Inquiring Minds Acquiring Wellness: Uses of Online and Offline Sources for Health Information

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ABSTRACT

Variation in ability to access and use health information is a key pathway through which social status may impact health. Digital media offer new opportunities for health-information seeking potentially lowering barriers to such content. Using a data set with nuanced information about what sources a diverse group of college students consults for different types of health material, coupled with detailed measures of Internet experiences, this paper explores factors related to where young adults turn for health content. Results suggest considerable sex differences in practices across sources of health information. We also find differences in Hispanic students' actions based on parents' country of origin across sources. Finally, challenging assumptions about the universal savvy of young adults, findings suggest that those who are more highly-skilled with the Internet are more likely to use it for health-information seeking and Internet experiences are especially important for explaining who turns to online discussions in this realm. Our findings contribute not only to a better understanding of health information seeking and health inequality, but also point to possible sites of intervention to ameliorate health disparities.

Introduction

The social conditions in which people live strongly impact their health through countless pathways. Access to health care may be blocked for the poor because of lack of resources. Information regarding health promotion is also socially patterned, with some lacking access (e.g., by belonging to networks where useful information is less likely to circulate), and some seeking out this information less. Because of the sheer amount of information and its ability to span geographic and social boundaries, the Internet might hold the potential to help close some of these gaps in health information. Understanding how different groups within society use a variety of sources of health information may give us insight into key mechanisms at work in health inequalities – and targets for interventions to reduce disparities. Perhaps because of data limitations, the degree to which the Internet's potential for leveling the playing field has been realized for people in a range of social positions has not been fully explored. This study addresses this hole in the literature.

Health Inequality and Health-information seeking

Studies have shown that those with lower socioeconomic status (SES) around the world have consistently had worse health than their higher SES counterparts, currently and throughout history (Cockerham, 2007; Link & Phelan, 1995). Further, some racial/ethnic minority groups also suffer poorer health. For instance, African Americans have an age-adjusted death rate 1.5 times that of Whites in the United States (Heron et al., 2009). While Hispanic Americans have a lower overall age-adjusted death rate than non-Hispanic Whites, as Hispanic immigrants stay longer in American society (both within and across generations), their health worsens (Cho, Frisbie, Hummer, & Rogers, 2001; Lopez-Gonzalez, Aravena, & Hummer, 2005). Sex and age have also been shown to relate to differentiated health outcomes. For sex, a major finding is that "women get sicker, but men die quicker", that is, women have higher morbidity throughout life, but men have a shorter life

expectancy (Lorber & Moore, 2002). Regarding age, those over 65, perhaps unsurprisingly, suffer from poorer health than those younger than them (Cockerham, 2007).

Social scientists devote a great deal of research to *why* these distinctions in health exist. Particularly notable within the social sciences has been the "fundamental cause" approach (Link & Phelan, 1995; Lutfey & Freese, 2005; Phelan, Link, Diez-Roux, Kawaki, & Levin, 2004). The basic argument here is that social conditions – in particular social stratification – that persist over diverse socio-historical and geographic settings structure health outcomes for populations regardless of the proximal mechanisms through which those social conditions may act.

The fundamental cause perspective has most successfully been applied to socioeconomic status. Things become a bit more complicated when applied to other factors. Much of the inequality between African Americans and Whites in health outcomes can be explained by the lower socioeconomic status of African Americans (and the prejudice and discrimination that maintains that status differential) (Williams, 1999). However, Hispanic Americans present a "paradox" in that, although they tend to be lower in SES than Whites, they have lower age-adjusted mortality, and thus other factors must be at work (Dubowitz, Bates, & Acevedo-Garcia, 2010; Markides & Coreil, 1986; Morales, Lara, Kington, Valdez, & Escarce, 2002). Moreover, since most families in the United States of all socioeconomic backgrounds are made up of both men and women, applying this perspective to understand health differences between the sexes does not make sense. Instead, a combination of biological factors and sex roles appears to be the major explanations (Rieker & Bird, 2000).

Some contemporary work has shifted the focus away from simply examining the sickening social environment of the disadvantaged and has in addition looked into the everyday choices those in different social positions make that affect their health. As Cockerham (2005) argues, the constraint of social structure is only half the issue. Calling on the work of Weber and Bourdieu,

Cockerham offers a theory of "health lifestyles". According to the theory, social structural position has a recursive interaction with individual agency, leading to different patterns of desires and proclivities between different status groups in society, each affecting the health of members of different groups. Such a range of lifestyle factors can help those in more advantageous positions not only in treating a health problem effectively should one arise, but also in taking innumerable mundane actions (exercise, diet, not smoking, etc.) that prevent the problems from arising in the first place. Cockerham's concept of health lifestyles may explain many sex differences in health. For example, he argues that women engage in more health behaviors and fewer "risky" behaviors throughout the life course, helping to explain their longer life expectancies. He goes on to say that there is insufficient research on the health lifestyles of various racial and ethnic groups, but the scant research that does exist shows some differences among groups (Cockerham, 2005).

In contemporary Western society, one of the major resources seen to affect health is access to quality information about it. On the one hand, those who are sicker look for health information more frequently than those who are well (Andreassen et al, 2007; Rice, 2006). Thus, we might expect the disadvantaged to seek health information more than their advantaged peers, but this is not always the case. For example, the educated look for health content more than those with less education (Lambert & Loiselle, 2007; Tu, 2008). As the fundamental cause perspective points out, the disadvantaged face barriers to accessing and using health information. Phelan and colleagues (2004:267) note, "social networks with high-status peers are […] more likely to inform a person of new health-related research […]". Lutfey and Freese (2005) found that a clinic that served higher-status patients had a better continuity of care enabling more personalized, tailored health information, and also had more resources devoted in general to diabetes education than did another with lower-status clientele.

Another issue that could complicate the relationship between social position and health-information seeking is that due to different health lifestyles (Cockerham, 2005), people might exhibit different patterned choices to *seek out* information about leading a healthy lifestyle. For instance, as Phelan and colleagues (2004:267) state, "being embedded in a social context where neighbors, friends, family members, and co-workers can generally look forward to a long and healthy life surely contributes to an individual's motivation to engage in health-enhancing behaviors." These propositions echo issues raised by the knowledge gap hypothesis in communication research (Ettema and Kline, 1977; Gaziano, 1983) about how communication skills, prior knowledge and other factors contribute to differentiated media uses.

Support for at least a component of Cockerham's (2005) assertion of different health lifestyles among status groups can be found in research on health-information seeking. In their review and analysis of this literature, Lambert and Loiselle (2007) show patterns in health-information seeking among different social categories. For example, the younger and the more educated are more likely to be active seekers. They also state that people look for health content from a range of sources – health professionals, friends and family, traditional media, the Internet – but they do not say whether choosing one source over another varies by social status.

