Health communication and new media: Just another TV rerun?

Chris McIntyre, PhD
Senior Researcher
Institute of Communication and Health
University of Lugano
chris@cmcintyre.info

L. Suzanne Suggs, PhD
Assistant Professor
Institute of Communication and Health
University of Lugano
suzanne.suggs@lu.unisi.ch

Joan E. Cowdery, PhD
Assistant Professor
Health Education
Eastern Michigan University
jcowdery@emich.edu

Abstract:

This paper addresses the convergence of health communication and new media framed by the historical context of televised health promotion campaigns. In the post World War II era, health has emerged as one of the most important political, economic, and social issues. A number of contemporary health behaviors, such as poor diet and declining physical activity, threaten to undo much of the progress achieved during the past 60 years resulting in decreased quality of life and destabilized health care systems. Accordingly, governments, health professionals, and advertisers have embraced a variety of strategies designed to promote positive health behavior practices. A cornerstone of these efforts has been the utilization of emerging communication technologies.

The widespread diffusion of television presented health communicators and organizations like the Ad Council with an opportunity to develop and distribute health promotion campaigns that harnessed the powerful combination of sound and image while reaching extraordinary numbers of people. The development of the Web and new media spawned a chorus of optimism about health communication interventions that echo previous predictions about the role of television as a health communication tool.

In this paper we describe analogies that exist between old and new media, how health communication can leverage new media, and implications for health communication practice and research. The analysis is framed by earlier predictions about the impact of televised health promotion campaigns beginning in the 1940s. This approach provides insights into the parallels between television and new media as platforms for health communication.

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INTRODUCTION

Greater understanding about the consequences of smoking, alcohol consumption, diet, and physical activity has been accompanied by increasing efforts to communicate and promote healthy behaviors during the past 60 years (Ashenden, Silagy & Weller 1997). This is important recognition as these health behaviors are the leading cause of deaths in the US (Mokdad et al. 2004). Thus, healthcare providers, policymakers, the public, and researchers have been confronting the growing importance of individual health decision-making by turning to new technologies.

Given that many health decisions occur in places other than medical settings it is imperative that people are provided access to accurate health information (Pines 2001). Patients and health consumers have expressed greater desire for more health information, but are often unable to obtain the relevant material (Strecher et al. 1999). This has increased the salience of understanding the development of effective health communication practices. A variety of approaches are employed to find health information. Health orientated people, those engaged in healthy lifestyles, health issues, and health information practices, are more likely to discern health information, even if it is unintended (Dutta-Bergman 2006). People who pursue active health information strategies tend to have healthier outcomes than those using passive approaches (Arora & McHorney 2000). Dutta-Bergman (2004) linked greater levels of health consciousness with active communication channels such as interpersonal communication, print media, and internet sources for health information, whereas passive consumption channels like television and radio were used more frequently by non health-oriented individuals. Active involvement with

communication is related to greater amounts of information processing (Krugman 1965; Strecher et al. 1999) and involvement with an issue is positively associated with information seeking related to that topic (Petty & Cacioppi 1986).

Advances in information and communication technologies (ICTs) such as new media represent a historic opportunity to transform the distribution of health information and serve as a bridge between information needs and contemporary levels of limited health knowledge. This study is structured around three questions: What historical analogies exist between old media and new media? How can health communication leverage new media? What are the implications of new media-based health communication for collaboration, patient-provider relationship, and health outcomes? We examine the effects of delivery channel factors on health communication using lessons from approximately 65 years of TV-based PSA practice and research.

SOURCES OF HEALTH COMMUNICATION

Communicating about health occurs in many settings, using different sources. Interpersonal sources such as healthcare providers, family, and friends have a long history dating back before technologies facilitated print, audio and visual communication. Mass media such as the news media, entertainment, direct to consumer advertising, and public service announcements have a shorter history although they are the focus of much health communication research and practice. New media sources such as Web applications like blogs, wikis, social networking sites and virtual worlds are more recent sources that have been the focus on attention because of their novelty and potential to transform health communication.

