The Influence of Media Trust and Internet Trust on Privacy-Risking Uses of E-Health

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ABSTRACT

People claim to be concerned about information privacy on the Internet, yet they frequently give out personal information to online vendors and correspondents with whom they have little, if any, prior experience. This behavior is known as the privacy paradox and is particularly relevant to the context of e-health, due to the special risks of health information exposure. Using data from the 2005 Health Information National Trends Survey (HINTS), this study addresses a key question regarding online health information privacy: Do individuals self-police risky e-health activities (i.e., uses where personal information is given out) or are they indifferent to risk based upon generalized trust in broadcast media and the Internet as sources for health information? Our results show that Internet trust mediates most effects of broadcast media trust on Internet use and that Internet trust plays a much smaller role in motivating Internet uses that are risky than is the case for low-risk uses. These results have important implications for researchers, policymakers, and healthcare administrators in determining the level of privacy protection individuals need in their use of e-health applications.

Keywords: broadcast media trust; health information search; Internet trust; privacy paradox; privacy risk

INTRODUCTION

Early e-health offerings were primarily informational, but an increasing variety of healthcare services are now being developed. These services include online access to health records (Masys, Baker, Butros, & Cowles, 2002), electronic billing and payment services (Altinkemer, De, & Ozdemir, 2006), and public health reporting (Järvinen, in press). Patients can interact with peers and mentors in online support groups (Zrebic & Jacobson, 2001) and engage in computer-mediated communication with physicians and clinical staff (Wilson, 2003). And even though many of the early e-health
vendors failed (Itagaki, Berli, & Schatz, 2002), leading e-business organizations, including Microsoft and Google, are now turning their attention to e-health development (Lohr, 2007). The new e-health services are prized by the public (Homan, 2003), yet they entail important information privacy risks that are inherent to communication and personalization.

Exchange of information during communication creates opportunities for personal information to be exposed, either through an accident, such as inadvertently overhearing a conversation, or by design, as is the case with surreptitious “phishing” strategies (Hesse, Nelson, Kreps, Croyle, Arora, Rimer, & Viswanath, 2005). Information privacy risks also emerge in personalization, defined as “the ability to proactively tailor products and product purchasing experience to tastes of individual consumers based upon their personal and preference information” (Chellappa & Sin, 2005, p. 181).

In the case of e-health, personalization can be applied to acquire and organize health information according to the patient’s preferences, to automatically generate health forms and records, or to provide monitoring capabilities to help manage chronic disease. However, information used for personalization can be exposed due to events beyond individual control, as illustrated by the recent exposure of records relating to 1.8 million patients and physicians that occurred when a laptop computer belonging to the U.S. Veterans Administration was stolen (Gaudin, 2007). Although individuals clearly benefit from having access to personalized e-health that can do more than simply provide health information, personalization does tend to increase the risk that privacy will be compromised.

Population sample surveys show that individuals strongly desire privacy in their use of the Internet (Fox, Rainie, Horrigan, Lenhart, Spooner, & Carter, 2000), yet they are increasingly pragmatic about providing personal information online (Taylor, 2003). This privacy paradox of individuals seeking privacy while giving out their information is especially relevant to the context of e-health due to the sensitivity of health information. Harm from the exposure of health information can have unique financial and emotional effects, such as obstructing insurance coverage, limiting job prospects, damaging personal relationships, and inviting social ostracism. If individuals perceive the potential for privacy risk harm to be especially high in the context of health information, this will reduce their motivation to use e-health (Cazier, Wilson, & Medlin, 2007).

Healthcare policymakers and regulators have responded to the public’s privacy concerns by creating specialized professional privacy standards (Mason, McCall, & Smith, 1999) and stringent privacy regulations, such as the Health Insurance Portability and Accountability Act of 1996 (HIPAA) which instates severe penalties for violations. These standards and regulations are intended to protect individuals from having their health information exposed, but they have proved to be cumbersome and relatively ineffective (Choy, Hudson, Pritts, & Goldman, 2001). Thus, current standards and regulations that apply to health information may actually reduce benefits and increase the costs of e-health use.

