

The Impact of Twitter Users' Characteristics on Behaviors: Insights Into the Role of Followers

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ABSTRACT

Researchers have focused on leadership, often overlooking followership. The notion of followership was irreversibly transformed with the advent and societal adoption of followership systems, such as Twitter. To examine such emergent systems, this paper advances a distinct form of followership: eFollowership. To understand Twitter and its users, the eFollowership concept is explicated and synthesized by adapting several followership lenses from the literature. The authors empirically examined eFollowership by assessing the roles constructed by 301 Twitter users and the relationships between these users' role-based characteristics and behaviors with partial least squares structural equation modeling (PLS-SEM). Results showed that users' voicing and empowering behaviors were significantly influenced by users' characteristics: personal sense of power, eCourage, and social capital. Users' helping behaviors were related to users' personal sense of power and social capital, but not to eCourage. Surprisingly, users' disempowering behaviors were unrelated to all three users' characteristics.

KEYWORDS

Followers, Influencers, Social Media, Twitter, Users

INTRODUCTION

Human beings are evolutionarily compelled to live in groups (Van Vugt, 2006; Van Vugt et al., 2008). When people come together, they undergo prompt organization, and leaders and followers emerge. Leadership and followership are fundamental to human practices. Many researchers have explored leaders and leadership, often ignoring followers and followership (Kelley, 1988). Followership is a constant and ubiquitous phenomenon in people's lives and in business. The act of following is an essential component that is akin to an invisible hand—an unseen force—with the potential to influence the world around us. Understanding this influence or understanding how, what, why people follow would be valuable to influencers on social media and businesses. Thus, the phenomenon of followership is a significant focus of examination in this research.

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With rising computer and internet use, literacy, and access has come the proliferation of followership systems such as Twitter. The world is undergoing significant shifts in the traditions of followership and followers (Uppala et al., 2023; Newburger, 2001; Ryan, 2018; Martin, 2021); thus, followership has a new form (Uppala et al., 2023). We use the term *eFollowership*, an abbreviation for electronic followership, to refer to this distinct phenomenon enabled by modern information and communication technologies.

To study efollowership, we draw from extant followership literature and apply constructs. Uhl-Bien et al. (2014) succinctly summarized the constructionist and role-based lenses as the two theoretical frameworks for the study of followership; in this research, we made use of both. The constructionist lens presents followership as co-constructed between people in social and relational interactions. While according to the role-based lens, followers are agents fulfilling their roles with their behaviors. Twitter followers are both co-creators and role-players with agency. The authors (Uppala et al., 2023) proposed and advanced these conceptualizations.

Thus, in this study, we move away from leader-centric research and build on follower centrism to understand Twitter's eFollowership. We conceptualize eFollowership and show its application for understanding Twitter followers' roles. Specifically, the objectives of this research were:

1. Identify appropriate theories for examining the nascent area of eFollowership.
2. Apply identified constructs to examine Twitter followership.
3. Develop a research model depicting relationships between constructs related to Twitter followers. Specifically, to answer the research question: How do Twitter followers' characteristics influence Twitter followers' behaviors?
4. Empirically validate the research model and delineate the important relationships.

The paper proceeds as follows. First, we describe the extant followership literature and the lenses for examining followership and followers. There is a discussion of applying these lenses in the context of Twitter and eFollowership, a new form of followership on social media. Specifically, the discussion provides the foundation for examining the concept of eFollowership with Uhl-Bien et al.'s (2014) lenses and formalized followership constructs derived in previous research (Uppala et al., 2023). Then, applying these identified followership constructs, we propose a research model on Twitter followers' role-based characteristics and behaviors and test it empirically with survey data and analysis using PLS-SEM. Finally, we present and discuss our results, limitations, suggestions for future research, and conclusions.

LITERATURE REVIEW

Researchers have viewed followership and followers through various lenses, including leader-centric, follower-centric, relational, constructionist, and role-based (Uhl-Bien et al., 2014). These lenses have served as theoretical foundations in much of the followership research.

The leader-centric lens construes followers as recipients or moderators of the leader's influence, resulting in various outcomes (Uhl-Bien et al., 2014). According to the typical scientific management perspective, where the leader-centric lens is commonly relevant and is applied, managers are superior to employees. As followers within a hierarchy, employees are inferior subordinates receiving and moderating the leaders' influence and requiring direction and control. On Twitter, based on their massive influence, social media influencers could be seen as the superiors; in contrast, followers are mutable subordinates. Although the leader-centric lens provides an understanding of social media influencers, it fails to delve into the follower's critical role. On Twitter, followers are not employees who have ceded their agency by contracting with an organization for employment. There is a clear

and substantial lexical and linguistic difference between employees and Twitter followers. Hence, the leader-centric lens is limited and inappropriate for understanding eFollowership.

The follower-centric lens offers a contrasting view compared to the leader-centric lens and is key to our research. Viewed through the follower-centric lens, followers are constructors of leadership, and leadership is a social construction (Uhl-Bien et al., 2014). Leaders emerge from follower processes, such as cognition, attribution, and social identification. The follower-centric lens shows followers as those who are constructing leadership. Through this lens, followers contribute to constructing important facets of life such as organizations, elections, and orientations through the exertion of their agency.

One of the follower-oriented concepts is the romance of leadership (Meindl, 1990; Meindl et al., 1985). In the romance of leadership, followers engage in social construction at the collective level. Followers' internal beliefs and schemas imbue the leader with attributes and leadership (Uhl-Bien et al., 2014). The distinction between the leader-centric and the follower-centric lenses is the directionality of the influence. Essentially, the follower-centric lens inverts the influence that exists in the leader-centric lens.

The follower-centric lens is essential to followership research, and Twitter is inseparable from eFollowership. With technological advancement and access to eFollowership systems, the influence is shifting to the followers. In *The End of Leadership*, Kellerman (2012) identified the fundamental shifts in patterns of dominance and deference among followers with the emergence of modern information and communication technologies. Thus, the importance of the followership phenomena is central to understanding a system such as Twitter.

Another way of viewing followership is through the relational lens, which comprises leader and follower reciprocity in relationships (Hollander, 1958; Uhl-Bien et al., 2014). Leadership is a process whereby leaders and followers exert mutual influence (Uhl-Bien et al., 2014). The relational lens expands on the leader-centric perspective to present leadership as a process co-constructed through leader–follower interactions. The leader-member exchange (LMX) emerges from this lens, presenting leaders and followers in transactional or exchange-oriented terms. The relational lens shows followership as a relationship between leaders and their followers, with each mutually influencing and co-creating the followership process.

