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The tweet goes on: Interconnection of Twitter opinion leadership, network size, and civic engagement

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ABSTRACT

Opinion leaders tend to possess particular characteristics, such as high social status, wide social networks, and they are highly engaged in civic affairs. This study revisits the concept of original opinion leadership and examines the characteristics of Twitter opinion leaders and leadership by conducting an online survey of 648 college students in the United States. The results reveal that Twitter opinion leadership is rarely predicted by socio-demographics. Twitter opinion leadership is more strongly associated with online network size than offline network size. The study also finds that Twitter opinion leadership is significantly and positively associated with online civic participation. Lastly, the current study finds that Twitter opinion leaders can be categorized as two types – frequent tweet posters and frequent retweeters.

1. Introduction

Twitter is one of the most widely used social media today (Pew Research Center, 2015). Like other social media, Twitter provides a way for users to send and share information about their activities, opinions, and status (Honeycutt & Herring, 2009). But with Twitter, updates and posts are made succinctly within a limit of 140 characters. Twitter's open, horizontal, and broadly networked structure, along with its easy-to-use interface and popularity, makes it a strong force in public discourse (Barnett, 2011; Parmelee & Bichard, 2012). Unlike Facebook posts, which default to restricted, in-network exposure, Twitter posts are disseminated publicly and are easily viewable by all users. Twitter's open system creates a venue for users to easily respond to other users, providing a vibrant forum for public discourse (Kim, 2011). Twitter's unique attributes allow ordinary citizens to emerge as opinion leaders when they share valuable information (Xu, Sang, Blasiola, & Park, 2014).

The concept of opinion leadership is one of the oldest theoretical approaches to public opinion formation (Nisbet, 2006). The notion of opinion leadership is based on the idea that communication flows are segmented and that participants can be divided into different communicative roles, with some providing information or orientation and others following. In other words, opinion leadership refers to an individual's unequal influence on others' attitudes and behaviors (Rogers, 2003). Traditionally, opinion leaders are characterized by higher social status, gregariousness, a large number of social contacts, and they attend to news media content more frequently than nonleaders (Chan & Misra, 1990; Rogers, 2003).

However, it is not certain whether the original concept of opinion leadership holds true in the Twitter environment. On one hand, Twitter opinion leadership may well be based on existing offline status, such as reputation and established networks (Stamatiou, McCree, Marshall, & Robertson, 2008). On the other hand, expertise seems to be a much more important requirement to show opinion leadership on Twitter than socio-economic status (Park, 2013). Unlike traditional opinion leaders, opinion leaders on Twitter play a role as a new type of agenda generator, without being constrained by social, economic, or political standings. Nevertheless, the nature of opinion leadership on Twitter remains widely under-researched.

The present study aims to identify theorized characteristics of opinion leaders on Twitter to deepen understanding of opinion leadership on social media. Specifically, it examines the degree to which opinion leadership on Twitter is explained by Twitter users' demographic characteristics, offline and online network size, civic behaviors, and frequency of tweets and retweets. This study analyzes whether new forms of opinion leadership emerge in the

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microblogging environment, thus placing one of the important concepts of communication in a new context. To these ends, this study conducted an online survey of 648 young adults at a large public university in the United States.

2. Literature review

2.1. Opinion leaders

Opinion leaders are best defined in terms of their ability to influence followers' attitudes and behaviors (Hollander, 1961). Since as early as the 1940s, scholars have understood the importance of opinion leaders in shaping public preferences, informing fellow citizens, and altering behaviors. Opinion leaders alert their peers to political events, social issues, and consumer choices. Indeed, certain individuals who paid close attention to an issue also frequently discussed the issue, and considered themselves more effective in persuading others to adopt an opinion or course of action (Lazarsfeld, Berelson, & Gaudet, 1948). Opinion leaders not only help direct the attention of others to a particular issue but also signal how others should respond or act. This influence occurs by giving advice and recommendations, by serving as a role model that others can imitate, and by persuading or convincing others (Weimann, 1994).

