
The Separate Spheres of Online Health: Gender, Parenting, and Online Health Information Searching in the Information Age

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Abstract

The objective of this article is to explore how parental status, gender, and their interaction influence a variety of aspects of searching for online health information. Drawing on nationally representative survey data, the results show that in a number of ways parenting and gender have separate but significant influences on the following: online searching behavior, whether the information is used, and feelings about the information obtained. The authors found that although female parents are more likely than male parents to put the health information they have found online into use, parenting and sex have more independent than combined effects. This is particularly the case regarding whether respondents search for information for themselves or others, their feelings about the information found, and the process of finding online health information.

Keywords

gender, parenting, Internet, health

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Introduction

The number of Americans who use the Internet to search for health-related information for either themselves or others has grown considerably over the past decade and is expected to continue to grow with each passing year (Fox & Jones, 2009; Fox & Rainie, 2000; Rice, 2006). The most recent statistics indicate that 83% of U.S. adults have used the Internet to search for health-related information (Pew Internet & American Life Project, 2010). It is, therefore, no surprise that in the United States more people will visit a health-related website than an actual health service professional on any given day (Nettleton, Burrows, & O'Malley, 2005). This modern phenomenon has elicited some positive outlooks regarding the use of online health information to empower the lay public (e.g., Gillett, 2003). However, others view it more negatively because of the impact of the sometimes poor quality of the information (e.g., Hirji, 2004). Yet few studies have focused on the social forces that lead one to search for health information, how these influences help to shape health-searching behaviors online, and how people feel about the information they find on the web.

Two influences that affect people's online health searching are gender and parenting. Previous research has shown that women are more likely to use the web to search for information regarding their own health (e.g., Rice, 2006). The influence of parenting, however, has garnered less attention. Parenting is typically a gendered activity (Walzer, 1998). The research that does exist suggests that mothers find social, emotional, and instrumental support through the use of online health message boards (Drentea & Moren-Cross, 2005; Ley, 2009). Some have argued that women's web behavior is more emotionally oriented than is men's because of the emphasis on comfort, encouragement, friendship, and so forth (e.g., Warner & Procaccino, 2007). Nevertheless, questions about health-searching behaviors and whether feelings about the information people find on the web differ for parents, especially for mothers, still persist. Previous research has tended to focus on individuals without applying what Roberts and Japuntich (2009) call a familial or "relational" lens; that is, this research has not looked at the way family status and roles influence our behaviors. The significance of this research is to fill these gaps in the literature and help us better understand the interactions between gender and parenting in an era of unprecedented access to health information.

Social Capital, Social Support, and Online Health Information Seeking

One of the key benefits of using the Internet is the ability to enhance social capital (Boase, Horrigan, Wellman, & Rainie, 2006; Stern & Dillman, 2006). Although it is well recognized that information and communication technology (ICT) use enhances social capital by facilitating communication—and by extension social support—with both strong and weak social ties, across geographic distances, time, and locations (Boase et al., 2006), there are two specific ways through which ICT use may help individuals with a more instrumental form of support. First, ICTs can aid individuals in finding information to help them make life decisions, thereby increasing access to and acquisition of resources. Second, ICTs can help people connect with experts for information, support, and exchange (Boase et al., 2006). Access to many types of information is easily available, wide-ranging, and current and usually has low access costs. These types of information yield more knowledge from which to base our judgments, which affects our levels of trust, engagement, and the activities we choose to engage in (Cotten, 2001; Horrigan & Rainie, 2002). Not surprisingly, one of the most prevalent uses of the Internet is for online health information seeking.

Recent research shows that 61% of U.S. adults and 75% of adult Internet users report they have looked online for health information (Fox & Jones, 2009; Jones & Fox, 2009). Individuals are most likely to search for information on health issues, including particular diseases (64%), medications (60%), and health promotion (e.g., disease prevention; 53%), diet and vitamins (49%), fitness (44%), and mental health issues (19% to 22%; Brodie & Flournoy, 2000; Dickerson et al., 2004; Fox, 2006). Forty-one percent of online health information seekers read commentaries by others about health issues, whether it is via a blog, online group, or website; however, fewer report having consulted online reviews of health care providers and organizations, signing up to receive updates about health issues, or listening to podcasts about health matters (Fox & Jones, 2009). In addition to searching for health information directly, individuals also use the Internet to communicate with health care providers and others about health concerns and issues (Cotten, 2001; Drentea & Moren-Cross, 2005; Goldner, 2006); estimates of this type of use are much lower than general health information seeking (Cole, 2008; Fox & Rainie, 2000). People, however, do not search for their

own purposes only. Recent research shows that more than half the people searching (52%) are searching for someone other than themselves (Fox & Jones, 2009).

This new area of patient-empowered information and health behavior has many names. Some of the most common include: e-patients, e-health, participatory health, and participatory medicine (Lemire, Sicotte, & Parè, 2008; Sarasohn-Kahn, 2009). This phenomenon allows for greater exchange of information and ideas with a more heterogeneous group of people—both experts and laypeople, which could enhance social capital and support.

Is Health Information Searching Gendered?

Women are the traditional “gatekeepers” for their family’s health, meaning they are more likely to be in charge of monitoring family members’ physical, social, and psychological well-being, scheduling doctor’s appointments, and researching health conditions (Stern, 1986; Warner & Procaccino, 2007). Women are also more likely to care for their (and their partner’s) aging parents as well (Stern, 1986). As such, women have less leisure time, and spend more time than men being “keepers” of kin (Mattingly & Sayer, 2006). At the same time, U.S. households are dominated by the dual-earner model; thus, women attempt to balance their careers with more traditional roles and responsibilities (Drentea & Moren-Cross, 2011; Milkie & Peltola, 1999; Nomaguchi, Milkie, & Bianchi, 2005; Winslow, 2005).