Interpersonal Sources

Interpersonal communication is a highly trusted and often effective source of health information (Hasler et al. 2000; Tate et al. 2007). Studies have found that advice provided by physicians is a strong predictor of behavior changeand that doctor-patient communication characterized by greater patient participation was associated with better health outcomes (Kaplan, Greenfield & Ware 1989; Ashenden, Silagy & Weller 1997). Despite this evidence, nearly half of physicians do not encourage overweight or obese patients to increase their physical activity because they are pessimistic about their advice being followed (Tufano & Karas 2005; Walker et al. 2007). Communication between family and friends is a mechanism for providing support, information and guidance on health habits and health decisions. Family roles have been associated with both positive and negative self-management practices among people with diabetes (Carbone et al. 2007). While people often cite family and friends as an important and trusted source, they can serve as a source of poor decision-making, especially when cultural or social factors override good health practices. For instance, Hispanics often cite family as their most trusted source of health information, yet traditional Hispanic diets and physical activity practices are inconsistent with healthy behaviors (Syracuse 2006; Suggs et al. in press).

Mass Media Sources

Mass media has frequently focused on health topics in television because of the large audiences it commands. However, it is not necessarily a source of useful health communication, because only a small proportion is intended to motivate individual behavior changes (Kline 2006) and has been associated with little to no health behavior change (Marcus et al. 1998; Marshall, Owen & Baumen 2004). Mass

media effects are most prevalent on reinforcing or strengthening existing behaviors or attitudes (O'Keefe 1971). From the beginning of television, the early research evidence suggested modest effects that were mediated by audience characteristics and environmental factors (Waples 1941). Mass media uses health issues to base content in news and entertainment media although the quality and utility of such information has been questioned because health content does not necessarily correspond to actual health problems and information is often incomplete or inaccurate (Kline 2006).

News media frequently frame health communication in terms of a treatment-based biomedical model (Clarke & Binns 2006). News media reports about medications are sometimes incomplete, misstate journal findings, and neglect to report financial arrangements between companies and researchers (Moynihan et al. 2000). After direct to consumer advertising was launched in the mid 1980s, news coverage became more optimistic, investor oriented and more promotional (Pines 2001). Entertainment media, such as soap operas, have been effectively used to deliver health information by incorporating health-based story lines and in some cases placing PSAs (Klingle & Aune 1994; Dutta-Bergman 2006; Wilkin et al. 2007). A number of entertainment programs based on the reality TV model tap into health issues such as The Biggest Loser, Dr. 90120, Weighing In, and Designing Blind. Other reality shows have indirect health implications, often because of unsafe activities that they portay, such Jackass, Fear Factor, and America's Top Model (Kaiser Family Foundation 2006).

Advertising has been a constant fixure on television, and a person is typically exposed to 20,000 to 40,000 commercials by the time they finish high school with automobiles and food advertising being the most frequent (Story & French 2004).

There is evidence that junk food advertising contributes to increasing childhood obesity and that television viewing is linked with overweight young people (Caroli et al. 2004; Linn 2004). Direct to consumer advertising (DTC) for pharmaceutical products spurred new research into their content and effects (Kline 2006). Findings indicate that people who viewed DTC pharmaceutical commercials were more likely to request prescriptions, and physicians were more likely to provide them (Mintzes et al. 2003; Kravitz et al. 2005).

Public service announcements designed to communicate information and promote healthy lifestyle choices have been a cornerstone of mass media initiatives (Maibach & Holtgrave 1995; Rimal, Flora & Schooler 1999; Zimmerman et al. 2007;). PSAs refer to both paid and unpaid advertisements that promote, encourage, and educate the public about important issues or behaviors, often health-related[1][2]. They are most often distributed by television and radio broadcasters, but can also include print media, outdoor advertising, and the Web (Murray, Stam, & Lastovicka 1996; AdCouncil 2008). They are frequently coupled with other efforts that include education outreach, community events, telephone hotlines, policy changes, and other activities.

