EXAMINING THE RELATIONSHIP BETWEEN FLEXIBLE RESOURCES AND

HEALTH INFORMATION SOURCE SELECTION

by

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ABSTRACT

This study examines how variations in flexible resources influence where individuals begin their search for health information. Variations in flexible resources can alter the accessibility of sources of health information, such as doctors and the Internet, by limiting the number of accessible, convenient, and trustworthy health information sources. Using the HINTS 2007 sample, I examine if information source utilization is predicted by the same factors in two groups with distinct levels of access to flexible resources, as measured by high and low levels of education. Variation in access to flexible resources is hypothesized to produce differences in coefficient strength and significance in predicting information source utilization. Four health information sources, including doctors, the Internet and print media serve as dependent variables. Logistic regression models were used to assess how a number of variables influence the probability of using each information source first in each of the two flexible resource groups. Results suggest that flexible resources can modify the information-seeking process by limiting easy access to the Internet via the digital divide, but it does not appear that diminished access to health insurance decreases utilization of doctors first. In all, few differences were found between the low and high flexible groups. Future research should take into account the distinctions between different offline sources while also seeking to further understand how social inequality relates to the utilization of different health information sources and corresponding health outcomes.

Chapter 1

INTRODUCTION

The combination of recent technological innovations and the burgeoning

consumer health movement has resulted in a proliferation of health information available

from a wide array of sources. In recent decades, Americans have become increasingly

likely to seek out health information for both themselves and others as active consumers

rather than as passive recipients of this information (Lenz 1984; Hardey 2001; Lambert

and Loiselle 2007). In theory, rather than depending exclusively on doctor's visits for

information, both the sick and healthy can also find health related materials and advice

from expanding sources such as the Internet, books, or interpersonal networks with

increased accessibility (Lenz 1984; Hardey 2001; Lambert and Loiselle 2007). This in

turn grants them with a greater opportunity to understand and handle health risks, thus

enabling individuals to make beneficial changes in their lifestyles (Freimuth et al. 1989).

While this trend holds promise for alleviating health disparities, prior research has

demonstrated that higher socioeconomic status is associated with an increased likelihood

that a person will engage in this information seeking behavior at all, suggesting that not

all groups are benefiting from this proliferation of information (Lambert and Loiselle

2007; Gibbons 2008). In addition, studies suggest that among those who do engage in a

search, flexible resources such as education and income are also associated with a greater

likelihood to use online sources over offline sources (Cotten and Gupta 2004; Koch-

Weser et al. 2010). Flexible resources (FR) are "key resources such as knowledge,

money, power, prestige, and beneficial social connections [that] can be used [to maintain

health] no matter what the risk and protective factors are in a given circumstance"

(Phelan et al. 2010:S29). This raises questions about whether social inequalities also

modify the likelihood that specific offline information sources, such as doctors and print media, were used. As such, disparities in FR may not only affect long-term health disparities, but also influence how individuals go about maintaining their health by determining where the search for health information begins.

Following Dobrasky and Hargittai (2011), the current study draws on Link and Phelan's (1995) theory of fundamental causes to hypothesize how social inequality can influence the starting point of health information seeking. This theory is primarily used to explain the persistent relationship between socioeconomic status and heightened mortality, but the current study argues that the concept of FR can be extended to health information seeking behavior (Phelan et al. 2010; Dobransky and Hargittai 2011). These resources are unequally distributed based upon socioeconomic status, which is the combination of income, education, and occupational prestige.

Thus, the current study tests a key assertion of the theory of fundamental causes by examining if access to FR influences the beginning of a search for health information. Prior research suggests that FR are associated with the accessibility of certain information sources, which is a critical factor in determining where the search for information begins (Johnson 1997; Lambert and Loiselle 2007). In particular, these resources are associated with being able to acquire insurance and having an Internet connection at home, which makes accessing a doctor and the Internet significantly easier (Anderson et al 2004; Cotten and Gupta 2004; Gibbons 2008; Koch-Weser et al. 2010). As such, variation in information seeking patterns among groups with differential access to FR come to fruition because different sources will be rendered more or less easily accessible and comprehensible. This presents a potential route through which structural disparities can

modify how individuals go about maintaining and restoring their health that needs to be studied further.

Using the Health Information National Trends Survey (HINTS) 2007 data, the current research examines if information source utilization is predicted by the same factors in two groups with distinct levels of access to FR, as measured by level of education (i.e., higher and lower levels of education). Multiple logistic regression models are utilized to examine the predictors for use of each information source within both the low and high FR groups. Dividing the sample in this fashion reveals any differences in information source utilization by allowing for the comparison of predictors across subsamples.

Chapter 2

HEALTH INFORMATION SEEKING

Health information seeking behavior (HISB) is the process of "purposive acquisition of information from selected information carriers" (Johnson 1997:4). This occurs for a wide array of reasons, such as a desire to learn more about a chronic condition, to look up a child's symptoms, or even simply to track one's diet (Lambert and Loiselle 2007; Weaver et al. 2010). Health information seeking is often used as a coping mechanism through which to cope with a newly discovered health related stressor, but it can also be used in coming to a collaborative decision with a care provider or in an effort to adopt healthier behaviors (Lambert and Loiselle 2007). The key assumptions of this conceptualization are that the search is *purposefully* conducted through use of a source that is *deliberately* selected based upon the information needed; the sources that are available to an individual are based upon his/her social circumstances.

There are a number of different information sources that individuals can choose from when deciding where to look for health information. Easy access to these sources is often contingent upon the FR a person has at his/her disposal. Research to date has primarily focused on HISB through the Internet (e.g. Eysenbach and Jadad 2001; Anderson 2004; Weaver et al. 2010; Kim and Kwon 2010). The Internet provides a route through which individuals can circumvent doctors and quickly acquire health information and advice anonymously (Hardey 2001). Fox (2008) suggests that between 75% and 80% of Internet users have looked for health information on the Internet, making HISB one of the most common uses of the Internet. Information seeking on the Internet is often used either before or after a doctor's visit in order to improve a patient's ability to

communicate or to better understand a doctor's advice That is to say, information seeking

from informal sources is often utilized as a supplement to more formal sources that will

be used in the future (Cullen 2006). Most health information seekers use the Internet to

acquire information on both maintaining wellness (e.g. diet and exercise advice) and how

to treat specific symptoms, though a substantial proportion only search for one or the

other (Weaver et al. 2010).

Several other sources of health information have also been the object of study.

These are generally offline sources, consisting of doctors, print media, and informal

social networks. Doctors are viewed as the most authoritative sources of health

information that a consumer can access (Johnson and Meischke 1991; Johnson 1997;

Lambert and Loiselle 2007), but interpersonal sources such as friends and families are

also frequently utilized (Lewallen 2004; Courtright 2005; Longo et al. 2010). Print media

such as books and pamphlets are also used as a source for health information (Johnson

and Meischke 1993; Roach et al. 2009; Percheski and Hargittai 2011). Mass media

sources such as television and radio figure prominently in the unintentional acquisition of

health knowledge but they are rarely used in HISB as it is defined in this research

(Lambert and Loiselle 2007).

Characteristics of Health Information Seekers

Importantly, previous research has indicated a number of characteristics that

typify health information seekers. Health information seeking occurs most frequently

among the young, the educated, the wealthy, and women, though information seeking

does occur across all social strata (Lambert and Loiselle 2007; Atkinson et al. 2009;

Koch-Weser et al. 2010). Those with greater economic resources are more likely to

search for health information, in part, because they are more empowered as consumers, but also because they have greater access to the communication skills and social networks that can be deployed in health information seeking (Johnson 1997; Lambert and Loiselle 2007). Poorer, less educated information seekers are the numerical minority, but ironically they are likely to be the least healthy given their social location and may stand to benefit most from the information located (Adler and Ostrove 1999; Link and Phelan 2010). Furthermore, individuals with diminished access to FR have greater difficulty in communicating with doctors and accessing care that is needed (Agency for Healthcare Research and Quality 2011). Even though health information is not a replacement for the health care that individuals with limited FR need, it can provide them with knowledge that can be used to empower them in independently improving their health and protecting themselves against risks (Freimuth et al. 1989).

<div align="center">Health Information Source Selection</div>

A substantial body of research indicates that individuals typically begin their information search with sources that are easily accessible (Johnson 1997; Gray et al. 2005; Hesse et al. 2005; Lambert and Loiselle 2007; Rains 2007; Kim and Kwon 2010). Johnson (1997) summarizes this trend:

> People seek out information that is most accessible. […] What is most surprising is how little it takes for a source to be deemed inaccessible. Similarly, somewhat disconcertingly, accessibility overrides such issues as the credibility and authoritativeness of a source. Individuals will knowingly seek out inferior information from a more accessible source. [P.125]

In other words, if there is even a minor barrier to accessing an information source, such as being unable to get time off work to go to the doctor's office, individuals may simply turn to other sources instead.

In light of what is known about accessibility and its relationship to source credibility, other research suggests that individuals tend to prefer information sources that are viewed as trusted and/or credible (Renn and Levine 1991; Frewer et al. 1996; Gray et al. 2005; Rains 2007; Hu and Sundar 2010; Longo et al. 2010). This means that seekers prefer sources that they feel will give them truthful and reliable information. For instance, Rains' (2007) study of 2003 HINTS data found that trust in information from the Internet was the strongest predictor in both preferring the Internet as a source and using it first in searches.

