



Social impacts in social media: An examination of perceived truthfulness and sharing of information



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ABSTRACT

Twitter, Facebook, and other social media display the combined opinion of users as collective opinion. The purpose of the work reported here was to examine how collective opinion might influence the perceived truthfulness and the sharing likelihood of health-related statements on social media. Experiment 1 revealed that, when evaluating the truthfulness of a statement, participants adopted the collective truthfulness rating associated with the statement. Similarly, Experiment 2 showed that the likelihood that participants would share a statement followed the collective sharing likelihood associated with the statement. These social impacts were extensive, taking place for statements perceived as true, debatable, and false. These results contribute new insights into how people perceive and share information on social media as well as how collective opinion might affect the quality of information on social media.

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1. Introduction

People contribute their opinions and experiences on Twitter, Facebook, and other social media. For example, they may post a health advice they have learned, their likings of the advice, and their beliefs about the truthfulness of the advice. This information generated by crowds can be useful for acquiring new knowledge and making informed decisions (e.g., Park, Gu, Leung, & Konana, 2014; Yu, Lu, & Liu, 2010). Consequently, people use social media not only for entertainment but also for education, business, and governance. However, social media can also facilitate the spread of unverified messages including those that are later found to be false (Friggeri, Adamic, Eckles, & Cheng, 2014; Starbird, Maddock, Orand, Achterman, & Mason, 2014; Tanaka, Sakamoto, & Matsuka, 2013). Inaccurate messages add noise to social media, confuse people, and could result in misbeliefs that are difficult to change (e.g., Ecker, Lewandowsky, & Tang, 2010; Lewandowsky, Ecker, Seifert, Schwarz, & Cook, 2012).

The purpose of the two experiments reported in the current paper was to examine how people might influence each other's information processing on social media, with a focus on reducing the spread of false information. In particular, the work reported here contributes new understanding by answering two research questions:

RQ1. How does the collective truthfulness rating of a statement influence people's perception of truthfulness of the statement on social media?

RQ2. How does the collective likelihood of sharing a statement influence the likelihood that people will share the statement on social media?

The focus is on collective opinion because it is often available on social media but its effects on perceived truthfulness and information sharing behavior are unclear. Collective opinion found on social media is the combined opinion of the social media users. For example, Facebook counts the number of likes received by its users to indicate the collective liking of a photo, story, community, and so on. Twitter counts the number of people who forwarded a particular message to indicate the collective sharing associated with the message. Another example is a star rating to indicate the collective evaluation of products and services. Collective opinion in the current paper is the opinion of the majority of crowds as opposed to public opinion formed by major media.

In Experiment 1, collective opinion took the form of the collective truthfulness rating of health-related statements. The main interest of Experiment 1 was to answer *RQ1*. The focus on truthfulness is because the ability to assess the truthfulness of information on social media will help identify false information and reduce its spread. The focus on health-related statements is because seeking health-related information online has become one of the most popular activities across all age groups in the U.S., and the health-related information people find online can greatly impact their

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health (Fox, Jones, & American Life project, 2009; Zhang & Fu, 2011). Thus, having accurate health-related information is crucial.

In Experiment 2, collective opinion was the collective likelihood of sharing health-related statements with others on social media. Thus, Experiment 2 considered *RQ2*. Examining people's sharing behavior is important because it determines the spread of information and ultimately the quality of information on social media. Better understanding of people's information sharing behavior will suggest ways to reduce the spread of false information and facilitate the spread of important information on social media.

1.1. Background

The theoretical framework of the work reported here is as follows. Past research on social impact, a phenomenon in which people affect one another in social settings, suggests that people will attend to collective opinion in social media environments and use it to make judgments and decisions. However, the degree and direction of social impact in social media are unclear. Moreover, how collective opinion would impact people's truthfulness judgment and sharing of information are not well understood. Thus, the work presented here aims at filling this gap by extending previous research on social impact to truthfulness judgment and sharing of information on social media. This framework is unpacked next.

According to social impact theory (Latané, 1981), three factors affect the degree of social impact: strength, immediacy, and number of people. Strength takes into account how important an individual thinks the influencing group is. Immediacy considers how close an individual thinks the influencing group is. Number of people is the number of members in the influencing group. Higher strength, immediacy, and number of people result in stronger social impact. If one assumes that a set of users contributing to collective opinion on social media to be an influencing group, the group would be important to the individual who seeks information from social media, the group would feel close to the individual who is interested in the same information as the group, and the number of people in the group is often large. These characteristics of social media should result in a high degree of social impact in social media.

