalled fewer Rp- items relative to Nrp items (i.e., $Nrp > Rp-$). This latter result is known as the retrieval-induced forgetting (RIF) effect. That is, by selectively retrieving an item (e.g., *apple*), it induced forgetting of related items (e.g., *banana*) relative to unrelated items (*all the professions*).

C. L. Wong and C. B. Stone (unpublished data) adapted the retrieval practice paradigm to instances of sharing pictures on the social media app, *Instagram*. The experiment took place over the course of 15 days. During the first week of the study, participants kept a diary where they recorded 16 different events across the following four categories (four events per category): happy, funny, exciting, and entertaining. For each event, the experimenter instructed the participants to take a picture associated with each event (Note: the experimenter forbade participants from taking selfies or pictures of their friends). At the end of the week, the experimenter contacted participants and randomly instructed them to post half of the pictures from half of the categories on *Instagram* (i.e., only two happy pictures and two funny pictures). Over the course of the following week, the experimenter instructed participants to react normally to their posts (i.e., if someone “liked” it, they could re-view their post). At the end of this second week, the participants returned to laboratory where they completed a counter-balanced, recognition and cued recall task. The recognition task measured their reaction time and accuracy when presented with their own pictures; the cued recall task measured their recall of their actual memories associated with the pictures (i.e., the details they wrote down surrounding the actual event). While there were not any RIF effects for recognition of the pictures, the preliminary results suggest that RIF occurred for the surrounding memories of the shared pictures. That is, selectively sharing pictures on *Instagram* induced individuals to forget memories associated with the related, but not shared pictures. This suggests that selectively curating one’s life via social media may enhance recall of the shared memories (Wang et al., 2016), but also induce forgetting of related memories. The extent to which others “liked” or commented on the picture did not moderate these effects.

When it comes to producing false personal information, as with consuming false personal information, there has yet to be research examining it in relation to memory. On the other hand, research has suggested that individuals are generally truthful when sharing personal information online, although such information is often exaggerated or embellished in a positive light (Li & Chignell, 2010). When false personal information is indeed present on social media, however, there are reasons to believe that it will lead to false memories. For example, researchers have found that simply imagining an event can lead to a false memory (e.g., Mazzoni & Memon, 2003; Thomas & Loftus, 2002). And, in fact, given the ability for individuals to be re-exposed and re-rehearse the content on social media, we would expect social media to facilitate even more false memories (Thomas & Loftus, 2002). Future research is needed to further examine these possibilities.

2.4. *Public information on social media*

2.4.1. *Role of consumer*

When consuming true, public information via social media, the limited research suggests that such consumption may lead to diminished recall of said information. However, when consuming false information, the results are mixed. We will consider each in turn.

2.4.1.1. True information: Hutchins (2010) argued that cognitive processing must be examined within context, which he calls cognitive ecology. That is, to appreciate the ways in which humans think and remember, one must appreciate the interdependence between the individual and his environment. This necessitates the “unit of analysis” to move from the individual to the cognitive ecosystem, which comprises the individual and the environment that the individual operates (Hutchins, 2010; for similar arguments see Bateson, 1979; Clark & Chalmers, 1998; Donald, 1991, 1993; Sterelny, 2012; Sutton, 2015). Particularly relevant to our thesis, those postulating a cognitive ecology emphasize an inclusion of external influences in their explanations of how and when individuals think and remember (Wilson & Clark, 2009).

Consider the smartphone. In many ways, the smartphone has become an externalized tool that has “taken over” many of the cognitive functions previously completed by the brain (see Barnier, 2010; Chalmers, 2008; see also Clark, 2008). It has become a source of non-biological memory that has augmented biological memory. While individuals could have relied upon pen and paper or a diary in the past, the advent of the smartphone has provided greater ease and accessibility to such externalized tools. For example, in the modern age, it is likely that many individuals cannot recall, unaided, their friends’ phone numbers. Yet, before smartphones, individuals often had to and could, by and large, recall numerous phone numbers or rely upon a centralized or portable phone book. Now, though, individuals can more easily and consistently rely upon an easily portable external device (i.e., their smartphone) to recall their friends’ phone numbers, among other information. That is, smartphones have sped up the process of externalizing memories and information. Thus, to understand the way an individual thinks and remembers phone numbers, that is, her biological memory, one must appreciate the individual’s cognitive

ecology, which include more easily accessible non-biological forms of memory, in this case, the presence of a smartphone.

In extrapolating this idea to social media, it would suggest that when individuals externalize information, they might come to consistently rely upon this externalization (cognitive ecology) in such a way that, without it, they may be unable to recall the information using their biological/cognitive capabilities. When it comes to consuming public information online, this appears to be the case.

Sparrow, Liu, and Wegner (2011) conducted a series of experiments in which individuals were either informed that the to-be-remembered, true information (answers to trivia questions, i.e., public information) would be available online at a later time or that it would not. Individuals who believed that the information would be available at a later point had worse recall of said information independent of external tools. It appears that participants did not use their biological memory to store the information. Rather, they used their “environment” (i.e., the Internet) to help them “recall” or find the information at a later point. That is, the Internet became part of their cognitive ecology, to use Hutchins’s (2010) term: Instead of remembering the information, *per se*, the individual *knew where* the information would be stored externally. Thus, in order to understand the totality of how humans utilize their cognitive processes, an understanding and appreciation of their (ever-evolving) environment or ecology is necessary. When individuals can rely on their cognitive ecologies, in this case, the Internet, to outsource the information, they may be less likely to rely upon their biological, cognitive resources to encode the information and, in turn, their recall diminishes (see also Henkel, 2014; *cf.* Barasch, Diehl, Silverman, & Zauberman, 2017).

