

How do patients evaluate and make use of online health information?

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Abstract

Increasing numbers of people are turning to the Internet for health advice despite reports that sites vary in terms of their quality. How do they decide whether or not to trust the advice they find online? A staged model of trust development is proposed and tested here in a longitudinal study in which fifteen women faced with decisions concerning the menopause and hormone replacement therapy (HRT) were observed while searching the Internet for information and advice over four consecutive weeks and then kept diaries over a six-month follow-up period. The women were all resident in the North-East of England and were recruited through advertisements in the local media. The study provided general support for a three-stage model of trust in which participants firstly engaged in rapid heuristic processing of information, efficiently sifting and rejecting general sales sites and portals but sometimes rejecting high-quality content because of poor design. Well-designed sites were then effectively interrogated for credible and personalized content before being designated trustworthy. The women appeared to act much like ‘scientists’ using web material to generate and test hypotheses and theories about HRT, although their capacity to deal with certain forms of risk information was limited. They subsequently reported integrating online advice with offline advice from friends, family and physicians in order to be fully confident in their final decisions. Women felt that the Internet influenced their decision-making and improved communications with physicians. Personalized stories from like-minded others improved trust perceptions. Despite the use of the Internet the physician was still seen as the primary source of information and advice.

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Introduction

The Internet is an important source for health information and advice. Many of those who have

access to the Internet use it for health care purposes, although usage estimates vary. It has been claimed that 80% of adults in the US and 66% of adults in Europe seek online health advice (Pew Research, 2003; Taylor & Leitman, 2002), although one of the most rigorous telephone-based surveys—conducted on 4764 US adults—put the figure at 40%, with about a third of these reporting that the Internet genuinely affected a health-care decision (Baker, Wagner, Singer, & Bundorf, 2003). Surveys of

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young people suggest that the Internet is a particularly appealing source of information and advice for them, especially when they want information about sensitive or stigmatized illnesses (Berger, Wagner, & Baker, 2005; Klein & Wilson, 2003).

Many people searching online for health advice trust the information and advice they find (Mead, Varnam, Rogers, & Roland, 2003). However this trust may be misplaced: in a systematic meta-analysis of health website evaluations, 70% of studies concluded that quality is a problem on the Internet (Eysenbach, Powell, Kuss, & Sa, 2002).

In the face of such variable quality, how do health consumers decide whether or not to trust the information and advice they find online? Relatively little is known about this, although we do know that ordinary health consumers are likely to adopt different trust criteria from experts, for example being more readily influenced by the attractiveness of the design, (Stanford, Tauber, Fogg, & Marable, 2002). Eysenbach and Köhler (2002) noted that non-expert consumers failed to read disclosure statements or check ownership of the website, despite suggesting these beforehand as important quality markers. Their study made use of an artificial search task, however, and the authors themselves conceded that different trust factors might be influential in a more realistic setting.

The literature regarding trust in an e-commerce setting provides a useful starting point for exploring the ways in which people evaluate the trustworthiness of health information and advice online (see Grabner-Krauter & Kaluscha, 2003 for a recent review). Based on this literature we can assume that various factors are likely to govern the extent to which people feel they can trust health advice online, although there is some disagreement over their relative importance in fostering trust in an e-commerce context. For example, some researchers argue that consumer trust (or a related construct, credibility) is primarily driven by an attractive and professional design (Fogg et al., 2002; Stanford et al., 2002) or by the presence or absence of visual anchors or prominent features such as a photograph or trust seal (Riegelsberger, Sasse, & McCarthy, 2003). Others argue that trust reflects the perceived competence, integrity, predictability and/or benevolence of the site (Bhattacharjee, 2002; McKnight & Chervany, 2001). A few authors also highlight the importance of personalization in the formation of trust judgments (Briggs, de Angeli, & Simpson, 2004) or the notion of good relationship management (Egger, 2000).

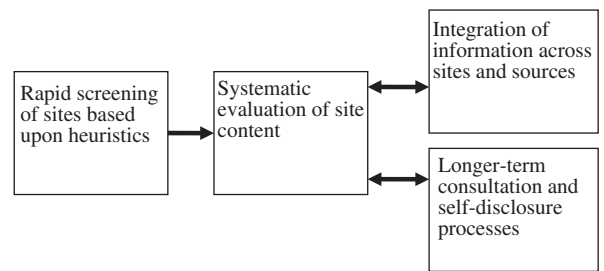


Fig. 1. Briggs et al.'s (2004) staged model of trust.