With women’s roles regarding their family’s health care in mind, it would not be surprising that they are more likely than men to search for online health resources. Recent studies show that women are more likely than men to search for information in the domains of health, religion, and social support (e.g., Drentea & Moren-Cross, 2011; Rice, 2006). Royal (2008) suggests some well-travelled health websites have begun to cater to women, viewing them as “consumers”; thus, the sites have adopted a “women’s magazine model” where they use gender stereotypes to advance their appeal. However, no studies to date actually examine whether women search for information for others more than they do for themselves.

As Ybarra and Suman (2008) argue, we must move beyond simply whether one group searches more often for information than another. We must examine the broader picture of online health searching by taking into account health-seeking behaviors (e.g., the plurality and diversity of searches) and experiences, in terms of both satisfaction with the information and putting this knowledge into use. The research that does exist on the topic suggests that women are also more likely to use the information found online.

Warner and Procaccino (2004) found that three fourths of the women surveyed reported that they put the information they found online into use to positively affect their health-related behaviors. In a connected study, these authors found that women who use the web to search for health-related information, as opposed to those using more traditional sources of information such as medical books or other reference materials, were more likely to communicate with health professionals about the information they found (Warner & Procaccino, 2007). Moreover, women who used online health material reported they felt more confident about the information, had higher levels of satisfaction with the information found, had more of their questions answered, and reported that they received more accurate information than women not using the web (Warner & Procaccino, 2007).

Nevertheless, other research suggests that experiences with and feelings about the process or information may be gendered. Previous studies show that although women are more likely to search for health information online and that women's use of the Internet has all but met parity in access and basic usage with men's (Royal, 2008), they are more likely to have negative feelings about certain aspects of the process or information (Fox, 2006). Ybarra and Suman (2008) found that women were less likely than men to (a) find online health information easy to locate, (b) report having enough time to find all of the information needed, and (c) be satisfied with the information found. Warner and Procaccino (2004) report that when women find conflicting information online, it leads some women to experience feelings of uncertainty. At the same time, these differences are not explained by traditional measures of Internet proficiency or skill (Royal, 2008). In all likelihood, it is the aforementioned responsibility of women to search out information for all members of the family, in addition to themselves, that evokes these feelings. However, no research has examined gender and parenting independently and in concert; yet there are clear reasons to do so because of the challenges of modern parenting.

Isolation of Parents and the Increased Expectations of Caring for Children

Parenting, and motherhood in particular, has changed in modern society as families have become much smaller over the past 60 years. The post-baby boom generation has fewer children on average and is more likely to experience dual-career couples in which both parents work (Epstein & Kalleberg, 2004). Neighborhoods have also changed as the available circle of social contacts has diminished; people spend less time at home and socialize less in

their neighborhoods (Putnam, 2000). These two social phenomena have created a situation with even less support and traditional information exchange for parents. Many parents have their first babies with little familiarity with children. Many women are no longer stay-at-home mothers, with the social resources of a neighborhood of experienced mothers (Arendell, 2000). The mothers who do stay at home may be even more isolated. This lack of community and neighborhood social resources creates a dearth of information and social support for parents (Drentea & Moren-Cross, 2011).

Although social support may be diminishing, the expectation of parenting continues to increase (Hays, 1996). Modern-day mothering has been called "intensive mothering," with more expectations of time, care, and resources put toward fewer children (Hays, 1996). Parents are expected to provide an enriching environment, spend ample time with children, and engage in "scientific mothering," which is the medicalization of child rearing (Litt, 2000). Scientific mothering led to an increase in families seeking medical advice to raise children and care for their health needs rather than depending on the circle of women to which they would have traditionally turned (Litt, 2000; Oakley, 2005). Scientific mothering likely began *en force* with the first publishing of Dr. Spock's book on raising children in 1946 and has increased ever since. Modern parents have been raised in an era of a vast proliferation of ideas and opinions as to how to raise children and help with their health needs. Contributing to this phenomenon is the idea in modern society that health is considered an individual achievement (Cockerham, 2007). With these expectations of intensive mothering, scientific mothering, and health as an individual achievement, much of the onus of health accomplishment is put on parents, and the mother specifically.

As parents have become more isolated and expectations have increased, a new domain for health information has become available. By the late 1990s and early 2000s, the Internet had become a site of information for parents (Daneback & Plantin, 2008; Drentea & Moren-Cross, 2005; Ley, 2009; O'Connor & Madge, 2004). An abundance of medical, health, and parenting websites exist that help explain health information and help parents find answers. Initial research on parenting and the Internet focused on delivering general information about valid websites. More recently research has examined usage patterns and social support (Daneback & Plantin, 2008). Research shows that 86% of new parents-to-be searched for information on pregnancy (Yahoo, 2005, as cited in Daneback & Plantin, 2008). It is likely that parents, while raising children, are also heavy users of these websites. It is also likely that mothers' usage outweighs that of fathers, in part because of the still unequal division of child rearing experienced between mothers and fathers.

However, little research examines the combination of gender and parenting in regard to health information searching.

Other Factors That Affect Online Health Searching

In addition to gender and parental status, other social factors also affect Internet use and subsequent online health searches. The highly educated and those with more income are more likely to both use the Internet more frequently and search for health information (Hale, Cotten, Drentea, & Goldner, 2010). There is also an age effect relative to online health searches. For example, individuals aged 18 to 49 years report using information and communication technologies for health information seeking more often than do older age-groups (Fox & Jones, 2009).