2.4.1.2. False information: As the 2016 U.S. election made clear, an important aspect of consuming public information via social media includes the consumption of fake news and other types of false information. For example, in December 2016, Edgar Madisson Welch entered the Comet Ping Pong pizza shop in Washington, D.C., with a loaded rifle and hand gun. Mr. Welch claimed he was investigating whether Hillary Clinton was running a child sex ring out of their basement. While inside the pizza shop, Mr. Welch fired his rifle several times. However, despite Mr. Welch’s confidence and belief, there was no such child sex ring, let alone run by Hillary Clinton. Yet this fake news was spread across social media sites such as Reddit. Although anecdotal, this example speaks to the real and profound consequences fake information can have on what people think and believe and how they act. In addition, even when such fake information is subsequently corrected, the extant research suggests that the utility of such a correction is limited (Lewandowsky, Ecker, Seifert, Schwarz, & Cook, 2012; Starbird, Maddock, Orand, Achterman, & Mason, 2014) and may even backfire, leading the individual to further rely on the false information (Seifert, 2002). This may explain why the World Economic Forum (WEF) lists fake news as one of the main threats to society (Howell, 2013).

In terms of memory research, researchers have been able to repeatedly implant false memories by presenting false information (Garry et al., 1996; see Loftus, 2005, for a review), such as showing people fake news (Polage, 2012) or doctored photos of real

news events (Sacchi, Agnoli, & Loftus, 2007). This line of research has also shown how false memories can shape subsequent behaviors and beliefs (e.g., Bernstein, Laney, Morris, & Loftus, 2005; Sacchi et al., 2007). For example, Bernstein and colleagues implanted false memories in individuals of becoming ill from eating either a hard-boiled egg or a dill pickle when they were younger. Subsequently, these false memories led individuals to be more likely to avoid each type of food, respectively. Similarly, in a study by Sacchi and colleagues, when experimenters provided participants with doctored photos in which a peaceful protest was made to look more aggressive, the participants were less likely to participate in future protests. In addition, the mere presence of a picture, which most articles include, may lead individuals to believe the false information to be more truthful (Newman, Garry, Bernstein, Kantner, & Lindsay, 2012) and this belief can last for up to 48 hours (Fenn et al., 2013).

In the context of social media, three factors are particularly critical: (a) whether the information coheres with the individuals' prior belief system, (b) whether the source is credible, and (c) whether the information is collectively agreed upon. We will examine each in turn.

First, individuals are much more likely to accept false information when it agrees with their prior belief system. For example, Republicans are more likely to believe the "birther" movement relative to Democrats (Travis, 2010). Such a movement fits within the belief system of Republicans as it was used to discredit a Democratic President, Barack Obama. This is particularly important given the group polarization that occurs on social media platforms, such as *Facebook* and *Instagram*, where individuals can create insular groups of like-minded individuals (Spears, Lea, & Lee, 1990). However, even in less homogenized social media platforms such as *Twitter*, the cross-pollination of ideas appears to only strengthen in-group and out-group memberships (Yardi & Boyd, 2010). Thus, understanding one's beliefs or worldview is critical in understanding when individuals will accept false information on social media.

Second, if the source of information is viewed as not credible, the persuasiveness of the message may be diminished and, in turn, less likely to lead to false memories (Eagly & Chaiken, 1993; Petty & Cacioppo, 1986). For example, after viewing 50 images that depicted a story of a man robbing a car, participants in a study by Fenn and colleagues were provided with either accurate or inaccurate information (false information) and this information was made to look like it came from a *Twitter* feed or not (control condition) (Fenn et al., 2013). Surprisingly, when the inaccurate information was presented as if it came from a *Twitter* feed, participants were less confident in the veracity of the false information relative to the control condition. Thus, individuals seem to be considering the medium by which they consume information (see also McLuhan, 1994). In this case, information from *Twitter* may be viewed as less trustworthy and, in turn, be less likely to lead to false memories. However, this may not always be the case. In some instances, individuals may disregard the source of the information (e.g., Cho, Martens, Kim, & Rodrigue, 2011) when making decisions surrounding the credibility of the source.

Last, the unique social engagement capabilities associated with social media (e.g., "liking," reposting, commenting) that allows for collective agreement may mitigate the

results by Fenn and colleagues. Collective opinion may play a pivotal role in shaping how individuals perceive and come to remember false information. For example, Li and Sakamoto (2014) had participants read health-related statements and asked to imagine that they had read it on Facebook or Twitter. The statements themselves were taken from the websites of Discovery, Food Networks, and National Institute of Health and each statement was identified by health professionals as true, inconclusive, or false. The researchers found that when individuals were provided with “collective truthfulness judgments,” that is, the participants received information about the extent to which a majority of people “like [the participant]” believed the statement to be true or false (Experiment 1) or people “like [the participant]” would be likely to share the statement (Experiment 2), individuals tended to follow the collective judgments. If a “majority of people like [the participant]” rated the statement as false or were likely to share the statement, the participant would be more likely to believe the statement is false or to share it, respectively. Similarly, work by Zubiaga and Ji (2014) demonstrated how individuals are more likely to trust a tweet when it has been corroborated by multiple tweets even when the original tweet is false (Fragale & Heath, 2004). Thus, the mere presentation of fake news and false information on social media may not be sufficient to create false memories. The social and collective dynamics inherent in social media platforms play an important role in how individuals appraise and interpret information on social media.