One way of reconciling such potentially contradictory findings is to adopt a staged model of trust in which users engage in a fast preliminary assessment of a site before moving on to a more in-depth evaluation of the information available in a selected few sites, and finally developing a long-term trusting relationship with one or more particular sites. Such a model (Fig. 1) was proposed by Briggs, Burford, de Angeli, and Lynch (2002).

According to this model, most users engage initially in a rapid screening of the large numbers of sites accessed using general search engines and do so using relatively superficial aspects of a website. Subsequently, they are presumed to spend longer exploring a handful of sites in greater depth using more considered judgments of content. The first stage is thus an *heuristic* or *affect*-based stage in which an initial trust impression is formed based upon more salient or easily processed information; the second stage is an *analytic* stage in which a decision is made to engage more systematically with the material. Such a strategy is consistent with dual-process models, such as those developed in the persuasion literature (Chaiken, 1980; Petty & Cacioppo, 1986).

It might be assumed that patients with genuine health concerns would be highly involved in the task and would therefore primarily engage in systematic processing of web content. However, most of those who seek health advice online begin their search via a general information portal, gaining indiscriminate access to large numbers of sites of variable quality (Briggs et al., 2002). Indeed, online health consumers often have to navigate their way through a large number of poor-quality sites in order to reach high-quality advice, and are initially open to many influences (Morahan-Martin, 2004). Given the size of this initial task, even the most highly motivated health consumer may rely upon heuristic strategies at the beginning of the search process, when they

are initially formulating what McKnight and Chervany (2001) describe as an intention to trust (rather than actually engaging in a trusting activity).

Ultimately, however, health consumers need to engage in trusting activities and these activities may be informed by material and advice obtained online. This longer-term trusting relationship has been largely neglected in the online trust literature, although a putative long-term relationship was originally proposed in the Cheskin/Sapient report (1999) and also appears in Egger (2000), where the author describes a stage of trust maintenance in which the consumer develops an informal, habit-like relationship with the vendor. The extent to which such a long-term relationship plays an important role in the e-health context is less certain, although some studies have demonstrated high levels of engagement and participation among patients with HIV or AIDS (Reeves, 2001) cancer (Ziebland et al., 2004) and in adolescents (Gray, Klein, Noyce, Sesselberg, & Cantrill, 2004).

In the current study, we seek evidence for a staged model of trust development in a group of genuine health consumers: menopausal women who were keen to assess the costs and benefits of taking hormone replacement therapy (HRT). Traditionally, women have had access to information about HRT through their physician, the media and their family and friends (Griffiths, 1999). Recently a number of specialized websites have appeared dedicated to women's health issues and to the menopause in particular and increasingly, as with other health issues, menopausal women are turning to the Internet for information and advice (Pandey, Hart, & Tiwary, 2003).

When faced with the task of finding out more about HRT, how do women search the Internet and how do they determine which sites to trust, both in terms of the initial selection process and longer-term engagement with specific sites? The trust model proposed above suggests that women are initially influenced by fairly superficial or readily accessible properties of sites, but subsequently evaluate content more systematically, making judgments concerning the expertise of the authors and the credibility of the material. The potential for subsequent engagement with particular websites over time and the development of a trust relationship is something that relatively little is known about.

In order to explore these issues, a group of menopausal women were observed while searching

the Internet for information and advice on HRT over four separate sessions taking place over a month. They were subsequently asked to keep diaries for a six-month period and were then interviewed about the way Internet advice had influenced both their decision-making and communication with their physician.

Method

Participants

Fifteen women at various stages of the menopause participated in the study (41–60 years, mean 49). The women were all resident in the North East of England, with differing levels of educational attainment (eight women were high-school educated, five were educated to degree level and two to post-graduate level). Eight of the women worked in business or administration (with the remainder describing themselves as either housewives or retired). The women were recruited through advertisements in the local media. All were interested in finding out more about the menopause and used the Internet at least once a week. Ten of the women rated themselves as being intermediate Internet users, the rest as novices.

Design

There were three phases of research, the first aimed at mining online search behaviors, the second aimed at understanding Internet use and integration of information across sources over a longer-term period and the third designed to elicit patient reflections on the value of Internet-based health information. In phase 1, each participant attended a total of four two-hour sessions held weekly in an Internet café in Newcastle-upon-Tyne, UK. During each session participants used the Internet to search for information and advice on the menopause (60 min), followed by a group discussion with a facilitator (50 min). Participants were allowed to freely search the web during weeks 1 and 4, but were directed to specific websites during weeks 2 and 3. These specific sites were chosen for their trust design elements. In phase 2, participants were asked to log their health search behaviors in diaries over the subsequent six-month period. Phase 3, undertaken one month after phase 2 ended, comprised a telephone interview. The research was conducted between August 2003 and April 2004.