Although the three lenses: leader-centric, follower-centric, and relational, are applicable to followership, Uhl-Bien et al. (2014) identified constructionist and role-based lenses as the comprehensive frameworks in their followership research. Uhl-Bien et al.'s lenses do share commonality with the other three lenses. Uhl-Bien et al.'s systematic review of followership literature led to the development of the constructionist and role-based lenses which encapsulate follower-centrism completely with the followers in focus and offer a more focused theory of followership. Hence, our eFollowership research is founded on Uhl-Bien et al.'s (2014) views of followership.

Constructionist Lens

According to Uhl-Bien and Pillai (2007), followership entails deference to leaders, and leadership involves influencing followers. In 2012, Fairhurst and Uhl-Bien postulated that followership and leadership emerge between people. They presented followership and leadership as a co-created social and relational process in the constructionist lens (Fairhurst & Uhl-Bien, 2012). That is, the co-existing phenomenon of followership and leadership require followers to engage and influence the leader by following and the leader to engage and influence the followers by leading. In 2014, Uhl-Bien et al. further explicated that as leadership exists only through followership, the behaviors associated with followers and following create both followership and leadership. With this lens, followers are active participants with leaders in co-constructing followership, leadership, and the associated outcomes. The constructionist lens allows a view of this co-constructing process by the followers and leaders to understand who is involved and what is happening.

Role-Based Lens

The role-based lens lends itself to investigating how followers construe and enact their follower role (Uhl-Bien et al., 2014). In the role-based lens, followership appears in the context of followers' rank or position, with their characteristics shaping their behaviors. Followers' role-based behaviors produce followership outcomes. Researchers who apply the role-based lens to study followership focus on how the followers' characteristics affect how followers play their roles, creating behaviors that produce followership outcomes. With this lens, the focus is specifically on the individuals involved in followership to understand who the followers are and what the followers are doing.

TWITTER USERS' CHARACTERISTICS AND BEHAVIORS

In order to examine Twitter and eFollowership, we integrated the constructionist and role-based lenses and applied them to study Twitter users' followership. In the first step, in previous research with the constructionist lens, we examined Twitter users' construction of their follower roles (Uppala et al., 2023). This extant research revealed Twitter users had three common role-based characteristics: *personal sense of power*, *electronic courage (eCourage)*, and *social capital*, and four common role-based behaviors: *voicing*, *helping*, *empowering*, and *disempowering*. In present research, we make use of these previously identified constructs to develop a model that illustrates how follower characteristics impact follower behaviors. Applying the role-based lens, a discussion of Twitter follower characteristics and behaviors follows.

Twitter Follower Characteristics

According to Uhl-Bien et al. (2014), followers' traits, motivations, perceptions, and constructions create a foundation from which follower characteristics originate. The preceding process encapsulates the constructionist lens. Hence, Twitter followers are not amorphous; Uppala et al. (2023), in previous research, found that Twitter users vary in terms of personal sense of power, eCourage, and social capital. These follower characteristics embody a significant portion of the role-based lens. Individuals' personal sense of power is their perception of their capacity to influence others (Anderson et al., 2012). Adapting this definition to Twitter, we identified personal sense of power as people's beliefs in their ability to control resources and influence others' behaviors and outcomes. In the context of Twitter, eCourage was defined as the willingness to act in the face of fear online. The online component distinguished this construct from traditional courage. Our concept of eCourage aligns with Norton and Weiss's (2009) and Woodard's (2004) ideas of courage as an individual's willingness to act despite fear. Social capital has multiple definitions. On Twitter, individuals accumulate social capital through relationships or networks. According to the network perspective (Ellison et al., 2007), there are three types of social capital in networks: bridging, bonding, and maintaining. In the context of Twitter, these three types of social capital acquired through networks embody some of the follower characteristics. The three characteristics—personal sense of power, eCourage, and social capital—shape who and what the followers are and what they do.

Twitter Follower Behaviors

In previous research, Uppala et al. (2023) found that Twitter users, to enact their roles, typically engage in a variety of behaviors: voicing, helping, empowering, and disempowering. These follower behaviors embody the other significant portion of the role-based lens. We adapted the definitions of voicing and helping behaviors from Van Dyne and LePine (1998). Voicing behaviors are challenging and promotive acts in relation to the leader. For example, on Twitter, users develop and make recommendations concerning issues, speak up, and encourage others to get involved. Helping behaviors are affiliative and promotive and involve meeting needs, requests, queries, or actions. For example, on Twitter, people help by providing information, leads, enhanced awareness, and direct

personal services. Empowering behaviors are a form of engagement that increase another person’s personal, interpersonal, or political power (Gutiérrez, 1990). Empowering behaviors on Twitter involve users’ proactive actions, including tweeting to influence an issue or dominate a conversation about a certain issue. Finally, disempowering behaviors are a form of disengagement. To disempower, people disengage from the process of followership. Disempowering behaviors decrease the leaders’ personal, interpersonal, or political power (Faulkner, 2001). On Twitter, disempowering behaviors may include avoiding, ignoring, and dismissing other people. Disempowering behaviors are clearly distinct from empowering behaviors.

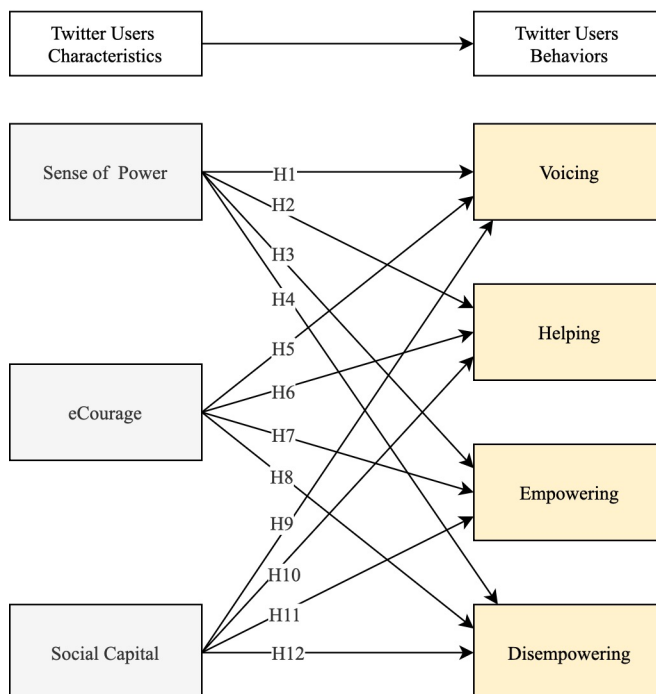
The Research Model

According to the role-based followership lens, roles are held by followers who are characteristically different (Uhl-Bien et al., 2014). The preceding manifests in different behaviors. Basically, the role-based followership lens recognizes that follower characteristics influence follower behaviors. In this research, we investigate the relationships between followers’ characteristics and behaviors to examine Twitter users’ roles. Our research model incorporating the specific constructs that were described in earlier sections are shown in Figure 1. Below, we also specify the hypotheses (H1-H12) shown in the model.