New Media Sources

The pool of health communication sources exploded with the appearance of the Web and applications such as email, Web sites, and chat rooms. There are different definitions of new media but it typically refers to communication material

[1] FCC definition: an ad for which "no charge is made and which promotes programs, activities, or services of federal, state, or local government, or nonprofit organizations, or any announcements regarded as serving community needs (47 USC 73:1810(d)(4) 1984).

[2] AdCouncil definition: an issue ad where The issue should be of public importance to warrant donations of space and time by the media, focus on Health & Safety, Education, or Community, offer a solution through an individual action, be national in scope, non-commercial, non-denominational, non-partisan, and not be designated to influence legislation. http://www.adcouncil.org

that uses applications such as blogs, social networking sites, social bookmarking, wikis, virtual worlds and other applications that enable sharing and collaboration (Seeman 2008). Web 2.0, often referred to as the Social Web, has opened the door for a plethora of technologies and applications designed to facilitate user generated content, interaction, and collaboration (Boulos & Wheeler 2007). To varying degrees new media allow users to communicate, share ideas, and track each others activities presumably as accurate representations of their real life personas. And while these technologies and applications have become exceedingly popular they have inherent limitations with regards to communication. In an effort to address these limitations the next logical step on the Web evolutionary ladder has been the creation of 3-D social networking through the use of virtual worlds.

PSA ANALOGIES

As new Web-based communication sources emerged, they have been quickly embraced as platforms for future health communication despite the limited amount of research that explains the effects of these different delivery channels on health outcomes. Even less is known about the process of migrating material from one media to another or creating new communication processes. The inherent complexities of designing health communication are exacerbated by the introduction of new technologies that seemingly overtake the status quo. However, communication is not developed in a vacuum and the reasoning of bounded rationality sets forth the proposition that the spectrum of choice in any given decision is dependent by resource limitations and previous choices (Simon 1945). As a result, old media do not go gentle into obsolescence when new communication technologies materialize, rather they become a point of reference and shape expectations for emerging new media. During its infancy, TV relied on programming

precedents adapted from radio broadcasting, and over time developed its own unique attributes and characteristics. The development of televised PSAs in the 1940s encouraged optimism about television's effectiveness as a delivery channel for persuasive messages intended to inspire health behavior changes.

For this paper we draw upon futures research to inform the methodological framework used to examine the interaction between communication delivery channels and the ensuing communication. Although not extensively used in health communication research, futures research focuses on predicting and describing future conditions using techniques such as Delphi analysis, backcasting, road-mapping, and historical analogies (Bouwman & Van Der Duin 2007). Historical analogies are parallel circumstances, conditions or factors shared among two or more phenomena from different time periods that are examined in a comparative process to identify similarities and produce forecasts.

Using PSAs as anchors for the analysis is appropriate for a number of reasons. First, they have existed for a sufficient length of time to fully absorb the effects of TV. Moreover, due to their longevity as a mass media instrument, an ample amount of research has been conducted on PSAs. Second, they have been utilized for a diversity of health issues. Finally, they have been used to achieve many objectives such increasing awareness, initiating behavior change, providing information resources, and influencing social norms. In effect, they represent a simplified, functional model of health communication. We specifically focused on the health communication research that examines PSAs, and online health communication to inform the development of the analogies. We examine the evidence about TV-based PSAs and then proceed to discuss the impact of these analogous factors on new media-based PSAs.

We propose a cluster of seven related analogies that exist among TV broadcasting and new media in the area of health communication. These factors take account of the nexus of issues, actors, institutions and activities related to these delivery channels. Collectively, the analogies provide the basis for making inferences about the broader concerns about the influence of technology on health communication.

Public Policy

Public policy is one of the primary determinants of the TV environment and communication. Policy is manifested in television broadcast licensing process, prioritizing health issues, and taxing and spending powers. A persistent, ongoing communication policy objective has advanced the concept that the airwaves should be used for the public interest and this has been incorporated in the license issuance and renewal process. More generally, the proposition that television should serve an educational role was reflected in other policies such as when the FCC set aside channels for non-commercial, public broadcasting in 1952, and established the corporation for public broadcasting in 1969.