The influence process of opinion leadership resembles a pyramid in which a few highly influential individuals occupy the top layer with the masses below it (Keller & Berry, 2003). Opinion leaders are of higher socio-economic status than others in the same social system, are better educated than nonleaders, and enjoy an intellectual challenge (Robertson & Myers, 1969).

2.2. Opinion leaders on Twitter

Opinion leaders play an important role in social communities, offline as well as online (Gladwell, 2002). Opinion leaders in computer-mediated environments, such as Twitter, largely share the same attributes with offline opinion leaders. Both online and offline opinion leaders are innovative, highly knowledgeable (Lyons & Henderson, 2005), well connected in social networks, highly influential (DuBrin, 2012; Rogers, 2003), and take initiative in discussion. For example, opinion leaders in online discussion groups post the most comments and are very active in synthesizing the posts of others (Cassell, Huffaker, Tversky, & Ferriman, 2006; Welser, Gleave, Fisher, & Smith, 2007; Yoo & Alavi, 2004).

Twitter opinion leadership, the ability to influence Twitter users' perceptions, attitudes and behaviors, might be based on offline occupational or professional status (Geser, 2009) or on a favorable reputation acquired through conventional mass media. In other ways, opinion leaders in the digital environment possess different characteristics from their offline counterparts' because Twitter and other digital sources make it easy for ordinary online users to produce content and disseminate it to a large number of followers (Himelboim, 2008; Himelboim, Gleave, & Smith, 2009). Creating and disseminating information, and controlling how it flows through networks is much easier and generally less expensive than doing so offline. Thus, on Twitter, opinion leaders do not have to have a high income to pay for supplies and travel, nor do they need to be high social status individuals with access to other movers and shakers in a community. In other words, irrespective of existing social cues, Twitter leaders emerge not because of socio-economic status, age, or other personal characteristics, but because of the useful information they impart.

The present study revisits the conventional wisdom that opinion leadership is the domain of a few high-profile individuals who have wide social network and exceptionally persuasive personality by asking the following research question:

RQ1a. What demographic variables describe opinion leaders on Twitter?

RQ1b. What demographic variables describe offline opinion leaders?

2.3. Twitter opinion leadership and network size

Networking, in the conventional sense, not only identifies the number of contacts in someone's circle of friends and acquaintances but also indicates the individual's position in the network (Katz, 1957). Opinion leaders occupy central positions in their networks and, as a result, are highly connected with many members of the community. This central role upholds opinion leaders' status, amplifies their reputation, and contributes to their ability to influence others (Mehra, Dixon, Brass, & Robertson, 2006). In other words, engaging in communication activities raises the potential to influence and extends the reach of the opinion leader (Weimann, 1994).

Twitter has unique characteristics that make it optimal for the timely and rapid diffusion of information than purely friends-based social media (Hansen, Arvidsson, Nielsen, Colleoni, & Etter, 2011; Huberman, Romero, & Wu, 2009). Twitter users on average have 208 followers and follow 102 users themselves (Beevolve, 2012). Evolutionary anthropologist Robin Dunbar claims each individual can only cope with about 150 friends at a given time, 15 of whom could be considered intimates (Parker, 2014). The influential power of opinion leaders on Twitter is expected to derive from their informal status as individuals who are highly "connected." That is, networks that are broader than those of traditional opinion leaders may be one of the important traits of Twitter opinion leaders.

Furthermore, opinion leaders on Twitter are involved in a 'multi-step flow' process, as opposed to the traditional 'two-step flow' process identified by Katz and Lazarsfeld (1955). The two-step flow model indicates that the effect of mass media on individuals is buffered by opinion leaders who follow media affairs closely and convey media messages to others in their community. While the two-step flow is "a process of the moving of information from the media to opinion leaders, and influence moving from opinion leaders to their followers" (Burt, 1999, p. 38), a multi-step flow indicates that a message is distributed through a web of diverse channels. On Twitter, those who are well-connected play a significant role in creating and distributing information through a multi-step flow. Through highly interconnected relations, Twitter opinion leaders can exert a significant impact on others.