Sense of Power: Hypotheses

French and Raven (1959) defined power as the potential for influence. Thus, a person does not necessarily have to exercise power to be considered powerful. Personal sense of power is a psychological construct that individuals can reliably gauge (Anderson et al., 2012). Studies show the positive relationships between power and voicing (Kim et al., 2019; Sherf et al., 2017) and power and helping (Jami et al., 2021; Yin & Smith, 2021). Researchers have also found relationships between

Figure 1. The research framework



power and engagement and disengagement, indicating that people with power can both empower and disempower (Anicich & Hirsh, 2017). Hence, having power influences behaviors. We hypothesize the relationship between personal sense of power and behaviors in the context of eFollowership and Twitter users' roles:

- H1:** Twitter user's sense of power positively influences his/her voicing behaviors.
- H2:** Twitter user's sense of power positively influences his/her helping behaviors.
- H3:** Twitter user's sense of power positively influences his/her empowering behaviors.
- H4:** Twitter user's sense of power positively influences his/her disempowering behaviors.

eCourage: Hypotheses

To the best of our knowledge, the construct of eCourage has not been explored. According to Chaleff (1992), individuals are responsible for their actions whether they follow or lead; as such, it takes courage to act. Thus, courage influences behaviors. Courage and eCourage are similar; although eCourage is specific to the electronic medium. eCourage is specific to a medium which lacks face-to-face interactions and has its own nuances. We hypothesize that Twitter users with higher eCourage would enact more promotive behaviors: voicing and helping. We also expect they would enact more engagement behaviors, i.e., empowering and disempowering. Thus, the following hypotheses:

- H5:** Twitter user's eCourage positively influences his/her voicing behaviors.
- H6:** Twitter user's eCourage positively influences his/her helping behaviors.
- H7:** Twitter user's eCourage positively influences his/her empowering behaviors.
- H8:** Twitter user's eCourage positively influences his/her disempowering behaviors.

Social Capital: Hypotheses

Many studies show social capital is related to behaviors: voicing (Onyx, 2001; Tavits, 2006), helping (Israel et al., 2001; Stablein, 2011), empowering, as well as disempowering (Ansari et al., 2012; Garcia & Ramirez, 2018). We expect these findings to prevail on Twitter, too. Thus, we hypothesize that people with social capital would enact promotive behaviors, i.e., voicing and helping, and engagement behaviors, i.e., empowering and disempowering.

- H9:** Twitter user's social capital positively influences his/her voicing.
- H10:** Twitter user's social capital positively influences his/her ways of helping.
- H11:** Twitter user's social capital positively influences his/her empowering behaviors.
- H12:** Twitter user's social capital positively influences his/her disempowering behaviors.

METHODOLOGY

A survey instrument was designed to test the relationships between role-based follower characteristics and behaviors. In developing the survey instrument, we adopted existing items from the literature. After pre-testing the instrument and making necessary adjustments, we pilot-tested it, made final adjustments, and administered the instrument in a large-scale survey. Responses from Twitter users in the general population were appropriate for this study. We restricted our scope to Twitter users in the United States to limit exogenous effects, such as cultural and usage differences among people in different countries. Finally, the survey data underwent analysis using PLS-SEM, with SPSS to generate descriptive statistics and conduct secondary analysis. As our research involves novel conceptualizations specific to Twitter, PLS-SEM was deemed appropriate to test the structural model.

Instrument Construction

To recapitulate, the common role-based characteristics and behaviors of Twitter users were derived in previous research conducted by the authors (Uppala et al., 2023). They are personal sense of power, eCourage, social capital, voicing, helping, empowering, and disempowering. The literature showed that researchers had studied these identified characteristics and behavioral constructs in different contexts. Items regarding personal sense of power were derived from Anderson et al. (2012), eCourage from Woodard and Pury (2007), social capital from Ellison et al. (2007), and voicing and helping from Van Dyne and LePine (1998). Empowering items were drawn from Speer and Peterson (2000), and the disempowering items were derived from Faulkner (2001). Demographic questions (e.g., gender, age, education, and work experience) were additional items in the survey. The items were reworded as necessary to apply to the Twitter context. The Appendix shows the instrument.

We pre-tested the instrument for face and content validity. First, five experts, including professors, reviewed the instrument and provided feedback, which was used to refine the survey. Next, we conducted a pilot test on Amazon Mechanical Turk with 30 Twitter users. We assessed the pilot data using box-and-whiskers plots and PLS-SEM testing. A few disempowerment items were unreliable because the items showed a considerable spread in box-and-whiskers plots and poor loadings in our PLS-SEM analysis. After further review by experts, the items underwent revision and refinement. The instrument was then finalized, and we proceeded with the full survey.

Full Survey

Administered on Amazon Mechanical Turk, the large-scale survey elicited 303 responses. After removing two responses for failing a question based on integer check, we had 301 usable responses. We used the following criteria to select the respondents: (a) Twitter account holder, (b) United States as location, and (c) human intelligence tasks (HITs) with an approval rate of more than 95% (i.e., less than 5% disapproval of their prior HITs). The HIT approval rate indicates the respondents' trustworthiness and the quality of responses.

Among the 301 participants, 47.2% were male and 52.8% were female. Table 1 shows participants' age, education, and work experience, indicating considerable diversity. The largest group of respondents were between the ages of 25 and 34 years (41.2%), followed by the age group of 35 to 34 years (31.6%); these percentages mirror younger populations' dominance on social media. The respondents had diverse educational qualifications, with most earning a college or associate degree. Most respondents had considerable work experience, with 36.2% having six to 15 years and 48.8% having more than 15 years. Thus, our sample includes mature and working populations.

