Ethnicity, digital divides and uses of the Internet for health information

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ABSTRACT

The present study investigates the influence of racial/ethnic and cognitive factors on use of the Internet as a channel for public health information. A random sample of 310 residents age 18 years or older provided valid survey responses. Multivariate analyses establish the importance of self efficacy in determining online search motivations, outcome expectancies and behaviors, although we fail to confirm the existence of any kind of "racial divide" in Internet use. The relatively modest role played by ethnicity—in determining online uses and self efficacy – underscores the significance of using attitudinal variables alongside traditional demographic and media use measures of communication technology use.

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1. Introduction

Although digital divide conceptions define Internet access in terms of race and class disparities (e.g., Ginossar & Nelson, 2010; Jeffres, Neuendorf, & Atkin, 2012; Laz & Berenson, 2013; Lee, Ramirez, Leis, Gray, & Hornik, 2012; Pingree & Hawkins, 1996; Rice & Katz, 2001; van Dijk, 2005, 2006; Vigdor & Ladd, 2010; Vishwanath et al., 2006), the concept also encompasses psychological factors determining computer use (e.g., Eastin & LaRose, 2000; Han et al., 2009; Ruppel & Rains, 2012; Whitten, Kreps, & Eastin, 2009). Dupagne and Salwen (2005) emphasize the critical public policy debate driving this issue, one defined in terms of disparities in internet access among different social groups. Representative concerns might reflect, for instance, uncertainties among novice users about how to get started on the Internet, discomfort with the technology, and hesitancy to adopt due to a belief that computers are too complicated (e.g., Bowen et al., 2003; Dobransky & Hargittai, 2012; Hargittai, 2009; Lee, 2009; Murero & Rice, 2006; Rice, 2006).

With three-quarters of American adults now going online, and 61% doing so for health information (Pew Research Center, 2012), the Internet is reshaping health care administration (Dutta-Bergman, 2003; Fox & Duggan, 2013; Lee, 2008; Whitten, 2007). Given projections that mushrooming health care costs will subsume 20% of the U.S. economy by 2021, policymakers are keen on enhancing the diffusion of cost-effective e-health interventions (e.g., Wayne, 2012). Health information already represents one of the most popular search destinations online (Bundorf, Wagner, Singer, & Baker, 2006; Pew Research Center, 2011; Rice, 2006; Walther & Boyd, 2002; Whitten et al., 2009), as the Internet's attributes of convenience, ease of use, ability to reach large audiences and interactivity make it an attractive option for disseminating information.[1] In order to facilitate efficient and productive Web-based health applications, however, we need to gain a better understanding of barriers to its use.

Research (e.g., Chakraborty & Bosman, 2005; Ginossar & Nelson, 2010; Hargittai, 2009; Lee, 2009; NTIA, 2010; Pew, 2012; Rice & Katz, 2003; Vigdor & Ladd, 2010) suggests that home Personal Computer (PC) ownership and Internet access are two key challenges defining the digital divide. To the extent that online health applications can enhance preventative healthcare—and even supplement costlier in-person treatment interventions—wider diffusion of online health affordances could help curtail skyrocketing medical costs (e.g., Han et al., 2009). The present study investigates

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[1] Thompson's (2006) review of 75 issues of *Health Communication* revealed that 25% of articles dealt with computer-mediated communication, rendering it one of the "biggest" topics in health policy (p. 120).

the influence of racial affiliation, media use/adoption and attitudes toward technology on Internet use for health information. We focus, in particular, on the multidimensional effects of self-efficacy factors and their relationship to health seeking behaviors online (e.g., Ybarra & Suman, 2006). Since the impact of health telematics intervention is well documented elsewhere (e.g., Whitten et al., 2009), we focus on factors influencing Web adoption and use for health information, beginning with the concept of self-efficacy.

1.1. Self-efficacy

Pajares (2002) provides a review of self efficacy in the context of social cognitive theory, which Lin (2003) casts as a key user-level variable in her Integrated Technology Adoption (ITAP) model. Self-efficacy can be viewed as a form of self-evaluation that influences an individual's decisions about which behaviors to engage in (e.g., Bandura, 1994, 1997; Lee, 2009), how much effort to put into said behaviors and the demonstration of persistence in mastering a behavior. Bandura (2002) maintains that one's perceived self-efficacy will influence their motivation, ability, and endurance for behavioral change. When one believes that control is possible or that their actions will be effective, they have a stronger incentive to act on their beliefs (Bandura, 1997). Pajares (2002, p. 4) suggests that self-efficacy provides the foundation for human motivation and personal accomplishment because, "unless people believe that their actions can produce the outcomes they desire, they have little incentive to act or to persevere in the face of difficulties."