We propose that it is important to learn more about the factors that drive use of e-health services, the nature of the relationships, and the impacts of the relationships on privacy risk. This knowledge will allow us to better understand and model the privacy trade-offs individuals make in their decisions involving personal health information. In addition, assessing the ability of individuals to self-manage e-health privacy risks can help policymakers and regulators create standards and laws that are more attuned to individual needs and preferences. In this study, we use data from the 2005 Health Information National Trends Survey (HINTS) to address a key question regarding online health information privacy:

Do individuals self-policing risky e-health activities (i.e., where personal information is given out) or are they indifferent to risk based upon generalized trust in broadcast media and the Internet as sources for health information?
Background
Our research approaches privacy risks from the perspective of trust—the willingness to assume risks of disclosure (Mayer, Davis, & Schoorman, 1995). Trust mitigates the effects of individuals' perceptions of privacy risk on subsequent behaviors (Dinev & Hart, 2006) and increases the willingness of individuals to share personal information in online settings (Cazier, Shao, & St. Louis, 2007). When trust is present, it is an important stimulator of online transactions (Quech & Klein, 1996), and lack of trust is a crucial reason why people drop out of online business interactions (Luo, 2002).

For online organizations it is essential to build and maintain trust because the primary recipient of an individual’s trust in online contexts is the organization itself; in online transactions there often are no salespeople or other human agents in whom to develop trust separately from the organization (Chow & Holden, 1997). Zucker (1986) identified three key bases from which trust in organizations is developed. Process-based trust arises from a process of social exchange and shared experiences between organizations and customers. Successful prior and current experiences build trust for future exchanges. Characteristic-based trust derives from a sense of commonality in characteristics that are shared with the other party, for example, similar values, background, ethnicity or experiences. Institution-based trust develops through influence of a third party, such as a government agency, a bank or some other organization that assures the trustworthiness of the target organization. An example of institution-based trust is the WebTrust Assurance Program developed by the American Institute of Certified Public Accountants (AICPA) (Srivastava & Mock, 1999).

The effect of trust is to reduce the fundamental tension underlying what we have described previously as a privacy paradox. Although individuals desire complete security and control over personal information, they simultaneously seek benefits that can be obtained only by relinquishing some of this security and control. In the case of e-health, communication and personalization services can be obtained only if the user assumes additional privacy risk. It is theorized that individuals apply a "privacy calculus" to determine whether benefits of disclosing personal information exceed the costs of increased risks (Culnan & Armstrong, 1999, p. 108), and this calculus is based to a large degree upon trust. A number of recent empirical studies in online settings have further confirmed the relationship between trust and various aspects of privacy, including privacy risk perception (Dinev & Hart, 2006; Larvenpaa, Tractinsky, & Vitale, 2000), privacy risk concerns (Eastlick, Lotz, & Warrington, 2006; Malhotra et al., 2004), and privacy protection characteristics (Liu, Marchewka, Lu, & Yu, 2005). These findings suggest that it can be useful to apply trust measures to study how individuals decide whether to accept privacy risks.

Trust is important to many forms of e-health use. E-health is an increasingly common source of health information (Krane, 2005), and many people have come to trust e-health for this purpose. In a recent population sample survey, nearly two-thirds of respondents indicated a trust level of "some" or "a lot" toward Internet health information (Hesse et al., 2005, p. 2620). Searching online for health information does not represent a significant privacy risk, as typical e-health sites offer anonymous public access to informational content. However, individuals are also adopting e-health services that emphasize communication and personalization (Sillence, Briggs, Harris, & Fishwick, 2007), including e-prescribing, remote disease monitoring, and patient-physician e-mail (Taylor & Leitman, 2002). As discussed earlier in the article, communication and personalization create opportunities for information exposure and thereby increase privacy risk.

