Effects of Text Messaging on College Students' Perceptions of Personal Health

Heather K. Hudson, Kadi R. Bliss, and Joyce V. Fetro

Abstract

Four focus groups of undergraduate students (n = 32) were conducted to elicit perceptions regarding how text messaging affects personal health. Participant responses were coded and themed into five health dimensions: physical, mental, social, emotional, and spiritual. Results of focus groups showed several main themes linked each dimension of health, except for spiritual health. Emergent themes regarding physical health were perceived to be more negative than positive. Perceptions of effects on emotional, social, and mental health were mixed. Social health was consistently impacted the most. Participants favored short-term positive effects of texting, regardless of their potential long-term negative consequences. Participants noted many negative consequences of texting in inappropriate situations. Most, however, admitted to text messaging regardless of how severe they perceived an outcome might be to their health and/or future. Implications for school health and health education include teaching skill-building lessons on decision-making using texting as an example to enable students to make healthier text messaging choices. To acknowledge and enhance positive effects of text messaging, educators can have students demonstrate clear verbal communication skills, which may minimize miscommunication. These practices may help students avoid negative consequences of text messaging and help students communicate more effectively while text messaging.

Introduction

According to the Cellular Telecommunications and Internet Association (CTIA), more than 2.12 trillion text messages were sent and received in the United States from June, 2010 to June, 2011 (CTIA, 2011). This number has dramatically increased in just five years as 113.5 billion text messages were sent and received in 2006 (CTIA, 2011). Cell phone usage and text messaging among college students also is at an all-time high. Cell phones and text messaging are common on college campuses as over 97% of college students own a cell phone and 94% of college students were text messaging daily from 2005-2007 (Hargittai, 2007; Ransford, 2005; Salaway, Caruso, & Nelson, 2007). In 2010, text messaging became even more common with 99.8% of college students owning cell phones (Ziegler, 2010) and texting during class was reported by 88% of college students (Fox, 2011). In fact, students are using their mobile devices approximately three hours per day (Carter, 2011).

Even though most college students agree that face-to-face communication is more helpful than a text message, college students' behaviors still favor text messaging (Massimini & Peterson, 2009). Text messaging would not be so favored if there were no personal and social benefits to using this communication method. Text messaging allows young adults to build, maintain, and sustain relationships, organize events and social gatherings, and share new and exciting experiences with their friends and peers (Horstmanshof & Power, 2005). College students especially like the enhanced sense of control that sending text messages empowers, and other benefits such as privacy, sense of protection, entertainment, efficient, cost, convenience, and the ability to store special sentimental messages (Horstmanshof & Power, 2005; Mahatanankoon & O'Sullivan, 2008; Massimini & Peterson, 2009).

Along with the many benefits of text messaging for college students, there is evidence that text messaging is positively related to a variety of physical and psychological health issues such as: increased stress and anxiety levels, interrupted sleep, hand and neck pain, increased heart and breathing rate, psychological discomfort, depression, and social anxiety (Horstmanshof & Power, 2005; Lin & Peper, 2009; Massimini & Peterson, 2009; Pierce, 2009; Sanchez-Martinez & Otero, 2009). A large study of adolescents 13-20 years old in Madrid, Spain, found that intensive cell phone use was associated with health risk behaviors such as excessive alcohol consumption, smoking tobacco, cell phone dependence, and school failure (Sanchez-Martinez & Otero, 2009).

Text messaging is considered a public health risk factor as well as a public health protective factor. The greatest public health issue involving text messaging is text messaging while driving. Text messaging while driving poses the biggest health risk by causing serious injury or death due to vehicle crashes from distracted driving. In 2009, 995 vehicle fatalities in the United States involved reports of cell phone usage as the distraction (U.S. Department of Transportation, 2010). In addition, data from the Fatality Analysis Reporting System and National Automotive Sampling System estimated 24,000 injuries involved reports of cell phone as a distraction (U.S. Department of Transportation, 2010). A national survey on distracted driving found that 18% of drivers reported that they had sent text messages or e-mails while driving. Furthermore, about half (49%) of those who text messaged and/or e-mailed

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while driving were 21 to 24 years old (Tison, Chaudhary, & Cosgrove, 2011).

In contrast, text messaging has been used on college campuses, and other institutions, as a public health and safety practice. The U.S. Department of Education requires university and colleges to have a system to communicate with their students in a timely manner in the event of an emergency (U.S. Department of Education, 2007). Several educational institutions have adopted text messaging alert system to protect students against bad weather or dangerous events on campus (Choney, 2010).