Research has shown that access to high-speed or broadband technologies influences the ways in which people use the Internet, including for online health (Fox, 2008), as well as how likely they are to form particular attitudes toward the technology (Davison & Cotten, 2010; Hale et al., 2010). As Rogers's (2003, p. 37) diffusion theory explains, social systems, or sets of "interrelated units that are engaged in joint problem-solving to accomplish a common goal," play an important role in determining individual attitudes and behaviors regarding innovations such as the Internet and Internet-related technology. Adoption theory further suggests that individual characteristics such as age, educational level, employment, and income aid in determining whether individuals adopt new technologies or not and thus whether they use them to aid them in their daily lives, such as in searching out health information for themselves or other family members (Stern, Adams, & Elsasser, 2009; Whitacre, 2008). These factors are traditionally considered as key factors associated with digital divides in technology use.

Theoretical Summary

Previous research suggests that Internet usage contributes to social capital through supplementing, not replacing, "traditional sources of health information" (Fox & Jones, 2009, pp. 6-7). It is an important tool for women, parents, and families when it comes to initially diagnosing problems. As a result of the increase in dual-earner households, mothers' isolation, scientific mothering, and women's traditional role as gatekeeper of the family's health, parenting and sex should have significant influences on aspects of online health searching beyond questions of whether these groups are more likely to search for information than others. The extant literature portends that there

should be an interaction between parental status and sex, whereby mothers are most involved in the different facets of online health searching. We address this undertheorized issue through examining the effects parental status, sex, and their interaction have on (a) online health searches, (b) for whom people search for information most often (i.e., themselves or others), and (c) feelings about searching for online health information. We include other factors in the forgoing analyses that have been shown to influence online health searching or use of the Internet in general. As a result, this research helps us better understand the interactions between gender and parenting in the information age.

The purpose of this study is to explore four interrelated, yet previously undertheorized, questions. First, how does gender influence the way people use and feel about online health information? Second, does being a parent influence the way people use and feel about online health information? Third, is there a gender and parenting interaction that further explains these relationships? Finally, do these relationships exist net of the impact of traditional digital divide factors such as income, age, race, employment, and technological diffusion? To address these questions, we use nationally representative survey data.

Methods and Procedures

The data for this study come from the 2006 Pew Internet & American Life Project's telephone survey of individuals aged 18 years and older conducted by Princeton Survey Research Associates ($N = 2,928$). Of the 2,928 respondents, 1,990 were Internet users and eligible for inclusion in our models. The sample for this survey is a random digit sample of telephone numbers selected from telephone exchanges in continental United States. The design of the sample achieves this representation by random generation of the last two digits of telephone numbers selected because of their area code, telephone exchange, and bank number. Consistent with other survey research centers, Princeton Survey Research Associates uses the contact rate, the cooperation rate, and the completion rate in calculating a response rate. In this case, 86% of those contacted were found eligible for the interview and 94% of eligible respondents completed the interview, which led to a final response rate of 27% (see Fox, 2006, for full details).¹

Key Independent Variables

The two key independent variables in this study are Parental Status and Sex. Parental Status is a dichotomous variable (1 = having a child in the home).

Sex is also a dichotomous variable where one equals female. We include their interaction in the models as well.

Dependent Variables

Plurality of health-related searches. The survey asked whether respondents had searched out information online about 17 medical issues including Disease or Problem; Medical Treatment; Experimental Treatment; Alternative Treatment; Diet, Nutrition, and Supplements; Exercise and Fitness; Over-the-Counter Drugs; Immunizations and Vaccinations; Quit Smoking; Alcohol and Drugs; Depression, Stress, and Mental Illness; Sexual Problems; Particular Doctor or Hospital; Health Insurance; Medicaid or Medicare; Dental Health; and Environmental Hazards. Response options included yes, no, and don't know. As seen in Table 1, 11 of these items were significantly associated with parental status, sex, or both. Using these 11 items, we constructed a cumulative scale representing the plurality of health-related searches. Values for this scale ranged from 0 to 11.

Health-related issues for which an Internet search affected a decision. A cumulative scale was constructed from a set of six survey items and was based on a subsample of respondents whose online health searching affected their health care decisions. The original question asked, "In which of the following ways, if any, did the info found online affect your own health care routine or the way you care for someone else?" The items included the following: a decision about how to treat a condition; approaches to maintain the respondent's health or a dependent's; to see a physician; to ask a doctor new questions or receive a second opinion; change the way they thought about diet, exercise, or stress management; and change the way they cope with a chronic condition or managed pain. Response options included *yes*, *no*, and *don't know*. The values for this scale ranged from 0 to 6. Because the questions that comprise this variable represent a branching question, the analysis includes a subsample of 731 cases.

Searching for health information online for self or others. We have included two measures that address whether respondents seek information for themselves or others. The query asked, "Thinking about the last time you went online for health or medical information, did you go online to look for information related to your own health or medical situation or someone else's health or medical situation?" Response options included searching for oneself, someone else, or both. We created one dichotomous variable for searching for information for themselves (1 = *self*) and another for searching for material for others (1 = *others*). Because of missing values associated with this variable, the analysis includes 1,334 cases.