2.4.2. Role of producer

Similar to consumers, the limited research suggests that sharing public or collective information also leads to worse recall. In a study by Jiang, Hou, and Wang (2016), Chinese college students were asked to read Weibo messages (a Chinese social media platform like Twitter) concerning a hotly debated public news event. Half of the participants were given the option to repost the messages, whereas the other half could only read through the messages. In a subsequent surprise memory test, those who had the option to repost messages performed significantly worse than those who did not have the option, and messages that were reposted were more prone to memory errors than those not reposted. In a follow-up study, the authors found that this adverse effect extended to offline cognitive tasks as well, and that it was a result of cognitive load caused by making the choice of sharing information. Thus, although the mechanisms may differ, it appears that selectively sharing public information may lead to similar mnemonic consequences as consuming public information: poorer recall.

As for the mnemonic consequences for the producer when they post false public information, as with producing false personal information, it remains unclear. The intention or motivation for sharing false information may lead to different outcomes. When the sharing is deliberate, that is, when an individual knowingly shares false information, then the individual would have sufficient memory for that information, especially for the aspects that are selectively shared. Furthermore, if the reason to knowingly share false information is to warn, rather than mislead others, and if the individual has good memory for the truth, the sharing may not lead to a false memory (Muller & Hirst, 2014). However, if the individual does not have the true memory, he may make source monitoring mistakes

and come to remember the false information (Johnson, Hashtroudi, & Lindsay, 1993; Muller & Hirst, 2014). Alternatively, when an individual is not aware that the information being shared is false, then the mnemonic consequences of the sharing may follow the same mechanism as that found by Jiang et al. (2016), that is, worse recall. However, those individuals sharing false information may be more likely to exhibit false memories in as much as the act of sharing may symbolize an implicit trust and acceptance of the false information (French, Garry, & Mori, 2008; Mazzoni & Memon, 2003; Thomas & Loftus, 2002). Obviously, much research is needed to better understand when producing false, public information leads to false memories or greater truthiness for said information.

3. Concluding thoughts and avenues for future research

What can we distill in terms of the mnemonic consequences associated with consuming and producing information via social media? Given the dearth of research, definitive conclusions remain elusive. Despite this, some general points can be made.

First, sharing and consuming information do not appear to differ in their mnemonic consequences (for now). This remains a rather tentative conclusion as research for each role is limited and no research has directly compared them. However, we will highlight two pressing questions: (1) Does producing, compared to consuming, false information lead to more false memories and/or more truthiness? While it is clear that individuals can form false memories (Mazzoni & Memon, 2003) and show greater confidence in false events (Garry et al., 1996), the extent to which this line of research extends to sharing false information via social media remains unclear. Whatever the answer, it will likely depend on the type of information and the extent to which the producer trusts the source of information (French et al., 2008).

And (2) does consuming, compared to sharing, information lead to induced forgetting? While recent research has found that induced forgetting can occur for both the speaker (within-individual retrieval-induced forgetting; WI-RIF) and listeners (socially shared-retrieval induced forgetting; SS-RIF; see, e.g., Cuc et al., 2007; Stone, Barnier, Sutton, & Hirst, 2010; Stone et al., 2013)—suggesting it is possible that induced forgetting could occur, not just for the producer (“WI-RIF”) but also the consumer (“SS-RIF”)—to the extent that it does, we would expect the following to occur, whereby the consumer: (a) actually *retrieves* the posted memory (retrieval is a necessary component of RIF; Anderson et al., 1994; Cuc et al., 2007), (b) does not have an integrated understanding of the material (RIF has been found to be eliminated when individuals have an integrated understanding of the material; Anderson & McCulloch, 1999), (c) is an in-group member (greater SS-RIF is found for in-group members; Barber & Mather, 2012; Coman & Hirst, 2015), and/or, perhaps most important, (d) undertakes a “narrow” search of related information at the time of consuming the social media post (Chan, McDermott, & Roediger, 2006). Indeed, this may be why researchers examining SS-RIF find stronger instances of induced forgetting when the listener is having a conversation rather than merely

overhearing: conversations move too quickly to allow the listener to conduct a “broad” search of related memories (Hirst & Echterhoff, 2008, 2012). Alternatively, social media platforms, such as Facebook and Twitter, may provide the right environment for such broad searches and thus eliminate RIF in the consumer (and possibly the producer too, for that matter). Thus, while further research is needed, the initial results do suggest that posting pictures on social media may induce individuals to forget memories related to those that are posted, but it remains unclear as to when such forgetting will extend to the consumer of the social media posts.

Second, the type of information matters. When individuals consume and produce personal information, the mnemonic consequences appear to mirror those associated with conversations: enhanced recall of consumed and produced memories (e.g., Mickes et al., 2013; Wang et al., 2016) and induced forgetting of related but unshared memories (C.L. Wong and C.B. Stone (unpublished data)). Alternatively, when the information is public in nature, recall is diminished (e.g., Jiang et al., 2016; Sparrow et al., 2011). In terms of the former, the enhanced recall could be because personal information becomes more meaningful when shared and consumed via social media (Wang et al., 2016). In terms of the latter, this diminished recall is, again, presumably, a result of the externalization of the information (Sparrow et al., 2011) or a result of cognitive load (Jiang et al., 2016). Regardless, further research is needed to better understand the underlying mechanisms leading to either enhanced or diminished recall of consumed or produced, personal and public information.