H1. Online network size is significantly related to perceived opinion leadership on Twitter.

RQ2. Is offline network size positively or negatively associated with perceived opinion leadership on Twitter?

2.4. Twitter opinion leaders and civic engagement

Whether opinion leadership is associated with civic engagement has been an important question among scholars. Several studies report that self-perceived leadership qualities are related to civic engagement. Opinion leaders "speak at meetings, participate in discussions, and take part in many social events" (Weimann, 1994, p. 79). Opinion leaders display high levels of civic engagement through various communicative and social interactions and voluntary associations (Chan & Misra, 1990; Noelle-Neumann, 1999, p. 5; Scheufele, 1999; Shah & Scheufele, 2006; Sheufele &

Shah, 2000).

The enhanced network capabilities of Twitter, such as reaching diverse people simultaneously, might provide Twitter opinion leaders more opportunities to engage in civic affairs. This speculation is based in part on the claim that individuals who are well connected to others participate frequently in public affairs because they are likely to meet a number of people who are knowledgeable about civic matters (La Due Lake & Huckfeldt, 1998). Park (2013) found that Twitter opinion leadership is significantly associated with political participation. Drawing on the literature and above reasoning, the present study expects a positive relationship between Twitter opinion leadership and civic engagement.

H2a. Civic participation is positively associated with perceived opinion leadership on Twitter.

H2b. Civic participation is positively associated with perceived offline opinion leadership.

2.5. Posting and retweeting on Twitter

For citizens to be fully engaged in public affairs they must be willing to express their opinions (Shah, Cho, Eveland, & Kwak, 2005). "Expression, not reception, may be the first step toward better citizenship" by motivating "exposure, attention, and elaboration of media messages" (Pingree, 2007, p. 449). Expression requires reflection on an issue, resulting in a deeper understanding of the issue (Bem, 1967). Furthermore, the act of expression creates a feeling that one's voice has been heard, increasing self-efficacy (Pingree, 2007).

Social media greatly facilitate online expression by enabling high levels of interactivity and allowing for diffused and real-time discussions with no geographical constraints (Gil de Zúñiga, Molyneux, & Zheng, 2014). Twitter often functions as a catalyst for online expression (Kim, Hsu, & Gil de Zúñiga, 2013), creating a new public sphere (Honeycutt & Herring, 2009; Williams & Gulati, 2009). Twitter users who are especially active are those who send the types of tweets that are likely to spark discussion and action (Xu et al., 2014). Opinion leaders in online discussion groups post the most comments and actively engage in discussions (Yoo & Alavi, 2004). Based on the literature, the current study expects that Twitter opinion leaders engage in online discussion by frequently posting information and their opinions.

H3. The number of postings on Twitter is positively related to perceived opinion leadership on Twitter.

In addition to the posting function, another convenient and powerful mechanism for facilitating information diffusion on Twitter is retweeting. A reply refers to a tweet that one user posts as a reaction to another user's post, while retweeting is the practice of relaying a tweet that is produced by another Twitter user. A recent study in South Korea found that approximately 75% of messages are generated in the form of retweeting and replies compared with approximately 25% representing original tweets (Chang & Kim, 2011). Retweeting is one of the main functions for facilitating information diffusion and sharing in the Korean Twitter network (Suh, Hong, Pirolli, & Chi, 2010).

Retweeting is similar to the notion of opinion leadership. When a post is retweeted, the user's message is likely to catch more attention from other Twitter users (Gruzd, Wellman, & Takhteyev, 2011). Users retweet when they agree or disagree with the viewpoints expressed in the original tweets or when they acknowledge the informational value of the tweets (Bruns & Burgess, 2011; Cha, Haddadi, Benevenuto, & Gummadi, 2010). Either way, retweeting reflects influence. That is, the original sender influences others by drawing their attention and stimulating responses to the message (Bruns & Burgess, 2011; Gruzd et al., 2011).