The rapid growth of PSAs in the late 1960s can be placed in the context of a changing information environment that resulted from expanding medical knowledge about health behavior risk factors and the appearance of discretionary pharmaceutical products. As result, the federal government took an active role in overseeing the type of health information communicated to the public and prioritized a several health issues. During the 1960s, television viewers were exposed to thousands of cigarette commercials and concerns mounted about the cumulative effects of such ads. PSAs received an enormous stimulus from the US government in 1967 when the FCC ruled that the fairness doctrine applied to cigarette

advertising. Broadcasters were required to air one anti-smoking PSA for every three cigarette commercials (Erikson, McKenna, & Romano 1990).

State and federal government funding policies had a direct impact on health communication efforts especially in terms of the increasing the number of large-scale PSA campaigns, providing additional resources for formative research, as well as improved production quality. PSA funding was obtained from different sources including the time state tobacco settlements (Master Tobacco Agreement), additional taxes imposed on cigarette sales, the federal government financing of national health campaigns such as the war on drugs. In 1988 California voters passed Proposition 99 that levied an additional tax on cigarettes and committed funds for counter marketing efforts. Other states adopted similar policy instruments following on California's lead.

The AIDS crisis prompted the US government to implement an education campaign called "America Responds to AIDS" that relied heavily on PSAs. The CDC launched the VERB campaign in 2002 in an effort to increase physical activity among children and relied heavily on TV ads using a combination of government funding and donated media time. In 1997 the US government funded a campaign to reduce risk behaviors, especially illegal drug use, among young people resulting in focused on using anti-drug PSAs. Although, less obvious to discern, political or ideological factors may effect PSA content such as the lack of condom references in HIV/AIDS PSAs (Dejong et al. 2001).

Government influence on the Web and new media has been somewhat more oblique compared to TV, but important nonetheless. The Internet was developed by the US military and championed through the National Information Infrastructure although government has largely avoided direction regulation and oversight of the

Web. Federal government policy has promoted, used and funded the Internet for health communication purposes. In 1993, it identified the Internet as an important communication technology. Furthermore, the potential of new media for health communication was recognized in Healthy People 2010 as “interactive health communication technologies are being used to exchange information, facilitate informed decision-making, promote healthy behaviors, enhance peer and emotional support, promote self-care, manage demand for health services, and support clinical care.” (ODPHP 2000).

Production and Distribution

The production and distribution process relates to the individuals and organizations that create, produce, and broadcast PSAs. For the most part, production has been dominated by a relatively small number of organizations such as the AdCouncil who collaborate with major marketing firms. The distribution system for unpaid ads is processed through gatekeepers at TV networks or individual channels who determine the PSAs that are aired. Recently, there have been more opportunities for user-generated ads as some organizations turned to competitions to generate new PSAs. For example, young people were able to submit audio and video-based PSAs about HIV prevention and HIV’s impact to MTV’s OneWorld and Staying Alive campaigns. It should be acknowledged that it was entirely possible for anyone with a camera and some editing skills could produce a ‘home PSA’, although for all intents and purposes there would be no outlet for distributing them.

New media opens up health communication to large numbers of individuals and organizations that can produce and distribute PSAs and other types of material. According to the Pew Internet & American Life Project, more than 60% of online

American teens have produced media content and approximately 30% have distributed their material online (Pew 2007). YouTube, MySpace, Facebook, Flikr and other Web sites offer a new outlets for user generated PSAs and health communication more generally. In fact, searching YouTube for PSAs will generate a number of school-based and personal PSA examples. Concerns about the credibility, validity, and reliability of Web-based health information have existed for many years. Health communication organizations have begun using new media to distribution outlets. Thus far, the production and distribution of comprehensive health Web sites has been dominated by a small number of providers including WebMD, Everyday Health AOL Body, and RevolutionHealth.com.

Adoption

Adoption of a technology, which refers to ownership and utilization, contributes to perceptions and routines that converge on a technology. Adoption is an important element in the health communication process that is affected by a combination of factors including user characteristics, usability, cost, and functionality. A major factor on the emergence of PSAs was the rapid growth of television ownership and utilization. Eight years after its introduction 63% of US homes owned a TV and reached 98% by 1985. People spend nearly four hours a day watching TV.