Last, the “social” in social media matters. The more collective, social endorsement a post receives, the more likely the post will be perceived as truthful (Li & Sakamoto, 2014). Thus, social media is not simply a more efficient means by which personal and public information is spread. Rather, the social interactions individuals undertake through social media (e.g., “liking”) have important consequences (Wang, 2013). Indeed, “liking” has been linked to greater activation with parts of the brain associated with rewards, social cognition, and attention (Sherman, Payton, Hernandez, Greenfield, & Dapretto, 2016). Might “liking” also lead to greater recall of the memory associated with the “liked” post? Greater induced forgetting? Does recall and forgetting increase as a function of the number of “likes” or might any of these consequences be mediated by the rehearsal associated with the “likes?” Regardless of the answers to these questions, what becomes clear is that “liking” shapes the way individuals appraise and remember the memories associated with the posts.

While addressing the issues and questions above will continue to push the research on social media and memory further, we will now turn to, in our minds, “larger” issues and/or issues that have yet to even be touched upon. In particular, we believe the following research avenues are ripe for future exploration: (a) social media versus conversations, (b) the post vs. the memory, (c) temporality of the post, (d) comments on the post, (e) social dynamics, and (f) goals. We will discuss each in turn.

3.1. Social media versus conversations

How and in what ways are the social influences via social media different than those with conversations? What becomes clear from the extant research examining social media

and memory is that there may be minimal differences, at least when examining recall for personal information (e.g., Wang et al., 2016; C. L. Wong & C. B. Stone, unpublished data; see also Hirst & Echterhoff, 2008, 2012, for a review of remembering in conversations). However, due to the lack of direct comparisons between social media and conversations, for both personal and public information, definitive conclusions are impossible to draw. Future research is needed to better understand diverging (possibly due to, e.g., “liking,” its semi-permanence) and converging mnemonic consequences associated with social media and conversations.

3.2. *The post versus the memory*

In examining the mnemonic consequences associated with consuming and sharing information via social media, what becomes clear is a difficulty in teasing apart the memory of a post with the actual memory the post represents. For example, will the fact that the first author’s friend shared a picture of how the two of them spent Independence Day lead the first author to have a better recollection of the actual memory or just the memory of the shared picture itself? At the moment, the answer to this question remains unclear (but see C.L. Wong and C.B. Stone (unpublished data)), but will ultimately have important implications for how social media shapes the way individuals remember the past.

3.3. *Temporality of the post*

Most social media provide a “semi-permanent”² platform by which individuals can share personal and public information (e.g., *Facebook*, *Instagram*, etc.), a marked transition from the ephemeral nature of conversations. This allows both the producer and the consumer to review and reflect on the posted message(s) (Dillenbourg & Traum, 2006). That is, it permits consumers the opportunity to interact with the post by commenting (more on this below) and/or “liking” the post. At the very least, the semi-permanence should provide greater chances of rehearsal and may lead to additional mnemonic consequences given the connection between “liking,” sociality, and social memory (e.g., Sherman et al., 2016). Indeed, there is some research using a text-based chat tool indicating improved memory for the source of the text (i.e., source monitoring), but a weaker recall of the actual text (Molinari, Jermann, & Dillenbourg, 2007). It remains unclear, though, whether such results may change if given the opportunity to revisit the chat room in a similar fashion as social media.

Whatever the mnemonic consequences are, might they only be short lived? Will something posted 7 years ago still maintain, to use Wang et al.’s (2016) term, meaning and, in turn, be more memorable? The answer to this is not clear and becomes even more complex given that platforms such as *Facebook* now send reminders of posts shared in the past. These reminders may, intuitively, help the producers recall the memory and, in turn, may or may not initiate a new round of induced forgetting of related memories. Alternatively, *Snapchat*, unlike other social media platforms, allows users to ensure that their post is ephemeral, lasting just a short period before “disappearing.” Thus, while it may

lack the temporal rigidity of other social platforms, *Snapchat* may be more conducive toward inducing both the producer and consumer to forget related memories in that it would prevent both the producer and consumer from conducting a broad search for related memories. Additional research is needed to address these pressing possibilities to better understand how the various lengths of temporality across social media platforms shape the way individuals and groups remember the past.

3.4. Comments on the post

The ability of consumers to actively engage with and comment on a producer's post and, in turn, the producer can comment on the consumer's feedback, an interactive process not unlike everyday conversations, may lead to copious amounts of nuanced, mnemonic consequences. For example, it may (a) lead to rehearsal effects on the part of the producer as she will then revisit her posts (Carrier & Pashler, 1992; Karpicke & Roediger, 2007, 2008; Roediger & Karpicke, 2006a,b; Roediger et al., 2009; Stone et al., 2013), (b) lead to greater meaning making and, in turn, greater recall on the part of both the consumer and the producer (Wang et al., 2016), (c) may corrupt the producer's and the consumer's recollection of the event if either provides inaccurate information in response to the post (Garry & Wade, 2005), or (d) any combination of the aforementioned possibilities. Given the lack of research examining these possibilities as they pertain to social media, further research is needed to examine if and when they may emerge.

