Use and Acceptance of Social Media among Health Educators

Carl Hanson, Joshua West, Brad Neiger, Rosemary Thackeray, Michael Barnes, and Emily McIntyre

ABSTRACT

Background: As social media use grows in popularity, health educators are challenged to think differently about how to communicate with audiences. Purpose: The purpose of this study was to explore social media use and factors that determine acceptance of social media use among health educators. Methods: A random sample of Certified Health Education Specialists (CHES) (N = 503) completed an online survey consisting of items related to the Unified Theory of Acceptance and Use of Technology (UTAUT). Results: Findings revealed that health educators most commonly used social networking sites (34.8%), podcasts (23.5%), and media sharing sites (18.5%) within their organizations. Social influence (P < 0.0001) and performance expectancy (P < 0.0001) were both positively associated with increased behavioral intentions to use social media for health promotion. Reasons for lack of use included employers monitoring or blocking social media, difficulty of use among older health educators, and the belief that social media would not enhance job performance. Discussion: Many health educators are using social media and intentions to use in practice are associated with social influence and performance expectancy. Translation to Health Education Practice: Social media use holds promise as a supporting methodology to enhance health education practice. Implementation should include attention to guidelines and best practice.

BACKGROUND

Obtaining accurate health information is important in order for the public to make educated decisions regarding their personal health and that of their community. To this end, health educators have successfully used traditional communication channels such as print and broadcast media to reach consumers. However, over the past 25 years the media landscape has changed. Traditional media such as television, radio and the first generation Internet (Web 1.0) has declined in popularity.[1-3] Instead, many consumers are using new media channels such as the second generation Internet (Web 2.0 or social media) to obtain health information and to communicate with other individuals. Web 2.0, or social media, "is commonly associated with web applications that facilitate interactive information sharing, interoperability, user-centered design and collaboration on the World Wide Web."[4] Social media include user-generated information, which refers to the production of online content by the general public, and engages audiences much better than traditional media where users are passive viewers of information provided to them.[4]

According to a recent study by the Pew Internet Project, of the 79% of adults in the U.S. using the Internet, 61% look online for health information with 41% using social

Carl Hanson is an associate professor in the Department of Health Science, 229-D Richards Building, Brigham Young University, Provo, UT 84602; E-mail: carl_hanson@byu.edu. Joshua West is an assistant professor in the Department of Health Science, 229-L Richards Building, Brigham Young University, Provo, UT 84602. Brad Neiger is a professor in the Department of Health Science, 229-F Richards Building, Brigham Young University, Provo, UT 84602.

Rosemary Thackeray is an associate professor in the Department of Health Science, 229-H Richards Building, Brigham Young University, Provo, UT 84602. Michael Barnes is a professor in the Department of Health Science, 221-F Richards Building, Brigham Young University, Provo, UT 84602. Emily McIntyre is an instructor in the Department of Health Science, 229-B Richards Building, Brigham Young University, Provo, UT 84602.

media to obtain information about health or medical issues.[5] The majority of consumers of online health information access user-generated health information because it provides tailored information or "just-in-time, someone-like-me" information.[5] As a result, health educators are now challenged to think differently about how to communicate with their audiences. Thackeray and Neiger [6] have conceptualized changes in the communication process and have proposed a new Multidirectional Communication Model (MCM). This model suggests that communication has shifted from unidirectional to multidirectional as consumers use more social media to create, seek and share information. Unidirectional refers to the traditional top-down communication process where senders, typically professionals, relay messages through communication channels such as print and broadcast media to a receiver. The MCM includes the traditional communication process but incorporates new forms of online communication that are occurring through social media. Through social media applications, consumers generate their own messages (bottom-up) and share these messages horizontally with others (side-side).