Table 1. Summary of Descriptive Statistics and Relationships With Key Independent Variables

	Parental Status				Sex				
	Total Sample, Percentage "Yes," N = 1,439	Percentage "Yes"		p	Percentage "Yes"		χ^2	p	
		Child in House (N = 531)	No Children in House (N = 908)		Women (N = 832)	Men (N = 607)			
Plurality of health-related searches									
Disease or problem	81.5	80.2	82.3	0.93	-0.3	85.7	75.8	22.90***	.13***
Medical treatment	65.4	67.0	64.4	1.01	.03	68.4	61.3	7.83***	.07**
Experimental treatment	23.3	22.4	23.9	0.42	-0.2	23.0	23.9	0.17	-0.1
Alternative treatment	33.7	35.6	32.6	1.34	.03	35.5	31.3	2.71†	.04†
Diet, nutrition, and supplements	60.7	63.8	58.9	3.40†	.05†	63.6	56.8	6.70***	.07**
Exercise and fitness	53.9	58.9	51.0	8.53**	.01**	55.3	52.1	1.47	.03
Over-the-counter drugs	50.1	50.1	50.1	0.01	.01	50.8	49.1	0.43	.02
Immunizations and vaccinations	18.1	24.5	15.4	18.6***	.11***	17.5	20.4	1.91	-0.4
Quit smoking	10.4	10.4	10.5	0.01	-0.1	11.2	9.4	1.20	.03
Alcohol and drugs	9.2	10.0	8.8	0.55	.02	9.7	8.6	0.57	.02
Depression, stress, and mental illness	26.7	30.5	24.4	6.29**	.07**	31.0	20.8	18.85***	.11***
Sexual problems	12.4	11.3	13.0	0.89	-0.3	11.8	13.2	0.64	-2.1
Particular doctor or hospital	35.8	39.4	33.7	4.67*	.06*	37.5	33.4	2.51	-0.4

(continued)

Table 1. (continued)

	Parental Status				Sex				
	Total Sample, Percentage "Yes," N = 1,439	Percentage "Yes"		χ^2	p	Percentage "Yes"			
		Child in House (N = 531)	No Children in House (N = 908)			Women (N = 832)	Men (N = 607)	χ^2	p
Health insurance	34.2	38.2	31.8	6.10**	.07**	32.6	36.4	2.97	-.04
Medicaid or Medicare	17.1	12.6	19.7	11.90***	-.10***	16.5	18.0	0.55	-.20
Dental health	16.4	17.1	16.0	0.33	.02	15.4	17.8	1.48	-.03
environmental hazards	25.0	27.5	23.6	2.75†	.04	23.8	26.7	1.56	-.03
Health-related issues for which an Internet search affected a decision sub- sample (n = 731)									
A decision about how to treat a condition	60.2	61.3	59.6	0.20	-.16	64.5	54.3	7.90**	.10**
Approaches to maintain the respondent's health or a dependent's	54.1	54.9	53.6	0.13	-.13	56.1	51.3	1.75	.05
To see a physician	33.4	34.7	32.6	0.36	-.22	34.1	32.5	0.22	.02
To ask a doctor new questions or receive a second opinion	54.1	57.0	52.3	1.62	-.47	56.0	51.4	1.55	.05
Change the way they thought about diet, exercise, or stress management	22.4	40.7	44.5	1.03	.37	43.3	42.7	0.02	.01

(continued)

Table 1. (continued)

	Parental Status					Sex			
	Total Sample, Percentage "Yes," N = 1,439	Percentage "Yes"		χ^2	p	Percentage "Yes"		χ^2	p
		Child in House (N = 531)	No Children in House (N = 908)			Women (N = 832)	Men (N = 607)		
Change the way they cope with a chronic condition or managed pain	38.5	38.9	38.2	0.30	-0.1	39.8	36.6	0.78	.03
Feelings about the information found online									
Eager to share the information they found	50.7	50.7	50.8	0.01	-0.1	50.1	51.4	0.19	-.11
Relieved by the information	56.6	62.0	53.5	9.71**	.08**	57.3	55.7	0.39	.02
Reassured by the information	77.3	81.2	75.1	7.02**	.07**	78.7	75.5	2.15	.04
More confident to ask new questions of a health care professional	56.8	60.3	54.8	4.01*	0.05*	59.0	53.9	3.78*	.05*
Overwhelmed by the information	24.3	22.6	25.3	1.39	-0.3	23.6	25.4	0.63	-.02
Confused by the information	17.1	14.7	18.5	3.44†	-.05†	17.2	17.0	0.01	.01
Frustrated with the information or process	21.6	21.1	21.9	0.13	-0.1	22.5	20.4	0.87	.03
Frightened by the information	9.2	9.2	9.1	0.01	.01	10.9	6.8	7.37**	.07**

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. † $p \leq .10$.

Feelings regarding health information found online. Regarding the way respondents felt about the information or the process, we used individual dichotomous indicators. The survey question asked, "At any point in your last search for health information online did you feel . . . ?" The responses included the following: eager to share the information, relieved by the information, reassured by the information, more confident to ask new questions of health care professionals, overwhelmed by the information, confused by the information, frustrated with the information or process, and frightened by the information. Response options included *yes*, *no*, and *don't know*. To be parsimonious, in the multivariate analysis we only present the data for the measures that reached statistical significance. The other data are available on request.

Other Factors

In our multivariate models, we control for other factors that research suggests may influence our outcomes. To measure high-speed Internet diffusion, we use the question that focused on the type of home Internet access: "Does the computer you use at home connect to the Internet through a dial-up telephone line, or do you have some other type of connection, such as a DSL-enabled phone line, a cable TV modem, a wireless connection, or a T-1 or fiber optic connection?" We recoded the choices to dial-up, digital subscriber line, cable, and wireless/fiber optic connections. From this, we created a dummy variable for analytical purposes where 1 = greater than dial-up access. Other variables include Age (measured in years), Employment Status (1 = employed full time), Income (<\$10,000; \$10,000 to <\$20,000; \$20,000 to <\$30,000; \$30,000 to <\$40,000; \$40,000 to <\$50,000; \$50,000 to <\$75,000; \$75,000 to <\$100,000; \geq \$100,000), and Education (None or Grades 1-8; High school incomplete; High school graduate or GED certificate; Technical, trade, or vocational school AFTER high school; Some college, no 4-year degree, which included associate degree; College graduate; Postgraduate training/professional school after college). Mean imputation was used with a relatively small number of missing values in the controls. The descriptive statistics for these variables can be found in the appendix.