3.5. Goal-directed social media use: Producers and consumers

Extant research has suggested that sharing information on social media serves similar goals or purposes as sharing information offline (Hollenbaugh, 2011; Wang, 2013; Whiting & Williams, 2013). Yet there is a lack of research examining social media goals and their mnemonic consequences. What we do know is that goals during, for example, conversations influence the mnemonic consequences. For example, when the listener's goal is to monitor for accuracy, he is more likely to exhibit induced forgetting as a result of the speaker's selective recounting (e.g., Cuc et al., 2007). Thus, goals matter when understanding how and when mnemonic consequences occur. Critically, research suggests that individuals use diverse goals when using social media: social interaction, information seeking, pass time, entertainment, relaxation, communicatory utility, convenience utility, expression of opinion, information sharing, and surveillance/knowledge about others (Whiting & Williams, 2013). The extent to which these goals moderate the mnemonic consequences associated with social media use remains an open question.

4. Conclusion

As this special issue makes clear, conversations play an important role in shaping the way individuals and groups remember the past. However, given the increased use of

social media, researchers interested in social aspects of memory need to expand their research beyond conversations and include social media use. Indeed, as the nascent research discussed in this paper suggests, social media, as a ubiquitous means of communication, may play a dynamic, unique, and unto-its-own role in shaping the way individuals remember their personal and public pasts in the Internet era. While the avenues of future research provided here are non-exhaustive, the answers to them should help provide a more holistic understanding of the mnemonic consequences associated with social media use.

Notes

1. Note: Information for the consumer, be it personal or public, may either be novel (i.e., new information) or not (i.e., “known” information). Given the dearth of research for the latter, we focus on the former.
2. We choose “semi-permanent” since it is possible for individuals to delete posts. However, the extent to which said posts remain deleted remains an open discussion.

References

- Anderson, M. C., Bjork, R. A., & Bjork, E. L. (1994). Remembering can cause forgetting: Retrieval dynamics in long-term memory. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, 20, 1063–1087. <https://doi.org/10.1037/0278-7393.20.5.1063>.
- Anderson, M. C., & McCulloch, K. C. (1999). Integration as a general boundary condition on retrieval-induced forgetting. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 25(3), 608–629. <https://doi.org/10.1037/0278-7393.25.3.608>.
- Baddeley, A. (1988). But what the hell is it for? In M. M. Gruneberg, P. E. Morris, & R. N. Sykes (Eds.), *Practical aspects of memory: Current research and issues* (vol. 2, pp. 1–18). New York: John Wiley & Sons.
- Baek, E. C., Scholz, C., O'Donnell, M. B., & Falk, E. B. (2017). The value of sharing information: A neural account of information transmission. *Psychological Science*, 28(7), 851–861. <https://doi.org/10.1177/0956797617695073>.
- Barasch, A., Diehl, K., Silverman, J., & Zauberman, G. (2017). Photographic memory: The effects of volitional photo taking on memory for visual and auditory aspects of an experience. *Psychological Science*, 28(8), 1056–1066. <https://doi.org/10.1177/0956797617694868>.
- Barber, S., & Mather, M. (2012). Forgetting in context: The effects of age, emotion, and social factors on retrieval-induced forgetting. *Memory & Cognition*, 40, 874–888. <https://doi.org/10.3758/s13421-012-0202-8>.
- Barnier, A. J. (2010). Memories, memory studies and my iPhone: Editorial. *Memory Studies*, 3, 293–297. <https://doi.org/10.1177/1750698010376027>.
- Bateson, G. (1979). *Mind and nature: A necessary unity*. New York: Dutton.
- Bernstein, D. M., Laney, C., Morris, E. K., & Loftus, E. F. (2005). False memories about food can lead to food avoidance. *Social Cognition*, 23(1), 11–34. <https://doi.org/10.1521/soco.23.1.11.59195>.
- Bietti, L., & Stone, C. B. (2018). Introduction to a special issue on the mnemonic consequences of conversation. *Topics in Cognitive Science*.