While existing research has yet to explore fully the details of health-information seeking by social status, there is reason to expect a relationship between the two. In this paper we ask the following related questions. Are there differences among people of different racial, ethnic, sex and socioeconomic backgrounds in where they seek different types of health information? Both the fundamental cause perspective and health lifestyles perspective would predict patterned differences in health-information seeking by social status. To address the predictions of the fundamental cause perspective, we measure respondents' social background. Further, as the fundamental cause perspective predicts, those from disadvantaged social statuses will be less healthy, and because

having poorer health may influence looking for health content, we measure respondents' health status to account for this possible mechanism through which social status may influence health-information seeking.

We gauge the health lifestyle perspective in two ways. First, the health lifestyles approach would predict that people from some privileged social backgrounds would be especially likely to seek information about pursuing a healthier lifestyle apart from seeking treatment for a specific problem. In order to address this prediction, we divide the types of health content into information about specific diseases and information about living a healthy lifestyle. Second, those from certain backgrounds (i.e., women, higher SES categories) could be more likely to look for health information more generally, which can be gauged by analyzing results from both types of health content. To address a key mechanism through which the health lifestyles perspective posits differences between statuses in health-content seeking, we also measure respondents' interest in health/fitness information. Further, we separate out our analyses by type of information source – online versus traditional – which has been difficult to do previously.

While our sample is somewhat homogeneous with regard to age and respondents' education, it is quite diverse with respect to race, ethnicity, gender, and socioeconomic status. Thus, we might expect differences in health-information seeking based on these types of variation, as would be predicted by both the fundamental cause and health lifestyle perspectives.

Digital Inequality and Health-information seeking Online

Among the variety of places one can find health information, an increasingly common source is the Internet (e.g., Rice & Katz, 2001), with as many as four-fifths of users looking for such content online (Zickuhr, 2010). In fact, given that seeking health information on the Web appears to offer many benefits not available through other means, some see digital media as a means to overcome health disparities (Gibbons, 2005). The sheer volume and variety of information available

online is likely much more than most people have available offline (Hardey, 1999). Further, the sense of anonymity and privacy that the Internet offers leads some to seek sensitive, potentially stigmatizing information through this means (Berger, Wagner, & Baker, 2005; Lambert & Loiselle, 2007). The online world also allows people to expand their networks far beyond those available in person. For instance, those dealing with health issues can exchange information and support with people from diverse backgrounds and locations who share their concerns and conditions (Barker, 2008; Drentea & Moren-Cross, 2005).

While some hold more critical views of the value of the Internet for health-information seeking (e.g., Bonnar-Kidd, Black, Mattson, & Coster, 2009; Holland & Fagnano, 2008), it appears that there is at least the *potential* that seeking health content online could offer benefits to those who do so. However, these benefits are only available to those who are able to access and make use of the Internet effectively. These resources and skills are themselves socially patterned, however. Even among those who are online, research has shown that people vary considerably in their Web-use abilities. Not only has research documented differences in online abilities(e.g., Hargittai, 2010), but it has also shown that people's sex, racial/ethnic and socioeconomic backgrounds are all systematically related to their skills, with those in more privileged positions reporting higher levels of understanding of the Internet and using it for more diverse purposes (Hargittai & Hinnant, 2008).[1] Applying the knowledge-gap hypothesis specifically to Internet uses, Bonfadelli (2002) also found a relationship between sociodemographic factors and diversity of Internet use. Although Bonfadelli's (2002) data set did not include information about health-information seeking per se, he did find that those in more privileged positions use the Internet for more capital-enhancing and more diverse

[1] Although about a quarter of Americans remain offline (e.g., Zhang, Callegaro and Thomas, 2008), we focus less on this core first-level digital divide and, rather, explore how those who do use the Internet utilize it differently for health matters all the while recognizing that lacking access to the Internet has the potential to disadvantage people further.

uses than those from less advantaged backgrounds contributing to digital inequality even after basic access differences are no longer an issue.

These inequalities in general skill and use patterns are mirrored in distinctions between those who seek health information online and those who do not. Using data from the General Social Survey Information Society module, Cotten and Gupta (2004) found that online health information seekers had higher income and more education, and were younger and healthier (see also DiMaggio et al, 2004). The results of subsequent studies from a variety of data sources have generally supported these findings (Andreassen et al., 2007; Ayers & Kronenfeld, 2007; Lee, 2009). Research has also shown that women's tendency to be more interested and engaged than men in health-promoting behaviors extends to searching for health information online (Anderson, 2004; Atkinson, Saperstein, & Pleis, 2009; Rice, 2006).

Prior work is less clear on differences in use of the Internet for health purposes along racial and ethnic lines. While there is some evidence that Hispanics use the Internet less than non-Hispanic Whites for this purpose (Lorence, Park, & Fox, 2006; Pena-Purcell, 2008), what underlies that pattern has not been explored in depth. Further, relatively little research has been conducted on patterns of looking for *specific types* of health information online by social status, perhaps due to the lack of availability of appropriately nuanced data sets. Given these limitations of the literature, there is a need for more detailed analyses of some of the factors underlying patterns of online health-information seeking among people from different social backgrounds.

The present study contributes to this body of work by examining whether (1) there are systematic differences between members of various social groups in seeking different types of health information online; and (2) whether any identified patterns can be explained by indicators of digital inequality such as differences in online autonomy and skill. Because all of the students in our sample have some access to the Internet, we move beyond basic conceptions of the digital divide

(i.e., technical access differences), instead focusing on how other factors such as online skill and differentiated use affect health information seeking.

DATA AND METHODS

No nationally representative data set exists that includes the type of detail about both health-information seeking and Internet experiences necessary to answer the questions raised above; thus we rely on primary data collection on a particular population for the analyses. We draw on data we collected from first-year students at the University of Illinois, Chicago. The authors of this piece are not now nor have ever been affiliated with this school beyond the scope of this project. This campus was chosen due to the diverse composition of its student body and the importance of that factor to the questions of interest in the overall study. This university consistently ranks among the most ethnically diverse campuses in the United States (U.S. News and World Report, 2009). Education and age have been shown as some of the most important predictors of Internet use (e.g., Smith, 2010) and online skill (Hargittai, 2002; Van Deursen, 2010). By controlling for age and education, we can gain insight into the variation in online behavior of a group that has come of age in the digital era. Due to this aspect of the data set, however, we must stay conscious of limitations in the generalizability of the findings.

A paper-pencil survey was administered in February-April, 2009 to students in class in the one course on campus that is required for everybody, the First-Year Writing Program. By working with this course, the project avoids biasing against people who may be less likely to take certain classes since this one is a requirement for all. Overall, counting all students who were enrolled in the 92 sections of this course, the final response rate is 80.5%. The analyses presented in this paper draw on 1,115 first-year students.[2] The survey was administered on paper rather than on the Web so

[2] The survey included a verification question to assess whether students were paying attention to the questionnaire: "The purpose of this question is to assess your attentiveness to question wording. For this

as not to bias against those students who are online less frequently or who are less inclined to fill out online forms for whatever reason (e.g., lack of enough private time spent online). Since having ample time online to engage in various activities is linked to the questions of interest in this study, it was important not to use a data-collection method that might be related to it.