PLS-SEM

To test the structural model, we conducted PLS-SEM analysis with SmartPLS 2.0M3 (Ringle et al., 2005). PLS-SEM is well-accepted by academics for its effectiveness in testing relationships between various constructs (Matthews et al., 2018) and is especially suited for testing exploratory studies (Hair et al., 2017). To employ the PLS-SEM method, Hair et al. (2021) recommended a sample size greater than 10 times the largest number of structural paths directed at a particular construct in the structural model. With 301 cases, we had an adequate sample size to use PLS-SEM. Following Wong's (2013) guidelines, we set the maximum number of iterations to 300 and the bootstrapping sample size to 5,000.

ANALYSIS AND RESULTS

Measurement

There were several steps taken to ensure the validity of the model. The initial steps included pre-testing, piloting, and making necessary refinements to the instrument. Furthermore, the survey items were presented in random order to reduce common method bias.

Table 1. Demographic characteristics of the participants

Variable	Count	%
Age		
18-24	18	6
25-34	124	41.2
35-44	95	31.6
45-54	35	11.6
55-64	20	6.6
65+	9	3
Education		
Less than a high school diploma	0	0
High school degree or equivalent (e.g., GED)	35	11.6
Some college, no degree	72	23.9
Associate degree (e.g., AA, AS)	38	12.6
Bachelor's degree (e.g., BA, BS)	124	41.2
Master's degree (e.g., MA, MS, MEd)	26	8.6
Professional degree (e.g., MD, DDS, DVM, JD)	5	1.7
Doctorate (e.g., PhD, EdD)	1	0.3
Years of Work Experience		
0	1	0.3
1-5	44	15.0
6-10	58	19.3
11-15	51	16.9
16+	147	48.8

Initially, all constructs had three or more items. After a factor analysis to examine factor loadings, we dropped items from the constructs if their loadings were below the threshold of 0.70. Although we initially measured eCourage with four items, one item did not load adequately and was dropped from the model. Disempowering was measured with five items; however, three did not load adequately and were dropped, leaving two items for the construct. According to Worthington and Whittaker (2006), a factor can be modeled with two items if they are highly correlated (i.e., Pearson correlation (r) > .70) and are relatively uncorrelated with other variables. The r for the two disempowering items was 0.76. The factor loadings for the final set of items are shown in Table 2.

We evaluated construct reliability with composite reliability and Cronbach's alpha (Table 3). Both values were above the 0.7 thresholds for all constructs. For convergent validity, factor loadings were checked and compared against the 0.70 value recommended by Hair et al. (2009), as shown in Table 2. We assessed AVE against the value of 0.5, per Hair et al. (2009), finding it more than adequate for all constructs (Table 3). To assess discriminant validity, the square root of the AVE must be larger than the inter-construct correlations (Fornell & Larcker, 1981), which was true for all constructs (Table 4). Thus, all of our tests indicated a valid model.

We also evaluated common method bias using Harman's single factor test as recommended by Podsakoff et al. (2003). For this purpose, factor analysis was employed, and the model was constrained to extract a single factor, which attributed 28.7% of the model's variation. The generally accepted threshold is 50%. Our percentage, 28.7%, is well below 50%. Therefore, our measurements are not significantly affected by common method bias.

Structural Model

The structural model was tested with PLS-SEM. Figure 2 shows the results graphically. Table 5 presents a summary of the various relationships, path coefficients, and p values.

Table 2. Factor analysis and cross loadings

Factor	SP	eC	SC	Vo	He	Em	Di
SP1	0.87662	0.22044	0.55119	0.58320	0.54445	0.51958	0.06345
SP2	0.83786	0.17645	0.45182	0.46730	0.44445	0.43671	0.02498
SP3	0.88256	0.23133	0.47645	0.47190	0.46288	0.46646	-0.05682
SP4	0.79209	0.15324	0.56110	0.50346	0.51659	0.37509	0.20899
eC1	0.04980	0.70938	0.06072	0.13407	0.13971	0.14909	-0.12105
eC2	0.22786	0.88443	0.21417	0.24597	0.23381	0.35087	0.01331
eC3	0.23006	0.82491	0.17254	0.26844	0.18080	0.29072	0.01566
SC1	0.44434	0.18142	0.75325	0.52140	0.56687	0.56459	0.20073
SC2	0.49065	0.11061	0.78159	0.46660	0.52081	0.36691	0.14805
SC3	0.57183	0.20340	0.85109	0.55007	0.59112	0.47114	0.15323
SC4	0.42908	0.14196	0.81750	0.55113	0.54115	0.46496	0.06256
Vo1	0.47617	0.09626	0.55093	0.78789	0.62117	0.44042	0.17443
Vo2	0.51599	0.31315	0.53380	0.88939	0.72502	0.63176	0.13160
Vo3	0.55188	0.29488	0.59689	0.91386	0.72767	0.67004	0.14044
Vo4	0.48890	0.22843	0.53173	0.78807	0.60986	0.56329	0.07465
He1	0.50947	0.21780	0.59143	0.71809	0.89463	0.60755	0.08131
He2	0.55507	0.24316	0.64489	0.72194	0.93592	0.61196	0.09784
He3	0.53641	0.21893	0.64359	0.73217	0.89579	0.60362	0.10574
He4	0.52207	0.17676	0.64630	0.72127	0.91436	0.59029	0.08581
Em1	0.33320	0.25249	0.38137	0.48896	0.46233	0.78570	-0.08473
Em2	0.32713	0.22975	0.35800	0.47724	0.49135	0.75524	-0.01968
Em3	0.46515	0.30020	0.54671	0.60819	0.56806	0.88209	0.04709
Em4	0.52896	0.30918	0.54197	0.58981	0.57755	0.77728	0.12516
Di3	0.08719	-0.00589	0.11251	0.14819	0.12393	0.03380	0.92636
Di4	0.05083	-0.02507	0.12295	0.14002	0.07057	0.03494	0.94399

Note: SP = personal sense of power; eC = eCourage; SC = social capital; Vo = voicing; He = helping; Em = empowering; Di = disempowering.

Twitter users' personal sense of power significantly influences three role-based behaviors: voicing, helping, and empowering. However, it does not appear to affect disempowering behaviors. eCourage significantly influences voicing and empowering behaviors but does not appear to influence helping and disempowering behaviors. Finally, social capital affects voicing, helping, and empowering behaviors but not disempowering behaviors.

The overall model's efficacy was evaluated by examining the explained variance (i.e., the R^2 value) in the endogenous constructs (Table 5). The explained variance values for voicing, helping, and empowering were 51%, 53%, and 44%, respectively. These are high values that indicate the strength of the research model. The explained variance for disempowering was only 2%. Also, none of the antecedents had a significant relationship with the disempowering construct. Disempowering

Table 3. Reliability and validity

Construct	Composite Reliability	Cronbach's Alpha	AVE
Sense of Power	0.91092	0.86940	0.71920
eCourage	0.84979	0.74440	0.65530
Social Capital	0.87776	0.81398	0.64273
Voicing	0.90981	0.86647	0.71699
Helping	0.95085	0.93099	0.82871
Empowering	0.87748	0.81755	0.64248
Disempowering	0.93312	0.85728	0.87464

Note: AVE = average variance extracted.