In 2004, Reid and Reid surveyed over 1,000 participants to explore the social and psychological effects of texting and found that texting helps develop new relationships, increases social agenda, and maintains old relationships. In contrast, those who prefer texting over talking on the phone were more likely to report that texting had negatively affected relationships with their family and friends. Also, those who preferred texting over talking on the phone also preferred real, or true, self expression via text messaging rather than face-to-face, however, they reported that their family would be surprised if they were to read their texts proposing that they present a different self-image than a familiar family member witnesses (Reid & Reid, 2004). Those who prefer text messaging over talking on the phone reported feeling more comfortable saying certain things and having more intimate social contact through texting rather than face-to-face.

For college undergraduates, text messaging provides a way to initiate intimate personal contact while also being detached, in order to control self-presentation and connection. With intimate relationships, however, undergraduate students are using texting as a mode for enhancing and sustaining intimate relationships more so than using it for practical or functional goals (Ling & Yttri, 2002; Thurlow, 2003).

The World Health Organization (WHO) defined health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 1948, p. 100). Physical health can broadly be defined as the ability to perform normal activities of daily living (Dintiman, & Greenberg, 1986). The Surgeon General's definition of mental health is successful performance of mental function, resulting in productive activities, fulfilling relationships with others, and the ability to adapt to change and cope with adversity (U.S. Department of Health and Human Services, 1999). Social health is "the ability to have satisfying interpersonal relationships, including interactions with others, adaptations to social situations, and appropriate daily behaviors in society" (Donatelle, 2010, p. 5). Emotional and spiritual health were two additional dimensions of health assessed in this study. Self-esteem, self-efficacy, self-confidence, love, trust and many other emotional reactions and responses are part of emotional health. Emotional health is the ability to appropriately express emotions, control inappropriate emotions, and avoid inappropriate expression of emotions. (Donatelle, 2010, p. 5). Spiritual health involves "the belief in some unifying force" (Cmich, 1984).

The purpose of this study was to assess how text messaging affects the five dimensions of health (physical, emotional, social, mental, and spiritual) among selected undergraduate students who send and receive an average of at least 20 text messages daily. The researchers noted that some comments related to more than one dimension. Although health dimensions are interrelated in relation to one's overall health and wellness, themes were analyzed in these specific five domains regarding direct effects of text messaging among college students.

Methods

To assess how young people perceive text messaging affects dimensions of health, this study used focus group interviews to allow participants to share their own perceptions and provide understanding of how this technology has affected their health. Focus groups are an exceptional method for providing insights into process instead of outcome (Barbour, 2008). When stimulated by the comments of others, focus group participants share different ideas and broaden the context of the open-ended questions and group themes will emerge.

Upon approval from the Human Subjects Committee, the researchers conducted four focus groups, consisting of 32 participants. Due to the limited number of courses taught in the summer intercession, focus group participants were recruited from the available undergraduate courses offered in the health education department, which included five sections of classes within health education major. In each of these classes, researchers described the proposed study and the criteria for participation, then interested students signed up and provided contact information. Only students who sent and received at least 40 text messages daily were eligible to participate in focus group interviews. Each focus group lasted between 45-90 minutes. The convenience sample was comprised of undergraduates between 18-29 years of age who were enrolled in at least one course at a mid-sized Midwestern university during the summer of 2010. One researcher facilitated group discussion while taking notes and the other observed and transcribed participants' verbal communication and non-verbal cues. The same two researchers conducted all focus groups to maintain consistency. Once focus groups were completed, each researcher read through the transcripts to conduct open coding, specifically related to the five dimensions of health. During the second phase of data analysis, researchers identified themes within each of the five open coding categories. Data analysis was ongoing throughout the data collection process, so themes were combined, narrowed, and adjusted as the focus groups took place. Because two researchers conducted all data analysis, triangulation was a method utilized for ensuring trustworthiness. Triangulation involved using multiple investigators to confirm emerging findings (Merriam, 2009). Data collection continued until saturation, which also contributed to the trustworthiness of the study.