Measures: user background

Table 1 presents the demographic and socioeconomic background of study respondents. Although both sexes are well represented, more women (58.7%) than men participated. Almost everybody in the sample (close to 99%) is either 18 or 19 so that variable is nearly constant and is thus not included in the analyses. For measures of race and ethnicity, students were first asked if they were Hispanic or of Latino origin and about a quarter (23.7%) indicated to be so. We also asked students the country of origin of both their father and mother. Because Hispanic health has been shown to vary systematically by "generation status" and immigrant status (with first generation immigrants healthier than later generations, Dubowitz, et al., 2010), we used this information to split Hispanic students into two groups: those with both parents born in Latin America or Mexico and those without.[3] Although the measures are not exact, students who indicated that both of their parents were born in Latin America or Mexico could be understood as generally earlier in "generation status" than others and are themselves likely first or second-generation immigrants.

Students were asked their race including the following categories: (a) White/Anglo/

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question please mark the 'Very often' response." The instrument included five possible response options: Never, Rarely, Sometimes, Often, and Very often. We exclude from the study a small portion of students, 4.5% or 52 respondents, who did not choose "Very often" in response to this verification question. The 1,115 students represent those who answered the question correctly.

[3] We would expect the effects of generation status to be most visible with those students who had both parents born in Latin America or Mexico, as opposed to those with "mixed parentage". Thus we restricted the category to the former.

Caucasian/Middle Eastern; (b) Black/African American; (c) Asian; (d) American Indian or Alaskan Native; (e) Other. Most responses in the "Other" category indicated Hispanic origin and were coded accordingly. The final race and ethnicity categories used for the analyses are: Hispanic with both parents born in Latin America or Mexico, Hispanic without both parents born in Latin America or Mexico, non-Hispanic African American, non-Hispanic Asian American, and non-Hispanic White. As the figures in Table 1 indicate, less than half of the sample is White and there are a considerable number of Hispanic students and Asian Americans in the group. African Americans make up just over ten percent of the sample. There are just a handful (six respondents, or one-half percent of the sample) of Native Americans who have been excluded from the analyses due to their low representation. The base category in the models is non-Hispanic White.

Consistent with other research, we use data about parental education as a proxy for socioeconomic status (e.g., Carlson, Uppal, & Prosser, 2000).[4] Respondents were asked to report the level of education of both their mother and father using the following categories: (a) less than high school degree; (b) high school degree; (c) some college; (d) college degree (for example: B.A., B.S., B.S.E); (e) advanced graduate (for example: master's, professional, Ph.D., M.D., Ed.D.). Based on information from these two questions, we created a parental education variable that is assigned the value of the highest education by either parent, e.g., if a student has a mother with a high school degree and a father with a college degree then the parental education variable for that student is coded as "college degree". Table 1 shows that there is considerable diversity regarding the educational background of students' parents. Close to a quarter of students come from families in which neither parent had more than a high school education and just below a fifth of participants

[4] Although income data are generally preferable for operationalizing socioeconomic status, with a group of college students such measures are hard to obtain and interpret. Namely, students often do not have income of their own and cannot reliably assess the income of their parents. Additionally, household income is a complicated measure when a large proportion of respondents (43%) lives with roommates.

have at least one parent who has a graduate degree. For the analyses, we recoded these variables into three categories: (1) high school or less; (2) some college; (3) college or more, and we use the third category (college or more) as the base in the models.

In addition to parental education, we collected two other measures to help assess students' socioeconomic status. First, we asked respondents whether they worried about being able to pay for tuition, indicating some level of economic hardship. Just over half (56.4%) expressed such a sentiment. Second, we asked students whether either of their parents "read or write paragraphs or longer documents" in their jobs regularly as a way to get a sense for parents in white-collar jobs. A bit less than half of the sample (43.1%) indicated having such a parent. Both of these measures are correlated with parental education in the data set at a statistically-significant level ($r=-.15$ ($p<.000$), $r=.33$ ($p<.000$) respectively) suggesting that they are capturing the type of background we had intended, but neither of the correlations is prohibitively high and thus does not cause concern regarding inclusion in the same models.[5] Both of these measures are included as dummy variables in the analyses. As evidenced by these descriptive statistics, while the sample is homogenous when it comes to age and respondents' education level (everybody is in the first year of college at the same institution), there is considerable diversity regarding socioeconomic status and race/ethnicity.

Measures: Internet experiences

When looking at online activities as the outcome (i.e., health-information seeking by going to a Web site or participating in an online discussion forum), it may be helpful to control for types of experiences with the Internet. Although all respondents reported being Internet users, they may not be identical when it comes to their online experiences. We use four measures to assess experiences with the Internet: number of use years for Internet veteran status, hours spent on the Web weekly

[5] Because these variables do not load on one factor, however, we opted against creating an index of the three. Cronbach's $\alpha= .43$.

for frequency of use, number of Internet access points for autonomy of use, and understanding Internet terms for online skill.

On average, students have been online for 5.7 years (standard deviation: 2.3). This measure is logged in the analyses given that there are likely diminishing returns to additional years of having been a user as the number of years increases. Time spent on the Web weekly (excluding email, chat and voice services) ranges from 0-42 hours and is also logged in the analyses for reasons similar to logging number of use years. On average, students report spending 17.4 hours on the Web weekly with the bottom ten percent spending less than an hour on the Web daily compared to the top ten percent reporting 4-5 hours of daily use.

Prior work has shown that autonomy – the freedom to use the Internet when and where one wants to – is an important predictor of online activities (e.g., Hassani, 2006). We asked respondents to indicate the types of locations – from a list of 10 – where they could access the Internet if they wanted to. The average number of access locations is 6.6 (standard deviation: 2.2). In the analyses, we log this figure given that each additional location is likely going to have diminishing returns. The skill measure comes from aggregated information asking respondents their level of understanding of 27 Internet-related terms (Hargittai & Hsieh, In Press). With the exclusion of missing values on these measures, the valid responses to these 5-point Likert-scale items were averaged to generate a global measure of Internet skill level (Cronbach's α=.94), the mean of which is 3.2. This measure is normally distributed with similar representations of low, medium, and high-level skill users in the sample.

Considering the above figures, it is clear from the data that this is truly a generation that grew up with digital media. While there is certainly some amount of variation in Internet access, there are no basic barriers standing in the way of these young adults in accessing the Internet. Limits may be put on their uses due to other factors (e.g. the need to share resources at home, time

taken up with a job or commuting), but everybody in the sample has basic access. This suggests that traditional concerns about the so-called digital divide do not apply to study participants concerning availability of the Internet. Looking at such a wired group of users allows us to control for basic access and focus on differentiated uses instead. Regarding broader applicability of our findings, these particular characteristics of the data suggest that findings will be conservative when it comes to observing differentiated Internet uses for accessing health information since we have excluded, by design, people who do not use the Internet at all, a group that tends to be less privileged – lower levels of education, lower income – than those who are connected (Smith, 2010). By excluding older and less-educated populations, we have also excluded those who tend to have lower levels of autonomy, experiences, and skill in using the Internet (e.g., Hargittai & Hinnant, 2008, Hassani, 2006).