Table 4. Correlations between constructs and square root of AVE

Construct	SP	eC	SC	Vo	He	Em	Di
SP	0.8481						
eC	0.2315	0.8095					
SC	0.6044	0.2015	0.8017				
Vo	0.6014	0.2795	0.6540	0.8468			
He	0.5834	0.2354	0.6944	0.7945	0.9103		
Em	0.5331	0.3464	0.5875	0.6851	0.6626	0.8016	
Di	0.0725	-0.0172	0.1262	0.1537	0.1020	0.0368	0.9352

Note: The diagonal values in grey are the square root of AVE. SP = personal sense of power; eC = eCourage; SC = social capital; Vo = voicing; He = helping; Em = empowering; Di = disempowering.

is a new construct; as such, disempowering may require further inquiry into the construct itself and its antecedents.

DISCUSSION

The extant followership literature typically includes traditional leaders and followers, and generally studies followers from the vantage point of leaders. eFollowership is a new phenomenon manifesting itself on social media platforms; as such, it requires a fresh perspective. Our study targeted this underexplored topic and applied relevant constructs from the followership literature. Although our research into this developing area is exploratory, it provides a good understanding of an emerging form of followership and offers building blocks in the form of important constructs and relationships.

We chose to apply followership constructs to Twitter for several reasons. eFollowership systems, such as Twitter, are growing in popularity, and the rhetoric on this platform differs from that in traditional followership in offline contexts. The dominant syntax on Twitter is follower-centric (e.g.,

Figure 2. Summary of results

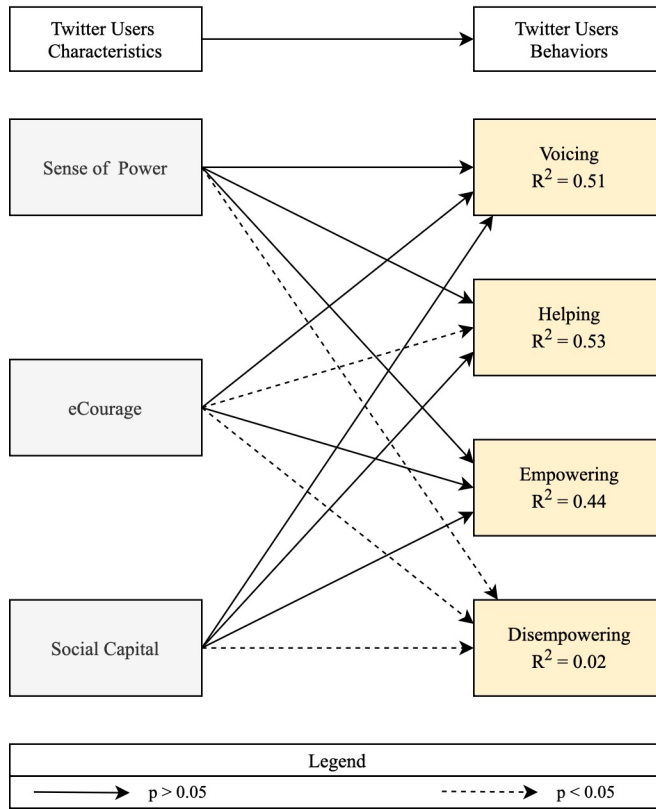


Table 5. Path coefficients and P values

Endogenous Construct	R ²	Explanatory Construct	Path Coefficient	Significance (p Value)
Voicing	0.51	Sense of Power	0.304	< 0.00001
		eCourage	0.119	0.019162
		Social Capital	0.446	< 0.00001
Helping	0.53	Sense of Power	0.246	0.000434
		eCourage	0.071	0.185511
		Social Capital	0.532	< 0.00001
Empowering	0.44	Sense of Power	0.244	0.003694
		eCourage	0.210	0.000247
		Social Capital	0.396	0.002420
Disempowering	0.02	Sense of Power	0.002	0.963341
		eCourage	-0.045	0.316182
		Social Capital	0.134	0.162839

follower and following). This observation shows a divergence from the leader-centric syntax (e.g., leader and leading), suggesting the emerging and dominant narrative of the follower (Uppala et al., 2023). Scholars have delved into followership research. Kelley (1988), Chaleff (1992), Kellerman (2007), and others were foundational in conceptualizing followership and followers. We expanded on their views beyond the traditional followership contexts.

The current zeitgeist is a world where tweets are a standard part of the public discourse (e.g., news), fact-checking is prevalent, and landing in Twitter jail is a common occurrence. Public discourse on Twitter is fundamentally different. Twitter users have the power to correct misperceptions and falsehoods and engage in discussions about controversies in real-time. Such debates are not available to individuals without modern information and communication technologies. Followers in their roles have significant potential to influence and shape outcomes at large. Thus, followers with specific characteristics can be better served by leaders or influencers with appropriate characteristics and behaviors.

This research presented and explored pertinent constructs in followers' roles—personal sense of power, eCourage, and social capital. These constructs are referred to as follower characteristics. This research also presented and explored follower behaviors: voicing, helping, empowering, and disempowering behaviors. Thus, we pave the way for understanding Twitter users as followers enacting roles on Twitter. Influencers or businesses can leverage this knowledge to their benefit when interacting with their followers by understanding who they are and how they act.

Users with more personal sense of power engage in more voicing, helping, and empowering behaviors. To create a buzz, one can recruit into followership individuals with a high personal sense of power. Users with increased eCourage engage in more voicing and empowering behaviors; thus, followership with eCourage is more likely to display voicing behaviors by challenging and promoting other users to behave in a particular way. eCourage also leads to empowering behaviors, by offering support and engagement to others. Influencers will be more effective if users in their followership possess such characteristics. Also, users with more social capital engage in more voicing, helping, and empowering behaviors. Influencers can market their products or ideas better when their followership has more social capital and can engage in voicing, helping, and empowering behaviors on behalf of themselves, their business, and brands. Influencers can promote the use of platforms like Twitter to create networks and generate social capital and improve their followers' voicing, helping, and empowering behaviors to their advantage.