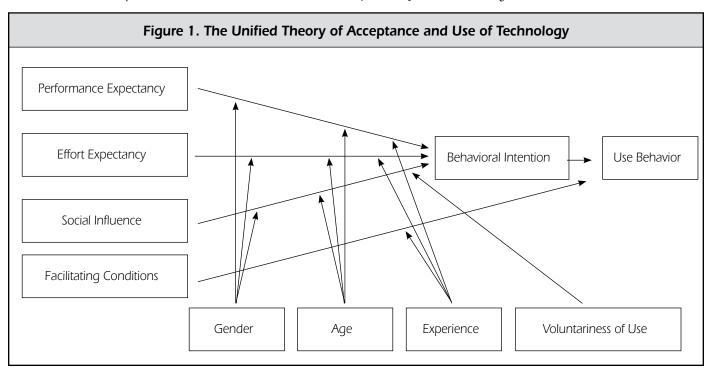With the shift away from traditional channels towards new social media channels, health educators have the potential to enhance health education practice through the integration of social media.[7,8] For example, health educators can use social media tools to mobilize communities around an issue,[9] correct misinformation that is circulating though social media outlets, direct the public to information that they can easily access[10] and develop relationships with their audiences, making them true partners in promoting health and behavior change. Perhaps most importantly, use of social media can enhance communication strategies. Not incorporating social media into health education practice can mean missed opportunities for public health. Consumers are using social media to communicate and unless health professionals learn to use these tools, they will be left out of the dialogue. However, little has been published on health educators' use of social media technologies and no studies have identified the factors that contribute to their use. Identification of factors that contribute to the use of social media tools among health educators can help provide valuable insight into how to increase their adoption and use in practice.

Conceptual Framework

The Unified Theory of Acceptance and Use of Technology (UTAUT) provided a theoretical foundation for this study (Figure 1). The UTAUT is the unification of several frameworks that help to explain the acceptance and use of technology.[11] These frameworks include Diffusion of Innovation, Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model, Theory of Planned Behavior (TPB), Combined TAM-TPB, Model of PC Utilization, and Social Cognitive Theory. The UTAUT has evidence of content validity through six longitudinal field studies.[11] Venkatesh et al.[11] report that the UTAUT accounts for 70% of the variance for usage intention, better than any of the eight frameworks alone.[11]

Four key constructs are associated with the UTAUT: performance expectancy or "the degree to which an individual believes that using the system will help him or her to attain gains in job performance,"[11(p. 447)] effort expectancy or "the degree of ease associated with use of the system,"[11(p. 450)] social influence or "the degree to which an individual perceives that important others believe he or she should use the new system,"[11(p. 451)] and facilitating conditions or "the degree to which an individual believes that an organizational and technical infrastructure

Figure 1. The Unified Theory of Acceptance and Use of Technology

exists to support the use of the system." [11(p. 453)] These constructs influence intention to use technology and actual use of technology and are moderated by gender, age, experience and voluntariness of use.[11]

PURPOSE

The purpose of this study was to explore use and factors that determine the acceptance of social media technologies among health educators. To be specific, performance expectancy, effort expectancy, social influence and facilitating conditions, as related to social media use were assessed as well as intention to use for health promotion. Actual use of social media tools for personal and organizational related purposes also was assessed.

METHODS

Participants

Study respondents were Certified Health Education Specialists (CHES) as of 2009 as identified by the National Commission for Health Education Credentialing (NCHEC). The 2009 member database was obtained from NCHEC and contained contact information for 7055 health education specialists, 7.8% male and 92.2% female. The NCHEC database was used to select study participants because it represents a substantial number of health education specialists who have demonstrated professional competency in health education. In order to determine the sample size for the study, an a priori power analysis was conducted using G*Power software and with an alpha error probability of .05 and power of .80. Assuming a small effect size of .05, it was determined that a sample of 463 participants was needed.

The procedures used for sample selection involved using the Microsoft Excel RAND function to generate a random list of numbers. Each random number on the list was then assigned to each contact email in the NCHEC database. The combined random numbers and emails were then sorted in descending numerical order. The first 500 participants on this list were selected for participation in the survey. Selection with replacement was used to choose additional participants to replace non-respondents. This procedure continued until an adequate number of responses, as defined by the power analysis, were received.