Four focus group interview questions initiated discussion about students' perceptions of both benefits and negative

impact of text messaging on their health and their lives in general. Focus group questions were broad and open-ended to allow for open discussion and avoid leading participant responses in one direction or another. The first question asked was "In what ways, if at all, do you feel that text messaging has affected your health, in both positive and negative ways?" The second question was "Overall, do you feel that text messaging has a more negative or positive affect on your health? In what ways?" The third question asked " In general, what are some of the benefits of text messaging to you?" And the last question asked "In general, what are some of the frustrating things about text messaging?" Participants also filled out a brief questionnaire to gather additional information on text messaging rates and further insight into perceptions of text messaging as related to their health. The questionnaire included six questions on how many daily text messages do the participants send and receive, to whom do they commonly send and receive text messages, whether or not they considered themselves "pro-texting" (generally like text messaging and text message because they want to) or "anti-texting" (do not like text messaging and text because they "have" to), and whether or not they felt that text messaging had created more problems or benefits in their life.

Results

Males represented 62.5% (n = 20), while females represented 37.5% (n = 12) of the sample. The majority of participants were 18 years of age (n = 9, 28%). Eight participants failed to respond to the question about age (see Table 1). Quantitative data from the short questionnaire (see Table 1) were calculated into frequencies and percentages. Additional quantitative data gathered revealed that participants sent text messages to close friends most frequently (n = 11, 34.21%), followed by romantic partners (n = 9, 28.95%), family members (n = 7, 22.37%), and acquaintances (n = 5, 14.47%). Participants also were asked whether or not they had overall more positive (pro-texting) or negative (anti-texting) feelings towards texting as a means for communication. Nearly all participants reported being pro-texting (n = 30, 93.75%) Also, nearly all (n = 27, 84.38 %) participants felt that text messaging provided benefits to their lives while only a third (n = 10, 31.25%) of participants felt that text messaging created problems in their lives, and a few (n = 5, 15.63%) answered that they felt text messaging was both beneficial and created problems in their lives.

Two major categories of results appeared as the researchers coded the qualitative data: effects of texting on the participants' lives in general and effects of texting on the participants' health. There were no themes related to spiritual health. However, several main themes were linked to physical, emotional, mental, and social dimensions of health. The themes regarding physical health tended to be more negative than positive. For example, the act of text messaging during night hours caused sleep deprivation for a large number of participants. They also reported the physical effects of increased stress and anxiety levels when expecting a text message or when arguing with a friend or significant other via text message. Many participants spoke of the potential physical harm due to text messaging in transit and not paying attention to the surroundings (like oncoming traffic, bicycles, and other moving objects). One participant "…got into a fender bender while reading a text. If I wouldn't have been texting I might have looked to see…" Another was "driving while texting and hit a mailbox."

The themes within the dimension of emotional health were mixed. Positively, text messaging increased feelings of confidence, in particular when flirting or arguing. Many participants also reported feeling more comfortable using text messages as a primary means of communicating with new friends or romantic partners. Several females and a couple of males also also expressed feeling loved and accepted when people sent pictures and flattering text messages to them. "You feel loved when your phone goes off." A male respondent said "In new relationships, it's easier to text 'hey what's up' than saying 'hey' on the phone." A couple of participants mentioned sexting, with mixed feelings. Sexting refers to sending/posting/ forwarding sexually suggestive messages or nude/semi-nude pictures or videos via an electronic device (Hudson, 2011). Those who spoke of sexting started off with positive feelings, with a male participant stating "It [sext message] makes me smile," while a female participant quickly noted that it could be a violation of privacy if the relationship ended badly. Another male participant positively stated, "Now that everyone has it [texting], I've seen more naked pictures than ever!" Negative emotional affects of text messaging were that many participants reported emotions of stress, jealousy, and pressure to return text messages. One participant reported, "Texting while trying to solve problems is a really bad idea because people interpret however they want and it makes it worse." Another said, "I feel more stressed because of texting. I don't feel like I have time to myself ever. I have to talk to her [girlfriend] all the time or she gets mad at me and I don't feel like talking."