Trust design elements

Earlier focus group work had identified a number of issues that people anticipated would be important in terms of trusting online health advice. The issues were primarily content- and provider-based. They included the site being provided by a well-known organization, contact details on the website, simple, easy to understand language and up-to-date information. These requirements are in line with those found by Eysenbach and Köhler (2002), who found that consumers reported wanting a reputable source of information, a professional layout and some sort of endorsement or quality seal. In the current study, the sites that the participants were directed to in weeks 2 and 3 contained a range of provider, content and design features varied for trust.

Procedure

Phase 1

All websites visited by the participants were automatically logged, along with the amount of time they spent on each site. Participants provided concurrent, oral “think aloud” protocols as they searched. Participants also recorded their perceptions of each site visited in a logbook to use during subsequent discussion sessions. Following the online period, they engaged in guided group discussion using themes piloted during earlier focus groups. The discussion guide covered the following main areas: (a) current information sources, (b) search strategies, (c) trusted and mistrusted websites, (d) first impressions and (e) revisiting websites.

Phase 2

At the end of the fourth week the participants were given diaries in order to record their ongoing information and advice searches both online and offline. Participants kept these diaries over a six-month period.

Phase 3

Following phase 2, participants were invited to take part in a final, follow-up interview. This structured telephone interview examined the ways in which the Internet sources affected the patients’ experiences of the menopause both in terms of decision-making and communications with physicians.

Results

The results for each phase of the study are described below, along with the forms of data analysis undertaken. In phase 1 the data-logs were analyzed to provide a timeline of rejected sites. The rejected sites were also classified by content. All discussions and verbal protocols from phase 1 were recorded on audiotape and then transcribed. The transcripts were scrutinized for extracts describing trust and mistrust and were then coded by one member of the research team under several anticipated themes (for example, first impressions of websites, source credibility) and emergent themes (such as social identification markers and mistrust and confusion surrounding risk information). Then at least one other research team member read the transcripts and considered the codes. Constant comparison was used in the analysis to ensure that the thematic analysis represented all perspectives. Discrepancies between coders were resolved through discussion and mutual agreement before analysis.

In phase 2 the diaries were analyzed according to the thematic analysis method described above. The diary entries were coded under several themes including search motivation and decision-making. Examples of online–offline integration of information were also noted. In phase 3, the structured interviews were analyzed according to the specific questions put to the participants and in terms of emergent themes. Once again a constant comparison method was used in the analysis to ensure that the thematic analysis represented all perspectives.

Phase 1

During week one, participants visited 80 sites, although a number of these were rejected very rapidly. Comparing automatically logged data and data from the participants own handwritten logs we found that participants made no note of any site viewed for less than two minutes despite having been given instructions to log every site (i.e. such sites did not effectively “register”). We can understand more about this very early process by plotting data from the automatic logs taken during the first week of exploration (when participants were engaged in free-searching activities). From Fig. 2 we can see that participants were able to efficiently sift information within a 30s window, recognizing and rejecting general portals (web pages that act as

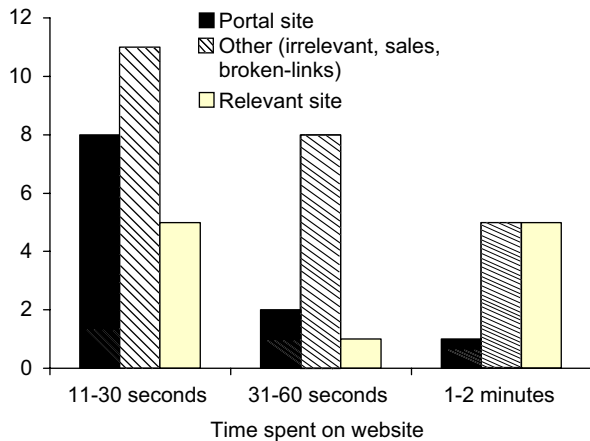


Fig. 2. Time spent on the site, by site content.

starting points or gateways to other sites across a wide range of domains) and sales-sites quickly. Many of the sites rejected within just 10s were unrelated to the menopause, were broken sites or were not menopause specific. Providers of health information need to be aware that burying content deep within general portal websites may lead to early consumer rejection.