Measures: health-information seeking

We included a group of questions asking participants what sources they use for seeking information about different types of health matters. From the options, we created two categories of content that a user might consult. One deals with content that a health information seeker would most likely look for when faced with an actual medical issue. In this category we include responses to a question asking whether participants sought information about "a specific disease or medical problem", "prescription or over-the-counter drugs", "specific doctor or hospital", and "depression, anxiety, stress, or mental health issues", each asked separately. The second category deals with information about broader, more mundane health issues involved in promoting health or preventing disease, which are less frequently associated with treating specific ailments. In this category we include "diet, nutrition, vitamins or nutritional supplements" and "exercise or fitness" (again, these were presented on the instrument as separate questions). These measures are similar to some of those asked on the Pew studies about use of the Internet for health information (Fox, 2011; Fox &

Jones, 2009). By restricting and grouping the different types of health content, we analyze two major ways in which health information can function in everyday life. The first category accounts for patterns in seeking health information at the occurrence of an illness, while the second category focuses on how people seek health information regarding the everyday health issues involved in Cockerham's (2005) health lifestyles.

On the survey, respondents were first asked whether they had sought each of the different types of health content over the past year. If they answered in the affirmative then they were next asked to indicate the sources of such content by checking "all that apply" from among the following options: (a) "Friends or family"; (b) "Medical professional"; (c) "Newspaper, magazine, TV, radio, books (not online)"; (d) "Web site"; and (e) "Online discussion (not counting friends/family)". These options are somewhat similar to the questions asked on the 2000 General Social Survey (Cotten and Gupta, 2004) although our survey included some additional nuances, especially regarding online sources. While the 2000 GSS only asked about "the World Wide Web", our instrument broke this out into two options to distinguish between information seeking through browsing Web content and participation in online discussions about health matters.

To construct our outcome variables, we created binary variables for use of each source by type of health content. We then created a summary binary variable for use of traditional sources by type of health content if a respondent included turning to options a-c above. We created two separate binary variables for use of Web site versus online discussion for each of the two types of content. This coding then allows us to consider separately what explains having used traditional sources, Web sites and online discussion for both treatment and health lifestyle information over the past year.

Measures: health status and interest

As has been done in other studies (e.g., Atkinson, Saperstein & Pleis, 2009; Dutta-Bergman, 2004, 2005; Lorence, Park & Fox, 2006) we included measures gauging the condition of respondents' health and their interest in health and fitness. For health status, we asked them to rate their health ("In general, how is your health?") by picking one of the following options: Excellent, Very good, Good, Fair, Poor. Not surprisingly given their young age, the majority of our respondents report being in relatively good health. We group together respondents of excellent and very good health (69.2%) to contrast them against those indicating lower-level health status. We asked about interest in "health/fitness" on a four-point scale and include it as a continuous variable in the models.

Methods of analysis

After presenting basic descriptive statistics about the prevalence of health-information seeking in different topical domains using different sources, we use logistic regression analyses to look at what predicts having sought different types of health information from various sources. Because our outcome variables are binary – someone either did or did not engage in the particular information-seeking process – this is the most appropriate statistical technique for our purposes.

RESULTS

Prevalence of health-information seeking using different sources

Overall, we find that a majority of respondents reports looking for both treatment (81.3%) and health lifestyle (74.9%) information at some point over the past year. As Table 2 shows, the most popular source for information about both types of health matters is the Internet, Web sites in particular (in contrast to online discussions). Second in popularity is consulting friends or family members. For treatment matters, next in prevalence is consulting with a medical professional. In contrast, for health lifestyle content, traditional media sources such as magazines and TV are in third

place. Less than a quarter of respondents reported using these sources for treatment though. In the realm of prevention, less than a fifth of students turn to medical professionals. Overall, close to two-thirds (65.7%) of respondents consult traditional sources for treatment material while somewhat less (58.3%) do so for health lifestyle information. Least common of all options for both types of content is participation in online discussions (a measure that excluded online discussions with friends or family members).

Of particular interest in light of recent media developments is what explains use of the Web and online discussions for health-information seeking. Thanks to our nuanced data about general Internet uses and experiences, we are able to consider the relationship of these factors. In Table 3, we present bivariate statistics of how use of different sources for both types of health information relates to the four Internet experience measures of interest (veteran status, autonomy of use, frequency of use, and Web skill). The figures show that whether for treatment or health lifestyle materials, whether turning to a site or online discussion, general Internet experiences matter. Those who started using the Internet earlier, who have more locations to access it, who spend more time online and who are better skilled at it are more likely to use the medium for health information. For example, those who do not consult online discussions for treatment information (column headed Online discussion-Treatment-No on Table 3) spend, on average, 16.8 hours online weekly (row labeled "Hours spent on the Web weekly), which is statistically significantly less than the 19.8 average hours spent on the Web by those who do turn to online discussion for such content. The figures in this table suggest that while many young adults may be on an equal footing when it comes to basic Internet access and use, the differences in their Internet experiences play an important role in whether they use the Web for accessing health content. Next, we look at whether the above-noted variations in use of the Internet for health information hold when we take other factors into consideration.

Explaining differences in treatment health information seeking

We start by looking at variation by user background in accessing traditional sources (mainstream media offline, friends or family, and medical professionals) for treatment health information. Model 1 in Table 4 considers whether sex, race and ethnicity, and socioeconomic status are related to such activity. Findings suggest that women are considerably more likely to turn to traditional sources for treatment content than men. Hispanic students from families where both parents were not born in Latin America or Mexico are considerably less likely than Whites to do so. We find no relationship between our measures of socioeconomic status and this activity, a departure from prior research. As noted earlier, however, given that all of our respondents are in college, we do not have the level of variance in socioeconomic status in the sample that is generalizable to the whole population, and findings on this variable are likely conservative. In Model 2, we add information about health status and health interest to the analysis. Interest in health and fitness is strongly related to consulting traditional sources for health treatment content. Being in good health, however, is not related. The findings about sex and ethnicity from Model 1 are robust. Overall, it is important to note that these models explain a rather small portion of the variance in the outcome variable.

Next we look at what explains whether a student has accessed treatment content on Web sites (Models 3-5) and through online discussions (Models 6-8) in the past year. Models 3 and 6 only consider user background variables, Models 4 and 7 add information about health status and health interest, and Models 5 and 8 include data on Internet experiences (veteran status, autonomy, frequency of use, and skill). Not surprisingly, higher-level interest in health matters is significant across the board. Sex is statistically significant in all of the models about consulting Web sites for treatment information, but not in the case of online discussions. Women are considerably more likely to have consulted a Web site for treatment health information than men in the past year.

Interestingly, once we add information about Internet skill to the model (Model 5), the coefficient for sex increases considerably and skill itself is significant. Those who are more knowledgeable about the Internet are more likely to consult Web sites for treatment health information. Additionally, inclusion of skill in the model also yields the finding that those with better health are less likely to look to Web sites for treatment.