Procedures

Following institutional review board approval, data were collected using an online survey instrument administered through Qualtrics survey software.[12] Surveys were distributed by email from July 17, 2009 to August 19, 2009 and included a study cover letter and an online link to the survey. The subject line of the email included reference to a social media survey.

An email was sent to the first 500 participants, as noted above. While there are several important strengths associated with online surveys (e.g., global reach, speed, ease of data entry, low cost), potential weaknesses also exist (e.g., low response rate, perception of junk email, questions about sample selection, unclear answering instructions).[13] To increase response rate, consistent with recommendations by Kittleson,[14] one reminder email was distributed to each non-respondent within one week of the initial distribution of the email. For convenience, this email reminder also included a link to the survey. Only one reminder was distributed because it was assumed that a decreased response rate was possible if potential respondents were saturated with e-mail messages—"a common trait among individuals who receive too many reminders."[14(p. 196)]

During the distribution phase, a total of 3500 online surveys were distributed through email; 230 emails were identified as undeliverable. A total of 612 individuals responded to the survey for an 18.7% response rate. Of the total, 109 surveys included missing data or were only partially completed and were excluded from the analysis, resulting in a final sample size of 503.

Although there is some inconsistency in the literature regarding the value of incentives for increasing response rates for online surveys,[13, 15] small incentives do appear to be beneficial. Therefore, in this study survey respondents were offered three free-of-charge music downloads from Puretracks.com for completing the survey. Music downloads were distributed to respondents through email by providing a link to the Puretracks site along with a "pin code" to access downloads. In addition, other attempts were made in this study to offset potential challenges common to online surveys including pilot testing the instrument to ensure clear answering instructions, randomization to help ensure a more representative sample and brief emails with URL links to avoid the perception of the survey as "junk e-mail." All surveys were distributed from an email address using an .edu organizational code (top-level domain name) to also help ensure the email was not filtered as spam and relegated to a "junk e-mail" folder.

Instrument

The survey instrument included three major sections. Section one included questions related to personal and organizational use of social media tools. This section included a listing of common social media tools generated from a review of these online applications and input from a panel of four social media and online survey experts. Tools included such applications as blogs, wikis, social networking (e.g., Facebook, Myspace), online games or virtual worlds (e.g., Second Life, Whyville), social bookmarking (e.g., del.icio.us.com), recommender systems (e.g., Digg.com, Cha Cha), social messaging (e.g., Twitter, Yammer), media sharing (e.g., Youtube, Flicker), podcasts, widgets and RSS feeds (file format for easy syndication of web content) and aggregators (web applications for collecting syndicated web content).

Section two related to the UTAUT where questions regarding performance expectancy, effort expectancy, social influence, facilitating conditions and behavioral intention were adapted from Venkatesh et al.[11] Each construct of the model was assessed using a five-point Likert scale with options ranging from strongly agree to strongly disagree. Behavioral intention was assessed with three questions as to whether the health educator intended, predicted, or planned to use social media tools within the next 12 months. Section three included demographics and included questions regarding age, gender, professional setting, years in

the profession and education. Additional questions included in this section related to the frequency of Internet use for work and personal purposes as well as whether social media sites were blocked or monitored at work. Content validity was established by having the instrument reviewed by a panel of experts in the field of social media. The instrument was pilot tested online among eight health educators working in public health agencies (state and local health departments).

Variables representing each of the UTAUT constructs were summed to make a composite scale. Construct validity was assessed through a confirmatory factor analysis using varimax rotation with Kaiser normalization. A three-factor model was used in an effort to explore factor loadings for the three constructs associated with behavioral intention (i.e., performance expectancy, effort expectancy and social influence). The three factors accounted for 70.17% of the systematic variance. Items with a factor loading exceeding 0.50 were considered to load on that factor. All four items related to effort expectancy loaded the highest for factor 1 and accounted for 26.12% of the variance, followed by all four performance expectancy items for factor 2, which accounted for 22.31% of the variance. Last, all five social influence items loaded on factor 3 and accounted for 21.74% of the variance. Cronbach's α was used to test the reliability of UTAUT constructs with reported reliability of .83 for performance expectancy, .85 for effort expectancy, .79 for social influence, .74 for voluntariness of use, and .96 for behavioral intention. These measures of internal consistency are similar to those in previous studies using UTAUT constructs.[16,17] A Cronbach's α coefficient of greater than .70 was considered acceptable for purposes of this study.[18]