Past research has proposed that social impact takes place because people have a strong motivation to compare their opinions with others (Festinger, 1954). Considering the opinions of others is beneficial because it could result in useful information that people would not have considered otherwise (Bandura, 1965). Perhaps because of this benefit, people tend to think that others have information that they do not have and often follow the behavior of others (e.g., Cialdini & Goldstein, 2004; Deutsch & Gerard, 1995; Kelman, 1958). These studies suggest that people will attend to collective opinion on social media and adopt it when they make their judgments and decisions.

Past research on social impact identified two conditions under which people follow the opinion of the majority. Informational social influence takes place when people follow the opinion of others due to their desire to make correct responses under uncertainty (Sherif, 1935). In contrast, normative social influence takes place when people follow others' opinion due to their desire to be liked by others (Asch, 1955). The research presented in the current paper focuses on these two types of social influence in social media, which have not been examined extensively in the past.

However, there are studies showing that other's opinions influence people's opinions in online environments. In a social media environment, one study found that people liked the same online news stories more when the stories had many existing supporters than when the stories had only a few supporters (Sakamoto, Ma, & Nickerson, 2009). People even switched their preferences when the

experimenter flipped the assumed numbers of previous supporters (Sakamoto, 2010; Salganik & Watts, 2008), suggesting that social impact can be strong. Another study found that, whereas good music was always downloaded by many and bad music was always unpopular, the popularities of the pieces in between varied depending on whether or not people knew the number of downloads the pieces had (Salganik, Dodds, & Watts, 2006). This finding suggests that people might be using collective opinion when they are not sure about the quality of item, somewhat consistent with informational social influence.

Although the results reviewed so far demonstrate a strong tendency of people to adopt collective opinion, there is counter evidence in consumer research that people who seek uniqueness may differentiate themselves from others (Berger & Heath, 2007; Tian, Bearden, & Hunter, 2001). According to this negative social influence account, people may decide to share information that others have not shared. For instance, in deciding the likelihood of sharing a statement on social media, people will go against the collective sharing likelihood of others, which is the opposite of the direction predicted by informational social influence and normative social influence mentioned previously. The comparison of these three kinds of social influence will clarify the types of social impact that take place on social media.

Past research on social impact has not examined information sharing and truthfulness judgment. However, there are studies that have examined these topics. Researchers who focus on the social dimensions of information sharing have examined aspects related to the structure of social networks such as the role of influential individuals and followers in the spread of information (e.g., Aral & Walker, 2012; Cha, Haddadi, Benevenuto, & Gummadi, 2010; Huberman, Romero, & Wu, 2009; Kwak, Lee, Park, & Moon, 2010; Xin, Ying, & Jerome, 2012). Influentials and followers have also been distinguished in the model of diffusion of innovations (Rogers, 2010; Van den Bulte & Joshi, 2007) and in a two-step flow model of communication (Katz & Lazarsfeld, 1995). In these models, a minority of influentials, such as early adopters and opinion leaders, serves as bridges between the source and the public. For example, information flows from the source, such as mass media, to opinion leaders, and then from the opinion leaders to the followers (Burt, 1999). These studies, however, did not consider how collective opinion would influence information sharing on social media, which is the focus of the work in the current paper.

Other researchers examining information spread focus on factors such as valence and credibility (e.g., Berger & Milkman, 2012; Castillo, Mendoza, & Poblete, 2011; Fragale & Heath, 2004; Ha & Ahn, 2011; Heath, 1996; Oh, Kwon, & Rao, 2010; Rene, Antonios, & Frank, 2012). For example, past studies on rumors suggest that people are more likely to pass along rumors by credible sources (Knapp, 1944). When a credible source communicates a rumor, the believability of the rumor can increase (Blake, McFaul, & Porter, 1974; Porter, 1984), which in turn can increase the sharing of the rumor (DiFonzo & Bordia, 2007; Li & Sakamoto, 2013; Rosnow, 2001). Credibility is related to truthfulness in that more credible information should be perceived as more truthful. If so, the results reviewed in this paragraph suggests that people are more likely to share information they perceive as more truthful. However, there is little research on the effect of collective opinion on perceived truthfulness of information in social media.

In sum, previous research on social impact suggests that social impact should take place on social media. However, past studies do not consider whether informational, normative, or negative social influence takes place on social media. Moreover, past work does not consider social impacts on truthfulness and sharing of information on social media. The research presented in the current paper fills this gap in understanding by extending the past work on social

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