Our findings did not support the relationship between personal sense of power and disempowering behaviors. We expected that users with a higher personal sense of power would exercise their perceived power to disempower others, but this was not the case. Rather, we found that users with a higher personal sense of power did not exercise their power to disempower others. Personal sense of power and disempowering behaviors could be unrelated, or disempowering behaviors could simply result from collective actions such as universal bans. Furthermore, the system itself may discourage disempowering behaviors at the individual level. That is, disempowering behaviors could be reduced due to mechanisms such as user knowledge of Twitter's framework. Users may know that Twitter framework might not allow them to exercise their personal sense of power. For example, if a user wants to demand another user to remove a tweet, Twitter does not have a technical mechanism to make a demand to another user. Also, it is possible that users fear losing their sense of power due to retribution from others on Twitter after disempowering behaviors. That is, other user characteristics and behaviors (e.g., helping) could be moderating the disempowering behaviors. Also, the users at large may undermine the influence, instill fear, and reduce social capital of those users who engage in disempowering behaviors individually.

Users' eCourage influenced their voicing and empowering behaviors. We expected Twitter users with high eCourage to exercise it to help or disempower other users. Surprisingly, users' eCourage did not impact their helping and disempowering behaviors. Although some Twitter users have more eCourage, they are not necessarily more helpful to other users. eCourage may arise in the context

of fear which may not be considered an emotion that promotes helping behaviors. It is also possible that users do not consider social and moral pressures to help other users because the users may engage in helping behaviors in privacy and with predetermination. Moreover, users do not seem to muster eCourage to disempower others either. Hence, eCourage could be unrelated to disempowering behaviors. Users, however, can maintain anonymity and disempower others while avoiding social and moral pressures. It is important to note that followers with voicing and empowering behaviors likely pose opportunities benefiting influencers and businesses.

Follower characteristics indicated a significant amount of variance in followers' behaviors. The R^2 for the constructs was 54% for voicing, 56% for helping, and 47% for empowering. Our model explained close to half of the variance in the model with personal sense of power, eCourage, and social capital. However, the R^2 was only 2% for disempowering. The results for disempowering behaviors were not significant. This research could not explain disempowering behaviors, despite evidence supporting that users engage in disempowering behaviors (Uppala et al., 2023). The concept of disempowering behaviors needs further examination to explain its place in Twitter followers' roles.

Our research highlights follower roles as a major facet of eFollowership. eFollowership systems such as Twitter support follower roles. In eFollowership systems, as in traditional organizations, people could be imbued or enabled with characteristics (e.g., titles, ranks, positions, etc.) acquired or innate. Thus, followers can be imbued or enabled with characteristics such as a certain sense of power, eCourage, and social capital. We have shown these characteristics influence behaviors. As such, followers can be given or setup with a particular set of characteristics, and the system can issue roles with preordained, predicable, or desired behaviors. To achieve business objectives, whether in traditional organizations or on Twitter, systems can render decisions to shape follower characteristics. They can also present opportunities to followers to select particular behaviors to flourish.

LIMITATIONS AND FUTURE RESEARCH

Although, demographic diversity among respondents was present (as shown in Table 1), a sample consisting of different populations, such as individuals in urban and rural settings or those living outside the United States, could have added value to this research.

Although the research model we postulated was mostly supported, none of the antecedents we considered had an influence on disempowering behaviors. Thus, the disempowering construct needs further examination regarding its constituent elements and antecedents. Future researchers may benefit from examining disempowering behaviors using the hybrid approach consisting of lexicon-based and machine learning approaches applied to detect cyberbullying on Twitter (Gautam & Bansal, 2023).

Given that our study was exploratory and there is little prior research on eFollowership, the characteristics and behaviors examined could undergo refinement and expansion in future research. Followership and follower roles are dynamic and complex. The relationships we identified are a starting point for more research. These relationships could be examined in specific contexts (e.g., in interdependent relationships and interactions with feedback, or within certain environmental conditions and cultures) with specific mechanisms in play. Also, it is possible that followers may adapt and adjust in their followership. Our research shows that sense of power, eCourage, and social capital contribute significantly to voicing, helping, and empowering behaviors. It would be useful to know the contexts and mechanisms that generate or shift personal sense of power, eCourage, and social capital. Also, future researchers can investigate how businesses can leverage the resulting voicing, helping, and empowering behaviors in eFollowership to improve brand value, reputation, sales, etc.

Our research did not distinguish between in-role and extra-role—not required—behaviors. It is unclear how this delineation between in-role and extra-role works with followers who are not employees and are not required to perform a role. Another area worthy of examination will be the role of Twitter's institutional mechanisms (e.g., fact-checking or banning certain users) in manifesting user behaviors.

As an exploratory study, our work provides the building blocks for conducting in-depth eFollowership research. We encourage the research community to dive deeper, identify new constructs and relationships to progress toward eFollowership theory-building. Furthermore, while we integrated the constructionist and role-based lenses in our research, future investigators would benefit from pursuing the application of other constructs. Also, other variables such as demographics or content of tweets may influence users' behavior on Twitter. As such, the impact of demographics and content of tweets on Twitter users' behavior is worth examining in future research.

Also, researchers may apply sentiment analysis (Fadhli et al., 2022) to study prospective customers on Twitter. While sentiment analysis is suitable to study large Twitter populations, researchers may apply cohort analysis (Fedushko & Ustyianovych, 2022) to study smaller groups of followers of specific influencers who are attempting to influence customer behaviors on Twitter.

Our focus was Twitter eFollowership. Scholars are encouraged to conduct similar research on other platforms such as Instagram, Facebook, What's App, etc., to identify generalizable principles.

CONCLUSION

Followers in the cyberworld are unique. They are empowered with access to modern information and communication technologies, and they enjoy more agency through eFollowership systems compared to that present in the traditional followership phenomenon. Applying followership constructs, we demonstrate the application of important constructs in the context of an eFollowership system. As Twitter and other social media evolve, an understanding of Twitter users' characteristics and behaviors based on our research has implications for researchers, eFollowership system developers, and users such as influencers who seek to understand, attract, and leverage the substantive roles played by the followers for businesses. We illustrate relationships between Twitter follower characteristics (personal sense of power, eCourage, and social capital) and behaviors (voicing, helping, and empowering). We encourage future researchers to build upon our findings to further the field of eFollowership.