Analytic Strategy

For the analysis, we use a combination of different statistical procedures based on the dependent variable's level of measurement and the question we are seeking to address. Given that our count variables, plurality of health-related searches, and whether the information affected decisions are positively skewed, the use of Poisson regression techniques for the full models would be

appropriate. However, diagnostics showed significant overdispersion ($p < .001$). Overdispersion refers to when the variance of the dependent variable exceeds its mean, resulting in the estimates for the Poisson regression model being biased, because of inflated Z scores. This leads to spuriously small p values. To address this problem, we estimate our models using negative binomial regression (NBR). NBR takes into account the unobserved heterogeneity that causes overdispersion (Long & Freese, 2006). We use binary logistic regression models to examine whether respondents searched for information regarding their own health or others and their feeling about the information. For both the NBR and binary logistic regression models we present the odds ratios for the effects that parenting, sex, and their interaction have on the dependent variables, with and without control variables included. Finally, we graph predicted probabilities to graphically demonstrate key findings.

Results

Table 1 reports the descriptive statistics and bivariate analyses for the plurality of online health searches, whether the information affected decisions, and feelings about the searches by sex and whether the respondent had a child in the house. In the case of the plurality of online health searches, we provide data on all the different types of uses that make up the measure. It is clear that some of the types of searches are significantly related to sex, others to parental status, and less than half to both. The exceptions include experimental treatments, over-the-counter drugs, sexual problems, and dental health. Regarding whether the information affected any decisions, sex and parental status seems to have little effect on these measures. However, five of our eight feelings about the information found online were significantly associated with sex, parental status, or both, with eagerness to share the information, being overwhelmed by the information, or being frustrated by the information or process serving as exceptions. Therefore, these variables are left out of the multivariate analysis. In addition, although prior literature suggests that marital status and race play a role in access to and use of the Internet, these variables did not correlate with our dependent variables and were eliminated from the multivariate analysis as well.

How Do Gender and Parental Status Influence the Plurality of Searches Conducted and Whether the Information Affected a Health-Related Decision?

Starting with an examination of the plurality of online health searches (first half of Table 2), we see that both being a parent and being a woman have

Table 2. Summary of Negative Binomial Regressions for Parental Status, Sex, and Controls on Plurality of Health-Related Searches Conducted and Health-Related Issues for Which an Internet Search Affected a Decision

	Plurality of Health-Related Searches Conducted				Health-Related Issues for Which an Internet Search Affected a Decision Subsample			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
	Exp(b) (SE)	Exp(b) (SE)	Exp(b) (SE)	Exp(b) (SE)	Exp(b) (SE)	Exp(b) (SE)	Exp(b) (SE)	Exp(b) (SE)
Parental status (Parent = 1)	1.09** (0.03)	—	1.03 (0.03)	1.06 (0.05)	1.03 (0.05)	—	1.02 (0.05)	1.13 (0.08)
Sex (Women = 1)	—	1.08** (0.03)	1.09** (0.03)	1.10** (0.04)	—	1.10 [†] (0.05)	1.08 (0.05)	1.15* (0.06)
High-speed access (>Dial-up = 1)	—	—	1.03 (0.03)	1.03 (0.03)	—	—	1.06 (0.05)	1.06 (0.05)
Age	—	—	0.99*** (0.00)	0.99*** (0.00)	—	—	0.99 (0.00)	0.99 (0.00)
Education	—	—	1.05*** (0.01)	1.05*** (0.01)	—	—	0.94*** (0.02)	0.94*** (0.02)
Employed (Full time = 1)	—	—	1.02 (0.03)	1.02 (0.03)	—	—	0.98 (0.06)	1.02 (0.06)
Income	—	—	1.02* (0.01)	1.02* (0.01)	—	—	0.97 [†] (0.01)	0.97 (0.01)
Parent * sex	—	—	—	0.96 (0.61)	—	—	—	0.85 [†] (0.12)
N	1,439	1,439	1,439	1,439	731	731	731	731
Log likelihood	-3312.75	-3312.74	-3284.64	-3284.56	-1471.12	-1469.59	-1457.71	-1456.37

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. [†] $p \leq .10$.

significant and positive effects (1.09, $p < .01$; 1.08, $p < .01$, respectively). Once we add the control variables in the model, parental status becomes nonsignificant; however, sex stays positive and significant (1.09, $p < .01$). Regardless of parental status, high-speed Internet access, and other demographic characteristics, women are more likely to conduct a greater diversity of online health searches than men. In Model 4 we include the parental status and sex interaction, but it has no substantial effect, thus confirming the previous model's results.

Turning to whether the information affected a health-related decision (second half of Table 2), parental status is not associated with putting this information into use; however, once again, sex does have a significant effect (1.10, $p < .10$). Although initially the introduction of the control variables (Model 3) reduced the effect of sex on our dependent variable, in Model 4 we include the parental status and sex interaction, which has a substantial impact on the both sex and parental status. With its inclusion, sex is positively and significantly related to putting this information into use (1.15, $p < .05$) and parental status is positive and approaches significance (1.13, $p = .13$), suggesting that female parents use the information slightly more than do male parents.