Mental health themes were also both positive and negative. Some participants reported using text messaging as a method to cheat during class and on exams. Also, participants said sending and receiving text messages helped to prevent them from becoming bored in class. One reported using text message services like ChaCha® and KGB® to get random information; participants were curious about this. On the other hand, many participants said that text messaging also can become distracting when they are trying to pay attention in class and do homework. One participant spoke of the frustrations of texting in class by saying, "it causes a lot of distractions in class when you are sitting there taking a test and you get 35 [text messages] in a row." The issue of spelling came up with mixed feelings in nearly every focus group. Some respondents said texting improved their spelling "because everyone does it [texts] now and no one wants to look like they don't know how to spell correctly." Others disagreed because, "…I'll be writing the [text] abbreviation and the teachers circle it…that's kind of a negative because

Table 1

Frequencies and Percentages of Demographic Variables and Text Messaging Behaviors (n = 32)

Demographic variable	Number (n)	Percentage
Gender		
Male	20	62.5
Female	12	37.5
Participant age		
18	9	28.1
19	0	0.0
20	2	3.3
21	6	18.8
22	4	12.5
23-29	3	9.4
Did not respond	8	25.0
Text messages sent daily		
20-50	10	31.2
51-100	5	15.6
101-200	9	28.1
Over 200	8	25.0
Text messages sent and received per month		
Under 1,000	3	9.4
1,000-1,999	8	25.0
2,000-2,999	4	12.5
3,000-3,999	5	15.6
Over 4,000	12	37.5
Persons most often text message (check all that apply)		
Family Member	7	22.4
Romantic Partner	9	28.9
Close Friends	11	34.2
Acquaintance	5	14.8
Consider themselves pro-texting or anti-texting		
Pro-texting	30	93.8
Anti-texting	1	3.1
Both	1	3.1
Text messaging as problematic, beneficial, both, or neither		
Problematic	3	9.4
Beneficial	20	62.5
Both	7	21.9
Neither	2	6.2

it messes up grammar." Several participants stated that they have developed signs of dependency of text messaging, such as feeling anxious when not with their phone or waiting on a response, or even hallucinating the tone or vibration feature that notifies a text message in the inbox. One female respondent divulged, "I'm a text freak. I have 1,551 text messages from this day alone." Another said, "I wonder if I'm addicted to it. Sometimes I feel my phone vibrating when it isn't."

The dimension that participants indicated was impacted most by text messaging was social health. Positively, participants reported the comfort they felt because they could text message while forming new relationships, in being able to keep in touch with old friends and family members, flirt with more ease and less awkwardness, and in being able to avoid face-to-face arguments. Participants also expressed a feeling of control and confidence in text messaging as they could either lie to others easier through text message or be more direct in expressing their feelings through text messages. Moreover, participants thought that the use of text messaging gave them opportunities they did not have before, such as social networking with people through texts to get employment, talking to a new romantic partner to develop a relationship, or maintaining friendships through text messages. Most participants also thought that text messaging enabled them to have increased communication because texting makes it easier to share good news, easier to invite people to events, and easier to forward text messages. In addition participants also felt a sense of social privacy because they can text people anywhere, anytime without others hearing.

Conversely, many participants felt that text messaging interfered with the ability to have face -to-face discussions. One male participant stated "I don't think texting helps you with your social skills. If you are at a job and you're used to texting and someone addresses you face-to-face, you won't know how to handle it." Another major drawbacks to text messages was miscommunication. Not being able to see facial expression or vocal tone was identified as one of the biggest drawbacks of text messaging. Participants, especially male participants, also thought that text messaging made them too accessible; they reported feeling pressured to return text messages when they did not always want to reply back.

Finally, many participants thought text messaging had a negative impact on their romantic relationships. Increased jealousy from romantic partners which lead to unnecessary arguments also came from the ability to read text message conversations. A male particpant revealed a negative experience arousing jealousy in his current relationship by revealing that "…I had a naked picture of my ex-[girlfriend] on my phone and I forgot it was on there and my new girlfriend saw it and…Whew!" Many participants voiced solving problems when arguing via text messages created problems and misunderstandings, and that this difficulty increases negative emotions, such as anger, anxiety, and frustration.

Not all participants felt negatively towards arguing via text messages. In fact, some participants stated arguing through text messaging was easier and helped them control the emotions that they would not be able to control during a face-to-face argument. Someone said, "In relationships, if someone doesn't text you back, then it escalates. We used to argue on texting." Many participants admitting to using text message as a replacement to a face-to-face argument. A female participant stated "I sent a 23 page message once." Another female participant shared "Oh yeah, my ex [boyfriend] was a crier. He's a boo-hooer, so I want to text him instead of hearing that." A male participant agreed that arguing was easier via texting, saying "You can't interrupt texts. Talking to someone, they are going to be mouthing back and you'll probably hang up on them, so it [texting] is good for avoiding that."