Taken together, accessibility appears to be more important than the trustworthiness of a source (Johnson 1997; Hesse et al. 2005; Rains 2007; Kim and Kwon 2010). Individuals tend to settle for sources that are most conveniently accessible and at least moderately trustworthy or credible. This is highlighted in Hesse and colleagues' (2005) analysis of the HINTS data, which found that respondents trusted and preferred doctors most as an information source, but were most likely to begin their information search on the Internet. In this case the Internet was the second most trusted source but it is likely that it was far more convenient to access, leading to increased utilization (Hesse et al. 2005). This observation is central because the relationship between source selection and access to FR is therefore mediated by the ease with which certain information sources can be accessed.

In addition to accessibility and trust, there are other factors that previous research demonstrates are important to health information source selection, but cannot be taken into account in the current research. In particular, Lambert and Loiselle's (2007) review of the literature notes the importance of the urgency of a person's need for information and the tone or format in which information is presented. Though these factors are not measured, it is likely that they hold less sway over where a person begins the search than accessibility does (Johnson 1997). After all, it is difficult to be picky about format when there are no other options. There are other variables likely important that also cannot be controlled for, such as a respondent's perceived risk, connection to health organizations, and the respondent's exposure to information that is acquired in passing. What is key, however, is that these are again superseded by a person's ability to even access the source easily. Without access and trust in a source there is little chance that an information seeker will use the source regardless of need.

Facilitating Accessibility: The Role of Flexible Resources

As Link and Phelan (1995; Phelan and Link 2010) argue, education, income, and occupational prestige grant access to FR such as knowledge, money, and social networks. These resources are flexible in that they can then be applied as needed across social situations in order to engage in protective behaviors that reduce health risks or maintain health. This theoretical framework is extended here to study how FR impact a person's ability to access and use different health information sources.

Flexible resources facilitate easier access to different information sources. In particular, FR of money and knowledge are used to acquire insurance and Internet access

at home, while knowledge of computers is used to access health information on the Internet easily (Eysenbach and Jadad 2001; Gibbons 2008). The expenditure of FR helps to lift barriers to accessing information sources, in particular the Internet and doctors, which makes it more likely that these sources will be viewed as an easily accessible starting point. Thus, individuals will be most likely to begin their information searches with a source that best strikes the balance between accessibility and trustworthiness (Johnson 1997). Flexible resources make some information sources available or more easily accessible than they might otherwise be, encouraging beginning a search with that source over others.

Information source utilization is indirectly connected to health inequalities for several reasons. In particular, access to and utilization of the internet allows respondents to engage in information seeking that is oriented towards the maintenance of health and the immediate recognition of symptoms, rather than waiting until symptoms were severe enough to justify a doctor's visit (Eysenbach and Jadad 2001, Anderson et al. 2004). Books do not always provide immediate answers which the individual is able to tap at a moment's notice, and doctors do not wait in the computer room to be asked questions. The internet provides immediacy that other sources do not provide, while doctors have a degree of expertise and authority that others are lacking. Being able to easily access these sources influences both the frequency at which an individual is able to engage in HISB and the accuracy of the information being found (Johnson 1997; Lambert and Loiselle 2007). This in turn modifies how engaged a person can be in his/her own care and both how effectively and how often beneficial lifestyle changes can be made. The connection, then, is that flexible resources may grant individuals easy access to information sources

that provide the luxury of quick and easy information that can be acted immediately, better enabling the individual to be a fully empowered consumer of healthcare. Those with lower access to flexible resources wait until symptoms are acute enough to seek for health information, and they use offline sources when they finally do (Stoller et al. 2011, Matthews et al. 2002)- this discrepancy can produce differences in how low and high FR individuals actually go about maintaining their health. Though it is beyond the scope of this study, it is likely that the differences in health maintenance strategies utilized by individuals may produce actual variations in health. Looking specifically at where people begin their search is important because it tells us where people the information a person had most immediately available. Many individuals use additional sources, but individuals from lower socioeconomic backgrounds are also more likely to cease their search at that first place, meaning that it is crucial to understand differences in where the search beings (Johnson 1997).

Two recent studies examined the relationship between FR and information seeking and provide findings that seem to contradict the theory of fundamental causes, warranting further investigation. Both Percheski and Hargittai (2011) and Dobransky and Hargittai (2011) found that income and education were not significantly associated with use of any particular information source. As the authors discuss, since both studies relied on samples of university students this is likely due to sampling bias. In doing so they rendered age into a fairly homogenous category and likely excluded individuals that lacked the prior education and income needed to go to college. Furthermore, most college universities provide Internet access and insurance for students that live on campus,

effectively eliminating any variation that may be associated with blocked access to these services.

The findings from previous research provide an impetus for further research, which will extend the theory of fundamental causes of health disparities to health information seeking behavior and resolve contradictory findings to date. The next section argues that in spite of these null findings it is still feasible that we may find a relationship between FR and information seeking in a more diverse and representative sample. This discussion is broken into two parts: one corresponding to the use of online sources and one to offline sources.

Access and Use of the Internet for HISB

As Eysenbach and Jadad (2001) suggest, the availability of quick and easy access to health information on the Internet varies across socioeconomic status. Social inequality -- including the disparate distribution of FR -- facilitates the creation of a "digital divide" between individuals with access to the Internet and the technical skills to use it and those who do not (Brodie et al. 2000; Anderson 2004; Lorence and Park 2007; Hargittai and Hinnant 2008; Talukdar and Gauri 2011). Disparities in Internet access and use have been found along lines of education and income, as well as age, race/ethnicity, and gender (Anderson 2004; Hargittai and Hinnant 2008; Talukdar and Gauri 2011). The digital divide is highlighted by a person's ability to use the FR of knowledge and money, as indicated by the strong influence of income and education, making access to the Internet easier or harder and therefore more or less likely a starting point in the information search.

First, the flexible resource of money must be spent on acquiring computers and Internet subscriptions in order to gain Internet access at home (Eysenbach and Jadad 2001; Anderson et al. 2004; Talukdar and Gauri 2011). Access to the Internet at home is associated with an increased likelihood to use the Internet for HISB both in the present and the future (Bowen 2003). Since health information seeking on the Internet requires this technology, it is likely that individuals that lack Internet access will not be thinking about using the Internet as a starting point in their search for health information. Libraries and the workplace offer a potential solution to the problem of access (Atkinson et al. 2009), but they do not impart the technical skills that owning and using a computer at home and education appear to (Hargittai and Hinnant 2008). These skills are the product of a second flexible resource, knowledge. Comfortably navigating the Internet requires a certain level of technical savvy that those with low education, as well as older individuals and ethnic minorities, tend to lack (Brodie et al. 2000; Eysenbach and Jadad 2001; Anderson 2004). Exploring and assessing health information on the Internet independently requires a degree of self-efficacy and health literacy that is enhanced by knowledge of technology and consistent exposure to the Internet (Eysenbach and Jadad 2001; Shieh et al. 2009; Shieh et al. 2010).

It is also important to examine if the digital divide is also perpetuated by distrust in the Internet, as HISB will begin at a source that is both accessible and trusted (Johnson 1997; Lambert and Loiselle 2007). The research indicates that those who use the Internet for health information seeking trust the Internet and the sites that are visited at least to some extent (Eysenbach and Kohler 2002; Hesse et al. 2005; Rains 2007). In this sense, distrust might diminish the likelihood that a person would use the Internet for health

information, but it isn't clear if flexible resources are related to this lack of trust. In other words, little is known about how trust in the Internet may be differentially distributed specifically among those with lower education and income. Research on how income and education relate to trust in the Internet are mixed, with some research supporting a positive association (Hesse et al. 2005), others suggesting a null association (Ye 2010), and others still finding inverse associations (Kalichman et al. 2006). These mixed findings are further examined in the current study, which will control for trust in the Internet and other information sources.

Disparities in FR and the subsequent digital divide clearly illustrate how FR influence ease of access and use of the Internet, which will limit the feasibility of the Internet as an option on which to start information searches (Eysenbach 2001; Anderson et al 2004; Cotten and Gupta 2004; Gibbons 2008; Shieh 2009; Koch-Weser et al. 2010). This illustrates how social inequality can modify how people will go about seeking their health information. This is seen in studies that contrast information seekers on the Internet versus those who use "offline" sources. For instance, individuals who seek out health information via the Internet, both as a starting point and later in their searches, tend to be wealthier and better educated than those who use offline sources first (Cotten and Gupta 2004; Koch-Weser et al. 2010). The current study contributes to this discussion by distinguishing the types of information sources used in more specific categories in order to better examine if access to FR influences use of offline sources as well.

Access and Use of Offline Sources

The likelihood that an individual will use a particular offline information source, such as doctors, print media, or social networks, is associated with a person's access to FR. This section begins by reviewing how access to FR can be related to an individual's likelihood to utilize a doctor first, focusing on how they are associated with insurance access and heightened trust in doctors. This is followed by a discussion of who is most likely to use print media or social networks for their health information.

The lack of FR such as money and knowledge appear to interfere with an individual's ability to access and retain health insurance either through an employer, private source, or public aid (Fairlie and London 2009). Racial and ethnic minorities with low education and low income are the least likely groups to have health insurance, which is negatively associated with seeing a physician and having an ongoing care provider (Fox and Richards 2010; Agency for Healthcare Research and Quality 2011). Health insurance is a resource associated with socioeconomic status (e.g., income, education, and occupation) and it makes going to a doctor first a significantly more plausible option simply by making it more affordable.