Data Analysis

Analyses were completed using SPSS 16.0 for Macintosh. Participants with missing data were excluded from analyses. Chi-square statistics were computed to test differences between personal and organizational related use of social media. Regression analyses were utilized to test the association between intentions to use social media and performance expectancy, effort expectancy and social influence while controlling for age and work experience. This analysis is consistent with other approaches identified in the literature.[19-21] UTAUT composite variables were utilized for the regression. Interactions between age and work experience and performance expectancy, effort expectancy and social influence were entered to test for moderating effects of age and work experience. Only interactions between age and performance expectancy and effort expectancy were retained in the final model. Diagnostics were done to ensure the model met all the assumptions of regression analysis including goodness-of-fit, collinearity and standardized residuals.

RESULTS

Of 503 usable surveys, the highest percentage of health educators completing the survey was in the 30-39 age group (34%). A total of 26.8% were from academia, 20.1% from other and 16.9% from local health departments. Sixty-two percent of health educators have been in the profession of health education nine years or less and had earned a masters degree. Consistent with the percentage of CHES in the NCHEC database, 90% of respondents were female.

Health Educators Usage of Social Media

The most commonly used social media tools for personal use were social networking websites (78.7%), media sharing sites (67.2%) and blogs (46.5%) (Table 2). Social bookmarking (4.6%) and recommender systems (3.2%) were least likely to be used for personal use. With regard to organizational related use of social media, the most commonly used tools were social networking sites (34.8%), podcasts (23.5%) and media sharing sites (18.5%). Social media least likely to be used by health educators at work included social bookmarking (3.0%) and recommender systems (1.0%). A comparison between personal and organizational related use revealed a significant difference for all social media types except for online games or virtual worlds and recommender systems. Health educators tend to use an average of three social media applications for personal use versus 1.5 within their organization.

Factors Related to Using Social Media

After controlling for the potentially confounding effects of age, work experience and employers blocking/monitoring employees' access to social media sites, social influence ($P < 0.0001$) and performance expectancy ($P < 0.0001$) were both positively associated with increased behavioral intentions to use social media applications at work (Table 3). Effort expectancy, or the degree of ease of social media use, was not associated with intentions to use. Health educators that reported their employers blocked or monitored their access to social media sites were more likely to report lower behavioral intentions ($P = 0.014$). The interaction between age and performance expectancy was observed and was negatively related to behavioral intentions ($P < 0.0001$). The interaction between age and effort expectancy was significantly related to behavioral intentions ($P = 0.004$). Additionally, no association between effort expectancy and behavioral intention among health educators 18-29 years old was observed; however, there was a significant association for all other age groups.

With regard to the various UTAUT constructs, the highest mean score was associated with effort expectancy among 18-29 year olds suggesting that health educators in this group felt that social media tools would be easiest to use (Table 4). A significant difference however was observed across age groups such that older health educators reported higher effort expectancies ($P < 0.001$), lower performance expectancies ($P < 0.01$) and lower social influence ($P < 0.05$).

DISCUSSION

The purpose of this study was to explore use and factors that determine the acceptance of social media tools among practicing health educators. Many practicing health educators are using social media applications such as social networking sites, blogs and podcasts for personal use but significantly fewer are using them in organizations for

work-related purposes. Reasons for lack of social media use for health promotion can be attributed to several factors including employers monitoring or blocking social media sites at work, difficulty of use of social media (effort expectancy) especially among older health educators, and the lack of belief that using social media tools would enhance job performance (performance expectancy).