Previous research has described health-related Internet trust factors (Hesse et al., 2005) and modeled development of trust in e-health services (Sillence, Briggs, Harris, & Fishwick, 2006). However, we are not aware of any studies that address how trust influences individual decisions to use e-health services representing differential privacy risks. This lack motivates
our research design as described in the following sections.

**Research Design**

Our research design adopts a mediated trust model of Internet behavior originating from studies of direct-to-consumer (DTC) advertising. Menon, Deshpande, Perri, and Zinkhan (2002) examined the relationship between individuals’ trust in various sources of prescription drug information and their information search behaviors. They observe:

*The findings reveal that trust in drug information from traditional media sources such as television and newspapers transfers to the domain of the Internet. Furthermore, a greater trust in on-line prescription drug information stimulates utilization of the Internet for information search after exposure to prescription drug advertising. (Menon et al., 2002, pp. 17–18)*

Subsequent research corroborates the contention by Menon et al. (2002) that trust in Internet information sources mediates effects of trust in traditional media sources on information-seeking via the Internet (Huh, DeLorme, & Reid, 2005). In addition, Internet trust is found to influence other behavioral factors, including intention to revisit a Web site (Hong, 2006) and follow-up communication by individuals with physicians and others (Huh et al., 2005). These findings underpin the research model presented in Figure 1.

The research model presents an empirically derived relationship between individuals’ trust in broadcast media health information and their use of e-health services that is mediated by trust in Internet health information (Huh et al., 2005; Menon et al., 2002). This relationship provides a structure for understanding how generalized trust factors (i.e., trust in broadcast media and the Internet as sources for generalized health information) influence individuals’ health-related behaviors. In the present study, we apply the model to understand how individuals approach differential privacy risks in the use of e-health services. We propose to do this by contrasting the relationships between Internet health trust and use of e-health services at two different levels of risk. We conceptualize low-risk e-health services as those in which no personal information is exchanged, for example, looking on the Internet for information about exercise and physical activities. High-risk e-health services require exchange of personal information, for example, using the Internet to buy medicine or vitamins. If individuals self-policing risky uses of e-health, then we would anticipate finding significantly lower association between Internet trust and use of high-risk vs. low-risk e-health services. If individuals are indifferent to risk in the use of e-health services, however, we would anticipate finding similar levels of association for the two levels of risk.

**Research Method**

Data for this study were obtained from the 2005 Health Information National Trends Survey (HINTS), conducted by the National Cancer Institute. HINTS utilizes a national probability sampling methodology to assess

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*Figure 1. Research model*

![Research model diagram](image)
U.S. residents' knowledge and perceptions regarding cancer information and other issues surrounding healthcare (Davis, Park, Covell, Rizzo, & Cantor, 2005). HINTS is directed toward documenting changing patterns in use of health information (especially information relating to cancer), identifying health communication trends, assessing how cancer risks are perceived, and testing theories relating to health communication (HINTS, 2008). The portion of the survey used in the present study relates to perceptions of trust, use of the Internet for healthcare purposes and demographic data.

HINTS data were collected by telephone interviews and online questionnaires between February and August of 2005. List-assisted, random digit samples of all telephone exchanges in the U.S. were used to develop a nationally representative sample of households. Residents of age 18 and above were recruited to participate in the survey, with intentional oversampling of residents who were self-identified as Black or Hispanic. The overall response rate of contacted households was approximately 21%, producing a total dataset representing 5,587 individuals who completed the survey.