Near the end of the focus group, participants were asked about effects of texting on their lives in general. The predominantly mentioned themes were comfort, control, and dependency. During every focus group session the topic of comfort was spoken of in depth. Participants perceived texting as making them feel included in their social circle, and they found comfort in knowing they could avoid awkward and negative face-to-face conversations through text messaging. The participants also displayed a sense of dependency on text messaging as they responded to the focus group questions. Without the ability to text message they expressed boredom, irritation, and discomfort. Participants believed that they should receive immediate feedback from those they sent text messages. They also admitted to text messaging in other situations many participants considered inappropriate, such as during class, at work, in transit, in the middle of the night, and while spending time with others.

Aside from these two major themes, the participants also spoke of a transition in the types and purposes of text messages they sent from the time when they initially started texting to present day. In almost all cases, respondents reported that current text messaging patterns are deeper and richer where they commonly engage in conversations via text messaging. Conversely, at the onset of text messaging they tended to text for more practical purposes. For example, one respondent recalls mainly texting to say, "Hey, pick me up at this time." One explanation was the rise in unlimited text messaging packages making texting more affordable than calling on the phone.

The researchers also noticed a sense of text messaging being a social norm with the college-aged population as illustrated by participants. In fact, during every focus group there were at least two people who felt comfortable enough to text message as the researchers reviewed the consent form and introduced themselves. While respondents did express that some of their friends became mad when they were text messaging during face-to-face conversations, most respondents agreed that you could text almost anywhere and not be rude. While not all respondents agreed (one respondent said, "It [texting] helps my relationship with my parents"), most believed text messaging is only normal or acceptable for the younger generation only. One respondent said, "It's

weird when old people text." Another said, "I despise getting texts from my mom."

When speaking of text messaging at work, participants said that texting often was not appropriate to be texting at work although they all reported doing it. Many particpants even reported getting in trouble at work. A participant who works at a hospital said, "I'm not supposed to [text message at work], but I do. I didn't get in trouble, but one of the nurses did. They aren't supposed to have phones on because it can affect the machines."

Even though all focus groups stated many negative effects and frustrations resulting from text messaging, when asked if they thought text messaging had a more positive or negative affect on their health, most respondents had a overall positive perception. One even said, "I don't have any negatives, I love it. I could text all day. I could send 40 text messages in under a minute…and I can text behind my back." Despite this response from participants, the four dimensions in this study relative to text messaging (physical, emotional, social, mental) had negative responses associated with them, most dealing with interpersonal relationship frustration and miscommunication.

Limitations

There were limitations to this research study. First, the sample was one of convenience. Participants were recruited from four sections of an undergraduate health education course during a summer semester at one midsized, Midwestern university. Therefore, researchers cannot generalize the results of this study to undergraduate students at any university. In addition, to increase participation, focus groups were held directly after class was over, but there was an exam the day of one of the focus groups. This conflict caused many participants to miss the focus group as they stayed in class late to complete their exam. Finally, there were only 32 total participants in this research study. While the goal of qualitative research is to reach data saturation, not to meet a specific number of total participants, there is no way of knowing if additional participants would have expressed different ideas and perceptions regarding the effects of text messaging on their lives and their health.

In future studies, these limitations could be addressed by conducting focus groups during spring or fall semesters when a simple or stratified random sampling method could be used to select participants from a much larger group of undergraduate courses. In addition, researchers should communicate with the instructors of courses to ensure all participants are dismissed from class in the time needed to attend the focus groups.

Discussion and Implications

The focus group interviews led to several conclusions about how text messaging affects one's health directly, as well as one's life in general. First, participants identified many text messaging situations with short-term positive impacts that could potentially lead to long-term negative consequences, yet were perceived as positive. For example, many participants said that text messaging allowed them to cheat in class (one positive effect stated by the participants), which in turn could cause them to be expelled, if caught. Even if students did not get caught cheating, they still might be unprepared for their future in the workplace because they relied on cheating, instead of knowledge, to pass their classes. Participants also indicated that text messaging made "hooking-up" easier, also stated as a positive effect of texting. Also, many participants reported that texting was good to avoid face-to-face arguments, and even avoiding persons altogether. The feeling of control is an effect that is perceived as a short-term positive impact of text messaging, however, this short-term effect also could lead to the long-term negative impact of having difficulty facilitating and engaging in productive face-to-face conversations.