Health educators who believe social media use can assist them in doing their jobs better are more likely to use social media for work related purposes. These findings are consistent with the UTAUT model and the assumption that behavioral intention is associated with an individual's belief that the technology will assist them in performing better at work (performance expectancy). For health educators with responsibilities for planning and implementing programs, continuing education with regard to the use of social media tools can potentially have an impact on this belief – especially among seasoned health educators who are less familiar or comfortable with emerging technologies. Social media offers new channels for health communication that when matched to the needs and preferences of the target audience can increase the chances of programming success – and ultimately job success.[22] Health educators will need practical, low-cost, easily learned evidence-based implementation strategies such as those provided by the Centers for Disease Control and Prevention Social Media Tools Guidelines and Best Practices.[23] Trainings may be provided through webinars, conference sessions at professional meetings, theme-based journal issues that include practitioner-based applications and peer training within public health organizations.

Intention to use social media for health promotion was also strongly associated with feelings of support from their stakeholders, managers and organizations to use these tools. These findings are also consistent with the UTAUT and the proposition that behavioral intention is influenced by the belief that "important others" think the technology should be used (social influence). These findings suggest that in order

Table 1. Demographics of Study Participants		
	N	Percentage
Gender		
Male	52	10.3
Female	451	89.7
Age		
18-29	149	29.6
30-39	171	34.0
40-49	85	16.9
50-59	82	16.3
60-69	15	3.0
70+	1	0.2
Years as a Health Educator		
0-4	170	33.8
5-9	139	27.8
10-14	82	16.3
15-19	46	9.1
20+	63	12.5
Missing	3	0.6
Highest Degree Earned		
Bachelors	114	22.7
Masters	315	62.6
Doctorate	69	13.7
Missing	5	1.0
Setting of Practice		
Local Health Department	85	16.9
State Health Department	36	7.2
Clinical Setting	71	14.1
Non Profit Organization	74	14.7
Academia	135	26.8
Other	101	20.1
Missing	1	0.2
Use the Internet for Work		
Daily	461	92.0
2-3 times per week	24	4.8
Once a week	8	1.6
2-3 times per month	1	0.2
Once a month	1	0.4
Less than once a month	1	0.2
Never	4	0.8
Does Employer Monitor/Block Websites		
Yes	210	41.7
No	217	43.1
Don't Know	76	15.1

Table 2. Differences between Personal and Organizational Related Use of Social Media among Health Educators (N = 503)

Social Media Type[a]	Personal Use	Organizational Use
Blogs***	46.5% (234)	20.5% (103)
RSS feeds and aggregators***	14.7% (74)	9.1% (46)
Wikis***	21.5% (108)	10.9% (55)
Podcasts***	39.8% (200)	23.5% (118)
Social networking***	78.7% (396)	34.8% (175)
Online games or virtual worlds	11.9% (60)	4.0% (20)
Social bookmarking***	4.6% (23)	3.0% (15)
Recommender systems	3.2% (16)	1.0% (5)
Media sharing***	67.2% (338)	18.5% (93)
Social messaging or microblogging***	26.0% (131)	16.1% (81)
Widgets***	9.3% (47)	4.6% (23)
Composite measure-Mean (SD)***,b	3.2 (2.0)	1.5 (2.0)

Note: *$P < 0.05$. **$P < 0.01$. ***$P < 0.001$.; [a] % of respondents that responded yes, which were compared using chi-square test statistics; [b] Represents a composite score for all social media types combined and means were compared using a paired t-test.

for health educators to participate more in using social media tools, they must feel social media use is valued by "important others." Supportive agency and organizational policies can provide validation of the use of social media at the workplace, when it is otherwise considered non-productive, non-essential, wasted use of time. The styles and purpose for these policies vary widely[24] and may include providing guidelines for appropriate online behavior for employees, an outline of the organization's approach to developing a positive social media presence, definition of user agreements for those who access organizational blogs and identification of who will respond to praise, complaints, and queries that appear in social media outlets.[25] In addition to validating the use of social media, without such policies there is the potential for inappropriate social media communications that could result in legal problems and negative publicity that may undermine an organization's competitive edge, or cost the health educator his or her job. The American Red Cross Online Communications Guidelines is one strong example.[24] These particular guidelines outline procedures that include but are not limited to the importance of using disclaimers, disclosing organizational roles, posting accurate information, being considerate with online communication and respecting the privacy of clients and communities.