**Sample Characteristics**

Our research design focused on the subset of HINTS participants who (1) had previously used the Internet to access health information or other health services and (2) provided cod-

<table>
<thead>
<tr>
<th>Factor</th>
<th>Category</th>
<th>% in HINTS</th>
<th>% in Subset</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
<td>18-34</td>
<td>18.6</td>
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<td></td>
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<td>36.8</td>
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<tr>
<td></td>
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<td>65.5</td>
<td>63.2</td>
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<tr>
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<td></td>
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<td></td>
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<td>18.6</td>
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<td>2.6</td>
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<td>6.0</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>$15,000 to &lt; $20,000</td>
<td>5.2</td>
<td>3.0</td>
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<td></td>
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<td>5.4</td>
<td>4.6</td>
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<td></td>
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<td>10.1</td>
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<td>2.4</td>
<td>4.1</td>
</tr>
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</table>
able responses to all health trust and Internet health use items. This reduced dataset contained 2,121 participants. Due to the requirement of Internet use, our participants are younger and better educated, have higher household incomes, and are slightly more likely to be males than is the case in the full HINTS dataset (see Table 1). These differences necessarily reflect the digital divide which characterizes Internet use at present (Norris, 2001); thus we propose our use of the subset is appropriate given the focus of the present study.

**Measures**

In addition to demographic measures, the subset of HINTS items used in the present study assesses health trust in broadcast media and the Internet as information sources and several health uses of the Internet. All survey items used in the present study are documented in the Appendix.

Broadcast Media Health Trust is measured through responses on four-point Likert scales to items which ask “How much do you trust information about health or medical topics?” in newspapers, magazines, radio, and television. These factors have been shown to produce a unidimensional measure in previous research (Menon et al., 2002), suggesting that broadcast media health trust should be modeled as a reflective construct.

Internet Health Trust is assessed through responses on a four-point Likert scale to the single item, “How much would you trust information about health or medical topics on the Internet?”

Internet Health Use is developed as a measure of behavioral variety that is calculated as the total number of different services in a predefined set that participants report having used. The rationale for counting the number of different behaviors is based upon the premise that higher counts represent more extensive utilization of the Internet across the population for the represented activities (health uses). Although behavioral variety measures are not as prevalent in information technology (IT) research as behavioral frequency measures, such measures have proved to be effective in a wide range of field research including studies of antisocial behavior (Morizot & Le Blanc, 2005), effects of childhood play on social development (Pellegrini, 1988), and management education (Lengnick-Hall & Sanders, 1997).

The HINTS dataset contains several yes-no measures that assess Internet health uses during the preceding 12-month period. These measures range from looking for health or medical information to buying medicines and vitamins online. We divide these measures of Internet health use into two levels of privacy risk. Low-risk Internet health uses do not offer the opportunity for personal information to be exchanged. These uses focus on looking for health information. High-risk Internet health uses promote the exchange of personal information through activities including buying a health product online, participating in an online support group, and communicating with one’s doctor or clinic via e-mail. Three items are used to measure each Internet health use factor, as shown in the Appendix.

**Results**

Our study applies a mediated trust model of Internet behavior to assess the degree to which individuals self-police risky e-health activities. In order to conduct this assessment, we first developed separate path models predicting low-risk and high-risk Internet health use.

**Model Development**

Our path models were developed using AMOS 4.0 structural equation modeling (SEM) software. Media trust is modeled as a reflective latent factor and Internet trust and Internet health use are modeled as single-indicator factors. The research model predicts that any effects of media trust on Internet health use will be fully mediated by Internet trust; however, a path modeling the direct relationship between media trust and Internet health use was included in order to test this assumption.

We recognize that single-indicator measures limit the ability to accurately estimate measurement error in many conditions (Im &
Grover, 2003), a situation which can attenuate the level of association among factors (Nunnally & Berenstein, 1994). Recent research indicates that single-indicator measures are equivalent to multiple-indicator measures where constructs are “doubly concrete” in the minds of subjects, meaning that both the object and attribute of the construct are “easily and uniformly imagined” (Bergkvist & Rossiter, 2007, p. 176). Our Internet health use measures meet these criteria; however, the single-indicator measurement of Internet trust remains problematic. Hierarchical regression is sometimes used instead of SEM where path models include single-indicator measures, but this approach does not remove the problem of attenuation (Nugent, White, & Basham, 2000). We propose that SEM is preferable to hierarchical regression in the present study as it offers the ability to assess mixed models containing both latent and single-indicator factors rather than requiring latent factors to be summed, a method which further reduces the ability to assess measurement error.