Retweeting empowers Twitter users to spread information beyond the reach of their own followers and to proliferate it across the network to message-receivers who do not necessarily have a direct relationship with the originator of the message (Hansen et al., 2011; Lee & Sundar, 2013). Without retweeting, the diffusion of information would not be extensive especially given that the Twitter network is likely to follow a power law distribution, which means that most of the connections on Twitter are concentrated around a small group of influential users, including celebrities and the Twitter accounts of mass media outlets (Java, Finin, Song, & Tseng, 2007). In this regard, the concept of retweeting is a crucial function for information diffusion and sharing (Honeycutt & Herring, 2009). Further, more frequent posters and commenters are more likely to be opinion leaders on Reddit. Commenters were also more likely to be opinion leaders if they directly respond to other comments (Leavitt & Clark, 2014).

This study investigates whether Twitter opinion leaders are more likely to retweet others' tweets or to post their own content by posing the following hypothesis and research question:

H4. The number of retweeting is positively related to perceived opinion leadership on Twitter.

RQ3. Is Twitter opinion leadership more strongly associated with retweeting than posting or vice versa?

3. Method

3.1. Data collection

This study conducted a Web-based survey at a large public university in the United States between October 10 and October 25, 2014. Given that nearly three-quarters (73.7%) of all Twitter users are between the age of 15 and 25 (Beevolve, 2012), university students are a good sample for a study on Twitter. A random sample of 3000 undergraduate and graduate students was obtained from the university registrar's office. The students were sent an e-mail invitation asking them to participate in the study. Although, there are a variety of ways to assess opinion leadership, this study uses the self-identification method. This method requests individuals to fill out a survey measuring their perceived level of opinion leadership (Childers, 1986; Rogers & Cartano, 1962; Weimann, 1991). Because this study treats Twitter opinion leadership as a prime variable, only Twitter users were allowed to complete the survey. A total of 648 students participated in the survey. This study asked the respondents questions about both types of opinion leadership (Twitter and conventional opinion leadership), Twitter posting, network size, and civic engagement.

According to the Pew Internet and American Life Project (2012), the proportion of Twitter adoption of the 18–24 age group is 31% as of February 2012, and that of the 25–34 age group is 17%. Considering that the adoption rate of Twitter among young adults is increasing every year, the proportion of Twitter use of this study's participants (648/1653 = 39.2%) is not much different from the average Twitter use pattern in the U.S.

3.2. Study variables

3.2.1. Twitter opinion leadership

The measure of Twitter opinion leadership was adapted from Weimann, Tustin, Van Vuuren, and Joubert (2007) by adding "on Twitter" to each item: (1) I like to assume responsibility what I do on Twitter; (2) I like to take the lead when a group does things

together on Twitter; (3) I enjoy convincing others of my opinions on Twitter; (4) I often notice that I serve as a role model for others on Twitter; (5) I am good at getting information that I need from Twitter; (6) I am often a step ahead of others on Twitter; and (7) I often give others advice and suggestions via Twitter. Responses were coded on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). The average was taken to create an index ($\alpha = 0.81$, M = 2.52, SD = 1.08).

3.2.2. Offline opinion leadership

Respondents marked how much they perceive themselves as opinion leaders in offline situations. Drawing on Weimann et al. (2007), the present study tapped the following seven items on a 5-point scale: (1) I like to assume responsibility what I do; (2) I like to take the lead when a group does things together; (3) I enjoy convincing others of my opinions; (4) I often notice that I serve as a role model for others; (5) I am good at getting information that I need; (6) I am often a step ahead of others; and (7) I often give others advice and suggestions ($\alpha = 0.83$, M = 2.25, SD = 1.05).

3.2.3. Twitter posting

Respondents were asked to enter into an open-ended blank space the number of times during the last week they posted their own content on Twitter ($M = 13.43$, $SD = 7.52$) and the number of times they retweeted others' tweets ($M = 7.94$, $SD = 10.80$).