How Do Gender and Parental Status Influence Whether One Searches for Information for Themselves or Others?

Parental status and sex have an influence on whether people search for information for themselves or others (Table 3). In regards to searching for information for one's self, before controls we find that men and people without children are significantly more likely to search for information for themselves than women and parents (0.72, $p < .01$; 0.81, $p < .10$, respectively). The controls (Model 3) have little effect on sex (0.81, $p < .10$) but do explain, in part, being a parent (0.79, $p < .10$). The interaction term had little consequence, suggesting that parenting and sex have independent effects on these results.

Regarding searching for information for others, we find that parents and women are significantly more likely to do so before controls are introduced in the models (1.41, $p < .01$; 1.21, $p < .10$, respectively). After introducing the controls (Model 3) and the interaction term (Model 4), both these relationships stay positive and significant. Similar to above, parenting and sex have independent influences on searching for information for others.

To compare the results from these two analyses, we charted predicted probabilities for parental status and sex by searching for information for one's self or others (Figure 1). Female parents were the least likely to search for information for themselves; however, male nonparents were the most likely to do

Table 3. Summary of Logistic Regressions for Parental Status, Sex, and Controls on Searching for Health Information for Self or Others

	Search for Health Information Online for Self				Search for Health Information Online for Others			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
	Exp(b) (SE)	Exp(b) (SE)	Exp(b) (SE)	Exp(b) (SE)	Exp(b) (SE)	Exp(b) (SE)	Exp(b) (SE)	Exp(b) (SE)
Parental status (Parent = 1)	0.72** (0.08)	—	0.79 [†] (0.10)	0.72 [†] (0.14)	1.41*** (0.16)	—	1.32* (0.16)	1.45* (0.27)
Sex (Women = 1)	—	0.81 [†] (0.09)	0.81 [†] (0.09)	0.76 [†] (0.11)	—	1.21 [†] (0.13)	1.21 [†] (0.14)	1.28 [†] (0.18)
High-speed access (>Dial-up = 1)	—	—	0.97 (0.12)	0.97 (0.12)	—	—	1.21 (0.15)	1.21 (0.15)
Age	—	—	1.00 (0.00)	1.00 (0.00)	—	—	0.99 (0.00)	1.00 (0.00)
Education	—	—	1.01 (0.04)	1.01 (0.04)	—	—	0.99 (0.04)	0.99 (0.04)
Employed (Full time = 1)	—	—	0.95 (0.12)	0.95 (0.13)	—	—	1.00 (0.13)	0.99 (0.13)
Income	—	—	0.92*** (0.03)	0.92* (0.03)	—	—	1.06 [†] (0.04)	1.06 [†] (0.04)
Parent * sex	—	—	—	1.18 (0.28)	—	—	—	0.86 (0.20)
N	1,334	1,334	1,334	1,334	1,334	1,334	1,334	1,334
Log likelihood	-893.90	-896.5	-887.68	-887.45	-919.13	-922.24	-914.51	-762.16

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. [†] $p \leq .10$.

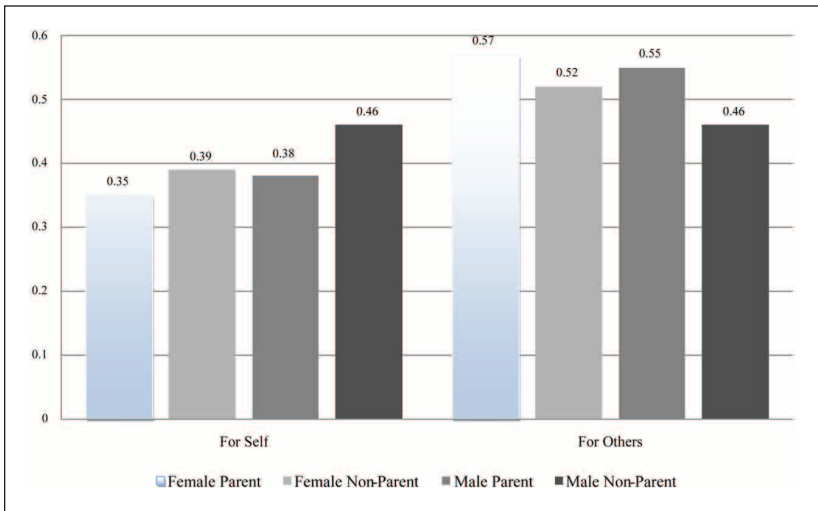


Figure 1. Predicted probabilities for parental status, sex, and controls on searching for health information for self or others

so. Parents, whether men or women, were less likely to search for information for themselves than were nonparents. Similarly, we find that female parents and male parents search more often for information for others than do their nonparent counterparts. These results confirm that there are reasonably independent parent and sex effects on whether people search for information for themselves or others.

How Do Gender and Parental Status Influence Actions and Feelings About Searching for Health Information on the Web?