**Construct Validation of Trust Measures**

In order to assess construct validity of media trust relative to Internet trust within the proposed research, a factor analysis was conducted among trust measures in both path models. Results are shown in Table 2. All theorized media trust measures loaded predominantly on a single factor, and Internet trust loaded on a second factor. Some cross-loading was observed for HC-13g, which assesses trust in television, however, much less of the variance in this measure is associated with Factor 2 ($R^2 = .24$) than with Factor 1 ($R^2 = .41$). These results suggest that a reasonable level of discriminant validity exists between the two constructs and that media trust measures converge sufficiently to demonstrate convergent validity.

**Model Fit**

Fit of the two measurement models was tested using absolute fit, incremental fit, and chi-square methods, as recommended by Hair, Black, Babin, Anderson, and Tatham (2006). Absolute fit indices directly measure how well the specified model reproduces the observed data. We applied RMSEA and the goodness-of-fit index (GFI) as indices of absolute fit. RMSEA equals .050 for the low-risk model and .045 for the high-risk use model. GFI equals .99 for both models. Both fit indices represent satisfactory levels of absolute fit at the criteria levels recommended by Hair et al. (2006).

Incremental fit indices examine fit of a specified model relative to an alternative baseline model, commonly referred to as a null

<table>
<thead>
<tr>
<th>Trust Indicator</th>
<th>Factor 1</th>
<th>Factor 2</th>
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</thead>
<tbody>
<tr>
<td>HC-13c: How much would you trust information about health or medical topics in newspapers?</td>
<td>.855</td>
<td>.164</td>
</tr>
<tr>
<td>HC-13d: How much would you trust information about health or medical topics in magazines?</td>
<td>.821</td>
<td>.184</td>
</tr>
<tr>
<td>HC-13e: How much would you trust information about health or medical topics on the radio?</td>
<td>.720</td>
<td>.229</td>
</tr>
<tr>
<td>HC-13g: How much would you trust information about health or medical topics on television?</td>
<td>.639</td>
<td>.493</td>
</tr>
<tr>
<td>HC-13f: How much would you trust information about health or medical topics on the Internet?</td>
<td>.196</td>
<td>.954</td>
</tr>
</tbody>
</table>

*Principal component analysis using varimax rotation with kaiser normalization.*

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model. We applied the Comparative Fit Index (CFI) as an incremental fit index, finding a CFI value of .962 for the low-risk model and .965 for the high-risk model. Both values exceed the .90 fit criterion proposed by Hair et al. (2006).

Chi-square results examine the extent that a perfect fit exists between observed and estimated covariance matrices in a specified model. We find chi-square per degree of freedom (df) to be 6.23 for the low-risk model and 5.35 for the high-risk model.

Path Model Results
Model results are presented in Figure 2. Media trust is strongly associated with Internet trust (path coefficient = .56), however, other statistics vary between the models. The path coefficient between Internet trust and low-risk use is .31 compared to .15 for the relationship between Internet trust and high-risk use ($Z = 6.68, p < .0001$). A significant association was found in the direct relationship between media trust and high-risk use; however, the strength of this relationship did not vary significantly between the low-risk and high-risk models. The path model results generally corroborate prior findings (Hong, 2006; Huh et al., 2005; Menon et al., 2002), but predictive effects of Internet trust were significantly more prominent in the model predicting low-risk Internet health use.

Discussion
The findings present several important implications for privacy researchers, policymakers, and healthcare administrators. First, we find the mediated trust model of Internet behavior on which we based our research can explain how generalized media and Internet trust influence use of the Internet for health activities reasonably well where personal information is not at risk. In such circumstances, trust in information provided by traditional media (such as pharmaceutical advertising) must be fully transferred to trust in Internet information sources before it can motivate individuals to perform low-risk Internet behaviors, such as searching for information on exercise and physical activities. This finding compares closely with prior studies of

Figure 2. Path model results (all paths significant unless otherwise indicated)
the mediated trust model and its encompassed relationships (Hong, 2006; Huh et al., 2005; Menon et al., 2002) and recommends the model for use by trust researchers.