Regarding online discussions as sources for treatment content (Models 6-8), there is no sex difference. There is some variation by ethnicity, however. Hispanic students whose parents were not both born in Latin America or Mexico are less likely to turn to such sources for this type of material. This relationship is even stronger once we account for Internet experiences. Students' likelihood to turn to online discussion about treatment is positively related to autonomy, frequency of use and Web skill. As with Models 1-2, however, the variance explained is rather low in all of these cases.

Explaining differences in health lifestyle information seeking

Model 1 in Table 5 considers whether demographic background and socioeconomic status relate to drawing on traditional sources for health lifestyle content while Model 2 adds information about health status and interest to the equation. Findings suggest that women are more likely to engage in such behavior than men whether we control for health status and interest or not. Those with better health also report more consultation of such sources. While Model 1 barely explains any variation in the outcome, by adding information about health status and interest, we see a considerable increase in the pseudo R^2 value, not surprisingly.

Models 3-5 of Table 5 look at who is more likely to turn to Web sites for such content. When only considering user background variables (Model 3), we find no systematic relationship between respondents' characteristics and the outcome. Once we add health status and health interest to the analysis, these findings are robust, but we also see that those with higher levels of interest in health are significantly more likely to consult Web sites on the topic. Including Internet experiences

(Model 5) improves the model fit slightly and suggests that autonomy of use and Web skill are positively related to having consulted Web sites for health lifestyle information.

When it comes to obtaining health lifestyle content through online discussions, results in Model 6 suggest that women are less likely while Asian Americans are more likely to do so. These findings are robust irrespective of health status or interest (Model 7). However, once we consider Internet experiences as well (Model 8), those relationships no longer hold. Rather, autonomy of use and Web skill are positively related to participating in online discussions for such content, but user demographics no longer show a relationship to the outcome. Although the variance explained here is a bit larger than with health treatment content as the outcome, the model fit remains weak.

Discussion

This study reveals mixed support for both the fundamental cause and the health lifestyles perspectives on the relationship between social status and health information seeking. The patterns evident are also mixed in their continuity across traditional and online sources of health content. Contrary to both the fundamental cause perspective and the health lifestyle perspective, in a group of college students, we find no significant relationships between health-information seeking and socioeconomic status for either treatment or lifestyle health information. It is important to note that the homogeneity of the sample on age and education may result in a conservative estimate of variation in this regard, however. Some key mechanisms through which social status is thought to impact health-information seeking also receive mixed support, with health status exhibiting little significant relationship with health-information seeking. The relative homogeneity of respondents in health status may play a role in the limited effect of that variable on health-information seeking in our sample. Having an interest in health and fitness, however, is significantly related to looking for both types of health information across all sources.

We also find limited variation by race and ethnicity, which is notable not only because the fundamental cause and health lifestyles perspectives would predict it, but also because research has shown that in other realms race and ethnicity often explain variations in digital media uses (e.g., Hargittai, 2010; Howard, Rainie & Jones 2001; Watkins, 2009). One finding in this domain that does stand out concerns Hispanic students. Adding a new dimension to the "Hispanic paradox", Hispanics in our sample without both parents born in Latin America or Mexico, i.e., those later in "generation status", are less likely to look for health information for treatment from traditional sources and online discussion groups. Contributing to research on Hispanic health, this finding demonstrates that while there are differences between Hispanics and non-Hispanic Whites in health-information seeking (Lorence, Park, & Fox, 2006; Pena-Purcell, 2008) they do not exist for all Hispanics, nor do they apply for all types of health information. Hispanics in later generations are less likely to look for treatment information from select sources, revealing a pathway through which generational differences in Hispanic health may operate. Furthering the "paradox" of Hispanic health, the key mechanisms presumed to be involved in the fundamental cause and health lifestyles perspectives, health status and interest in health and fitness do not account for these results. When those variables are included, the effects persist. It may be that because of the relative uniformity of the sample with regard to health status and age, we are seeing a population that will not be as interested as others in seeking out health treatment information until they need it, and they have not yet reached the stage of life where their own increased likelihood for health problems forces them to seek out that information. It is notable, however, that these relationships do not extend to consulting health lifestyle information.

Sex differences in online health-information seeking were also evident. Consistent with prior research (see Lambert & Loiselle, 2007; Rice, 2006), women are more likely to look for treatment information from all sources except online discussions. They also are more likely than

men to look for health lifestyle information from traditional sources and less likely to consult health lifestyle information through online discussions. However, this last difference no longer holds when online skills are taken into account. These findings partially support the health lifestyle perspective, given that the relationships span types of health information, though it appears women's increased likelihood focuses more on treatment information than on health lifestyle content. However, a central mechanism in health lifestyle theory – interest in health and fitness – does not explain the relationships, as they persist when the variable is added. It appears that there is something about the relationship between sex roles and health-information seeking that is not captured by controlling for interest in health and fitness in our data set. Given the limits in what level of the variance our models are able to explain, considerable room remains for future work to explore the underlying factors of these relationships.

We add a new wrinkle to health lifestyle theory by showing the importance of the medium through which men and women seek information. Prior work has shown that sex differences in self-reported Internet skills are related to online activities (e.g., Correa, 2010; Hargittai & Walejko, 2008). Females in the study, overall, report lower levels of Internet skill than males, and these differences suppress the relationship between sex and tendency to look for health information in several cases. Once the Internet experience variables are introduced (Models 5 and 8 in both Tables 5 and 6), we see an increase in the coefficient for the likelihood of women's health-information seeking. However, only in looking for health lifestyle information through online discussion do we see the skill variable explaining the sex gap in health-information seeking: once the skill variable is introduced, the relationship is reduced to non-significance. The tendency of the female college students in our sample to look for health information from traditional sources does not neatly translate online, in part because men tend to report higher-level Web skills, which seems to be

related to using the medium for seeking such content. Thus with regard to sex, the Internet can act as a leveler in seeking health information.

The results also highlight differences between who simply turns to Web sites for health content compared to the more active practice of engaging in online discussions. This is a distinction most studies are unable to draw since they tend to collapse all online information seeking into one generic Web-use variable. As the Internet matures, more and more opportunities become available for people to interact with others and contribute to content themselves rather than simply approaching all online content passively. To be sure, chat rooms and email lists have existed for a long time, but such forum content is now much more meaningfully searchable and publicly accessible than before. While considerable research already looks at how people utilize such resources (e.g., Shaw et al., 2006; Tanis, 2008), most such work samples on participants in online discussions rather than asking an important prior question: who turns to them in the first place.

There are several areas that would be fruitful for future research in this line of inquiry. First, it would be helpful to add more Internet experience variables to nationally-representative samples that look at health-information seeking so that research could examine whether factors such as income and education matter in the process among a more socioeconomically diverse group. Further, the research agenda could expand to include information regarding the health status, health interest and Internet experiences not only of respondents, but also of those in their networks. For instance, people might seek out health content not only if they themselves are ill, but also if they are healthy while one of their loved ones is ill (Fox, 2011). Moreover, because health behaviors spread throughout networks (Christakis & Fowler, 2009), we could gain additional insight into health information seeking by understanding respondents' network connections (Askelson et al, in press) and the seeking behaviors of those in respondents' networks.