- Bluck, S., & Alea, N. (2002). Exploring the functions of autobiographical memory: Why do I remember the autumn? In J. D. Webster & B. K. Haight (Eds.), *Critical advances in reminiscence work: From theory to application* (pp. 61–75). New York: Springer.
- Bullingham, L., & Vasconcelos, A. C. (2013). “The presentation of self in the online world”: Goffman and the study of online identities. *Journal of Information Science*, *39*(1), 101–112. <https://doi.org/10.1177/0165551512470051>.
- Carrier, M., & Pashler, H. (1992). The influence of retrieval on retention. *Memory & Cognition*, *20*(6), 633–642. <https://doi.org/10.3758/BF03202713>.
- Chalmers, D. (2008). Foreword. In A. Clark (Ed.), *Supersizing the mind: Embodiment, action, and cognitive extension* (pp. ix–xvi). Oxford, UK: Oxford University Press.
- Chan, J. C. K., McDermott, K. B., & Roediger, H. L. (2006). Retrieval-induced facilitation: Initially nontested material can benefit from prior testing of related material. *Journal of Experimental Psychology: General*, *135*, 553–571. <https://doi.org/10.1037/0096-3445.135.4.553>.
- Cho, C. H., Martens, M. L., Kim, H., & Rodrigue, M. (2011). Astroturfing global warming: It isn’t always greener on the other side of the fence. *Journal of Business Ethics*, *104*(4), 571–587. <https://doi.org/10.1007/s10551-011-0950-6>.
- Clark, A. (2008). *Supersizing the mind: Embodiment, action, and cognitive extension*. Oxford, UK: Oxford University Press.
- Clark, A., & Chalmers, D. (1998). The extended mind. *Analysis*, *58*, 7–19. Available at <http://www.jstor.org/stable/3328150>.
- Coman, A., & Hirst, W. (2015). Social identity and socially shared retrieval-induced forgetting: The effects of group membership. *Journal of Experimental Psychology: General*, *144*(4), 717–722. <https://doi.org/10.1037/xge0000077>.
- Conway, M. A., & Pleydell-Pearce, C. W. (2000). The construction of autobiographical memories in the self-memory system. *Psychological Review*, *107*(2), 261–288. <https://doi.org/10.1037/0033-295X.107.2.261>.
- Correa, T., Hinsley, A. W., & De Zuniga, H. G. (2010). Who interacts on the Web?: The intersection of users’ personality and social media use. *Computers in Human Behavior*, *26*(2), 247–253. <https://doi.org/10.1016/j.chb.2009.09.003>.
- Cuc, A., Koppel, J., & Hirst, W. (2007). Silence in not golden: A case for socially-shared retrieval-induced forgetting. *Psychological Science*, *18*, 727–733. <https://doi.org/10.1111/j.1467-9280.2007.01967.x>.
- Del Vicario, M., Bessi, A., Zollo, F., Petroni, F., Scala, A., Caldarelli, G., Eugene Stanley, H., & Quattrociocchi, W. (2016). The spreading of misinformation online. *Proceedings of the National Academy of Sciences*, *113*(3), 554–559. <https://doi.org/10.1073/pnas.1517441113>.
- Dillenbourg, P., & Traum, D. (2006). Sharing solutions: Persistence and grounding in multimodal collaborative problem solving. *The Journal of the Learning Sciences*, *15*(1), 121–151. https://doi.org/10.1207/s15327809jls1501_9.
- Donald, M. (1991). *Origins of the modern mind: Three stages in the evolution of culture and cognition*. Cambridge, MA: Harvard University Press.
- Donald, M. (1993). Precis of origins of the modern mind: Three stages in the evolution of culture and cognition. *Behavioral and Brain Sciences*, *16*(4), 737–748. <https://doi.org/10.1017/S0140525X00032647>.
- Duggan, M., & Brenner, J. (2013). *The demographics of social media users, 2012* (vol. 14). Washington, DC: Pew Research Center’s Internet & American Life Project.
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Orlando, FL: Harcourt Brace Jovanovich College Publishers.
- Echterhoff, G., Higgins, E. T., & Groll, S. (2005). Audience-tuning effects on memory: The role of shared reality. *Journal of Personality and Social Psychology*, *89*(3), 257–276. <https://doi.org/10.1037/0022-3514.89.3.257>.
- Fenn, K. M., Griffin, N. R., Uitvlugt, M. G., & Ravizza, S. M. (2014). The effect of Twitter exposure on false memory formation. *Psychonomic Bulletin & Review*, *21*(6), 1551–1556. <https://doi.org/10.3758/s13423-014-0639-9>.