Trust in doctors is also related to race and a person's access to FR. Poor racial and ethnic minorities, especially African Americans, tend to view doctors as less trustworthy (Matthews et al. 2002; Boulware et al. 2003; Blanchard and Lurie 2004). This might make African Americans less likely to turn to doctors first (Frewer et al 1996; Johnson 1997). Furthermore, minorities with lower education are the least likely to possess the interpersonal skills needed to communicate comfortably and effectively with a physician (Shim 2010). Some, however, view doctors more highly than others, with the elderly

being more likely to prefer doctors due to their perceived trustworthiness and authoritativeness (Johnson 1997). Important social factors such as FR and race are therefore associated with both access to tangible resources and cultural competencies that modify the likelihood that a doctor is both a convenient and trustworthy source of information. This again highlights the need to move beyond the simple online/offline dichotomies used in prior research towards an approach that accounts for a variety of offline sources (Cotten and Gupta 2004; Koch-Weser et al. 2010).

Research indicates that health information seekers with diminished FR are most likely to use print media, interpersonal networks, as well as doctors (if they have the basic requisite resources) (Spink and Cole 2001; Lewallen 2004; Shieh et al. 2009). It is their *lack* of FR, in particular education and money, that leads them to view these less costly sources as the most accessible (Matthews et al. 2002; Shieh et al. 2009). For example, focus groups with low-income African American cancer patients found that participants cited friends and family as their most trusted information sources with no mention given to the Internet (Matthews et al. 2002). Men who lacked insurance and financial resources also struggle to utilize doctors, reinforcing the observation that accessibility can sometimes trump need. Doctors are used as a starting point only when respondents feel the issue is severe enough to justify the out of pocket expenses associated with seeing a doctor. Instead they used books, family members, and pamphlets in an effort to educate themselves (Matthews et al. 2002). Another study of low-income Latino immigrants by Courtright (2005) indicated the same pattern, noting that even the Internet users in her sample preferred using sources other than the Internet. This suggests that not only does access to FR and race/ethnicity limit the options that are available to

these individuals, but that they may have developed a completely different set of information seeking strategies that are distinct to those from higher SES backgrounds. One prominent limitation of prior research focusing specifically on HISB among low income or low education individuals is that they depend on small non-random samples, which limits generalizability. The current study will build upon this previous research by assessing source selection patterns among individuals with low access to FR in a sample of the American population.

Chapter 3

RESEARCH GOALS AND HYPOTHESES

The current study makes the general hypothesis that an individual's FR will be associated with the health information source they utilized first in their searches. Three specific sources are examined: the Internet, doctors, and print media. In addition, a combined variable that takes into account all other offline sources serves as a fourth source.

The core thesis of the current research is that flexible resources afforded by money and knowledge enable convenient access and the skills needed to navigate the Internet. This supports the claim that individuals with lower levels of education and who are poorer will be less likely to begin their search for health information on the Internet. Preference towards and access to a doctor is influenced by insurance status and cultural factors, which are again differentially distributed based upon FR and also race and ethnicity. As income and education decrease, the accessible sources an individual has to choose from become increasingly limited, leading them to turn exclusively to informal social networks, traditional print media and (in acute situations) doctors more often as a first source of health information. Their proclivity towards these offline sources highlights a need to better understand if this tendency is based on just access to resources or if it may be because of a culturally engrained preference for offline sources even when the Internet is available. One way to begin exploring this is by seeing if there are differences not only in how likely certain sources are used, but also if there is significant variation in what predicts use of a first information source. Such variation might suggest that individuals with lower access to FR engage in patterns of information seeking that

are different from those of individuals with higher access to flexible resource. Identifying

variations such as these would further our understanding of both HISB as a whole and

how FR can influence them.

As mentioned earlier, this study divides the HINTS 2007 data into two groups:

one with higher access to FR and one with lower access to these resources. Higher and

lower FR are measured using education as a proxy, with those persons with some college

or more reflecting higher FR, while those with only a high school diploma or less

reflecting lower FR. Logistic regression models will predict the use of one health

information source as a starting point relative to all others, and comparisons of logits

across FR groups will help to identify any differences in strength and statistical

significance of predictor variables.

Specific Hypotheses

Hypothesis 1a: There will be differences in what predicts use of an information source among individuals with lower FR as compared to those with higher FR.

Hypothesis 1b: Individuals with lower access to FR will be significantly more likely to use print media or "other" sources first, while individuals with higher access to FR will be significantly more likely to use doctors or the Internet first.

While it is unclear as to how demographic characteristics will be associated with

source utilization within the multivariate and bivariate analyses of low and high flexible

resource groups, a few hypotheses can be stated based upon prior research.

Hypothesis 2a: Respondents with high access to FR will be more likely to have health insurance and/or a regular care provider than those with low access to FR.

Hypothesis 2b: Having health insurance and/or a regular care provider will be associated with an increased likelihood to use a doctor or health professional as a starting point in both the higher and lower FR groups.

Hypothesis 3a: Respondents with high access to FR will be more likely to have an Internet connection at home than those with low access to FR.

Hypothesis 3b: Having a home Internet connection will be associated with an increased likelihood to use the Internet a starting point in both groups.

Hypothesis 4a: Trust in a particular information source will be positively associated with use of that information source.

Hypothesis 4b: The group with low FR will have significantly lower trust in doctors.

Hypothesis 5: Race/ethnicity will be a significant predictor of the utilization of health professionals first in both low and high FR groups, with whites being significantly more likely to use this source.

Hypothesis 6: Individuals with poor self-reported health in either FR group will be significantly more likely to use an authoritative information source -- such as a doctor -- first.

Hypothesis 7: Individuals that use informal sources of health information (print media, the Internet, other sources) in both FR groups will be more likely to use additional sources to supplement their search for information relative to those who start their searches with doctors.

Hypothesis 8: High FR respondents will use a significantly higher number of information sources than low FR respondents.

Chapter 4

METHODOLOGY

<u>Data</u>

The National Cancer Institute's Health Information Trends Survey (HINTS) data

is used to address the question of how FR influence where individuals are most likely to

start searching for health information across different information sources. It is

hypothesized that this relationship is mediated by factors such as trust, access, and

education; all of which are measured in the HINTS survey. The 2007 HINTS data used a

mixed mode design, recruiting a random sample of 7,674 non-institutionalized Americans

18 or older via mail and random digit dialing in 2008. The HINTS documentation

specifically recommends using the mail sample (N=3,593) when using the information

source variables due to significant differences between survey modes (Cantor and

McBride 2009). Racial and ethnic minorities were oversampled, but young male

minorities with low education are still somewhat underrepresented. This limitation is

accounted for to some extent through the use of jackknife replicate weights included with

the data set. These weights are calibrated in order to minimize sampling error and to

maximize congruency with larger national surveys, such as the National Health

Information Survey, the Current Population Survey, and the American Community

Survey. While these weights help, they do not completely correct for nonresponse bias

and generalizations should be made with caution (Cantor et al. 2009).

Data Preparation

First, following Koch-Weser and colleagues' (2010) analysis of the 2007 HINTS,

cases were selected to include only respondents who have ever looked for health

information for either themselves and/or someone else (2,945=yes, 632=no). Because

information seeking can occur either for oneself or another person, such as a child or

spouse, it is important to include the respondents who may have looked for information

for someone else. The data was then further divided into two groups for individuals with

above and below a high school education (Link and Phelan 2004). This resulted in two

groups that were used in separate analyses: high school diploma or less (N=772), and

some college or more (N=2,166).Notice that this under represents individuals with lower

levels of education. The random digit dialing data has somewhat more representative

coverage of these groups, but it is not good enough to justify using this data over the mail

sample's superior question phrasing. All "refused" and "don't know" responses were

recoded as missing. Preliminary tests for outliers using $\Delta\beta$ statistics and predicted

probabilities (see Kohler and Kreuter 2009) revealed six influential outliers. Three of

these were kept because they had clearly patterned responses that indicated they were

middle aged, low income, uninsured individuals with low confidence in their ability to

find health information. The other three cases demonstrated no discernible patterns and

were dropped from all univariate, bivariate, and multivariate analyses. The total sample

size for multivariate analysis *after* listwise deletion was 504 cases for the low FR group

and 1,764 for the high FR group, although bivariate analyses have somewhat larger

samples than these in many cases.

Disaggregating the Sample: Flexible Resources

   The theory of fundamental causes stipulates that access to FR can modify how

individuals go about maintaining their health (Link and Phelan 1995; Phelan et al. 2004).

In order to test this assertion the sample needs to be divided into different subsamples

that can then be compared against one another. Simply controlling for education and income in multivariate models would not be sufficient because it does not allow for the comparison of the relative strength and significance of different predictors across subsamples. Potential differences in predictors for source utilization across high and low FR groups would therefore be left unexamined.

Prior research suggests that level of education is the best social indicator to divide the sample in order to capture access to FR (Winkleby et al. 1992; Phelan et al. 2004). Other researchers have taken a similar approach to testing the idea that FR can influence health outcomes. Phelan and colleagues (2004) divided their sample into three separate levels of education (1-11 years, 12-15 years, and 16+ years), finding that disparities in mortality due to preventable diseases had a stronger and more consistent negative association with level of education than income below the poverty line. This finding is explained by education's high correlation with income, knowledge of disease and an improved ability to take preventative steps (Phelan et al. 2004). Instead of dividing the sample into income groups based on the national poverty line, education was used to divide the groups because income groupings would require problematic assumptions about family size, as well as reducing the sample size substantially more than individual education. In addition, additive indexes of variables such as income and education are not recommended due to reliability issues (Braveman et al. 2005).

Though theoretically robust, due to some limitations in sample size it is only feasible to divide the sample into a group of individuals with a high school education or less and some college/post high school vocational training or more. This is somewhat imprecise, but the distinction is still useful for several reasons. Research has indicated

that some patterns, such as how low levels of education are associated with an increased

likelihood to use offline sources, are exhibited by individuals that have completed high

school or less rather than just those with less than a high school education (Cotten and

Gupta 2004; Koch-Weser et al. 2010). Furthermore, high school graduates are still

significantly less likely to have health insurance for a full year, less likely to have an

ongoing source of care for a full year, and to report having poorer communication with

healthcare providers (Agency for Healthcare Research and Quality 2011).