Additional findings revealed an interaction between age and performance expectancy. These variables were negatively associated with behavioral intention suggesting that with increasing age health educators believe that social media is less likely to help them attain gains in job performance, which contributed to lower intentions to use these tools. Results also indicated that for health educators over the age of 29, intention to use social media tools increases as ease of use increases (effort expectancy). The fact that effort expectancy was not associated with behavioral intention for health educators ages 18-29 is likely due to the advanced technological skills of this age group.[26]

Study results should be interpreted based on several limitations. These limitations primarily relate to the sample. The response rate for this study was relatively low (18%) potentially impacting representativeness of the sample and generalizability of the findings. Previous online survey research among health educators and other health professionals has revealed similar response rates[27, 28] suggesting the need for further research into the reasons for non-response.

Several reasons have been provided as to why health professionals may not respond to surveys including: (1) the lack of time, (2) the perceived salience of the survey or study, (3) concern for confidentiality, (4) biased questions or lack of response options for a given subject, and (5) length and number of surveys professionals receive.[29] Despite attempts in this study to increase response and minimize this limitation (e.g., contacting non-respondents a limited number of times, providing a small incentive, providing brief emails with URL links, and distributing surveys using email addresses with an .edu organizational code), the response rate was not significantly improved. Though steps were taken to reduce the chance that the emails would be identified as spam or junk e-mail, it is still possible that emails ended up in junk email folders and never read. One indication however of the representativeness of the sample is the gender distribution of respondents. In this study, more women (89.7%) completed the online survey than men (10.3%). These percentages are closely aligned with the gender distribution of the NCHEC database. Finally, because the majority of respondents were younger in terms of age and years working in the profession, the results may not reflect the view of all health educators.

There are several possible directions for future research. First, this study did not explore the job responsibilities of health educators and whether they were in positions to plan and implement social media programs. Future research should assess the specific roles of health educators within organizations and investigate behavioral intention relative to these roles. Second, while recent evidence suggests no difference in social media use (e.g., blogging) between males and females; whites, blacks, and Hispanics; and income level,[30] future research should also investigate these demographic variables among health educators in more detail. Third, while attempts were made to contact non-respondents, future research could incorporate additional follow-up methods to non-respondents and include analyses of the efficacy of these methods.

Table 3. Factors Associated with Behavioral Intentions to Use Social Media Applications at Work (*N = 503*)

Model	B	t	95% CI[a] Lower	95% CI[a] Upper
(Constant)	-	-1.441	-4.096	0.630
Social Influence***	0.325	7.962	0.253	0.419
Performance Expectancy***	0.584	6.287	0.422	0.807
Age	0.080	0.682	-0.555	1.144
Effort Expectancy	-0.146	-1.455	-0.438	0.065
Experience	0.003	0.062	-0.313	0.333
Age x Performance Expectancy***	-0.560	-3.877	-0.210	-0.069
Age x Effort Expectancy**	0.474	2.927	0.042	0.216
Employer Blocks or Monitors Social Media*	-0.094	-2.459	-1.019	-0.114

Note: Factors were evaluated using multiple linear regression; [a]95% CI corresponds to *B*; R^2 for the model = 33.1%; *$P < 0.05$. **$P < 0.01$. ***$P < 0.001$.

Table 4. Unified Theory of Acceptance and Use of Technology Constructs by Age (*N = 503*)

Age	18-29		30-39		40-49		50-59		60-69	
Construct	M	SD	M	SD	M	SD	M	SD	M	SD
Performance Expectancy***	3.14	0.97	3.04	0.98	2.85	1.13	2.60	1.09	2.37	1.13
Effort Expectancy***	4.14	0.78	3.91	0.86	3.39	1.01	3.08	1.19	2.72	1.35
Social Influence*	2.74	1.04	2.62	0.98	2.72	0.88	2.35	1.07	2.32	1.34
Behavioral Intentions	3.14	1.50	2.96	1.58	2.95	1.47	2.80	1.56	2.42	1.70
Voluntariness of Use	3.45	0.53	3.47	0.67	3.48	0.52	3.52	0.54	3.08	1.14

Note: Means were compared using one-way analysis of variance; The age category including 70+ was excluded from this analysis because it only included one respondent; Mean responses were derived from a common scale 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, 5 = Strongly Agree to items reflective of each construct. Respondents also had the option to respond, *Don't Know*, but those values were recoded to 0; *$P < 0.05$. **$P < 0.01$. ***$P < 0.001$.