- Fenn, E., Newman, E. J., Pezdek, K., & Garry, M. (2013). The effect of nonprobative photographs on truthiness persists over time. *Acta Psychologica*, *144*(1), 207–211. <https://doi.org/10.1016/j.actpsy.2013.06.004>.
- Fragale, A. R., & Heath, C. (2004). Evolving informational credentials: The (mis) attribution of believable facts to credible sources. *Personality and Social Psychology Bulletin*, *30*(2), 225–236. <https://doi.org/10.1177/0146167203259933>.
- French, L., Garry, M., & Mori, K. (2008). You say tomato? Collaborative remembering leads to more false memories for intimate couples than for strangers. *Memory*, *16*(3), 262–273. <https://doi.org/10.1080/09658210701801491>.
- Garry, M., Manning, C. G., Loftus, E. F., & Sherman, S. J. (1996). Imagination inflation: Imagining a childhood event inflates confidence that it occurred. *Psychonomic Bulletin & Review*, *3*(2), 208–214. <https://doi.org/10.3758/BF03212420>.
- Garry, M., & Wade, K. A. (2005). Actually, a picture is worth less than 45 words: Narratives produce more false memories than photographs do. *Psychonomic Bulletin & Review*, *12*(2), 359–366. <https://doi.org/10.3758/BF03196385>.
- Henkel, L. A. (2014). Point-and-shoot memories the influence of taking photos on memory for a museum tour. *Psychological Science*, *25*(2), 396–402. <https://doi.org/10.1177/0956797613504438>.
- Hirst, W., & Echterhoff, G. (2008). Creating shared memories in conversation: Towards a psychology of collective memory. *Social Research*, *75*, 183–216. Available at <http://www.jstor.org/stable/40972057>.
- Hirst, W., & Echterhoff, G. (2012). Remembering in conversations: The social sharing and reshaping of memories. *Annual Review of Psychology*, *63*, 55–79. <https://doi.org/10.1146/annurev-psych-120710-100340>.
- Hirst, W., & Manier, D. (2008). Towards a psychology of collective memory. *Memory*, *16*(3), 183–200. <https://doi.org/10.1080/09658210701811912>.
- Hollenbaugh, E. E. (2011). Motives for maintaining personal journal blogs. *CyberPsychology, Behavior & Social Networking*, *14*(1/2), 13–20. <https://doi.org/10.1089/cyber.2009.0403So>.
- Howell, L. (2013). Digital wildfires in a hyperconnected world. In Report 2013. World Economic Forum.
- Hutchins, E. (2010). Cognitive ecology. *Topics in Cognitive Science*, *2*(4), 705–715. <https://doi.org/10.1111/j.1756-8765.2010.01089.x>.
- Jiang, T., Hou, Y., & Wang, Q. (2016). Does micro-blogging make us “shallow”? Sharing information online interferes with information comprehension. *Computers in Human Behavior*, *59*, 210–214. <https://doi.org/10.1016/j.chb.2016.02.008>.
- Johnson, M. K., Hashtroudi, S., & Lindsay, D. S. (1993). Source monitoring. *Psychological Bulletin*, *114*(1), 3–28. <https://doi.org/10.1037/0033-2909.114.1.3>.
- Karpicke, J. D., & Roediger, H. L. (2007). Repeated retrieval during learning is the key to long-term retention. *Journal of Memory and Language*, *57*(2), 151–162. <https://doi.org/10.1016/j.jml.2006.09.004>.
- Karpicke, J. D., & Roediger, H. L. (2008). The critical importance of retrieval for learning. *Science*, *319* (5865), 966–968. <https://doi.org/10.1126/science.1152408>.
- Lewandowsky, S., Ecker, U. K., Seifert, C. M., Schwarz, N., & Cook, J. (2012). Misinformation and its correction: Continued influence and successful debiasing. *Psychological Science in the Public Interest*, *13* (3), 106–131. <https://doi.org/10.1177/1529100612451018>.
- Li, J., & Chignell, M. (2010). Birds of a feather: How personality influences blog writing and reading. *International Journal of Human-Computer Studies*, *68*, 589–602. <https://doi.org/10.1016/j.ijhcs.2010.04.001>.
- Li, H., & Sakamoto, Y. (2014). Social impacts in social media: An examination of perceived truthfulness and sharing of information. *Computers in Human Behavior*, *41*, 278–287. <https://doi.org/10.1016/j.chb.2014.08.009>.
- Loftus, E. F. (2005). Planting misinformation in the human mind: A 30-year investigation of the malleability of memory. *Learning & Memory*, *12*(4), 361–366. <https://doi.org/10.1101/lm.94705>.

- Marsh, E. J. (2007). Retelling is not the same as recalling implications for memory. *Current Directions in Psychological Science*, 16(1), 16–20. <https://doi.org/10.1111/j.1467-8721.2007.00467.x>.
- Mazzoni, G., & Memon, A. (2003). Imagination can create false autobiographical memories. *Psychological Science*, 14(2), 186–188. <https://doi.org/10.1046/j.1432-1327.1999.00020.x>.
- McLuhan, M. (1994). *Understanding media: The extensions of man*. Cambridge, MA: The MIT Press.
- Mickes, L., Darby, R. S., Hwe, V., Bajic, D., Warker, J. A., Harris, C. R., & Christenfeld, N. J. (2013). Major memory for microblogs. *Memory & Cognition*, 41(4), 481–489. <https://doi.org/10.3758/s13421-012-0281-6>.
- Molinari, G., Jermann, P., & Dillenbourg, P. (2007). Source memorization in chat interactions. In C. Chinn, G. Erkens, & S. Puntambekar (Eds.), *Proceedings of the Computer-Supported Collaborative Learning Conference (CSCL)* (pp. 515–517). New Brunswick, NJ: International Society of the Learning Sciences.
- Muller, F., & Hirst, W. (2014). Remembering stories together: Social contagion and the moderating influence of disagreements in conversations. *Journal of Applied Research in Memory and Cognition*, 3(1), 7–11. <https://doi.org/10.1016/j.jarmac.2013.12.002>.
- Newman, E. J., Garry, M., Bernstein, D. M., Kantner, J., & Lindsay, D. S. (2012). Nonprobative photographs (or words) inflate truthiness. *Psychonomic Bulletin & Review*, 19(5), 969–974. <https://doi.org/10.3758/s13423-012-0292-0>.
- Page, R. E. (2013). *Stories and social media: Identities and interaction*. New York: Routledge.
- Pasupathi, M., Stallworth, L. M., & Murdoch, K. (1998). How what we tell becomes what we know: Listener effects on speakers' long-term memory for events. *Discourse Processes*, 26(1), 1–25. <https://doi.org/10.1080/01638539809545035>.
- Perrin, A. (2015). Social media usage. Pew Research Center. Available at https://static1.squarespace.com/static/56698c26e0327c6cd4b4a9c0/t/56cb504e356fb0ad1dc200dc/1456164942915/PI_2015-10-08_Social-Networking-Usage-2005-2015_FINAL.pdf
- Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. *Advances in Experimental Social Psychology*, 19, 123–205. [https://doi.org/10.1016/S0065-2601\(08\)60214-2](https://doi.org/10.1016/S0065-2601(08)60214-2).
- Polage, D. C. (2012). Making up history: False memories of fake news stories. *Europe's Journal of Psychology*, 8(2), 245–250. <https://doi.org/10.5964/ejop.v8i2.456>.
- Roediger III, H. L., & Karpicke, J. D. (2006a). Test-enhanced learning: Taking memory tests improves long-term retention. *Psychological Science*, 17(3), 249–255. <https://doi.org/10.1111/j.1467-9280.2006.01693.x>.
- Roediger III, H. L., & Karpicke, J. D. (2006b). The power of testing memory: Basic research and implications for educational practice. *Perspectives on Psychological Science*, 1(3), 181–210. <https://doi.org/10.1111/j.1745-6916.2006.00012.x>.
- Roediger, H. L., Zaromb, F. M., & Butler, A. C. (2009). The role of repeated retrieval in shaping collective memory. In P. Boyer & J. V. Wertsch (Eds.), *Memory in mind and culture* (pp. 29–58). Cambridge, UK: Cambridge University Press.
- Sacchi, D. L., Agnoli, F., & Loftus, E. F. (2007). Changing history: Doctored photographs affect memory for past public events. *Applied Cognitive Psychology*, 21(8), 1005–1022. <https://doi.org/10.1002/acp.1394>.
- Seifert, C. M. (2002). The continued influence of misinformation in memory: What makes a correction effective? *Psychology of Learning and Motivation*, 41, 265–292. [https://doi.org/10.1016/S0079-7421\(02\)80009-3](https://doi.org/10.1016/S0079-7421(02)80009-3).
- Sherman, L. E., Payton, A. A., Hernandez, L. M., Greenfield, P. M., & Dapretto, M. (2016). The power of the like in adolescence: Effects of peer influence on neural and behavioral responses to social media. *Psychological Science*, 27(7), 1027–1035. <https://doi.org/10.1177/0956797616645673>.
- Sparrow, B., Liu, J., & Wegner, D. M. (2011). Google effects on memory: Cognitive consequences of having information at our fingertips. *Science*, 333(6043), 776–778. <https://doi.org/10.1126/science.1207745>.
- Spears, R., Lea, M., & Lee, S. (1990). De-individuation and group polarization in computer-mediated communication. *British Journal of Social Psychology*, 29(2), 121–134. <https://doi.org/10.1111/j.2044-8309.1990.tb00893.x>.