<p style="text-align:center;">Measures</p>

The Dependent Variable: First Information Source Used

Univariate statistics for all measures are presented in table 1. Respondents were

first asked if they "had ever looked for information about health or medical topics from

any source?" Those that answered yes to this question were then asked: "the most recent

time you looked for information about health or medical topics, where did you go first?"

Consistent with theoretical models of HISB (e.g. Lenz 1984; Freimuth et al. 1989;

Lambert and Loiselle 2007) and Johnson's (1997) conceptualization, this question

assumes that the respondent had some sort of need for information prior to actually

looking for information. One inherent limitation to the HINTS data is that it does not

account for a person's level of experience with searching for information seeking in the

past. Respondents were presented with a list of 14 information sources from which to

choose. Information sources were recoded into three categories suggested by previous

research: doctor or health care provider; print media (books, brochures/pamphlets, the

library, magazines, newspapers); and the Internet (Johnson and Meischke 1991; Lewallen

2004; Lambert and Loiselle 2007). A fourth "other" category containing family,

<p style="text-align:center;">23</p>

friend/coworker, alternative practitioner, telephone info line, cancer organizations, insurance providers, television, and "other" was also made. It should be noted that the vast majority of people who land in the "other" category used family or friends as a first source (79% for low FR, 71%for high FR), but there were too few cases to allow for this group to be made into its own category after list wise deletion. Dummy variables were also constructed to represent those who used a source as compared to all other sources for multivariate analysis (e.g. went to doctor first (1), went to a different source first (0)). The four dummy variables serve as dependent variables in four separate logistic regression models.

Table 1: Univariate Distributions for Information Seekers in Mail Sample

Variable	Response	n	Unweighted %	Weighted %
First source used	Doctor	542	18.56	16.77
n=2,920	Internet	1,599	54.76	56.86
	Print Media	602	20.62	18.72
	Other	177	6.06	7.65
Education	HS or less	772	26.28	31.09
n=2,938	Some college or more	2,166	73.72	68.91
Age (grouped)	18-34	496	16.95	27.88
n=2, 926	35-64	1,757	60.05	55.52
	65+	673	23.00	16.60
Income group	Less than $20k	434	16.36	18.33
n= 2,653	$20k-$34,999	370	13.95	14.21
	$35k-$49,999	391	14.74	14.3
	$50k-$74,999	532	20.05	18.91
	$75k+	926	34.90	34.26
Home Net Access	Yes	2,029	68.52	68.86
n= 2,961	No	932	31.48	31.14
Insurance Status	Has Insurance	2,577	89.32	85.06
n= 2,885	No Insurance	308	10.68	14.94
Regular Provider	Yes	2,295	78.84	72.17
n= 2,911	No	616	21.16	27.83
Perceived Health	Excellent	293	10.02	10.07
n= 2,925	Very Good	1,119	38.26	37.79
	Good	1.096	37.47	38.26
	Fair	346	11.83	11.39
	Poor	71	2.43	2.48
Confidence In Ability To Find Health Info	Completely Confident	746	25.39	24.51
	Very Confident	1084	36.90	36.45
	Somewhat Confident	891	30.33	31.57
n=2,938	A little Confident	171	5.82	5.45
	Not Confident at All	46	1.57	2.0
Gender	Male	1,048	35.87	44.42
n=2,937	Female	1,874	64.13	55.58

Table 1 Continued: Univariate Distributions for Information Seekers in Mail Sample

Variable	Response	n	Unweighted %	Weighted %
Trust in Health Info	A lot	2090	71.26	70.09
From Doctor	Some	762	25.98	26.89
n=2,933	A little	70	2.39	2.56
	Not at all	11	0.38	.46
Trust in Health Info	A lot	149	5.25	5.02
From News and	Some	1,322	46.57	44.84
Magazines	A little	1,115	39.27	41.09
n= 2,850	Not at all	253	8.91	9.05
Trust in Health Info	A lot	607	22.12	22.32
From Internet	Some	1,576	57.43	56.02
n=2,744	A little	410	14.94	46.24
	Not at all	151	5.50	5.42
Trust in Health Info	A lot	227	7.96	8.7
From Family	Some	1,468	51.51	51.50
n=2,850	A little	1,041	36.53	35.95
	Not at all	114	4.00	3.86
Race/Ethnicity	White	2,119	73.73	72.16
n=2,874	Hispanic	243	8.46	11.4
	Black	335	11.66	9.95
	Other	177	6.16	6.5
Number of	None	672	23.67	25.17
Additional Sources	1 source	1,014	35.72	36.68
Used	2 sources	380	13.38	13.83
n=2,839	3 sources	326	11.48	10.59
	4 sources	188	6.62	5.69
	5 sources	124	4.37	3.89
	6 or more sources	135	4.76	4.16
Who was the	Myself	1,604	55.18	55.53
information for?	Someone Else	563	19.37	19.32
n=2,907	Both	740	25.46	25.15

Independent Variables

Income

All multivariate models also included a measure that accounts for a respondent's annual combined household income before taxes. Responses are grouped into five ranges: Less than $20,000; $20,000-34,999; $35,000-$49,999; $50,000-$74,999; $75,000+.

Access to Internet and Doctors

Access to certain FR such as education and income makes it easier to make use of different information sources (Johnson 1997; Koch-Weser et al. 2010). In particular, having insurance facilitates easier access to a doctor and an Internet connection at home makes it more likely that the Internet could be used as a first information source (Anderson et al 2004; Cotten and Gupta 2004; Gibbons 2008; Shieh 2009; Koch-Weser et al. 2010).

Internet access was measured with a two-step question in HINTS. First, respondents were asked if they had used the Internet for any reason, followed by an item asking where they accessed the Internet from. All respondents who reported using the Internet at home were recoded as "home connection (1)," with individuals that never mentioned accessing the Internet from home being coded as "no home connection (0)."

Health insurance status is measured with a simple yes (1)/no (2) question that asked "Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare?" A second variable measuring if they have a regular care provider was also included, which specifically asked: "Not including psychiatrists and other mental health professionals, is there a particular doctor, nurse, or other health professional that you see most often?" Response

options were yes (1) and no (2). Note that in both cases these measures group a wide array of insurance types or care providers together. Though this does not differentiate between specific types of insurance, having access to any sort of insurance or provider is associated with improved health outcomes and utilization of doctors (Agency for Healthcare Research and Quality 2011).

Trust in Information Sources

Trust in information from a given source is conceptualized as "the generalized expectancy that a message received is true and reliable and that the communicator demonstrates competence and honesty by conveying accurate, objective, and complete information" (Renn and Levine 1991:179). The HINTS data has several questions that assess a general sense of trust in different information sources. Four of these were used as proxies for this concept. Each respondent was asked: "In general, how much would you trust information about health or medical topics? How about…" followed by an information source. The sources used for this analysis are "On the Internet," "from family or friends," "from a doctor or other health care professional," and "in newspapers or magazines." Though the measure for trust in print media excludes books, it will still be useful as a basic gauge of how respondents feel towards certain printed sources. Each question had options ranging from "not at all" (1) to "a lot" (4). Because trust in a specific information source is hypothesized to be associated with an increased likelihood to use that source first, these variables are utilized independently as controls in multivariate models.

The variable assessing trust in doctors and health professionals needed to be recoded as a dummy variable that differentiated between respondents that trusted doctors

"a lot" (1) and "some or less" (0) for multivariate models. This is because over 70% of respondents said "a lot" and less than seven respondents in either subsample said "not at all." This lack of respondents caused problems in the model, often making it impossible for jackknife standard error estimates to be computed. Recoding as a binary dummy variable was the only way to correct this variable.

Remaining Control Variables

A number of relevant control variables were included in the logistic regression models. A respondent's perceived health was measured with the item "In general, would you say your health is…excellent to poor?" It was necessary to collapse the bottom two categories for multivariate models due to a lack of response in the "poor" category. The final range of the variable was therefore "excellent (4) to "fair to poor" (1). This measure is included under the rationale that poorer health will create a greater level of stress and may be associated with an increased desire to seek out health information and possibly treatment from a more authoritative source. This assumption is congruent with most stimulus-response type models of health information seeking behavior (Lenz 1984; Johnson and Meischke 2003; Lambert and Loiselle 2007).

Many information seekers use a number of different sources when searching for health information (Freimuth et al. 1989; Johnson 1997; Cullen 2006; Lambert and Loiselle 2007). For example, while a person may use the Internet to begin their search for information, they may also go to a doctor and family member to elaborate on or verify this information. In order to control for the use of additional information sources the question "Did you look or go anywhere else?" was asked as a follow up to the initial information source question presented as the dependent variable. Respondents could then

select any number of options from the same list of 14 sources that were available for the dependent variable (the Internet, doctor or health care provider, family, a friend/coworker, an alternative practitioner, a telephone info line, cancer organizations, insurance providers, television, books, brochures/pamphlets, the library, magazines, and newspapers). A variable tallying the number of additional sources used by an individual was then constructed based on these responses (mean = 1.87 additional sources, median = 1 additional source, SD = 1.8 additional sources). The measure was then truncated at 6 additional sources because those who used 7 or more registered as outliers on box plots. This variable was entered as a continuous control variable in all regression models.

Information seekers in this sample could be searching for information for either themselves or for others. In order to account for this a variable asking "The most recent time you looked for information about health or medical topics, who was it for?" was used, with the response options: Myself (1), someone else (2), and both myself and someone else (3).