REFERENCES

- Anderson, C., John, O. P., & Keltner, D. (2012). The personal sense of power. *Journal of Personality, 80*(2), 313–344. doi:10.1111/j.1467-6494.2011.00734.x PMID:21446947
- Anicich, E. M., & Hirsh, J. B. (2017). The psychology of middle power: Vertical code-switching, role conflict, and behavioral inhibition. *Academy of Management Review, 42*(4), 659–682. doi:10.5465/amr.2016.0002
- Ansari, S., Munir, K., & Gregg, T. (2012). Impact at the ‘bottom of the pyramid’: The role of social capital in capability development and community empowerment. *Journal of Management Studies, 49*(4), 813–842. doi:10.1111/j.1467-6486.2012.01042.x
- Chaleff, I. (1992). *The courageous follower: Standing up to and for our leaders*. Berrett-Koehler Publishers.
- Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of Facebook “friends”: Social capital and college students’ use of online social network sites. *Journal of Computer-Mediated Communication, 12*(4), 1143–1168. doi:10.1111/j.1083-6101.2007.00367.x
- Fadhli, I., Hlaoua, L., & Omri, M. N. (2022). Sentiment analysis CSAM model to discover pertinent conversations in Twitter microblogs. *International Journal of Computer Network and Information Security, 5*(5), 28–46. doi:10.5815/ijcnis.2022.05.03
- Fairhurst, G. T., & Uhl-Bien, M. (2012). Organizational discourse analysis (ODA): Examining leadership as a relational process. *The Leadership Quarterly, 23*(6), 1043–1062. doi:10.1016/j.leaqua.2012.10.005
- Faulkner, M. (2001). A measure of patient empowerment in hospital environments catering for older people. *Journal of Advanced Nursing, 34*(5), 676–686. doi:10.1046/j.1365-2648.2001.01797.x PMID:11380736
- Fedushko, S., & Ustyianovych, T. (2022). E-commerce customers behavior research using cohort analysis: A case study of COVID-19. *Journal of Open Innovation, 8*(1), 12. doi:10.3390/joitmc8010012
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *JMR, Journal of Marketing Research, 18*(1), 39–50. doi:10.1177/002224378101800104
- French, J. R. P., Jr., & Raven, B. (1959). The bases of social power. In D. Cartwright (Ed.), *Studies in social power* (pp. 150–167). Ann Arbor, MI: Institute for Social Research, University of Michigan.
- Garcia, G. A., & Ramirez, J. J. (2018). Institutional agents at a Hispanic serving institution: Using social capital to empower students. *Urban Education, 53*(3), 355–381. doi:10.1177/0042085915623341
- Gautam, A. K., & Bansal, A. (2023). Automatic cyberstalking detection on Twitter in real-time using hybrid approach. *International Journal of Modern Education and Computer Science, 15*(1), 58–72. doi:10.5815/ijmecs.2023.01.05
- Gutiérrez, L. M. (1990). Working with women of color: An empowerment perspective. *Social Work, 35*(2), 149–153.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2009). *Multivariate data analysis* (7th ed.). Pearson Prentice Hall.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). Sage Publications. doi:10.1007/978-3-030-80519-7
- Hair, J. F., Matthews, L. M., Matthews, R. L., & Sarstedt, M. (2017). PLS-SEM or CB-SEM: Updated guidelines on which method to use. *International Journal of Multivariate Data Analysis, 1*(2), 107–123. doi:10.1504/IJMDA.2017.087624
- Hollander, E. P. (1958). Conformity, status, and idiosyncrasy credit. *Psychological Review, 65*(2), 117–127. doi:10.1037/h0042501 PMID:13542706
- Israel, G. D., Beaulieu, L. J., & Hartless, G. (2001). The influence of family and community social capital on educational achievement. *Rural Sociology, 66*(1), 43–68. doi:10.1111/j.1549-0831.2001.tb00054.x
- Jami, A., Kouchaki, M., & Gino, F. (2021). I own, so I help out: How psychological ownership increases prosocial behavior. *The Journal of Consumer Research, 47*(5), 698–715. doi:10.1093/jcr/ucaa040

- Kellerman, B. (2007). What every leader needs to know about followership. *Harvard Business Review*, 85(12), 84–91. PMID:18283918
- Kellerman, B. (2012). *The end of leadership*. Harper Business.
- Kelley, R. E. (1988). In praise of followers. *Harvard Business Review*, 66(6), 142–148.
- Kim, T. H., Lee, S. S., Oh, J., & Lee, S. (2019). Too powerless to speak up: Effects of social rejection on sense of power and employee voice. *Journal of Applied Social Psychology*, 49(10), 655–667. doi:10.1111/jasp.12625
- Martin, M. (2021). *Computer and internet use in the United States: 2018 American community survey reports*. United States Census Bureau. <https://www.census.gov/history/pdf/computer-internetuse2018.pdf>
- Matthews, L., Hair, J., & Matthews, R. (2018). PLS-SEM: The holy grail for advanced analysis. *Marketing Management Journal*, 28(1), 1–13.
- Meindl, J. R. (1990). On leadership: An alternative to the conventional wisdom. *Research in Organizational Behavior*, 12, 159–203.
- Meindl, J. R., Ehrlich, S. B., & Dukerich, J. M. (1985). The romance of leadership. *Administrative Science Quarterly*, 30(1), 78–102. doi:10.2307/2392813
- Newburger, E. (2001). *Home computers and internet use in the United States: August 2000 current population reports*. United States Census Bureau. <https://content.money.com/wp-content/uploads/2015/02/p23-207.pdf>
- Norton, P. J., & Weiss, B. J. (2009). The role of courage on behavioral approach in a fear-eliciting situation: A proof-of-concept pilot study. *Journal of Anxiety Disorders*, 23(2), 212–217. doi:10.1016/j.janxdis.2008.07.002 PMID:18692986
- Onyx, J. (2001). Third sector as voice: The importance of social capital. *Third Sector Review*, 7(2), 73–88.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *The Journal of Applied Psychology*, 88(5), 879–903. doi:10.1037/0021-9010.88.5.879 PMID:14516251
- Ringle, C. M., Wende, S., & Will, A. (2005). *Smart PLS 2.0 M3*. University of Hamburg. www.smartpls.de
- Ryan, C. L. (2018). *Computer and internet use in the United States: 2016 American community survey reports*. United States Census Bureau. <https://www.census.gov/content/dam/Census/library/publications/2018/acs/ACS-39.pdf>
- Sherf, E. N., Tangirala, S., & Weber, K. C. (2017). It is not my place! Psychological standing and men's voice and participation in gender-parity initiatives. *Organization Science*, 28(2), 193–210. doi:10.1287/orsc.2017.1118
- Speer, P. W., & Peterson, N. A. (2000). Psychometric properties of an empowerment scale: Testing cognitive, emotional, and behavioral domains. *Social Work Research*, 24(2), 109–118. doi:10.1093/swr/24.2.109
- Stablein, T. (2011). Helping friends and the homeless milieu: Social capital and the utility of street peers. *Journal of Contemporary Ethnography*, 40(3), 290–317. doi:10.1177/0891241610390365
- Tavits, M. (2006). Making democracy work more? Exploring the linkage between social capital and government performance. *Political Research Quarterly*, 59(2), 211–225. doi:10.1177/106591290605900204
- Uhl-Bien, M., & Pillai, R. (2007). The romance of leadership and the social construction of followership. In B. Shamsie, R. Pillai, M. Bligh, & M. Uhl-Bien (Eds.), *Follower-centered perspectives on leadership: A tribute to the memory of James R. Meindl*. Information Age Publishers.
- Uhl-Bien, M., Riggio, R. E., Lowe, K. B., & Carsten, M. K. (2014). Followership theory: A review and research agenda. *The Leadership Quarterly*, 25(1), 83–104. doi:10.1016/j.leaqua.2013.11.007
- Uppala, V., Palvia, P., & Ankem, K. (2023). Anatomy of Twitter followership. *First Monday*, 28(3). doi:10.5210/fm.v28i3.12825
- Van Dyne, L., & LePine, J. A. (1998). Helping and voice extra-role behaviors: Evidence of construct and predictive validity. *Academy of Management Journal*, 41(1), 108–119. doi:10.2307/256902