Personal computers reached a high level of adoption rate of 66% ownership in 2007. Apart from television, few ICTs have had been adopted at the same pace as the Internet with adoption levels at 57% and 47% had high speed internet access (Pew 2007). However, the relatively high adoption rates mask some meaningful variations among different age, and socioeconomic groups. In fact, retired adults today spend 89 minutes per day online. The next generation of retirees is expected

to be more computer and Internet literate as adults between 45 and 64 are online approximately two hours a day (Media Audit 2008).

Exposure

Exposure to health information material is a necessary step for communication to be effective. Different measurement metrics are used including reach, which refers to the proportion of the audience exposed to the message at least once, and frequency is the average number of exposures of an audience member reached (Lorch et al. 1994). PSAs comprised 1.4% of all commercials broadcast during a typical day, and of those, health related PSAs were the most frequent (Kaiser Family Foundation 2006). A sizeable majority of PSAs are national campaigns but only 5% of network broadcast time was allocated to them. An average of nine seconds per hour is devoted to broadcasting PSAs, but this should be considered in light of the fact that 50% of PSAs were shown between midnight and six AM (Kaiser Family Foundation 2006). Obviously, ads shown during prime time hours have much larger audience reach than PSAs broadcast after midnight. Research has shown that it is important to place health information where people go for other types of communication (Johnson & Meischkle 1993). PSAs shown during entertainment programs, especially when placed at relevant spots in a story, resulted in increased calls to a hotline and greater knowledge of health topics (Kennedy et al. 2004; Wilken et al. 2007).

New media enables the delivery of material to individuals, as well as target groups. Organizations such as the National Safety Council and the AdCouncil distribute PSAs in several media formats, like the EPA radon campaign or the AdCouncil channel on YouTube, but exposure to this information requires that an individual have access, interest, motivation, and ability. Nonetheless, new media is

able to effectively distribute PSAs and other types of health communication through strategic placement on high traffic Web sites, RSS feeds, viral marketing techniques, and push content.

Functional Boundaries

Different technologies, hardware, and even behavioral norms impose boundaries on the type of communication that can be developed the most important is that TV is fundamentally a unidirectional source. Television technology has progressed, although innovations have been relatively slow and incremental some of the major advances include the introduction of color, remote controls, cable, and more recently digital TV. While the 30 or 60 second commercial is largely taken for granted, it restricts the amount of information and requires relatively complex health information to be substantially reduced for PSAs.

Processing speed, network capacity, bandwidth, and download times place boundaries on communication content by forcing tradeoffs between higher quality video and audio versus smaller files. Time is an important consideration as delays in accessing content (such as a video) can drive viewers to other sources. The demand for immediate delivery of online requests has engendered some resistance to intrusive ads such as pop ups, and ads run before some online video clips has prompted consideration of three second long PSAs. Limited monitor display space constrains the size and shape of ads. The availability of high speed is being introduced will see download rates increase from 3 – 6 Mbps to 50 – 100 Mbps.

Resources

Resources, especially economic factors, have occupied an important role in the development of PSAs. Use of unpaid time poses a number of limitations compared to paid time, especially for message placement and frequency (Elder et

al. 2004). Apart from the actual cost of purchasing a TV or computer, plus the additional expenses involved with connectivity, there is a relationship between health information seeking, knowledge and socio economic status. Financial resources are required obtain production talent, equipment, facilities and equipment. Limited funding of PSAs has been reflected in less polished and sophisticated production features relative to ads for products that contribute to health problems such as fast food products (Murray, Stam & Lastovicka 1996; Andsager, Austin & Pinleton 2001). As the number of groups using PSAs increased, the competition for donated time among groups increases.

The costs of producing highly interactive applications are quite high. Placement of PSAs on high traffic Web sites will present many of the same challenges experienced by television-based PSAs because of the need for revenue-producing ads that are still crucial for many new media. Economic factors and gatekeeper choices will influence the new media-based health communication.