Lastly, while this study explored the use of specific social media tools at home and in health education practice it did not assess how these tools were used in practice for health education. Future research might go beyond simple usage to assess best practice implementation of these tools for health promotion purposes.

TRANSLATION TO HEALTH EDUCATION PRACTICE

Conceptually, the increased use of social media holds promise in enhancing the work of health education. It represents the potential to expand access to priority populations and communicate accurate health information. It may also be a breakthrough in the way participants are recruited and mobilized for health education efforts and how they are encouraged to access products and services. As consumers engage in more side-to-side communication, the potential to expand a program's reach and response will likely also increase.

Study results indicate that many health educators are already using social media for personal use and believe it would enhance their job performance. However, as with any new professional innovation, it is important for health educators to ensure that social media is used appropriately (within theoretical bounds), perhaps even cautiously in these initial stages, and that its value as an evidence-based methodology is further established. While the newness of social media may cause anxiety to some in health education, it "has given a voice to millions of ordinary citizens who can now relate their experience and opinions to a global audience. It is not a fad."[31(p. 4)] As reported however, respondents in this study who had blocked access to social media sites had significantly lower behavioral intentions to engage in the process. As efforts are made to develop protocols for appropriate use of social media and evaluate its impact and value, it should become increasingly easier for health educators to justify the use of these technologies to administrators or other decision makers in professional settings.

Recommending guidelines or proto-

cols for appropriate use of social media is timely.[23] Due to its inherent nature as a communication tool, some health educators are likely to use social media independent of educational, policy or broader marketing campaigns and mistakenly rely on the merits of communication alone to influence individual or social change. With the exception of risk communication, wherein information must be shared immediately to prevent imminent danger, communication should generally be viewed as a supporting methodology. It is well established that health communication alone cannot change systemic health problems.[32] Health educators must appreciate the limitations of communication and use social media as a complementary component of what must typically be a more comprehensive approach to improving health outcomes.

REFERENCES

1. Project for Excellence in Journalism. *The state of the news media 2007: an annual report on American journalism*, 2007. Available at: http://www.stateofthenewsmedia.org/2007/index.asp. Accessed May 10, 2007.

2. Pew Research Center. *Online papers modestly boost newspaper readership,* 2006. Available at: http://people-press.org/reports/display.php3?PageID=1065. Accessed July 16, 2007.

3. Newspaper Association of America. *Readership statistics,* 2007. Available at: http://www.naa.org/Resources/Articles/Circulation-Readership-Statistics/Circulation-Readership-Statistics.aspx. Accessed December 4, 2007.

4. Wikipedia. Web 2.0., 2010. Available at: http://en.wikipedia.org/wiki/Web_2. Accessed January 22, 2010.

5. Fox S, Jones S. *The social life of health information,* 2009. Available at: http://www.pewinternet.org/Reports/2009/8-The-Social-Life-of-Health-Information.aspx. Accessed September 11, 2009.

6. Thackeray R, Neiger BL. A multidirectional communication model: implications for social marketing practice. *Health Promot Pract.* 2009;10(2):171-175.

7. Fox S. *Social media's promise for public health,* 2009. Available at: http://e-patients.net/archives/2009/08/social-medias-promise-for-public-health.html. Accessed October 15, 2009.

8. Thackeray R, Neiger BL, Hanson CL, McKenzie JF. Enhancing promotional strategies within social marketing programs: use of Web 2.0 social media. *Health Promot Pract.* 2008;9(4):338-343.