Second, we find that generalized trust is much less consequential in motivating high-risk Internet health uses, explaining less than one-quarter the variance in this factor of that explained in low-risk uses. This finding indicates that individuals do not rely heavily on generalized trust of traditional media or the Internet in deciding whether to risk exposure of personal health information and implies that self-policing is prevalent in such health-related Internet activities as buying, medicine, participating in a support group, or e-mailing doctors. It must be recognized that this is a tentative interpretation, as it is possible that aspects of trust which are not measured by our research design—such as trust in a vendor’s online security and privacy protection measures—could be more predictive of high-risk Internet health uses.

The findings suggest that additional research is needed to identify other antecedents of risky online behaviors, as generalized trust does not appear to be an overriding cause of peoples’ willingness to give out personal information while desiring privacy—a phenomenon referred to earlier in the article as the privacy paradox. For policymakers and administrators, the results caution against assuming that individuals routinely misapply trust and therefore need encompassing protection in their online dealings. The finding that generalized trust is not strongly predictive of high-risk online behaviors suggests that regulations and policy interventions should be implemented primarily to avoid designed health information privacy losses, such as health information phishing schemes, rather than addressing all aspects of e-health.

Third, we find an important distinction between trust in traditional media and trust in the Internet as information sources. Although these factors are correlated, Internet trust is a unique factor that almost entirely mediates the influence of media trust on the online behaviors we studied. Several explanations for this distinction are plausible, and these deserve additional study:

- Unlike traditional media, the Internet provides the activity domain as well as the informational domain, making it imperative for individuals to achieve some level of Internet-specific trust before they will initiate Internet activities. This interpretation would suggest that health promotion and advertising for online services should be moved away from traditional media and onto the Internet, thereby avoiding the need for customers to transfer trust to the Internet.
- Where traditional media emphasize broadcast (one-way) communication, the Internet provides a mix of broadcast and interpersonal (two-way) communication (Hoffman & Novak, 1996). Interpersonal interaction is especially important in health domains as people expect speedy and relevant responses to their health questions and concerns. For this reason, interactive elements of the Internet may be key to development of Internet trust, implying that promotional resources should be directed toward increasing opportunities for online interpersonal communication.
- Alternatively, social presence of informational communication on the Internet, for example, in health-related chat groups, may be higher than with traditional media. If increased social presence leads to greater Internet trust, this would imply that promotional resources should be directed toward increasing the social presence of online informational resources.

Identifying the source(s) of the distinction between media trust and Internet trust that we have found in the present study will be an important area for future research. In addition, we expect this issue to have ramifications for healthcare administrators in allocating resources and directing the design of future e-health services.
Finally, the findings suggest that finding ways to increase Internet health trust among potential e-health uses can be effective in increasing use of e-health services, especially where information privacy risk is low. This is an important consideration for healthcare administrators, as seemingly important e-health services are often underutilized by intended users (Payton & Brennan, 1999). Our research shows that Internet trust mediates effects of media trust, presumably through transfer to the Internet of institution-based trust in broadcast media as a health information source (Zucker, 1986). It will be important to explore other sources for developing institution-based Internet health trust, such as endorsements by professional medical organizations, certification by security audit services, and partnering e-health development with Microsoft, Google, or other leading e-business organizations that are already well-trusted Internet information sources.

Limitations
The key limitations of the present study arise from use of the HINTS dataset. From our perspective, HINTS provided an outstanding opportunity to conduct a study using data from a large, current, and nationally-representative population sample. However, this also required us to make several trade-offs. Our choice of measures for Internet trust and Internet health uses was highly constrained, requiring us to use some single-indicator constructs which can attenuate strength of relationships. Some dimensions we would have liked to assess, such as Internet health use frequency, were not available in the dataset. In addition, it was not possible for us to develop certain types of manipulation checks or to direct follow-up questions to clarify participants’ responses to the survey. We propose that these trade-offs are reasonable, given the exploratory nature of the present research. However, it will be important for future researchers to follow up the issues that were limited in our research design.