Relevance

The relevance of health communication is key to its effectiveness as a catalyst for change. Health behavior theory helps predict what factors drive a behavior (for example, social norms about physical activity, perceptions of risk, or attitudes about a behavior) so that messages target these factors. Health behavior change theory has been extensively used in developing PSA messages and in distributing the material. However this is not always the case as nearly 75% of government produced AIDS related PSAs used since 1987 did not rely on any theory-based messages (Dejong et al. 2001).

Because people have different attitudes, values, norms, knowledge, and environmental factors that impact their intentions, behaviors, and exposure to health

communication, messages must be tailored. Indeed the Elaboration Likelihood Model (ELM) serves as a foundation for segmentation and tailoring by predicting that messages are more likely to be accepted when they are personally relevant for a person (Petty & Cacioppo 1986). The context in which issues are framed (referring to the social priorities and values with which a topic is implicitly associated) allows messages to be developed that reflect individual attitudes (Slater 2006). Situating health communication in familiar or trusted locations has shown promise. Wilkin et al. (2007) concluded that PSAs coupled with embedded health story lines were more effective, especially when audience m. embers identify with program characters, participants reported more knowledge, interpersonal communication, and behavioral intentions. Klingle and Aune (1994) found that taking account of individual preferences related to entertainment and combining health related PSAs lead to knowledge, interpersonal communication, calls to a hotline, and intention to change behavior. Additionally, different characteristics related to sensation seeking and differences of program context (referring to which TV shows a PSA is placed) have a greater effect on attentiveness to PSAs than ad attributes (such as quality) meaning in optimal circumstances PSAs should be broadcast in shows or places that the target audience finds interesting (Lorch et al. 1994).

LEVERAGING NEW MEDIA

To illustrate how health communication can leverage new media we narrow the focus of our discussion to one type of new media – virtual worlds – and weigh the implications for collaboration and health behavior. Collaboration concerns the ability of people such as healthcare providers, patients, families, friends, caregivers and policy makers to interact, offer support, and share information about disease, illness, health behaviors, environment, economic, and other health factors.

Collaboration also includes work among practitioners such as knowledge sharing, education, and conferencing. Health behavior concerns the ability of new media to impact individual behaviors that influence health outcomes.

Virtual worlds are receiving increased consideration to deliver health messages and information. One of the defining characteristics of virtual worlds is that individuals exist as user controlled three-dimensional physical representations most commonly referred to as avatars. Second Life is one such 3-D virtual world that is experiencing explosive growth and popularity. First developed in 2003, it was entirely constructed by its residents and is now inhabited by almost 9 million people from around the globe making it the most popular of existing virtual worlds. Recent estimates predict that 80 percent of active Internet users will assume a virtual world presence by 2011 (Gartner Symposium 2007). Real world institutions are beginning to appear in online virtual worlds for a myriad of purposes including online education, marketing, and advertising. Second Life offers: streaming audio and video, information archived virtual libraries, opportunities to explore new places and cultures, socialization and interaction with others, and participation in live events such as concerts, classes, and lectures (Boulos, Hetherington & Wheeler 2007).

On-line virtual worlds have existed for over a decade and primarily consisted of massively multiplayer online role-playing games such as World of Warcraft and Everquest. The subsequent generation of virtual worlds moved beyond gaming to user generated three-dimensional sites for social networking (Au 2008). The virtual worlds that are now possible with Web 2.0 technologies can be contrasted with the early Web applications, which were structured around sequential, solo access to content. Thus, even though many users may read a blog or post to a discussion board these posts are made sequentially. Even with real time communication such

as instant messaging there is a lack of physical presence in the exchange. These differences supply the basis for anticipating changes in health communication especially in terms of collaboration and health behavior change.