- Starbird, K., Maddock, J., Orand, M., Achterman, P., & Mason, R. M. (2014). Rumors, false flags, and digital vigilantes: Misinformation on twitter after the 2013 boston marathon bombing. *iConference 2014 Proceedings*.
- Sterelny, K. (2012). *The evolved apprentice*. Cambridge, MA: MIT Press.
- Stone, C. B., Barnier, A. J., Sutton, J., & Hirst, W. (2010). Building consensus about the past: Schema consistency and convergence in socially shared retrieval-induced forgetting. *Memory, 18*(2), 170–184. <https://doi.org/10.1080/09658210903159003>.
- Stone, C. B., Barnier, A. J., Sutton, J., & Hirst, W. (2013). Forgetting our personal past: Socially-shared retrieval-induced forgetting of autobiographical memories. *Journal of Experimental Psychology: General, 142*, 1084–1099. <https://doi.org/10.1037/a0030739>.
- Sutton, J. (2015). Remembering as public practice: Wittgenstein, memory, and distributed cognitive ecologies. In D. Moyal-Sharrock, A. Coliva, and V. Munz (Eds.), *Mind, language & action: Proceedings of the 36th International Wittgenstein Symposium* (pp. 409–443). Berlin: De Gruyter.
- Thomas, A. K., & Loftus, E. F. (2002). Creating bizarre false memories through imagination. *Memory & Cognition, 30*(3), 423–431. <https://doi.org/10.3758/BF03194942>.
- Travis, S. (2010). CNN poll: Quarter doubt Obama was born in U.S. Available at <http://politicalticker.blogs.cnn.com/2010/08/04/cnn-poll-quarter-doubt-president-was-born-in-u-s/>
- Tversky, B., & Marsh, E. J. (2000). Biased retellings of events yield biased memories. *Cognitive Psychology, 40*(1), 1–38. <https://doi.org/10.1006/cogp.1999.0720>.
- Wang, Q. (2013). *The autobiographical self in time and culture*. New York, NY: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199737833.001.0001>.
- Wang, Q., Lee, D., & Hou, Y. (2016). Externalising the autobiographical self: Sharing personal memories online facilitated memory retention. *Memory, 25*, 772–776. <https://doi.org/10.1080/09658211.2016.1221115>.
- Whiting, A., & Williams, D. (2013). Why people use social media: A uses and gratifications approach. *Qualitative Market Research: An International Journal, 16*(4), 362–369. <https://doi.org/10.1108/QMR-06-2013-0041>.
- Wilson, R. A., & Clark, A. (2009). How to situate cognition: Letting nature takes its course. In P. Robin & M. Aydede (Eds.), *The Cambridge handbook of situated cognition* (pp. 55–77). Cambridge, UK: Cambridge University Press.
- Yardi, S., & Boyd, D. (2010). Dynamic debates: An analysis of group polarization over time on twitter. *Bulletin of Science, Technology & Society, 30*(5), 316–327. <https://doi.org/10.1177/0270467610380011>.
- Zubiaga, A., & Ji, H. (2014). Tweet, but verify: Epistemic study of information verification on twitter. *Social Network Analysis and Mining, 4*(1), 163. <https://doi.org/10.1007/s13278-014-0163-y>.
- Zubiaga, A., Liakata, M., Procter, R., Hoi, G. W. S., & Tolmie, P. (2016). Analysing how people orient to and spread rumours in social media by looking at conversational threads. *PLoS ONE, 11*(3), e0150989. <https://doi.org/10.1371/journal.pone.0150989>.