Conclusion

Thanks to a unique data set with nuanced information about a diverse group of college students' use of different sources for health-information seeking and their Internet experiences and skills, in this study we were able to examine how a group of young adults obtains health content in the new media environment. We find considerable sex differences across different sources of health information even after controlling for other background characteristics, health status, interest in health and Internet experiences. We also find differences between early-generation and later-generation Hispanic students, again, across sources. Finally, challenging assumptions that all young adults are universally savvy with digital media (e.g., Prensky, 2001), we find that variation in Web-use skill is also an important factor when it comes to use of the Internet for health information. Students who are more knowledgeable about the Web are more likely to use it for obtaining health content.

These findings have implications for efforts to address health inequalities. We see that seeking health information online levels differences between some groups, such as men and women. Further, we see that online experience and skill are very important in the degree to which young adults turn to online sources of health information. In addition to online skill, other measures of Internet experiences also matter in several ways for Web-based health-information seeking. Tables 4, 5, and 6 all show that students who are veterans, who are online for longer periods, and who have higher skills look for a variety of types of health information more than others. Thus, merely expanding access to online health content appears insufficient to open opportunities for health information seeking using that medium. Education and support to improve people's understanding of digital media must accompany efforts to improve universal Internet access (Federal Communications Commission, 2010). Opening up channels of health information seeking itself may be insufficient, as some groups in society may be less likely to use those channels to search for health information, as the results in this paper for later-generation Hispanics show. Thus, wider

public health efforts aimed at stressing the importance of early awareness of health matters and how these can be addressed online should be a part of any attempt at improving the health of vulnerable populations and thus reducing health inequalities.

Table 1. Background of Study Participants

	Percent	N
Men	41.3	456
Women	58.7	648
Age		1,112
18	66.2	736
19	32.6	363
20-29	1.2	13
Race and ethnicity		1,101
African American, non-Hispanic	10.6	118
Asian American, non-Hispanic	23.1	259
Native American, non-Hispanic	0.5	6
White, non-Hispanic	41.1	458
Hispanic	23.7	260
Hispanic with both parents born in Latin America or Mexico	15.7	172
Parents' highest level of education		1,103
Less than high school	7.2	79
High school	15.9	175
Some college	23.7	261
College	34.6	382
Graduate degree	18.7	206
Worries about being able to pay for tuition	56.4	1,114
Has parent who reads/writes paragraphs or longer documents regularly on the job	43.1	1,115
Health status		1,109
Excellent	28.2	313
Very good	41.0	455
Good	25.5	283
Fair	4.3	48
Poor	0.9	10

Table 2. Sources of information for treatment and preventive health content over the past year (n=1,115)

	Treatment	Lifestyle
Traditional sources		
Friends or family	56.1	47.4
Medical professional	44.6	18.0
Newspaper, magazine, TV, radio, book (not online)	16.0	29.9
Any of the above three	65.7	58.3
Online sources		
Web site	73.7	66.5
Online discussion (not counting friends/family)	15.6	14.8

Table 3. Relationship of Internet experiences and use of the Internet for health information

	Web site				Online discussion			
	Treatment		Lifestyle		Treatment		Lifestyle	
	No	Yes	No	Yes	No	Yes	No	Yes
Number of Internet use years	5.6	5.7	5.5*	5.8	5.6**	6.1	5.6**	6.2
Hours spent on the Web weekly	16.3*	17.7	16.5*	17.8	16.8***	19.8	17.0**	19.6
Number of access locations	6.5	6.6	6.3***	6.8	6.5***	7.2	6.5***	7.1
Internet skills	3.1*	3.2	3.1**	3.3	3.2***	3.5	3.1***	3.5

T-tests between No and Yes in each condition; * $p<0.05$, ** $p<0.01$, *** $p<0.001$

Table 4. Logistic regression on various sources of treatment health information (standard errors in parentheses)

Independent variables	Traditional sources		Web sites			Online discussion		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Female	.55***	.50***	.46**	.38*	.60***	-.10	-.15	.16
	(.13)	(.14)	(.14)	(.15)	(.16)	(.16)	(.17)	(.19)
Hispanic, parents not both born in Latin America/Mexico	-.69**	-.70**	-.46	-.40	-.39	-.83*	-.90*	-.96*
	(.24)	(.25)	(.26)	(.26)	(.27)	(.39)	(.42)	(.43)
Hispanic, parents both born in Latin America/Mexico	-.05	-.05	-.22	-.24	-.19	-.55	-.56	-.51
	(.21)	(-.21)	(.22)	(.22)	(.23)	(.29)	(.29)	(.30)
African American	-.13	-.07	-.27	-.20	-.22	-.44	-.37	-.41
	(.23)	(.24)	(.24)	(.25)	(.26)	(.31)	(.31)	(.32)
Asian American	-.02	-.09	.24	.21	.09	.02	.02	-.20
	(.17)	(.17)	(.19)	(.20)	(.20)	(.20)	(.20)	(.21)
Parental education: high school or less	-.17	-.19	-.08	-.08	-.05	-.27	-.26	-.17
	(.18)	(.19)	(.20)	(.20)	(.21)	(.24)	(.24)	(.25)
Parental education: some college	.02	.00	-.01	-.02	.02	-.22	-.23	-.18
	(.17)	(.17)	(.18)	(.18)	(.19)	(.21)	(.22)	(.22)
Worries about affording tuition	.16	.19	.13	.16	.11	.15	.20	.21
	(.13)	(.14)	(..14)	(.15)	(.15)	(.17)	(.17)	(.18)
Parent reads/writes on job	.22	.27	-.12	-.06	-.10	-.09	-.08	-.20
	(.14)	(.15)	(.15)	(.16)	(.16)	(.18)	(.18)	(.19)
Good health		-.05		-.28	-.34*		-.14	-.22
		(.15)		(.16)	(.17)		(.18)	(.19)
Interest in health/fitness		.41***		.45***	.44***		.39***	.37***
		(.08)		(.08)	(.08)		(.10)	(.10)
Internet use years					-.01			.04
					(.03)			(.04)
Number of access locations					.05			1.57*
					(.56)			(.69)
Weekly hours on Web					.37			.63*
					(.21)			(.25)
Internet skill					.32**			.38**
					(.10)			(.12)
Constant	.28	-.87**	.84***	-.24	-2.53	-1.29***	-2.39***	-10.37***
	(.17)	(.30)	(.18)	(.32)	(1.65)	(.21)	(.40)	(2.09)
N	1081	1070	1081	1070	1055	1081	1070	1055
Pseudo R2	.02	.04	.02	.04	.06	.02	.03	.07

* p<.05, ** p<.01, *** p<.001

Table 5. Logistic regression on various sources of health lifestyle information (standard errors in parentheses)