Self- efficacy in this case is a person's perceived ability that he/she will be able to successfully find needed health information (Shieh et al. 2010). Individuals with low self-efficacy may be less likely to feel they can navigate the Internet or read books in order to educate themselves on health issues. This could lead to a greater dependence on authoritative sources (e.g. doctors) that can filter the vast body of health information and provide more direct and conclusive answers. For example, Shieh and colleagues (2010) found that self-efficacy in information seeking ability was an important predictor in determining if a low income pregnant woman would look for health information. This will be controlled for with an item asking "Overall, how confident are you that you could

get health related-advice or information if you needed it? Would you say… completely confident (5) to not confident at all (1)?"

Several demographic variables are also held constant in the multivariate models. Age is measured in years using a ratio level measure with a fairly normal distribution (mean = 54.16 years, median =55 years, SD =17.04 years). Race and ethnicity are coded into 4 categories, including: non-Hispanic White, non-Hispanic Black, Hispanic, and "Other". Variations by gender will be accounted for with a simple male/female dichotomy.

<center>Analytical Strategy</center>

All data analysis was performed in STATA 12.1 using the appropriate sampling weights. The sample was divided into two groups: "high school or less" and "some college or more." Bivariate analyses examined differences between the two subsamples, as well as relationships between individual independent variables and the dependent variable. This provided important information on how access to FR influences information seeking patterns and the existence of accessibility enhancers such as Internet access and insurance.

Multivariate analyses were conducted in two separate steps. First, four logistic regression models were run on the low FR (i.e. low education) group. Each model used a different dummy variable measuring first information source used as a DV. These dummies compared respondents who used one of the four sources described above (Internet, doctor, print media, and other) first relative to those who began their search elsewhere. For instance, one dummy set up as "doctor first (1)" and "source other than a doctor first (0)," while a separate variable is coded as "Internet first (1)" and "source

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other than the Internet first (0)" The independent variables in each model are: income, age, race, gender, trust in the four different information sources, self-confidence, insurance status, access to an ongoing provider, Internet access at home, who was being searched for, the number of additional sources used, and perceived health. This revealed differences between individuals who start off at an information source as opposed to those who use all other sources. The second set of logistic regression models was identical to those described above with the exception that they are being applied to the high FR (i.e. higher education) subsample. All analyses were conducted on the same 504 (low FR) and 1,764 (high FR) cases, respectively

      Coefficients from these models were then compared by running both high and low FR models simultaneously and calculating adjusted Wald statistics for each. Both specific coefficients and entire models from high and low FR groups for specific information sources were compared against one another. In addition to this test for statistical difference, substantive variations such as significance in only one model or changes in direction were also noted.

Chapter 5

RESULTS

Univariate statistics are presented in Table 1. These illustrate some key points

about the data. In particular, the majority of respondents (57%) began their search for

health information on the Internet. Doctors were almost always the most highly trusted

sources of health information, and most respondents had health insurance, a regular care

provider, and Internet access. Women and individuals that earn over $75,000 or more in a

year are both heavily overrepresented in this sample even after sampling weights are

used. This is likely the product of sampling bias from the mail survey, as well as a

byproduct of removing non-information seekers from the sample. Over seventy-four

percent (75%) of respondents also used at least one additional information source in

addition to the one they started with. A surprisingly large proportion of respondents,

44.47%, were searching for information for either someone else or both themselves and

another.

Differences Between Flexible Resource Subsamples

Table 2 presents all significant differences between the low and high FR group.

All bivariate significance tests use adjusted Wald tests rather than chi-square tests due to

sampling weights being in use. First, 31% of the total number of respondents was

categorized in the low access to FR group, while 69% of respondents were viewed as

having higher access to FR. Individuals from the low FR group were significantly older

and they were also substantially more likely to have lower incomes. The low FR group

was much less likely to have Internet access at home and insurance, though they were

equally likely to have a regular healthcare provider. In addition, this group had a larger

number of Hispanic and black respondents. Finally, they also reported somewhat poorer health overall and had markedly lower levels of trust in information from the Internet.

As expected, there were also differences in information source utilization based upon access to flexible resources. A majority (65%) of individuals from the high FR group used the Internet first, as compared to the more modest 39% of the low FR group that turned to the Internet first. The low FR group was significantly more likely to use all non-Internet information sources first, including doctors.

Table 2: Comparison of Information Seekers by Flexible Resources

Variable	Response	Weighted Percent of Low FR Group	Weighted Percent of High FR Group	*p**
First source used n=2,891	Doctor	25.61	12.89	
	Internet	38.97	64.63	<.000
	Print Media	24.61	16.24	
	Other	10.82	6.25	
Average Age n=2,904		49.62 years	45.17 years	<.000
Income group n=2,652	Less than $20k	35.95	10.83	
	$20k-$34,999	19.32	12.04	
	$35k-$49,999	16.07	13.55	<.000
	$50k-$74,999	14.56	20.76	
	$75k+	14.1	42.82	
Home Net Access n=2,918	Yes	47.03	78.99	
	No	52.97	21.01	<.000
Insurance Status n=2,844	Has Insurance	75.37	89.36	
	No Insurance	24.63	10.64	<.000
Perceived Health n=2,899	Excellent	6.73	11.49	
	Very Good	28.95	42.07	
	Good	43.51	35.69	<.000
	Fair	17.08	8.88	
	Poor	3.72	1.87	
Confidence In Ability To Find Health Info n=2,904	Completely Confident	23.86	25.06	
	Very Confident	27.26	40.93	
	Somewhat Confident	37.02	28.44	<.000
	A little Confident	7.7	4.47	
	Not Confident at All	4.15	1.1	
Trust in Health Info From Internet n=2,719	A lot	22.47	21.83	
	Some	44.14	61.23	<.000
	A little	20.84	14.43	
	Not at all	12.55	2.51	
Race/ Ethnicity n=2,854	White	63.34	76.33	
	Hispanic	18.62	8.32	
	Black	12.45	8.93	.010
	Other	5.6	6.42	
Who was the information for? n=2,878	Myself	61.5	53.14	
	Someone Else	14.9	20.84	.0102
	Both	23.59	26.02	
Gender n=2,918	Male	41.52	45.72	
	Female	58.48	54.28	.0339

Note: Having a regular provider, trust in a doctor, trust in news/magazines, and trust in family members, and number of additional sources used were not significantly different and were therefore omitted.

*Adjusted Wald test

Multivariate Analysis

Several diagnostics were performed before analyses were conducted in order to ensure the validity of the models. Lowess curves of the relationship between continuous independent variables and each dependent variable revealed no problematic probability distributions. Multicollinearity was tested for with variance inflation factors (VIFs). A number of dummies for the trust variables were strongly associated with the other dummies from their own variable (e.g. "some" trust in a doctor was negatively correlated with "a lot" of trust in doctors). Such internal correlations can lead to inflated coefficients and standard errors within each trust variable, but they do not dramatically influence the coefficients of other independent variables. This was confirmed by running all regression models again while excluding the trust variables. Still, the trust variables may have exaggerated results and they should be interpreted with caution.

The results of the eight regression models and the Wald comparisons of the logits are presented in Tables 3 and 4. Models for the low FR group are presented alongside the high FR group in order to allow for the quick comparison of odds ratios. Model fit is presented using unweighted models, as it is not possible to calculate fit statistics using sample weights. In theory, model fit should improve further after the weights are added since they help to improve the accuracy of standard error estimates. Only the model predicting use of other information sources for individuals with low FR demonstrated poor model fit. In this case the significant Hosmer-Lemeshow goodness of fit test suggested poor model fit while the chi square test suggested the opposite. This may in part be attributable to the fact that only 39 low FR respondents used this source first. Regardless of the cause, the results of this model should be interpreted with caution.

Before discussing each model, it should be noted that some variables were non-significant across all models and FR groups. An individual's race, insurance status, information seeking self-efficacy, and the target for the information search were not significant in any of the models.

Predicting the Use of a Doctor or Healthcare Provider First

Results for both low and high FR models and Wald coefficient comparisons can be found in table 3. Several variables were useful in predicting the use of a doctor as a starting point in the search for health information. Respondents in both FR groups tended to be older and less trusting in the Internet than those that used other information sources. Results concerning trust in the Internet were more consistent in the high FR subgroup. While only the "a lot" category was significant in the low FR group, both "a lot" and "some" were significant in the high FR group. In addition to these there were group specific predictors worth noting. In the low FR group those with Internet access at home were 66.8% less likely to start their search at a doctor. This coefficient was also significantly lower than that of the high FR group, as indicated by the Wald statistic of 4.56. This suggests that having a home Internet connection has a stronger deterrent effect for those with limited access to FR. For high FR respondents, the likelihood that a person would use a doctor instead of any other option increases by 140.2% if they have a regular care provider. In addition, high FR respondents that highly trusted doctors and medical professionals were 79.1% more likely to use a doctor or medical professional as compared to those that used other sources.