Another major conclusion from this study was that nearly every participant mentioned many negative impacts on their dimensions of health, yet did not mention any intentions to change their behaviors to help reduce the negative impacts on their health and/or futures. Researchers found this fact interesting as participants valued the instant gratification from the short-term benefits text messaging provided more than the potential negative long-term impacts. A male participant said, "Sometimes I'll throw my phone and be like 'leave me alone!' But there's definitely more pros [to texting]." For this group of participants, the behavior of texting was viewed as a socially acceptable behavior among participants in their generation. Also, many viewed text messaging during formal social situations as socially acceptable, such as text messaging while simultaneously having a face-to-face conversation with someone, text messaging during class or at work, or even text messaging while participating in this focus group. The researchers observed over half of the participants in every focus group were text messaging at some point while the focus group was in session. A male participant stated, "I'm texting right now and I feel guilty about it," while still continuing to text message and talk to the researchers. Even for those participants who disagreed that text messaging in formal social situations was socially acceptable, many still admitted to being guilty of text messaging during these situations occasionally.

The researchers found it interesting that not one theme emerged related to spiritual health. As health educators, spiritual health consistently is included as one dimension of health. Perhaps these undergraduate students equated spiritual health with organized religion and going to church and thus, did not make any connection, positive or negative, with text messaging.

Implications for Health Education Specialists

Text messaging has both positive and negative effects on personal health. Recognizing this fact, the researchers believe that health education specialists need to focus on ways to utilize text messaging that helps decrease risky

texting behaviors and increase healthy texting behaviors or protective efforts. The researchers believe that talking about text messaging can and should be incorporated into general health classes as it is a behavior that appears to affect health and is becoming increasingly common in the college-aged population. However, both negative and positive impacts of texting should be addressed. Skills-based activities should be utilized to teach the students that many of their short-term positive perceptions of text messaging can turn into long-term negative consequences. One way to do this is by having role play scripts revolving around text messaging issues and impacts. Text messaging is not simply a negative behavior, however, and it can be used in a positive way in the classroom as well. For example, instructors can use technology through cell phones to help by text messaging questions to students about various health topics.

Text messaging is now a social norm, and health educators should be encouraged to embrace text messaging instead of rejecting it. Health educators also should be encouraged to incorporate the usage of text messaging into classroom settings to improve the learning environment, engage student learning, or even elicit personal information from students in a confidential and discrete way, using programs such as polleverywhere.com, which is free for people in education.

Since text messaging is so widely popular among college students, as well as school-aged children and teenagers, incorporating text messaging scenarios into skills-based activities will help them stay engaged during these activities because they will be more relevant and relatable to their lives. To acknowledge and enhance positive usage of text messaging, educators can have students demonstrate clear verbal communication skills (i.e. practicing I-statements using worksheets with "text speak"), which will minimize or avoid miscommunication while text messaging. Practicing decision-making skills will help students avoid risky behaviors that lead to negative consequences of text messaging. Building or enhancing electronic communication skills will help students communicate more effectively while text messaging, thus avoiding miscommunication.

Also, text messaging should be used in public health practices. Text messaging should be used to alert the public about various health emergencies or health promotion efforts, such as reminders for free screening events. Health educators may be able to play a part in developing applications for the text messaging alert system. Health educators should be thinking of ways to use text messaging to promote healthy behaviors, such as incorporating text messaging alerts into health promotion programs as healthy behavior reminders for participants. Currently, the Northwest Center for Public Health Practice is working to develop a video series for public health programs about text messaging and conducting a risk analysis of the practice of sending protected health information via text messages. Also, they are attempting to identify texter types to determine the best targets for text messaging health programs (Oberly, 2012). The increased use of text messaging in society has the potential for great benefit and great harm, so health educators would be wise to weigh the pros and cons of text messaging as they determine the best ways to utilize text messaging in their programming and educate about the effects of text messaging on personal health.

References

Barbour R. (2008). *Doing focus groups*. Thousand Oaks, CA: Sage Publications, Ltd.

Carter, D. (2011, April 15). How many hours do students spend texting every day? *eCampus News.* Retrieved from http://www.ecampusnews.com/technologies/how-many-hours-do-students-spend-texting-every-day/

Cellular Telecommunications and Internet Association. (2011). *U.S. wireless quick facts*. Retrieved from http://www.ctia.org/advocacy/research/index.cfm/aid/10323

Choney, S. (2010, April 16). Campus alerts go beyond text messaging. *MSNBC.com*. Retrieved from http://www.msnbc.msn.com/id/36566978/ns/technology_and_science-security/t/campus-alerts-go-beyond-text-messaging/

Cmich, D. (1984). Theoretical perspectives of holistic health. *Journal of School Health, 54*(1), 30-32.