Independent variables	Traditional sources		Web sites			Online discussion		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Female	.38**	.33*	.02	-.10	.07	-43*	-.44*	-.15
	(.13)	(.14)	(.13)	(.15)	(.16)	(.18)	(.18)	(.20)
Hispanic, parents not both born in Latin America/Mexico	.10	.19	-.08	.00	.00	-.41	-.29	-.31
	(.24)	(.26)	(.25)	(..27)	(.28)	(.40)	(.41)	(.42)
Hispanic, parents both born in Latin America/Mexico	-.03	-.01	-.27	-.29	-.24	-.01	.01	.02
	(.20)	(.21)	(.21)	(.22)	(.23)	(.29)	(.30)	(.31)
African American	-.33	-.25	-.21	-.05	.02	.03	.11	.10
	(.22)	(.24)	(.22)	(.25)	(.26)	(.32)	(.32)	(.33)
Asian American	.14	.14	.22	.21	.08	.45*	.50*	.30
	(.16)	(.18)	(.17)	(.19)	(.20)	(.21)	(.22)	(.23)
Parental education: high school or less	-.25	-.27	.07	.09	.16	-.28	-.25	-.15
	(.18)	(.19)	(.19)	(.20)	(.21)	(.26)	(.26)	(.27)
Parental education: some college	.01	.04	-.05	-.05	-.06	-.24	-.23	-.17
	(.16)	(..17)	(.17)	(.18)	(.19)	(.23)	(.23)	(.24)
Worries about affording tuition	.01	.07	-.03	.00	-.02	.27	.34	.33
	(.13)	(.14)	(.13)	(.15)	(.15)	(.18)	(.19)	(.19)
Parent reads/writes on job	-.11	-.05	-.19	-.11	-.21	.06	.09	-.03
	(.14)	(.15)	(.14)	(.15)	(.16)	(.19)	(.18)	(.20)
Good health		.11		-.16	-.20		.18	.08
		(.15)		(.16)	(.16)		(.21)	(.22)
Interest in health/fitness		.91***		1.01***	1.03***		.58***	.60***
		(.08)		(.09)	(.09)		(.12)	(.12)
Internet use years					.05			.04
					(.03)			(.04)
Number of access locations					1.14*			1.25
					(.55)			(.75)
Weekly hours on Web					.36			.51
					(.21)			(.27)
Internet skill					.22*			.45***
					(.10)			(.13)
Constant	.23	-2.57***	.81***	-1.98***	-7.38***	-1.69***	-3.71***	-10.69***
	(.17)	(.32)	(.17)	(.32)	(1.65)	(.23)	(.47)	(2.26)
N	1081	1070	1081	1070	1055	1081	1070	1055
Pseudo R2	.01	.11	.01	.13	.15	.02	.06	.09

* p<.05, ** p<.01, *** p<.001

REFERENCES

Anderson, B. (2004). Everyday Research in the Knowledge Society: Who Uses ICTs to Find Job and Health Information. In R. Finnegan (Ed.), *Participating in the Knowledge Society*: Palgrave MacMillan.

Andreassen, H. K., Bujnowska-Fedak, M. M., Chronaki, C. E., Dumitru, R. C., Pudule, I., Santana, S., et al. (2007). European citizens' use of E-health services: A study of seven countries. *Bmc Public Health, 7*, 7. doi: 5310.1186/1471-2458-7-53

Askelson, N. M., Campo, S. & Carter, K.D. (In Press). "Completely Isolated? Health Information Seeking Among Social Isolates." *Health Education & Behavior*. doi: 10.1177/1090198110369055

Atkinson, N. L., Saperstein, S. L., & Pleis, J. (2009). Using the Internet for Health-Related Activities: Findings From a National Probability Sample. *Journal of Medical Internet Research, 11*, 12. doi: e410.2196/jmir.1035

Ayers, S. L., & Kronenfeld, J. J. (2007). Chronic illness and health-seeking information on the Internet. *health, 11*, 327-347. doi: 10.1177/1363459307077547

Barker, K. K. (2008). Electronic Support Groups, Patient-Consumers, and Medicalization: The Case of Contested Illness. *Journal of Health and Social Behavior, 49*, 20-36.

Berger, M., Wagner, T. H., & Baker, L. C. (2005). Internet use and stigmatized illness. *Social Science & Medicine, 61*, 1821-1827. doi: 10.1016/j.socsimed.2005.03.025

Bonfadelli, H. (2002). "The Internet and Knowledge Gaps: A Theoretical and Empirical Investigation." *European Journal of Communication 17*, 65-84.

Bonnar-Kidd, K., Black, D., Mattson, M., & Coster, D. (2009). Online Physical Activity Information: WIll Typical Users Find Quality Information? *Health Communication, 24*, 165-175.

Carlson, C., Uppal, S., & Prosser, E. C. (2000). Ethnic differences in processes contributing to the self-esteem of early adolescent girls. *The Journal of Early Adolescence, 20*, 44-67.

Cho, Y., Frisbie, W. P., Hummer, R. A., & Rogers, R. G. (2001). Nativity, Duration of Residence, and the Health of Hispanic Adults in the United States *International Migration Review, 38*, 184-211.

Christakis, N. & Fowler, J.H. (2009). *Connected: The Surprising Power of Our Social Networks and How They Shape Our Lives*. New York: Little, Brown, and Co.

Cockerham, W. (2005). Health Lifestyle Theory and the Convergence of Agency and Structure. *Journal of Health and Social Behavior, 46*, 51-67.

Cockerham, W. C. (2007). *Social Causes of Health and Disease*. Cambridge, UK: Polity.

Correa, T. (2010). The Participation Divide Among "Online Experts": Experience, Skills and Psychological Factors as Predictors of College Students' Web Content Creation. *Journal of Computer-Mediated Communication, 16*, 71-92.

Cotten, S. R., & Gupta, S. S. (2004). Characteristics of Online and Offline Health Information and the Factors that Discriminate Between Them. *Social Science and Medicine, 59*, 1795-1806.

DiMaggio, P., Hargittai, E., Celeste, C., & Shafer, S. (2004). Digital Inequality: From Unequal Access to Differentiated Use. In K. M. Neckerman (Ed.), *Social Inequality* (pp. 355-400). New York: Russell Sage Foundation.

Drentea, P., & Moren-Cross, J. L. (2005). Social Capital and Social Support on the Web: The Case of an Internet Mother Site. *Sociology of Health and Illness, 27*, 920-943.

Dubowitz, T., Bates, L. M., & Acevedo-Garcia, D. (2010). The Latino Health Paradox: Looking at the Intersection of Sociology and Health. In C. Bird, P. Conrad, A. Fremont & S. Timmermans (Eds.), *Handbook of Medical Sociology* (pp. 106-123). Nashville: Vanderbilt University Press.

Dutta-Bergman, M. (2003). Trusted online sources of health information: Differences in demographics, health behavior and health-information orientation. *Journal of Medical Internet Research, 5*, e21. www.jmir.org/2003/3/e21/index.htm

Dutta-Bergman, M. (2004). Primary Sources of Health Information: Comparisons in the Domain of Health Attitudes, Health Cognitions, and Health Behaviors. *Health Communication, 16,* 273-288.

Dutta-Bergman, M. (2005). The Readership of Health Magazines: The Role of Health Orientation. *Health Marketing Quarterly, 22*, 27-49.

Ettema, J. S. & Kline, F.G. (1977). "Deficits, Differences, and Ceilings: Contingent Conditions for Understanding the Knowledge Gap." *Communication Research, 4*, 179-202.