Conclusion
This study applied measures of trust to assess whether individuals self-police privacy-risking e-health activities or are indifferent to them. Addressing this question is important to researchers, who benefit both from empirical validation of the underlying mediated trust model of Internet behavior as well as illumination of the relationships between generalized trust and Internet health uses at two levels of privacy risk. Policymakers and healthcare administrators benefit from improved understanding of the role trust plays in mitigating the privacy paradox that faces e-health users, which can be applied to guide development of better e-health services and more efficient resource allocation processes.

REFERENCES


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APPENDIX
The following survey items, labeled below with identifiers from the original HINTS dataset, were used in the present analysis.

**Broadcast Media Health Trust**
- **Response Measures**: 1 = “A Lot”, 2 = “Some”, 3 = “A Little”, 4 = “Not At All”
- **HC-13c**: How much would you trust information about health or medical topics in newspapers?
- **HC-13d**: How much would you trust information about health or medical topics in magazines?
- **HC-13e**: How much would you trust information about health or medical topics on the radio?
- **HC-13g**: How much would you trust information about health or medical topics on television?

**Internet Health Trust**
- **Response Measures**: 1 = “A Lot”, 2 = “Some”, 3 = “A Little”, 4 = “Not At All”
- **HC-13f**: How much would you trust information about health or medical topics on the Internet?
- **Use of Low-Risk E-Health Services** (no personal information is exchanged)
  - **Response Measures**: Recoded to 1 = “Yes” and 0 = “No” for analysis
- **HC-14a**: In the past 12 months, have you done the following things while using the Internet: Looked for health or medical information for yourself?
- **HC-14f**: In the past 12 months, have you done the following things while using the Internet: Looked for information about physical activity or exercise?
- **HC-14i**: In the past 12 months, have you done the following things while using the Internet: Looked for information about quitting smoking?
- **Use of High-Risk E-Health Services** (personal information exchange is required)
  - **Response Measures**: Recoded to 1 = “Yes” and 0 = “No” for analysis
- **HC-14c**: In the past 12 months, have you done the following things while using the Internet: Bought medicine or vitamins on-line?
- **HC-14d**: In the past 12 months, have you done the following things while using the Internet: Participated in an on-line support group for people with a similar health or medical issue?
- **HC-14e**: In the past 12 months, have you done the following things while using the Internet: Used e-mail or the Internet to communicate with a doctor or a doctor’s office?

**Demographic Items**
- **GA-0A**: May I please have your age? Open-Ended Response Measure
- **GA-0C**: Are you male or female? Response Measure: 1 = “Male”, 2 = “Female”
- **DM-03**: What is the highest level of school you completed? Response Measure: 1 = “Never Attended”, 2 = “Grades 1 Through 5 (Elementary)”, 3 = “Grades 6 Through 8 (Middle)”, 4 = “Grades 9 Through 12 (Some High School But No Diploma)”, 5 = “High School Graduate (High School Diploma Or Equivalent)”, 6 = “Vocational Or Trade School Graduate”, 7 =

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APPENDIX CONTINUED

"Some College, But No Degree", 8 = "Associate Degree In College", 9 = "Master’s Degree", 10 = "Professional School Or Doctorate Degree"

HHInC: What is your combined annual household income? Response Measure: 1 = "< $10,000", 2 = "$10,000 - <$15,000", 3 = "$15,000 - <$20,000", 4 = "$20,000 - <$25,000", 5 = "$25,000 - <$35,000", 6 = "$35,000 - <$50,000", 7 = "$50,000 - <$75,000", 8 = "$75,000 - < $100,000", 9 = "$100,000 - <$200,000", 10 = ">$200,000"

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