Dintiman, G., & Greenberg, J. S. (1986). *Health through discovery [3rd ed.].* NY: New York Random House.

Donatelle, R. J. (2010). *Health: The basics, green edition.* San Francisco, CA: Pearson Education, Inc.

Fox, Z. (2011). How cellphones shape the lives of college students. *Mashable Tech.* Retrieved from http://mashable.com/2011/10/31/cellphones-college-students/

Hargittai, E. (2007). A framework for studying differences in people's digital media uses. *Cyberwold Unlimited.* Retrieved from http://eszter.com/research/c10-digitalmediausesframework.html

Horstmanshof, L., & Power, M. R. (2005). Mobile phones, SMS, and relationships. *Australian Journal of Communication, 32*, 33-52.

Hudson, H.K. (2011). *Factors affecting sexting behaviors among selected undergraduate students* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses Database. (AAT 3478177)

Lin, I., & Peper, E. (2009). Psychophysiological patterns during cell phone text messaging: A preliminary study. *Applied Psychophysiology & Biofeedback, 34*(1), 53-57.

Ling, R., & Yttri, B. (2002). Hyper-co-ordination via mobile phones in Norway. In J. E. Katz & M. Aakhus (Eds.), *Perceptual contact: Mobile communication, private talk and public performance (pp. 139-169).* Cambridge: Cambridge University Press.

Mahatanankoon, P. & O'Sullivan, P. (2008). Attitudes towards mobile-text messaging: An expectancy-based perspective. *Journal of Computer-Mediated Communication, 13*, 973-992.

Massimini, M., & Peterson, M. (2009). Information and Communication Technology: Affects on U.S. college students. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 3(1),* article 3.

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation.* San Francisco, CA: Jossey-Bass.

Oberly, M. (2012). Text messaging for public health emergencies. *Northwest Center for Public Health Practice*. Retrieved from http://www.nwcphp.org/research/nwperrc/project-three

Pierce, T. (2009). Social anxiety and technology: Face-to-face communication versus technological communication among teens. *Computers in Human Behavior*, *25*(6), 1367-1372.

Ransford, M. (2005). Study: College students receive, but don't recall, cell phone ads. *Newscenter*. Retrieved from http://www.bsu.edu/news/article/0,1370,-31674,00.html

Reid, D. & Reid, F. (2004, February). *Insights into the social and psychological effects of SMS text messaging*. University of Plymouth. Retrieved from http://www.mendeley.com/research/insights-into-the-social-and-psychological-effects-of-sms-text-messaging/

Salaway, G., Caruso, J. B., & Nelson, M. R. (2007). *The ECAR study of undergraduate students and information technology.* Retrieved from http://connect.educause.edu/library/TheECARStudyofUnderg/45075

Sánchez-Martínez, M., & Otero, A. (2009). Factors associated with cell phone use in adolescents in the community of Madrid (Spain). *CyberPsychology & Behavior*, *12*(2), 131-137.

Thurlow, C. (2003). Generation Txt? Exposing the sociolinguistics of young peoples test-messaging. *Discourse Analysis Online.* Retrieved from http://extra.shu.ac.uk/daol/articles/v1/n1/a3/thurlow2002003-paper.html

Tison, J., Chaudhary, N., & Cosgrove, L. (2011, December). *National phone survey on distracted driving attitudes and behaviors*. (Report No. DOT HS 811 555). Washington, DC: National Highway Traffic Safety Administration.

U. S. Department of Education. (2007). *Balancing student privacy and school safety: A guide to the family educational rights and privacy act for colleges and universities*. Washington, D.C.: U.S. Government Printing Office.

U. S. Department of Transportation. (2010). *Traffic Safety Facts*. Washington, D.C.: U.S. Government Printing Office.

U.S. Department of Health and Human Services. (1999). *Mental health: A report of the surgeon general—Executive summary*. Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, National Institutes of Health, National Institute of Mental Health.

World Health Organization. (1948). *Official records of the World Health Organization, 2*, 100.

Ziegler, A. (2010, June 28). Smart phones beating out computers. *Daily Nebraskan.* Retrieved from http://www.dailynebraskan.com/smart-phones-beating-out-computers-1.2277275#.Ty2D45hLHzI

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