Table 3: Logistic Regression Models Predicting Use of Doctors and Internet as Starting Points in Groups with Differential Access to FRs

Low Flexible Resources (FR) n= 504; High Flexible Resources (FR) n=1,764

VARIABLES	Response (if applicable)	Doctor First(1) vs Any Other Option(0)			Internet First(1) vs Any Other Option(0)		
		Odds Ratios Low FR (125 yes)	Odds Ratios High FR (226 yes)	Wald Contrast F Statistic	Odds Ratios Low FR (222 yes)	Odds Ratios High FR (1,161 yes)	Wald Contrast F Statistic
Age (years)		1.031* (0.015)	1.033*** (0.008)	.04	0.964* (0.0141)	0.972*** (0.00636)	.5
Income Reference group: Less than 20k	$20k-$34,999	0.725 (0.431)	1.451 (0.645)	1.6	1.797 (1.432)	0.916 (0.339)	1.32
	$35k-$49,999	0.555 (0.329)	0.631 (0.266)	.05	3.049* (1.437)	2.029* (0.702)	.55
	$50k-$74,999	2.991 (1.767)	1.315 (0.524)	2.22	0.746 (0.552)	1.932* (0.603)	2.58
	$75k+	0.588 (0.445)	1.131 (0.425)	1.17	1.564 (1.041)	1.472 (0.433)	.01
Has home net access (1)	Yes	0.332* (0.137)	0.784 (0.146)	4.56*	6.827*** (3.223)	2.701*** (0.461)	5.75*
Has insurance (1)	Yes	1.222 (0.877)	1.177 (0.539)	.00	1.785 (0.997)	1.291 (0.429)	.47
Has regular provider (1)	Yes	1.436 (0.824)	2.402** (0.734)	1.01	0.956 (0.522)	0.819 (0.180)	.12
General Health Reference group: Excellent Health	Very Good	0.494 (0.710)	1.592 (0.694)	1.76	2.772 (2.636)	0.647 (0.181)	4.07*
	Good	0.480 (0.707)	1.416 (0.558)	1.54	4.280 (4.409)	1.129 (0.318)	3.27
	Fair or Poor	0.460 (0.622)	1.384 (0.765)	1.53	3.765 (3.773)	1.341 (0.565)	1.73
Number of Additional Sources Used		0.987 (0.150)	1.031 (0.0452)	.13	0.816 (0.0954)	0.885* (0.0427)	.64
Has a lot of trust in doctors (1)	Yes	0.923 (0.398)	1.791* (0.468)	2.71	1.152 (0.613)	0.829 (0.149)	.78

Standard errors in parentheses

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

Table 3 Cont'd: Models Predicting Use of Doctors and Internet as Starting Points in Groups with Differential Access to FRs
Low Flexible Resources (FR) n= 504; High Flexible Resources (FR) n=1,764

VARIABLES	Response (if applicable)	Doctor First(1) vs Any Other Option(0)			Internet First(1) vs Any Other Option(0)		
		Odds Ratios Low FR (125 yes)	Odds Ratios High FR (226 yes)	Wald Contrast F Statistic	Odds Ratios Low FR (222 yes)	Odds Ratios High FR (1,161 yes)	Wald Contrast F Statistic
Trust in Family	A little	0.470	0.319	.17	0.599	1.653	1.22
Reference group:		(0.479)	(0.226)		(0.598)	(0.806)	
Not at all	Some	0.807	0.470	.32	0.391	0.991	1.09
		(0.829)	(0.315)		(0.317)	(0.421)	
	A lot	0.436	0.553	.04	0.299	0.565	.41
		(0.509)	(0.399)		(0.344)	(0.259)	
Trust in	A little	0.280*	0.821	3.17	1.618	1.028	.43
News and Magazines		(0.168)	(0.415)		(1.138)	(0.442)	
Reference group:	Some	0.381	0.808	1.44	0.863	0.887	.00
Not at all		(0.243)	(0.376)		(0.567)	(0.353)	
	A lot	0.182	0.653	1.37	1.036	1.099	.00
		(0.206)	(0.586)		(1.038)	(0.551)	
Trust in Internet	A little	0.804	0.355	1.45	18.90*	12.44***	.12
Reference group:		(0.486)	(0.187)		(24.10)	(4.605)	
Not at all	Some	0.753	0.221**	3.78	33.75**	35.87***	.00
		(0.548)	(0.114)		(42.78)	(12.77)	
	A lot	0.272*	0.111***	1.49	104.0**	66.46***	.14
		(0.804)	(0.355)		(138.6)	(26.28)	
Constant		0.840	0.0838		0.0171*	0.0882**	
		(1.798)	(0.109)		(0.0294)	(0.0682)	
-2 Log Likelihood[1]		81.88***	172.94***		211.92***	423.30***	
Hosmer-Lemeshow[2]		470.60	1755.42		486.67	1739.06	

Gender, race, and confidence to find health information were also controlled for in these models for but were never significant. They have been excluded from the table for sake of parsimony.

Standard errors in parentheses
***=p<.001,**= p<.01, *=p<.05
[1]Calculated from unweighted model. Significance level is from chi square test; [2] Calculated from unweighted model.

Predicting the Use of the Internet First

Results for both low and high FR models and Wald comparisons of coefficients can be found in table 3. Use of the Internet first followed a similar pattern in which some predictors were shared while others were unique. In both groups people who went to the Internet first tended to be younger than individuals that used other sources. Respondents at even the moderate and low levels of trust in the Internet were significantly more likely to use the Internet as a starting point. In addition to this, having an Internet connection at home also increased the odds that a person might use the Internet first substantially. The Wald test comparing the logits was significant, indicating that having a home connection has a stronger effect for low FR respondents. Income also demonstrated a rather quizzical association with use of the Internet as a starting point, indicating that only those with an income ranging from $35,000 to $49,000 a year were more likely to use the Internet first in both FR groups. The only unique predictor between the two groups was that high FR individuals were 11.5% less likely to use the Internet first for each additional source that they used. In other words, we would expect high FR persons who start their HISB on the internet to be most likely to use no additional information sources.

Predicting the Use Print Media First

Both the low and high FR models predicting use of print media and "other" sources, and accompanying coefficient comparisons, can be found in table 4. Only one significant predictor of using print media first was shared between both FR groups. Print media users in both groups are expected to use a significantly higher number of sources than those that used other sources. A handful of predictors were also unique to each of the FR groups. For the low FR group, increased trust in the Internet was significantly

associated with a decreased likelihood to use print media as a starting point. Wald tests show that the effect of this trust in the Internet was significantly stronger in the low FR group than the high FR group, suggesting that we would expect a stronger effect for low FR individuals in the population as well. High FR respondents with easy Internet access were 50.8% less likely to use print media than low FR respondents; an effect that was surprisingly non-statistically significant in the low FR group.

Predicting the Use of Other Sources First

Lastly, respondents that used "other" sources were difficult to predict. Heightened trust in family members was significantly associated with a greater likelihood to use "other" sources of health information first. This increasing pattern is especially consistent in the high FR group. These (admittedly inflated) results are likely the product of the fact that the "other" category is largely composed of individuals who used family and friends as information sources.

A few unique predictors of the use of "other" information sources in the high FR group are worth mentioning here. First, those with convenient Internet access were significantly less likely to use "other" information sources first. In addition, high FR individuals with a lot of trust in doctors are 65.9% less likely to use "other" sources first. There are a few significant predictors in the low FR group, but it is unclear how these should be viewed because there is little consistency in the results. Given the very small number of cases that used "other" sources, it is advised that further research be conducted before these results are taken at face value.

Table 4: Logistic Regression Models Predicting Use of Print Media and Other Sources as Starting Points in Groups with Differential Access to FRs
Low Flexible Resources (FR) n= 504; High Flexible Resources (FR) n=1,764

VARIABLES	Response (if applicable)	Print First(1) vs Any Other Option(0)			"Other" First(1) vs Any Other Option(0)		
		Odds Ratios Low FR (118 yes)	Odds Ratios High FR (288 yes)	Wald Contrast F Statistic	Odds Ratios Low FR (39 yes)	Odds Ratios High FR (89 yes)	Wald Contrast F Statistic
Age (years)		1.007 (0.0134)	1.015 (0.00903)	.55	0.987 (0.0195)	0.993 (0.0108)	.13
Income Reference group: Less than 20k	$20k-$34,999	0.438 (0.254)	1.206 (0.521)	2.73	2.629 (2.964)	0.479 (0.278)	3.74
	$35k-$49,999	0.541 (0.312)	0.765 (0.295)	.40	1.280 (1.181)	0.483 (0.269)	1.22
	$50k-$74,999	0.358 (0.200)	0.504 (0.199)	.31	0.431 (1.158)	0.418 (0.267)	.00
	$75k+	0.725 (0.509)	0.700 (0.225)	.00	1.989 (2.294)	0.735 (0.383)	1.36
Has home net access	Yes	0.484 (0.285)	0.492*** (0.09)	.00	0.334 (0.225)	0.327** (0.115)	.00
Has insurance	Yes	0.393 (0.212)	0.683 (0.264)	1.26	0.744 (0.651)	0.879 (0.387)	.06
Has regular provider	Yes	1.434 (0.796)	0.924 (0.277)	.91	0.329 (0.280)	0.988 (0.481)	2.82
General Health Reference group: Excellent Health	Very Good	0.601 (0.653)	1.169 (0.355)	.84	0.652 (0.803)	1.400 (0.865)	.79
	Good	1.272 (1.509)	0.661 (0.197)	.78	0.0762* (0.0899)	0.915 (0.622)	8.4**
	Fair or Poor	1.554 (1.707)	0.745 (0.330)	.87	0.0471 (0.0803)	0.303 (0.242)	2.04
Number of Additional Sources Used		1.356* (0.173)	1.140* (0.0589)	2.71	0.902 (0.272)	1.086 (0.119)	.74
Has a lot of trust in doctors (1)	Yes	1.434 (0.796)	0.924 (0.277)	.30	0.997 (1.091)	0.441* (0.163)	1.31

Standard errors in parentheses
***=p<.001,**= p<.01, *=p<.05;

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Table 4 Cont'd: Models Predicting Use of Print Media and Other Sources as Starting Points in Groups with Differential Access to FRs
Low Flexible Resources (FR) n= 504; High Flexible Resources (FR) n=1,764