Federal Communications Commission. (2010). Connecting America: The National Broadband Plan. Washington, D.C.

Fox, S. (2011). Health Topics. Washington, D.C.: Pew Internet & American Life Project.

Fox, S., & Jones, S. (2009). The Social Life of Health Information. Washington, D.C.: Pew Internet and American Life Project.

Gaziano, C. (1983). "The Knowledge Gap: An Analytical Review of Media Effects." *Communication Research, 10*, 447-486.

Gibbons, M. C. (2005). A Historical Overview of Health Disparities and the Potential of eHealth Solutions. *Journal of Medical Internet Research, 7* e50 doi:10.2196/jmir.7.5.e50

Hardey, M. (1999). Doctor in the House: the Internet as a Source of Lay Health Knowledge and the Challenge to Expertise. *Sociology of Health and Illness, 21*, 820-835.

Hargittai, E. (2002). Second-Level Digital Divide: Differences in People's Online Skills. *First Monday. 7*

Hargittai, E. (2010). Digital Na(t)ives? Variation in Internet Skills and Uses among Members of the "Net Generation". *Sociological Inquiry. 80*, 92-113.

Hargittai, E. & Walejko, G. (2008). The Participation Divide: Content Creation and Sharing in the Digital Age. *Information, Communication and Society.11*, 239-256.

Hargittai, E. & Hinnant, A. (2008). Digital Inequality: Differences in Young Adults' Use of the Internet. *Communication Research. 35*, 602-621.

Hargittai, E. & Hsieh, Y.P. (In Press). Succinct Measures of Web-Use Skills. *Social Science Computer Review.*

Hassani, S. N. (2006). Locating Digital Divides at Home, Work, and Everywhere Else. *Poetics, 34*, 250-272.

Heron, M. P., Hoyert, D. L., Murphy, S. L., Xu, J. Q., Kochanek, K. D., & Tejada-Vera, B. (2009). *Deaths: Final Data for 2006*. Hyattsville, MD: National Center for Health Statistics.

Holland, M. L., & Fagnano, M. (2008). Appropriate antibiotic use for acute otitis media: What consumers find using web searches. *Clinical Pediatrics, 47*, 452-456. doi: 10.1177/0009922807313274

Howard, P. E. N., Rainie, L. & Jones, S. (2001). Days and Nights on the Internet: The Impact of a Diffusing Technology. *American Behavioral Scientist 45*, 383-404.

Lambert, S. D., & Loiselle, C. G. (2007). Health information-seeking behavior. *Qualitative Health Research, 17*, 1006-1019. doi: 10.1177/1049732307305199

Lee, C. (2009). The Role of Internet Engagement in the Health-Knowledge Gap. *Journal of Broadcasting & Electronic Media, 53*, 365-382.

Link, B. G., & Phelan, J. C. (1995). Social Conditions as Fundamental Causes of Disease. *Journal of Health and Social Behavior, 36*(Extra Issue), 80-94.

Lopez-Gonzalez, L., Aravena, V. C., & Hummer, R. A. (2005). Immigrant Acculturation, Gender, and Health Behavior: A Research Note. *Social Forces, 84*, 581-593.

Lorber, J., & Moore, L. J. (2002). *Gender and the Social Construction of Illness* (2nd ed.). Lanham, MD: Alta Mira Press.

Lorence, D. P., Park, H., & Fox, S. (2006). Assessing health consumerism on the Web: A demographic profile of information-seeking behaviors. *Journal of Medical Systems, 30*, 251-258. doi: 10.1007/s10916-005-9004-x

Lutfey, K., & Freese, J. (2005). Toward Some Fundamentals of Fundamental Causality: Socioeconomic Status and Health in the Routine Clinic Visit for Diabetes. *American Journal of Sociology, 110*, 1326-1372.

Markides, K. S., & Coreil, J. (1986). The Health of Hispanics in the Southwestern United States: an Epidemiologic Paradox. *Public Helath Reports, 101*, 253-262.

Morales, L. S., Lara, M., Kington, R. S., Valdez, R. O., & Escarce, J. J. (2002). Socioeconomic, Cultural, and Behavioral Factors Affective Hispanic Health Outcomes. *Journal of Health Care for the Poor and Underserved, 13*, 477-503.

Pena-Purcell, N. (2008). Hispanics' use of Internet health information: an exploratory study. [Article]. *Journal of the Medical Library Association, 96*, 101-107. doi: 10.3163/1536-5050.96.2.101

Phelan, J. C., Link, B. G., Diez-Roux, A., Kawaki, I., & Levin, B. (2004). 'Fundamental Causes' in Social Inequalities in Mortality: A Test of the Theory. *Journal of Health and Social Behavior, 45*, 265-285.

Prensky, M. (2001). Digital Natives, Digital Immigrants. *On the Horizon, 9*.

Rice, R. E. and J. E. Katz, Eds. (2001). *The Internet and Health Communication: Experiences and Expectations*. Thousand Oaks, CA, Sage.

Rice, R. E. (2006). Influences, usage, and outcomes of Internet health information searching: Multivariate results from the Pew surveys. *International Journal of Medical Informatics, 75*, 8-28. doi: 10.1016/j.ijmedinf.2005.07.032

Shaw, B. R., Hawkins, R., McTavish, F., Pingree, S. & Gustafson, D.H. (2006). Effects of Insightful Disclosure Within Computer Mediated Support Groups on Women With Breast Cancer. *Health Communication 19*, 133-142.

Smith, A. (2010). Home Broadband 2010. Washington, D.C.: Pew Internet & American Life Project.

Rieker, P. R., & Bird, C. (2000). Sociological Explanations of Gender Differences in Mental and Physical Health. In C. Bird, P. Conrad & A. Fremont (Eds.), *Handbook of Medical Sociology*. New York: Prentice Hall.

Tanis, M. (2008). Health-Related On-Line Forums: What's the Big Attraction? *Journal of Health Communication*, 13, 698-714. doi: 10.1080/10810730802415316

Tu, H. T. (2008). Striking Jump in Consumers Seeking Health Information. *Tracking Report/Center for Studying Health System Change, 20*.

U.S. News and World Report. (2009). America's Best Colleges 2010.

Van Deursen, A. J. A. M. (2010). *Internet Skills: Vital Assets in an Information Society*. Ph.D. Dissertation, University of Twente, Enscheded, Netherlands.

Watkins, C. J. (2009). *The young & the digital: What the migration to social network sites, games, and anytime, anywhere media means for our future*. Boston, MA: Beacon Press.

Williams, D. R. (1999). Race, SES, and Health: The Added Effects of Racism and Discrimination. *Annals of the New York Academy of Science, 896*, 173-188.

Zhang, C, Callegaro, M. &Thomas, M. 2008. "More than the Digital Divide?: Investigating the Differences between Internet and Non-Internet Users." in *Midwest Association of Public Opinion Research*. Chicago, IL.

Zickuhr, K. (2010). Generations 2010. Washington, D.C.: Pew Internet & American Life Project.