Collaboration

New media can make important contributions to collaboration among health professionals, patients, caregivers, health organizations, universities, researchers, and policy makers through linkages that facilitate knowledge management and diffusion especially for disseminating systematic reviews, practice guidelines, best practices, continuing education, policies, or health advice. According to Ondrejka (2008), one of the defining characteristics of virtual worlds is that they generate simultaneously shared spaces and foster real time social interaction and collaboration among people. Another advantage is that in addition to the availability of user generated content, current and existing content can be utilized. This has been illustrated primarily with the use of entertainment content within Second Life. One of the more successful commercial ventures 'in world' has been the construction of an island designed to recreate the setting of Showtime's series *The L Word*. This space provided not only a place for fans of the show to socialize but was also used to stream episodes of the show (Au 2008). Similarly, live concerts and other entertainment events have been broadcasted 'in world'. Educators have discovered that many of the teaching techniques used in a traditional classroom can transfer to the virtual classroom including lecture, the use of powerpoint slides, and video.

New media, such as Second Life, can transform the patient-provider relationship to the extent that communication can approximate interpersonal encounters in terms of the quality and depth of health information. There are multiple

examples of health related communication and education efforts within Second Life. Generally, health information is provided by objects like kiosks, notecards, and signs although much of the material is interactive and consisting of streaming audio, video, and links to relevant online resources.

Dutta-Bergman (2006) found that people with greater health orientation levels were more likely to recall health information and share that information in their social networks. But the quality of information available in health oriented social networks is not without shortcomings. Eysenbach et al. (2004) observed that virtual communities offer great potential for linking individuals who can share experiences, offer help, and support others but their review of peer-to-peer Web site studies revealed that online health related peer communities had limited effects on health outcomes. Cline and Haynes (2001) review of Internet-based health information research reported that online support groups were a notable source of incorrect information generally based on the anecdotal, personal experiences of nonprofessionals.

Some of the underlying issues concerning the feasibility of new media, particularly virtual worlds, as a health communication source include whether individuals are receptive to messages delivered within virtual worlds and whether information is received and processed in the context of our real world identities or 'in world' avatars. Some preliminary qualitative data from our pilot research suggests the acceptability of receiving health information via this medium and that health messages are processed in the context of their real world personas and not as their 'in world' avatar representations. Although there are nearly endless opportunities to create avatars of any type (from animals, to robots, to twentieth century art) limited only by the users' imagination, 70-80% of all Second Life residents represent

themselves as human avatars, many designed to look and act very similar to their real world selves (Au 2008). A Global Marketing Institute survey of residents found that 23 percent had avatars of a different gender and 22 percent had avatars with a different skin color than their own (Au 2008).

Boulos, Hetherington & Wheeler (2007) described the most extensive health related locations in Second Life including Healthinfo Island, which is funded by a US National Library of Medicine grant. Healthinfo Island consists of a medical and consumer library, HIV/AIDS center, and a path for support, that contains information and links to 60 different health related support groups. Many of these groups are affiliated with national organizations while others are user created groups to facilitate the sharing of knowledge and interests. Other trends that have emerged from some of the early research have included the inclination by new users to seek out places and people they are already familiar with from the real world and to trust messages from sources that they deem credible based on real world experiences. The potential therefore exists to deliver health related information such as PSAs or real time interventions (lectures, classes, focus groups etc.) to targeted groups or individuals.

Health Behavior

Despite their prominent role in health campaigns, the ability of PSAs to facilitate behavior change has been found to be minimal and fail to impact the targeted groups (Mendelsohn 1973; Wallack 1981; Fishbein et al. 2002; Elder et al. 2004). For example, O'Keefe's 1971 study of anti-smoking commercials and smoking habits found that nonsmokers rated the commercials more effective compared to smokers. The effects had an inverse relationship with the amount that people smoked, meaning that the heaviest smokers were least influenced by the commercials. Planned behavior change efforts have been less than effective, and

negative in some cases such as violence or drug use, producing a boomerang effect (Wallack 1981; Fishbein et al. 2002; Slater 2006). Like PSAs, the early research into the first iteration of new media, or Web 1.0, health communication has accumulated mixed results.