VARIABLES	Response (if applicable)	Print First(1) vs Any Other Option(0)			"Other" First(1) vs Any Other Option(0)		
		Odds Ratios Low FR (118 yes)	Odds Ratios High FR (288 yes)	Wald Contrast F Statistic	Odds Ratios Low FR (39 yes)	Odds Ratios High FR (89 yes)	Wald Contrast F Statistic
Trust in Family	A little	2.292	0.918	.96	8.078	13.41*	.06
Reference group:		(2.846)	(0.515)		(14.09)	(13.64)	
Not at all	Some	1.814	0.929	.53	8.829	53.22***	.83
		(2.175)	(0.523)		(14.35)	(51.44)	
	A lot	1.335	0.775	.26	47.26*	174.3***	.38
		(1.760)	(0.518)		(77.69)	(170.5)	
Trust in	A little	4.246	0.950	4.46*	0.219	1.106	2.45
News and Magazines		(4.330)	(0.432)		(0.293)	(0.677)	
Reference group:	Some	5.722	1.536	3.75	0.244	0.721	1.2
Not at all		(5.147)	(0.704)		(0.349)	(0.475)	
	A lot	7.566	2.163	1.70	0.837	0.211	.82
		(9.714)	(1.352)		(2.075)	(0.260)	
Trust in Internet	A little	0.145**	1.417	11.75***	9.313*	2.314	1.67
Reference group:		(0.102)	(0.633)		(9.959)	(1.647)	
Not at all	Some	0.175*	0.585	3.46	2.415	1.318	.37
		(0.119)	(0.272)		(2.534)	(0.822)	
	A lot	0.0581***	0.354	6.23*	3.071	1.191	.57
		(0.0423)	(0.186)		(4.411)	(0.805)	
Constant		0.177	0.297		0.0171*	0.0882**	
		(0.329)	(0.333)		(0.0294)	(0.0682)	
-2 Log Likelihood[1]		90.55***	164.50***		60.66**	102.07***	
Hosmer-Lemeshow[2]		493.07	1818.20		486.67*	1731.25	

Gender, race, and confidence to find health information were also controlled in these models for but were never significant. They have been excluded from the table for sake of parsimony.

Standard errors in parentheses
***=p<.001,**= p<.01, *=p<.05
[1]Calculated from unweighted model. Significance level is from chi square test; [2]Calculated from unweighted model.

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When comparing low and high FR models only a handful of Wald tests comparing logits were significantly different. The vast majority were not. In these cases we must conclude that the strength of the regression coefficients might be comparable in the population. This does not, however, negate that fact that two very similar coefficients are not always going to be significant in their respective models. As such, the lack of difference is strength of coefficients is only one way to see differences between the models. The second way is, as has been done here, to emphasize the presence or lack of statistical significance. Using this approach we can see many similarities and few differences between the models.

Chapter 6

DISCUSSION

This analysis presented a number of interesting findings that both support and contradict original hypotheses. Taken as a whole, this data provides only limited support for the prediction that access to FR influences how people go about maintaining their health by altering how they search for health information. This does not by any means refute the theory of fundamental causes- instead it suggests that it's applicability to HISB may be somewhat limited. In line with the theory's expectations, low FR individuals are more likely to be disadvantaged in a variety of ways, with lower incomes, a higher chance to be a racial minority, and disproportionately female. In spite of these congruencies this diminished access to FR does not seem to influence individual's information through all the routes that were proposed. In addition, a number of the exploratory hypotheses were not supported.

The first hypothesis stated that individuals with lower flexible resources would be less likely to use costly information sources, such as doctors and the Internet, while higher FR individuals would be more likely to use them because they did not have as many barriers to access to deal with. Low FR individuals are significantly more likely to use sources other than the Internet, which they are also less likely to have access to, than other sources. Contrary to expectations, however, they were also more likely to use doctors in their information seeking than high FR individuals. High FR individuals instead overwhelmingly used the Internet first in their starting point. This only lends partial support to the hypothesis, and illustrates some differential patterns of information seeking based upon access to FR.

Though the finding that low FR individuals are more likely to go to doctors first is somewhat at ends with the theoretical underpinning of this project, this doesn't need to be the case. First, just because low FR respondents go to doctors first does not mean that they are doing so immediately upon detecting the problem. Instead it is more likely that they wait until symptoms are acute enough to cause serious concern that justifies a trip to a doctor (Stoller et al. 2011). On the other hand, some research has indicated that older respondents simply prefer to not be engaged in health care decision making, instead choosing to have a doctor make the decisions for them even if they have the option to decide for themselves (Czaja et al. 2003). But even if this were the case, it does not negate the benefits that are gained from being an informed and active health consumer. Starting one's search at a doctor means that the respondent is less likely to have primed him/herself for the meeting with a list of questions and concerns. This may leave the patient with only partial understanding of the issue and a limited ability to incorporate these changes into his/her life. Research has indicated that individuals who go to the internet first tend to be "activated" patients that are consciously engaged in the management of their own health (Williams and Heller 2007, Gibbons 2008). This finding suggests that high FR individuals may be more reactive to minor symptoms while also being more activated regarding maintenance of their health. This result should be taken seriously, as activated patients tend to have greater success in self-managing their health and incorporating beneficial behavioral changes in the long run (Hibbard et al. 2007). With this in mind, this result supports the theory of fundamental causes because it points to the possibility that low FR individuals are taking less active roles in the management of their health in part due to a lack of access to the internet.

Less clear, however, is if the low FR individuals that use an information source are substantively different from those with higher FR. In most cases the strongest predictors were shared between the two groups. For instance, in both FR groups Internet users tended to be youngest of all information seekers and those who started with a doctor were likely to be the oldest. This finding is also consistent with prior research, indicating that FR probably do not influence the information seeking patterns of different age cohorts (Johnson 1997; Lambert and Loiselle 2007). Another finding that suggests a lack of influence of FR is that income, which captures the FR of money, is only rarely associated with heightened use of a particular information source. But there is also evidence to suggest that access to FR do produce nuances in the information sources an individual might use.

The few unique predictors for the low and high FR models were usually related to trust in and the accessibility of a given source, especially the Internet, rather than differences in a person's health or self-efficacy. This assertion should be taken with caution, however, as the commonalities between these models outweigh the differences. This should not downplay the potential importance of this finding, and it emphasizes the need to consider characteristics of both the information source and the individual information seeker. Future research should investigate and elaborate upon the potential for finer differences in HISB between high and low FR groups using different years of the HINTS data sets and more precise measures that capture both trust in different information sources and his/her ability to access and utilize these sources. Until such research is conducted it is difficult to conclude if FR are producing meaningful differences by altering HISB and the actual health maintenance strategies engaged in

after finding information, as would be hypothesized based on the theory of fundamental causes (Link and Phelan 1995). For the time these findings point to the possibility that this is the case, since low and high FR individuals demonstrate variations in their access to and utilization of sources.

The current analysis does provide some evidence that FR diminish access to resources that might improve the likelihood that a person will use a particular source. Hypotheses two and three examined first if individuals with lower access to FR had decreased access to convenient Internet access, health insurance, and a regular care provider. Multivariate analysis then assessed if these three factors were actually associated with increased likelihood to utilize their respective information sources. Results indicated that the digital divide is still in effect, with low FR respondents having diminished access to Internet connectivity at home. This is in line with a substantial body of research, and it illustrates that connectivity is still differentially distributed based upon access to economic and social resources in spite of technological booms (Eysenbach and Jadad 2001; Anderson 2004; Hargittai and Hinnant 2008; Talukdar and Gauri 2011). Like Fox (2008) has discussed, those with Internet access are likely to use the Internet for HISB. The opposite also holds true, with both FR groups demonstrating that a lack of internet access is associated with heightened utilization of offline sources. For instance, Individuals in the low FR group with Internet access were not only much more likely than their high FR counterparts to use the Internet first, but they were also much less likely to start their search with a doctor. This result also suggested a rapid closing of the digital divide once access is provided, much like what Brodie and colleagues (2000) documented a decade ago. The key implication here is that the digital divide appears to

be a key mechanism through which FR can influence information seeking behavior. As some have suggested, this lack of access to the internet can modify patterns of information seeking, differentially benefiting the wealthy by giving them the luxury to immediately react to symptoms and needs rather than waiting until symptoms are acute enough to justify visiting a doctor (Eysenbach and Jadad 2001; Gibbons 2008; Anderson 2004).

These findings suggest that low FR individuals with Internet access are more likely to view the Internet as an ideal starting point for their search than high FR individuals. Theoretically this seems to be consistent with Johnson (1997) and others because it implies that having access to the Internet does enhance the ease with which the Internet can be accessed, thereby making it more likely that it will be used as a first source (Gray et al. 2005; Rains 2007; Kim and Kwon 2010). This also illustrates a clear mechanism through which access to FR can minimize or enhance a person's ability to carry out certain information seeking patterns. In terms of practical application, this shows that the Internet is an excellent route for reaching low FR individuals *if* they are likely to have Internet access. Otherwise, offline sources may be better for dispensing information to low FR groups about important health topics. In addition, based on the wald comparisons internet access does not seem to be as important of a factor in determining internet use for individuals with high FRs- this may be because they have internet access at work or know friends or families with connections that could be borrowed quickly.

Having health insurance and a regular care provider were less clearly related to using a doctor as a starting point during HISB. As expected from prior research,

individuals with low FR were somewhat less likely to have health insurance, but they were unexpectedly not any less likely to have a regular care provider (Agency for Healthcare Research and Quality 2011). Having a regular provider only increased the likelihood that a doctor would be used first for high FR respondents, suggesting that their access to FR may have made going to their regular care provider more plausible or appealing than options such as the Internet. In contrast to research which has found that individuals without health insurance are much more likely to forego care, this analysis revealed that lack of health insurance did not predict going to a source other than a doctor first (Fox and Richards 2010). It is possible that since the Internet is so easy and quick to access that having health insurance did not ease the process for individuals of either FR group enough to make it a viable choice to being with. What both these findings around insurance access ultimately show is that access to FR do not appear to minimize or enhance the likelihood that doctors will be used by low FR individuals. In this instance, this finding only lends partial support to the hypothesized mechanism through which FR can alter HISB.