- Van Vugt, M. (2006). Evolutionary origins of leadership and followership. *Personality and Social Psychology Review*, *10*(4), 354–371. doi:10.1207/s15327957pspr1004_5 PMID:17201593
- Van Vugt, M., Hogan, R., & Kaiser, R. B. (2008). Leadership, followership, and evolution: Some lessons from the past. *The American Psychologist*, *63*(3), 182–196. doi:10.1037/0003-066X.63.3.182 PMID:18377108
- Wong, K. K. K. (2013). Partial least squares structural equation modeling (PLS-SEM) techniques using SmartPLS. *Marketing Bulletin*, *24*(1), 1–32.
- Woodard, C. R. (2004). Hardiness and the concept of courage. *Consulting Psychology Journal*, *56*(3), 173–185. doi:10.1037/1065-9293.56.3.173
- Woodard, C. R., & Pury, C. L. S. (2007). The construct of courage: Categorization and measurement. *Consulting Psychology Journal*, *59*(2), 135–147. doi:10.1037/1065-9293.59.2.135
- Worthington, R. L., & Whittaker, T. A. (2006). Scale development research: A content analysis and recommendations for best practices. *The Counseling Psychologist*, *34*(6), 806–838. doi:10.1177/0011000006288127
- Yin, Y., & Smith, P. K. (2021). When and how refusing to help decreases one's influence. *Journal of Experimental Social Psychology*, *95*, 104120. doi:10.1016/j.jesp.2021.104120

APPENDIX

Survey instrument

Personal Sense of Power
<ul style="list-style-type: none"> • Item 1: On Twitter, I can get other people to pay attention to what I tweet. • Item 2: On Twitter, even if I voice my views, they have little sway.* • Item 3: On Twitter, my ideas and opinions are often ignored.* • Item 4: On Twitter, I think I have a great deal of power.
eCourage
<ul style="list-style-type: none"> • Item 1: On Twitter, intense social pressure would not stop me from doing the right thing. • Item 2: I would risk rejection by important others for a chance at communicating my thoughts. • Item 3: On Twitter, I would tweet and do what I wanted to do, even though I might be harassed. • Item 4: I would refuse instructions from a respected person if it meant hurting someone needlessly on Twitter.
Social Capital
<ul style="list-style-type: none"> • Item 1: Interacting with people on Twitter makes me feel like a part of a larger community. • Item 2: There are several people on Twitter I trust to solve my problems. • Item 3: If I needed to, I could ask a Twitter acquaintance to do a small favor for me. • Item 4: I would be able to find information about something important from a Twitter acquaintance.
Voicing
<ul style="list-style-type: none"> • Item 1: I develop and make recommendations concerning issues that affect others on Twitter. • Item 2: I speak up and encourage others on Twitter to get involved in issues that affect other people. • Item 3: I get involved in issues that affect the general well-being of others on Twitter. • Item 4: I keep well informed about issues where my opinions might be useful to other people on Twitter.
Helping
<ul style="list-style-type: none"> • Item 1: On Twitter, I get involved to benefit others. • Item 2: I play a role that helps others on Twitter. • Item 3: I help others on Twitter to learn about new things. • Item 4: I provide support on Twitter to benefit others.
Empowering
<ul style="list-style-type: none"> • Item 1: I would tweet (or like a post) to influence a policy or issue. • Item 2: I would tweet (or like a post) to promote information. • Item 3: I would engage in a conversation about an issue affecting my Twitter community. • Item 4: I would arrange and outline things to be discussed on Twitter.
Disempowering
<ul style="list-style-type: none"> • Item 1: I would ignore a tweet that makes complaints. • Item 2: I would refuse to share or like a tweet. • Item 3: I would tweet to lower the confidence (self-regard) of others. • Item 4: I would tweet to talk down at other people as if they were children. • Item 5: I would tweet against the opinions of others.
Gender
<ul style="list-style-type: none"> • Item: Gender (Scale: Male; Female; Other)
Age
<ul style="list-style-type: none"> • Item: Age (Scale: 18–24; 25–34; 35–44; 45–54; 55–64; 65+)
Education
<ul style="list-style-type: none"> • Item: What is the highest degree or level of school you have completed? • (If currently enrolled in school, select the highest degree received.) (Scale: Less than a high school diploma; High school degree or equivalent (e.g., GED); Some college, no degree; Associate degree (e.g., AA, AS); Bachelor's degree (e.g., BA, BS); Master's degree (e.g., MA, MS, MEd); Professional degree (e.g., MD, DDS, DVM, JD); Doctorate (e.g., PhD, EdD)
Work Experience
<ul style="list-style-type: none"> • Item: How many years of work experience do you have? (Scale: 0; 1–5; 6–10; 11–15; 16+)
<p><i>Note.</i> An Asterisk (*) indicates the item was reverse scored. Scale used for personal sense of power, eCourage, social capital, voicing, helping, empowering, and disempowering: 1 = disagree strongly; 2 = disagree; 3 = disagree a little; 4 = neither agree nor disagree; 5 = agree a little; 6 = agree; 7 = agree strongly.</p>

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