Table 4 shows the results for four sets of questions about feelings produced through searching for online health information. As discussed above, there were eight questions of this nature in the original survey. Only four were significantly related to parental status, sex, or both after the inclusion of controls; being confused by the information failed to reach significance after controls were added. Starting with being frightened by the information, it is clear that women are significantly more likely to be affected in this way regardless of controls ($1.67, p < .01$) or the inclusion of the interaction term

Table 4. Summary of Logistic Regressions for Parental Status, Sex, and Controls on Respondents' Feelings Regarding Health Information Found Online

	Respondents' Feelings Regarding Health Information Found Online															
	Frightened by the Information				Relieved by the Information				Reassured by the Information				More Confident to Ask New Questions of a Health Care Professional			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Parental status (Parent = 1)	Exp(b) (SE)	1.01 (0.19)	—	1.15 (0.39)	1.41** (0.16)	—	1.39** (0.17)	1.35† (0.16)	1.43*** (0.19)	—	1.30† (0.19)	1.15 (0.25)	1.25* (0.14)	—	1.16 (0.14)	1.30 (0.23)
Sex (Women = 1)	Exp(b) (SE)	—	1.70** (0.33)	1.93** (0.48)	—	1.07 (0.12)	1.03 (0.11)	1.01 (0.14)	—	1.20 (0.15)	1.20 (0.15)	0.96 (0.15)	—	1.23* (0.13)	1.25* (0.14)	1.33* (0.18)
High-speed access (>Dial-up = 1)	Exp(b) (SE)	—	—	1.18 (0.24)	1.19 (0.24)	—	1.23† (0.15)	1.23† (0.15)	—	—	1.08 (0.15)	1.07 (0.15)	—	—	1.17 (0.14)	1.17 (0.14)
Age	Exp(b) (SE)	—	0.99* (0.01)	0.99** (0.01)	0.99* (0.01)	—	0.99 (0.00)	0.99 (0.00)	—	0.99 (0.00)	0.99 (0.00)	0.99 (0.00)	—	0.99 (0.00)	0.99 (0.00)	0.99 (0.00)
Education	Exp(b) (SE)	—	0.88* (0.06)	0.89† (0.06)	0.88* (0.06)	—	0.91** (0.03)	0.91** (0.03)	—	0.93† (0.04)	0.93† (0.04)	0.93† (0.04)	—	1.03 (0.04)	1.03 (0.04)	1.03 (0.04)
Employed (Full time = 1)	Exp(b) (SE)	—	0.84 (0.18)	0.83 (0.17)	0.83 (0.17)	—	1.06 (0.14)	1.07 (0.14)	—	—	1.33* (0.19)	1.35* (0.19)	—	—	1.15 (0.14)	1.14 (0.14)
Income	Exp(b) (SE)	—	0.98 (0.05)	0.98 (0.05)	0.98 (0.05)	—	0.93* (0.03)	0.93* (0.03)	—	—	1.05 (0.03)	1.05 (0.03)	—	—	1.01 (0.03)	1.01 (0.03)
Parent * Sex	Exp(b) (SE)	—	—	0.65 (0.27)	0.65 (0.27)	—	—	1.05 (0.24)	—	—	—	1.23 (0.34)	—	—	—	0.83 (0.19)
N	Exp(b) (SE)	1,439	1,439	1,439	1,439	1,439	1,439	1,439	1,439	1,439	1,439	1,439	1,439	1,439	1,439	1,439
Log likelihood	Exp(b) (SE)	-441.09	-437.29	-430.81	-430.29	-979.85	-984.53	-969.26	-969.24	-766.39	-768.90	-760.39	-760.11	-981.90	-982.02	-977.48

*p ≤ .05. **p ≤ .01. ***p ≤ .001. †p ≤ .10.

(1.93, $p < .01$). As we saw above, women search for different types of information and search more for others, which could play a role in this finding. Not surprisingly, as we see in the second panel, women are less relieved by the information they find than are men; however, parents are more relieved than nonparents regardless of controls (1.39, $p < .01$) and the interaction term (1.35, $p < .10$). Sex is not related to being reassured by the information (third panel); however, being a parent is positively and significantly related to this feeling after including controls (1.30, $p < .10$). The relationship fails to reach significance after taking into account the interaction term, meaning that it is plausible that some of the relationship we find for parental status in the previous model is the product of parental status and sex working in concert. Finally, we examine whether respondents felt more confident to ask new questions of a health care professional (fourth panel). Being a parent and a woman have significant, positive effects in producing this more confident feeling before controls (1.25, $p < .05$; 1.23, $p < .05$, respectively). After including the controls and the interaction term, only sex stays positive and significant (1.33, $p < .05$), meaning that the interaction accounts, at least in part, for the effects previously seen for parental status.

Conclusion

The number of online health resources and services will continue to grow as more people gain access to and proficiency with the Internet. Extant research shows quite clearly that online resources have become part of our everyday lives (e.g., Stern et al., 2009) and searching for health-related information is one of the leading ways people use the web (Fox & Jones, 2009). However, our study is the first one to examine sex and parental status in combination in relation to online health searching. In applying a gender relational lens to various aspects of online health searching, we have found that sex and parental status have both independent and interconnected influences on searching and feelings about the information. In many areas sex differences in online health searching reach beyond the role of parenting, whereas in other areas parental status affects online behavior independent of sex. There are also behaviors that are affected by their interaction, though we did find not many. Three key findings emerge from this research.

First, the interaction between sex and parenting is less pronounced than we expected. This may reflect that when it comes to health-related searches on the Internet, male and female parents are actually quite similar in Internet usage, reflecting a societal change of greater parity in parenting among the types of people who use the Internet and would actually seek help on it. However, two areas in which we did find an interaction were among those

putting the online health information into use and feeling reassured by the information found, although the latter was much less prominent than the former. In terms of putting the information into use, the results are consistent with previous research suggesting that female parents use the information they find online (e.g., Warner & Procaccino, 2004); however, we add that they do so slightly more than do male parents. Regarding feeling reassured, the marginal effects we found for parenting were explained away after considering the effects of sex and parenting status in concert, meaning that there was little in the way of an independent parent or sex effect. Nonetheless, taken in the aggregate, parenting and sex had more independent than combined effects on our outcomes.