Hypotheses 4a and 4b suggested that high trust in an information source would increase the probability that this source is used over others. It also anticipated that low FR individuals would have lower trust in doctors than high FR respondents. This hypothesis only received partial support. To begin with, the low FR group was only more likely to have lower trust in the Internet, but not doctors as was expected. These results help to verify the existence of a positive relationship between trust in the Internet and level of education found by Hesse and colleagues (2005) while also contradicting other research that reported null or inverse associations. (Kalichman et al. 2006; Ye 2010). Trust in

family, doctors, print media, and the internet was surprisingly high in both groups, with at least 50% of respondents said they had some trust in health information from these sources. This could be due to the somewhat vague specification of different information sources in the trust questions, but it illustrates that many individuals are quite trusting in at least information from some doctors and some sites on the internet.

In the multivariate models it was clear that in most cases high trust in the Internet is connected to a heightened likelihood to use the Internet first, but trust in family members and trust in doctors were also significant in predicting their respective information sources (doctors, "other" sources) in the high FR group. It is important to note that Internet utilization for HISB is not coupled with distrust in doctors, as might be predicted by Hardey (2001).

These findings give support to the prior assertions that individuals who go to the most trusted and easily available source may need to take into account the influence of FR (Johnson 1997; Gray et al. 2005; Hesse et al. 2005; Rains 2007). The high FR group's ability to go to alternative sources that are more highly trusted may be the product of their ability to more easily access these trusted sources, such as being able to afford to travel to a trusted doctor's office to ask a few questions. Low FR respondents may need to settle to some extent, choosing the Internet first when it is trusted and veering towards alternative sources, especially print media, mostly when the Internet is not trusted.

Low trust in the Internet was associated with a higher probability of using other sources in both groups. The heightened distrust that low FR respondents feel towards the Internet can help to explain why low FR respondents are less likely to use the Internet as a starting point during their search for health information. This repeats the finding that

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Internet-based health information providers need to make a concerted effort to appear

legitimate and trustworthy in order to maximize their utility to users (Eysenbach and

Kohler 2002; Gibbons 2008). These results also point to an important area for future

research: the effect of diminished trust or distrust in information sources on where

individuals begin their information searches. The importance of this is seen in the high

FR group's result that those with lower trust in doctors were significantly more likely to

use an "other" source, which points to the possibility that respondents are avoiding a

source that is distrusted and replacing it with a less conventional alternative.

The final four hypotheses were exploratory in nature, attempting to identify areas

in which low and high FR individual's information seeking patterns might differ. The

first of these posited a relationship between race and the utilization of doctors. The null

findings of this analysis imply that racial and ethnic minorities do not harbor a specific

aversion to using doctors for health information. This may be because trust was

controlled for in these models, but it is very likely that there is a fundamental distinction

between trusting a doctor for information and trusting a doctor for care. Given the

intersection of trust and race in prior research on both utilization of doctors for care

(Boulware et al. 2003; Blanchard and Lurie 2004) and information (Frewer et al 1996;

Johnson 1997; Lambert and Loiselle 2007), future research should attempt to clarify this

relationship. One way to begin doing this would be to see if there are any interaction

effects between race and trust in both care provided and information dispensed.

The sixth hypothesis was not supported. The finding that an individual's

perceived health has little bearing on what information source is used first joins several

other studied that have found a similar null relationship between the two (Johnson and

Meischke 1991; Johnson and Meischke 1993; Dobransky and Hargittai 2011). This divergence from other studies such as Andreassen (2007) and Rice (2006) suggests that HISB on the Internet and health status are somehow connected.

The last two hypotheses began by anticipating that respondents using a doctor first would be less likely to use additional information sources. In addition, the high FR group was expected to use more information sources overall (Johnson 1997). Surprisingly, it was instead found that print media users tended to use more sources than individuals that used any other source. This might be because the information being provided was too complex to understand intuitively, or that the information gained may have justified a visit to a more formal source such as a doctor. In contrast to what others have asserted, those who start searching on the Internet or with a doctor are not more likely to use additional information sources (Cullen 2006). In fact, the opposite was true in high FR Internet users. Neither FR group used more information sources, nor were the coefficients significantly stronger than one another, disconfirming the final hypothesis. The use of follow-up information sources is important, and future research should examine if specific information sources are likely to be used in conjunction with different starting points.

The results of the eight models in the current study also build upon Koch-Weser and colleagues (2010) as they illustrate differences between online and offline information seekers that were previously undetected. This suggests that strategies in prior research of aggregating offline sources together (e.g. Cotten and Gupta 2004; Koch-Weser et al. 2010) should be modified in order to make finer distinctions between the sources used. Other researchers have found worthwhile nuances when looking at specific

sources and it is likely that more will emerge if future research accounts for these differences (Johnson and Meischke 1991; Dobransky and Hargittai 2011; Percheski and Hargittai 2011).

<div align="center">Limitations</div>

These findings must be understood in light of a number of methodological and data limitations. First, the sample used demonstrates substantial bias. In addition to nonresponse error, selection bias was introduced because only information seekers are included. We can see the effects of this bias in the disproportionate representations of women, the wealthy, and well educated. This has exacerbated the inherent biases of the HINTS 2007 mail survey data, such as getting a disproportionately high number of better-educated people, to the point that it is unlikely that the United States population is truly being represented in this sample. As such, generalizations should be made very carefully. A second limitation can be found in the method for dividing the sample based on flexible resources as measured by education. The low FR group had a very large number of older respondents, which may be indicative of generational differences in education levels. Low FR may have unintentionally been synonymous with being elderly to some extent, and many bivariate differences such as having Internet access at home and lower income could be the products of age cohort effects rather than diminished access to money, power, and prestige. Controlling for age in multivariate models suggests that this is not the case, but future research should follow Phelan and colleagues (2004) by also dividing the sample by income or multiple levels of education to mitigate the introduction of age biases. Dividing by income was not an option in this analysis because there were too few respondents that were at or near the poverty line.

The measures used in this analysis also only shed light on if a person used a source first. They tell us nothing about the usefulness of the information, their ability to comprehend advice, or how long the person spent using the source. It is also impossible to ascertain the motivations behind the respondent's information search; we don't know why they chose to search for health information to begin with. This lack of important information is a regrettable limitation of the HINTS data that cannot be accounted for. It is also possible that recall bias may play a part in which sources are recalled as being used "first," in which individuals recall the most useful or time consuming sources their starting points when they may not have actually been used first. The measure for insurance status also lacked specificity, as it did not differentiate between specific types of insurance, such as HMOs, PPOs or Medicaid.

Chapter 7

CONCLUSION

The current research attempted to test the theory of fundamental causes' assertion that access to FR such as money, power, knowledge, and prestige can influence a person's ability to maintain his or her health in the long run (Link and Phelan 1995). This theory was extended to hypothesize that access to FR can influence the sources that an individual uses to begin their search for health information by influencing the ease through which individuals can access different information sources. In particular, access to the Internet at home and having health insurance were expected to remove substantial barriers that might otherwise reduce the likelihood that a person will use the Internet or a doctor to begin their search for health information. It was also expected that the perceived trustworthiness of the information source would be critical to determining if a source was used (Johnson 1997). To see if there were differences in predictors and access among individuals with differential access to FR the sample was divided into low and high FR groups based upon level of education.

Analysis indicated only partial support for the theory of fundamental causes as applied here. On the one hand, low FR individuals were less likely to have access to the Internet, health insurance, and a regular care provider. Low FR respondents were also more likely to start their searches using sources other than the Internet. However, at the same time predictors in low and high FR logistic regression models revealed may similarities between the groups. The findings of this study suggest that while access to FR influence both connectivity and trust in the Internet, as well as access to insurance, they only produce minor differences in actual patterns of utilization in multivariate

models. In fact, access to insurance did not appear to improve the likelihood that doctors would be used as starting points.

The results of this study suggest that the Internet is generally viewed as the most convenient and accessible source of health information, and as long as individuals have access and trust in the information found they will be likely to use the Internet first. Diminished access to FR impeded a person's ability to access the Internet, which in turn appears to have resulted in a greater likelihood to utilize other information sources such as doctors or print media. Flexible resources can influence an individual's information seeking patterns this way, which may ultimately produce changes in how a person goes about managing his or her health in the long run.

The results of this study illustrate that not only should future research take care in disaggregating between specific offline sources, but it should also examine how social inequality relates to utilization of these specific sources. Given the limited variations in predictors between users of different information sources we should continue this line of inquiry in order to better understand how users of different information sources differ from one another and how systemic inequalities may relate to differences in source selection. This study's findings also highlight a greater need for understanding of the relationship between not only trust and information source selection, but also how distrust can produce aversions to certain sources. But it identifies only a mechanism- not an outcome. Studies assessing if there are differences in health outcomes or lifestyle changes based upon information seeking patterns need to be in order to better connect HISB to the fundamental causes perspective. In addition, this study examines only where the person went first in their search- another study should be conducted in order to assess

if there are differences in in individuals who use different sources at *any* point in their

information search. The HINTS 2007 data is ready to explore this question and its

implications further, and doing so will contribute to our understanding of inequality and

source utilization. This will shed further light on if this study's findings point to a

mechanism through which information seeking can perpetuate health inequalities over

time.

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