The research record demonstrates that unless health communication is relevant and experiences high exposure, the potential effects will likely go unrealized. One of the principal capabilities of new media is the ability to respond to the unique informational needs individuals. Tailoring is generally based on information related to health orientation, cognitive skills, individual efficacy levels, barriers, progress achieved, health information practices, media preferences and demographic characteristics. Tailored material is effective partly because of the greater level of attention paid to it resulting in improved relevance and comprehension (de Vries & Brug 1999; Kreuter et al. 1999; Bull, Kreuter, & Scharrf 1999). Spittaels et al. (2006) implemented a tailored online intervention to increase physical activity and found that the recipients of the tailored material discussed their information more and changed their attitudes about physical activity. A synthesis of 80 published articles that studied electronic communication with patients found that 76 percent analyzed provider-initiated communication with patients and 63 percent of the studies reported positive outcomes or improved performance (Balas et al. 1997).

Little empirical evidence exists with regards to the use of virtual worlds for impacting individual health and health behavior. However, as was believed about televised PSAs and the Web, it has great promise to impact behavior change. Virtual worlds have the potential to emulate real life and provide tailored information to participants. Using Second Life, individuals can provide real time relevant

information to all those ‘in world’. One can even imagine a virtual town hall meeting where residents learn about the best ways to be healthy and get support from other residents in their efforts.

Major technological advances in mobile computing and phones offer additional opportunities to increase the efficacy of health communication by incorporating tailored information into messages that can be delivered to a person where ever they are, rather than hoping that they stumble upon it or seek it out. Additionally, voice-activated technology supplies the means to transmit personally relevant information using a familiar and highly adopted device, mobile phones provide opportunities to incorporate health communication into the daily activities of people. For example, coupled with user feedback or monitoring through devices such as an accelerometer that assesses the level of activity relative to recommended guidelines, physical activity data can be uploaded to a central server triggering the delivery of appropriate, tailored messages at the correct time via voice, text message, or video to mobile phones or computers.

CONCLUSION

The study proposed a number of analogies between television and new media and further described how health communication can leverage new media. PSAs have had a relative constant presence from the advent of television to the present and their lifespan coincides with broader health communication transformations that placed greater responsibility, choices, and information demands on individuals. However, as is currently case, the real problem confronting health communication practitioners and policy planners is not the absence of information is being able to provide exposure to relevant messages that will contribute to desired health behavior changes and outcomes.

Limitations

Forecasting the future is a precarious undertaking at the very best of times and there a number of limitations inherent in this type of exercise. It should be recognized that this paper does not propose a comprehensive model of health communication delivery channel effects. It is a proposal of factors that can be observed from the history of new media based PSAs and has bearing for future health communication. The Second Life example included in the discussion is not representative of new media. Nonetheless, it is worthwhile to use as a basis to consider the factors that intertwine health communication and new media. We do not provide any weights for the historical analogies, and they were considered as more or less possessing an equal contribution to the future. This is likely to change overtime as there is some blurring of the analogies at their borders. While the future is not determined by predictions, this type of analysis can inform and prepare people for approaching transformation in health communication.

Implications for Practice and Research

History demonstrates, unless the communication is relevant and has high exposure the potential will not likely be realized. Technological change is inevitable, but new health communication delivery channels should be evaluated to estimate their effects on the communication process, experience, and behavior. Ultimately, new media based health communication should be determined by its ability to expand exposure to health information, improve the quality and accuracy, and be relevant to the intended users. The mere presence of a technological ability is not sufficient for it to be adopted. The choice of technology has consequences for how messages are designed, constructed, delivered, and processed. For example does the choice to use a new technology result in more people gaining access? Are

different audiences served? Does the new technology function more reliably? Are intended outcomes achieved?

Future research requires a more thorough understanding of how new media operates in terms of existing health behavior change theory. Also needed is the examination of new media technologies in the broader context of health information practices, especially information gathering, processing and cognition. Additionally, how device mobility can contribute to real time, dynamic communication distribution and whether sensors or monitors can increase the effectiveness of message timing or content should be studied. Finally, more exploration of how the best elements of interpersonal communication can be implemented, how new media use influences interpersonal communication, what other analogies exist and what can be learned from them is needed. It is an exciting opportunity to engage in multidisciplinary research that may transform health communication theory, methods and practice.

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