3.2.4. Online network size

This variable is operationalized as the size of a respondent's social network. Respondents were asked to fill in the blank with an estimate of the number of friends or acquaintances they frequently keep in touch with online. The variable was positively skewed (M = 12.64, SD = 43.24, skewness = 11.49), so it was transformed using the natural logarithm (M = 0.45, SD = 0.53, skewness = 1.10). When the distribution of a variable has a positive skew, taking a natural logarithm of the variable helps fitting the variable into a normal distribution model by bringing in the right tail.

3.2.5. Offline network size

In an open-ended fashion, respondents estimated the number of friends or acquaintances they frequently keep in touch with offline. The variable was positively skewed (M = 14.61, SD = 43.26, skewness = 13.51), so it was transformed using the natural logarithm (M = 0.43, SD = 0.58, skewness = 1.23).

3.2.6. Offline civic engagement

This variable is assessed by constructing an additive index of five behavioral items. Respondents reported during the past month how often they (1) attended meetings to discuss neighborhood problems; (2) went to a club meeting; (3) donated to charities; (4) did volunteer work; and (5) worked on a community project. Participants responded on a scale ranging from 1 (never) to 5 (very frequently). The average was taken to create an index ($\alpha = 0.83$, M = 2.28, SD = 1.06).

3.2.7. Online civic engagement

Respondents indicated during the last month how often they engaged in the following activities: (1) sign up for a community issue online; (2) sign an online petition; and (3) volunteer for an online social campaign such as product boycotting and community fundraising. The responses were coded on a 7-point scale. The average of the responses was taken to create an index ($\alpha = 0.84$, M = 2.81, SD = 0.95).

3.2.8. Demographics

Several control variables were included in the analyses: age, sex, ethnicity and annual family income. Respondents were asked their gender, and entered in their age as of their last birthday. Respondents estimated their family household income for 2014 on a 6-point scale ranging from 1 (less than $20,000) to 6 (more than $100,000).

3.3. Data analysis

To test the first and second research questions and the four hypotheses, hierarchical multiple regressions were run in which the independent variables were entered in the model in blocks. The measures were entered in as blocks in the order of demographics, network size, Twitter use, and civic participation.

To test the third research question (the relationship between Twitter opinion leadership and Twitter use), opinion leaders were defined as those who showed scores 1 SD (1.08) above the mean (2.52). In other words, those who obtained more than 3.60 for the perceived opinion leadership measure were considered opinion leaders. This process is based on past studies (e.g., Kotler, Chandler, Brown, & Adam, 1994; Rogers & Cartano, 1962). As a result, 121 respondents were defined as opinion leaders and 527 respondents were designated as nonleaders. The relative low proportion of opinion leaders alleviates the concern that self-aggrandizing survey respondents tend to present answers that are socially desirable. Out of 121 opinion leaders, 51 who answered they depend more on posting than retweeting were considered the frequent posting group. Seventy people answered they do more retweeting than posting. Two independent samples t tests were conducted to compare the differences in posting and retweeting between opinion leaders in the frequent posting group and opinion leaders in the frequent retweeting group.

4. Results

Out of the total sample, 50.4% are males and 49.6% are females. The average age was 23.4. Caucasian participants are the majority (75.1%), followed by African Americans (15.4%), Hispanics (5.2%), and others (4.3%). The mode of responses for 2014 estimated household income was in $40,000 to $59,999 range.

The first research question asked what demographic variables explain offline and Twitter opinion leadership. The analysis shows that age, gender, race and household income has little to do with Twitter opinion leadership, which suggests that Twitter opinion leadership cannot be characterized by social status or positions. On the other hand, gender ($\beta = 0.097$, $p < 0.05$) and income ($\beta = 0.096$, $p < 0.05$) were found to have positive associations with offline opinion leadership.