Second, this research shows the independent effects that parental status and sex have on whether respondents search for information for themselves or others. In particular, the literature suggests that women would be more likely to search for information for others and that parenting would only enhance this result; thus, there would be an interaction evidenced for female parents. This was not the case. Again we see a story emerging of greater similarity between male and female parents. Furthermore, parents—regardless of sex—felt more relieved by the information they found online. This may be because of the population they are searching on; children, as a group, are generally a very healthy population in the United States. Thus, parents are likely relieved to find that many symptoms and behaviors are normal for children. Indeed, as a previous study showed, much of the dialogue on an Internet website about parenting was about symptoms and behaviors and whether one's children were normal. Overwhelmingly, there would be support that whatever was happening was within the lenient boundaries of normal for childhood development (Drentea & Moren-Cross, 2005).

Our third key finding shows, as previous research has shown (e.g., Ybarra & Suman, 2008), the complex feelings that women have when searching for and using online health information. Women, regardless of their parental status, were significantly more likely to feel frightened by the information they found online; however, they reported feeling more confident to ask new questions of a health care professional. To some extent, we can attribute this to the greater plurality of searches that women conduct and their other caregiving duties. Because women generally take on caring for others, they may be searching for issues with aging parents whose prognosis may not be good (Stern, 1986). Although female parents may get good news when searching about children, they may experience the realities of health problems of aging parents. Our findings clearly indicate a sex effect, net of parental status or other demographic factors. Women may be more confident with a health care professional because they are usually the ones interacting with the doctors;

thus, they are better armed to handle the situation. More qualitative research is needed in this area, but so too are more large-scale survey data with more complex questioning about not only how women feel but also why they feel this way.

One limitation of our study is that it cannot address causality. Though the data are nationally representative, the questions we addressed here have not been consistently asked over a long series of years. Therefore, we cannot discuss the “causal” connection between parental status, sex, and searching for and/or using online health information. In addition, the data are 5 years old, and although more recent data would suggest there are no reasons to expect significant differences, replicating the results from this study with more recent data may be useful. One significant issue we did not address in any meaningful detail was digital inequality. By focusing on Internet users and their behaviors, we have failed to address the very real gap between people who are proficient with the Internet and those who are not. Future research should examine in greater detail the roles that technological proficiency, race, class, education, and place play in the use of and feelings about online health resources. This is especially true for rural families who often do not have access to ready health facilities or high-speed Internet access (Hale et al., 2010).

The Internet contributes to social capital in many ways, including providing us with ready and easily available information to help serve ourselves and our families. Our research has shown that online health-searching behaviors are gendered in some ways—just as previous research has shown—but they are also very much the function of parenting, regardless of one’s sex. It is an interesting, but perhaps a predictable result, as we put the various pieces of this puzzle together. Mothers have been the traditional gatekeepers of health but may not be as motivated online. The research shows that men tend to use the Internet slightly more than women for paying bills and other financial purposes and tend to feel less overwhelmed by the often conflicting information found on the web (e.g., Ybarra & Suman, 2008). It is not surprising that men search out information for others in similar ways to women inasmuch as the process is analogous to the searches mentioned above where there is a lot of conflicting information and opinions. Alternatively, it may simply represent a natural progression of the ways men and women are parenting and using the Internet to help do so. Nonetheless, previous studies (Warner & Procaccino, 2004) and our findings have shown that women put health information into use more often. These findings suggest that male parents may be taking a more active role in the family’s health care but that it has not yet met parity with mothers’ status as gatekeepers. We may want to consider using the term *scientific parenting* over *scientific mothering* as we continue exploring these complex issues.

In addition to the contributions to the social capital and ICT usage literature, our work also has practical implications. Our findings suggest that intervention efforts designed to teach individuals how to find online health-related information should include information on how to evaluate information found online, ways that this information could be used (i.e., asking health care providers questions, etc.), and informing individuals that people often experience a range of emotions when they find this information online. According to our results, providing ways to alleviate feelings of being skeptical, unsure, or anxious in some way about the information found online may be particularly needed for women. This may involve helping women sort out health information from reliable online sources versus that from sources trying to sell a remedy or from those who are merely venting, which may cause more concern.

Appendix

Respondent Demographics	N	Percentage or Mean (SD)
Parental status (Parent = 1)	1,439	36.9%
Sex (Women = 1)	1,439	57.8%
High-speed access (>Dial-up = 1)	1,439	42.5%
Age (years)	1,439	46.3 (16.7)
Education	1,439	
None or Grades 1-8		0.2%
High school incomplete		2.8%
High school graduate or GED certificate		22.4%
Technical, trade, or vocational school after high school		2.0%
Some college, no 4-year degree, which included associate degree		24.9%
College graduate		29.5%
Postgraduate training/professional school after college		17.9%
Refused		0.3%
Employed (Full time = 1)	1,439	69.6%
Income (\$)	1,439	
<10,000		1.9%
10,000 to <20,000		4.9%
20,000 to <30,000		9.9%
30,000 to <40,000		8.4%
40,000 to <50,000		9.5%
50,000 to <75,000		17.9%
75,000 to <100,000		13.3%
≥100,000		18.1%
Refused		16.1%

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Note

1. With the increasing use of ICTs and the prevalence of technologies such as caller ID and call blocking, it has become much harder to reach potential respondents via telephone in the past decade (Curtin, Presser, & Singer, 2000; Howard, Rainie, & Jones, 2001). Although this has resulted in the majority of telephone surveys having very low response rates, studies have not found a strong link between telephone study response rates and nonresponse bias in random digit dialed surveys (Curtin et al., 2000; Keeter, Kennedy, Dimock, Best, & Craighill, 2006).

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