9. Williams A, Zraik D, Schiavo R, Hatz D. Raising awareness of sustainable food issues and building community via the integrated use of new media with other communication approaches. *Cases in Public Health Communication and Marketing.* 2008;2:159-177.

10. McNab C. What social media offers to health professionals and citizens. *Bull World Health Organ.* 2009;87:566.

11. Venkatesk V, Morris M, Davis G, Davis F. User acceptance of information technology: toward a unified view. *MIS Quarterly.* 2003;27(3):425-478.

12. Qualtrics.com. 2008. Available at: http://www.qualtrics.com/. Accessed February 3, 2010.

13. Evans JR, Mathur A. The value of online surveys. *Internet Research.* 2005;15(2):195-219.

14. Kittleson M. Determining effective follow-up of e-mail surveys. *Am J Health Behav.* 1997;21:193-197.

15. Cook C, Heath F, Thompson RL. A meta-analysis of response rates in web- or internet-based surveys. *Educ Psychol Meas.* 2000;60(6):821-836.

16. AlAwadhi S, Morris A. *The use of the UTAUT model in the adoption of e-government services in Kuwait.* Paper presented at: 41st Annual Hawaii International Conference on System Sciences; January 7, 2008; Waikoloa, Hawaii.

17. Dapper G. *User acceptance of enterprise 2.0: a case study at an internationally operating private bank.* Paper presented at: Twente Student Conference on IT; June 25, 2007; Enschede, Netherlands.

18. Streiner DL, Norman GR. *Health measurement scales: a practical guide to their development and use.* (4th ed.). New York, NY: Oxford University Press; 2008.

19. Nemme He, White KM. Texting while driving: psychosocial influences on young people's texting intentions and behavior. *Accid Anal Prev.* 2010;42(4):1257-1265.

20. Schifter DE, Ajzen I. Intention, perceived control, and weight loss: an application of the theory of planned behavior. *J Pers Soc Psychol.* 1985;49(3):843-851.

21. Conner M, Sheeran P, Norman P, Armitage CJ. Temporal stability as a moderator of relationships in the Theory of Planned Behaviour. *Br J Soc Psychol.* 2000;39 Pt 4:469-493.

22. Parker JC, Thorson E. *Health cmmunication in the new media landscape.* New York, NY: Springer Publishing Company; 2009.

23. Centers for Disease Control and Prevention. *CDC social media tools guidelines and best practices,* 2010. Available at: http://www.cdc.gov/SocialMedia/Tools/guidelines/. Accessed April 2, 2010.

24. Boudreaux C. *Social media governance: empowerment with accountability,* 2009. Available at: http://socialmediagovernance.com/policies.php. Accessed January 22, 2010.

25. eMarketer. Few companies have policy for employee use of social networks, 2010. Available at: http://www.emarketer.com/Article.aspx?R=1007493. Accessed February 15, 2010.

26. Pew Research Center. *The millennials: confident. connected. open to change*, 2010. Available at: http://pewresearch.org/millennials. Accessed April 3, 2010.

27. Society for Public Health Education. *Health eduator job analysis—2010*, 2010. Available at: http://www.sophe.org/HEJA2010.cfm. Accessed April 2, 2010.

28. Braithwaite D, Emery J, De Lusignan S, Sutton S. Using the internet to conduct surveys of health professionals: a valid alternative? *Fam Pract.* 2003;20(5):545-551.

29. VanGeest JB, Johnson TP, Welch VL. Methodologies for improving response rates in surveys of physicians: a systematic review. *Eval Health Prof.* 2007;30(4):303-321.

30. Lenhart A, Purcell K, Smith A. *Social media and young adults: social media and mobile Internet use among teens and young adults*, 2010. Available at: http://www.pewinternet.org/Reports/2010/Social-Media-and-Young-Adults/Introduction.aspx?r=1. Accessed February 16, 2010.

31. Gillin P. *Secrets of social media marketing: how to use online conversations and customer communities to turbo-charge your business!* Fresno, CA: Quill Driver Books; 2009.

32. U.S. Department of Health and Human Services. *Healthy People 2020.* Available at http://www.healthypeople.gov/. Accessed June 6, 2011.