Hypothesis 1 predicts that online network size would have a positive association with Twitter opinion leadership. As shown in Table 1, this proposition is supported ($\beta = 0.286$, $p < 0.001$). Further, the analysis for the second research question that addresses the relationship between offline network size and Twitter opinion leadership, found that offline network size is also positively and significantly linked to Twitter opinion leadership ($\beta = 0.093$, $p < 0.05$). Online network size, then, is a stronger predictor of Twitter leadership than offline network size.

A similar pattern was observed for offline opinion leadership. As seen Table 1, offline network size ($\beta = 0.254$, $p < 0.001$) explains a much bigger portion of offline opinion leadership than does online network size ($\beta = 0.138$, $p < 0.01$). Offline network size, then, is a stronger predictor of offline leadership than online network size.

Hypothesis 2 asserts that civic participation is positively associated with Twitter opinion leadership. Regression analyses reveal that the more people engage in civic activities online, the stronger opinion leadership they exhibit on Twitter ($\beta = 0.105$, $p < 0.05$).

Table 1
Results of hierarchical regression predicting offline opinion leadership and Twitter opinion leadership.

	Offline opinion leadership	Twitter opinion leadership
Block 1: Demographics		
Age	0.051	0.085
Gender	0.097*	0.044
Race	0.087	0.052
Household Income	0.096*	0.045
R^2 (%)	6.3	3.5
Block 2: Network Size		
Offline Network Size	0.254***	0.093*
Online Network Size	0.138**	0.286***
Inc. R^2 (%)	9.4	12.4
Block 3: Twitter Use		
Posting	0.084	0.296***
Retweeting	0.079	0.102*
Inc. R^2 (%)	8.7	14.5
Block 4: Civic Participation		
Offline Civic Participation	0.219***	0.081
Online Civic Participation	0.140**	0.105*
Inc. R^2 (%)	7.7	6.4
Total R^2 (%)	32.1	36.8

Note. Cell entries are standardized coefficients. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

However, offline civic participation had a null association with Twitter opinion leadership ($\beta = 0.083$, n.s.). Thus, H2 is partially supported. Additionally, both offline ($\beta = 0.219$, $p < 0.001$) and online civic participation ($\beta = 0.140$, $p < 0.001$) had positive links to offline opinion leadership.

Hypotheses 3 and 4 predict that the number of postings and retweeting have positive associations with Twitter opinion leadership. The two hypotheses were supported (posting: $\beta = 0.296$, $p < 0.001$; retweeting: $\beta = 0.102$, $p < 0.05$). Respondents who frequently post their opinions and retweet information see themselves as opinion leaders on Twitter, but their engagement on Twitter does not affect their self-perceptions as offline opinion leaders (Table 1).

The third research asks if Twitter posting and retweeting frequencies are significantly related to Twitter opinion leadership. Independent samples *t*-test revealed that opinion leaders in the frequent posting group rely more on posting than opinion leaders in the frequent retweeting group ($t(119) = 1.89$, $p < 0.01$). On the other hand, opinion leaders in the frequent posting group rely less on retweeting than opinion leaders in the frequent retweeting group ($t(119) = 1.57$, $p < 0.05$). These results indicate that Twitter opinion leaders can be divided into two types depending on whether they rely more on posting or retweeting (Table 2).

5. Discussion

5.1. Implications of the study

Opinion leaders play an important role in the dissemination of information throughout digital technologies. This study examined the characteristics of opinion leaders on Twitter, a social networking site well known for its wide connectedness and quick spread of information. This research investigated how perceived opinion leadership on Twitter relates to socio-demographics, network size, and civic participation, and frequency of posting and retweeting. The results point to three main implications of opinion leadership on Twitter and how it is distinguished from the offline counterpart.

Table 2
Groups of opinion leaders/nonleaders and frequent posters and frequent retweeters.