LaRose and Eastin (2004) emphasize self-efficacy as a central component in new media adoption. Research suggests that more efficacious individuals are less inhibited by outside barriers to adoption and more confident in making adoption decisions (e.g., Mou, Wu, & Atkin, 2014). Internet self-efficacy is defined as what a person believes he or she can accomplish online, as opposed to one's actual skill or proficiency in performing specific tasks (e.g., Khorrami-Arani, 2001). Studies on web adoption (Dupagne & Salwen, 2005; Eastin & LaRose, 2000) maintain that the digital divide resulted not only from the lack of access of computer users, but also from a lack of self-efficacy in the use of the Internet (or *internet efficacy*). Although the concept can reflect dimensions of information search and recognition skills (*i.e., skills efficacy*), it can also encompass an individual's determination to invest time and effort to take charge of their own health (i.e., *action efficacy*). Toward that end, affordances of health related online searches should favor those with higher degrees of self-efficacy.

This might reflect the belief in one's ability to "organize and execute courses of Internet actions required to produce given attainments," according to Eastin and LaRose (2000, p. 3). They found that new online users, in particular, were less comfortable with their skills and thus encounter more stressful situations while attempting to perform tasks on the Internet; users scoring lower in Internet self-efficacy may have little confidence in their ability to navigate the Web and are in turn dissatisfied when using it; males, for instance, express higher identification with computer or internet-related perceptions and attitudes, including self-efficacy and perceived ease of use.

In the health domain, Pew (2011) reports that a quarter (23%) of Internet users living with a chronic ailment (e.g., diabetes) indicate having gone online to find others with similar health concerns, compared to 15% of users who have no such condition.

Further applications of social cognitive theory are supported by outcome expectancies, with Internet self-efficacy being positively related to Internet use and prior Internet experience as well as negatively related with measures such as Internet stress and self-disparagement. Hong (2002) found that use of computer-based health information was predicted by self efficacy and trust in the credibility of online information. Similarly, Kalichman et al. (2006) demonstrated that use of the Internet to search for health-related information was associated with self-efficacy for information-seeking, problem-focused coping and greater social support. Given the importance of these psychosocial and technology adoption variables in online health engagement (e.g., Lee, 2008, 2009; Rains, 2008), it is useful to explore how they are shaped by underlying divides in technology adoption.

1.2. The digital divide

Walther and Boyd (2002) found the Internet offers several attributes that make it especially useful as a health channel (e.g., interaction that is embedded in who the message targets, rather than in the manner of interaction); it provides widespread access to health information, along with the additional advantages of interactivity (e.g., chat rooms and E-mail), anonymity, and the ability for a user to tailor information according to user interests. However, the Internet is also beset with navigation challenges – usually owing to Web page design elements – which contribute to digital divides among users.

More importantly, many users either lack the basic skills to conduct effective searches, or the resources to purchase a computer and engage in Internet search activities (e.g., Ybarra & Suman, 2006). In a cross-sectional study of women, Bowen et al. (2003, p. 940) found that health-related Internet use was predicted by level of mental health, level of general health perceptions, older age and higher income; they conclude that perceived lack of usefulness of the Internet and lack of familiarity with the technology are "equally important reasons as financial cost for not adopting the Internet." Similarly, Lee (2009) found that education is positively related to Internet engagement, as Internet use was more strongly related with health knowledge for individuals exhibiting higher levels of internet engagement.

Health communication scholars continue to examine whether disadvantaged economic and ethnic groups are more susceptible to the digital divide than others, as this inequity may influence the diffusion of health information (Kvasny & Keil, 2006; Lee, 2009). These disadvantaged groups may be less able to avail themselves to such information due to their lack of access, skills, motivation or knowledge-based media habits (Dupagne & Salwen, 2005; Hargittai, 2008; NTIA, 2004, 2010; Rice, 2006; van Dijk, 2006; Vigdor & Ladd, 2010; Whitten et al., 2009), even though their need for health information is as great as in privileged communities (Davis, 2002; Detlefsen, 2004; Pingree & Hawkins, 1996; Wyatt, 2005).

In the health domain, researchers (Bundorf et al., 2006; Diaz et al., 2003; Dupagne & Salwen, 2005; Pew, 2011, 2012) found that those seeking online information on medical topics were more educated and had higher incomes. Such findings are consistent with work on diffusion theory (e.g., Lin & Atkin, 2007), which suggests that adoption of new media is resource-driven; that is, early adopters of innovations like Web health applications are likely to be better educated, heavier media users, receptive to other new ideas or innovations, and more venturesome as consumers (Rogers, 2003).

Nevertheless, users of health-related information from Web sites, particularly minorities and others who are typically marginalized in society, often do become empowered and in turn experience more positive discussions with healthcare providers through their enhanced learning (e.g., Lee, 2008; Peterson & Fretz, 2003). A study of online breast cancer information-seeking found, for instance, that Internet use among minorities is associated with greater overall support as well as appraisal and tangible support, but belonging and social support levels were comparable