	Frequent posters	Frequent retweeters
Leaders (N = 121)	51 (42.1%)	70 (57.9%)
Nonleaders (N = 527)	152 (28.9%)	375 (71.1%)

The present study finds that age, gender, ethnicity and household income do not predict Twitter opinion leadership, while gender and income are associated with offline opinion leadership. Also, the current study finds that Twitter opinion leadership is a function of network size. Both Twitter opinion leaders and offline opinion leaders have wide online and offline networks, which clearly suggests that leaders must have a large number of followers (Wu, Hofman, Mason, & Watts, 2011). Logically, online network size is more crucial to Twitter opinion leaders than offline network size, which is more important for offline opinion leaders.

An important implication of the above findings is that socio-economic variables are not as effective in explaining Twitter opinion leadership as offline leadership. Past research focused on identifying whether opinion leaders possessed a particular set of socio-economic characteristics (Anderson, 1962; Black, 1982; Robinson, 1976). For example, opinion leaders have been considered elite (Kingdon, 1970), intelligent (Chan & Misra, 1990), and having high social positions or reputation (Katz, 1957). In other words, only a few elites are at the top of the influence pyramid. The findings of the current study show that opinion leadership in the social media age is not a function of the presence of certain predispositions or personal characteristics so much as a function of the size and diversity of an individuals' network.

The current study also categorizes Twitter opinion leadership into two sub categories – posters and retweeters, by creating a four typology: 1) leaders-frequent posters, 2) leaders-frequent retweeters, 3) nonleaders-frequent posters, 4) nonleaders-frequent retweeters. Public expression is one of the important motivations on Twitter (Park, 2013), and posting is an important indicator of opinion leadership in social media networks (Krishnamurthy, Gill, & Arlitt, 2008). The present study demonstrates that certain opinion leaders on Twitter post original content more often than others, and frequent posting is an important indicator of opinion leadership on social media (Bakshy, Hofman, Mason, & Watts, 2011; Park, 2013; van Eck, Jager, & Leeflang, 2011). On the other hand, some Twitter users exert their influence over others by retweeting news stories, information, or others' posts. This retweeting behavior may lead ordinary individuals to play a role as an opinion leader on Twitter.

Twitter is an innovative medium with open and horizontal networks (Honeycutt & Herring, 2009; Lerman & Ghosh, 2010), which gives users unprecedented access to a large number of followers. The current study suggests that Twitter opinion leaders emerge as they originate and retweet important information using their wide networks on Twitter.

Taken together, in this initial exploration of Twitter opinion leadership, previous theorized variables – such as social status and offline network size – may not result in the formation or reinforcement of opinion leadership, while emerging variables, such as online network size do. In other words, in a thriving networked community via social networking sites, it is possible that opinion leaders can in fact lead others in the absence of traditional opinion leadership characteristics, such as high socio-economic status. The current study clearly shows that Twitter fosters the formation of a new type of opinion leadership. As Twitter continues to grow in terms of users, further examination of this online space is necessary to understand how digital opinion leadership is constructed and exercised.

5.2. Limitations and future research

This study has a few limitations. Considering that about three-quarters of all Twitter users are between the age of 15 and 25 (Beevolve, 2012), this study recruited only college students for sampling. Even though university students are representative of Twitter users, future research should expand this study by looking at opinion leadership among a broader range of individuals, especially those older than 35. "Amplifiers," defined as 'Twitter users who are most likely to retweet' are evenly spread across age groups (Fonseca, 2013), and thus worthy of study. Although amplifiers are not exactly the same as Twitter opinion leaders, the current research's findings might be generalized to older age groups. Another shortcoming is the use of the self-identification method in measuring opinion leadership. Although some respondents may mark options they see as socially desirable, the self-identification method is useful because the technique can easily capture and stratify the degree of opinion leadership of each individual (Booth & Babchuk, 1972). Also this study focused only on two types of Twitter opinion leaders – frequent posters and frequent retweeters. Future research should examine more diverse types of opinion leadership on Twitter.

Despite the limitations, this study contributes to the literature of opinion leadership by identifying new theoretical characteristics of Twitter opinion leadership and by unpacking how such characteristics are interconnected with Twitter opinion leadership.

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