Reasons to reject

Participants discussed their first impressions of a website. There were two factors that led them to reject or mistrust a website quickly. These are summarized in Table 1. The overwhelming majority of comments related to the design of the website. The look and feel of the website was clearly important to the participants. Visual appeal, plus design issues relevant to site navigation appeared to exert a strong influence on their first impressions of the site. Sites that had a corporate feel were mistrusted, particularly those containing pop-up or banner advertisements. Poor interface design was particularly associated with rapid rejection and mistrust of a website. In cases where the participants did not like some aspect of the design the site was often not explored.

Reasons to select

The participants cited a number of elements associated with sites that they had chosen to explore in more depth. Perceived trust in the sites was an important feature of the selected websites and this is discussed in more detail below, in terms of those

Table 1
Factors contributing to the rejection and mistrust of web sites

Design factors (94% of cited reasons)^a
 Inappropriate name for the website
 Complex, busy layout
 Lack of navigation aids
 Boring web design especially use of color
 Pop up adverts
 Slow introductions to site
 Small print
 Too much text
 Corporate look and feel
 Poor search facilities/indexes

Content factors (6% of cited reasons)
 Irrelevant material
 Inappropriate material

^aThe number of times a factor was mentioned expressed as a percentage of the total number of rejection-related comments overall.

Table 2
Factors contributing to the selection and trust of web sites

Design factors (17% of cited reasons)^a
 Clear layout
 Good navigation aids
 Interactive features e.g. assessment tools

Content factors (83% of cited reasons)
 Informative content
 Relevant illustrations
 Wide variety of topics covered
 Unbiased information
 Age specific information
 Clear, simple language used
 Discussion groups
 Frequently asked questions section

^aThe number of times a factor was mentioned expressed as a percentage of the total number of selection-related comments overall.

factors known to influence trust in e-commerce, namely (a) source expertise and credibility, (b) accessibility and consistency and (c) social identification and personalization. These content factors were more important than design factors in describing trusted or well-liked sites (Table 2).

Source expertise and credibility

Most individuals preferred sites that were run by reputable organizations or had a medical or expert “feel.” They trusted the information on such websites, especially when the credentials of the site and its authors were made explicit. However, most

showed some distrust of the advice and information on websites sponsored by pharmaceutical companies or those explicitly selling products:

I think there are a lot who are selling their products and sometimes it's difficult to get beyond those to get to the real information. (Participant 12)

I liked all the information and everything but when I got to the end I realised it was all sponsored by drug companies and the only bit they had about natural therapies was literally three paragraphs ... it just disappointed me cos I thought it was really great until I realised that. (P10)

This contrasts sharply with recommendations made following a medical review of menopause-related websites in which pharmaceutical sites were promoted as providing the most accurate information (Reed & Anderson, 2002).

Accessibility and consistency

One important aspect of a trusted site was that the information and advice presented there was framed in a manner consistent with the patient's query. In other words, the women went looking for answers to specific queries and the relevant information had to provide a good match to the query and be easily accessible:

I found an absolutely marvellous site I was really, really taken with it, it went into such clear explanations and with a breakdown of the different, oestrogen, progesterone, testosterone and what they actually do and how they link together. (P1)

[The site] gave me information about each sort of stage and the symptoms with each stage and what you can do to combat them. (P8)

[On an ideal site] I think there has to be an immediate link to HRT because I think it's what people are looking for, what women are looking for. (P9)

Personalization and social identification

Participants were also looking for sites that were written by people similar to themselves and that were obviously aimed at "people like them." Sites that provided these social identification cues were appreciated, as was the inclusion of familiar sounding language and highly relevant or personalized content:

I clicked onto one of the personal stories 'cos I related to it. (P14)

Participants failed to identify with certain sites, in particular those that appeared to be aimed solely at American women (note that these participants were UK based). One participant upon reading a site containing the phrase "most women in the United States go through the menopause" felt excluded and commented "*as if nobody else in the world exists!*", others were simply suspicious of unfamiliar language.

In keeping with this search for like-minded individuals, the women seemed highly motivated to seek information and advice that supported their own viewpoint and used this to build confidence in their decision-making:

I think I was only looking for what I wanted to see anyway. I am fairly negative towards HRT and I found lots of stuff that reinforced my ideas tonight so that was good, it put me off even more. (P2)

Comprehension of risk information

Finally, Phase 1 group discussions highlighted a number of issues related to the presentation of risk information, which was often seen as confusing or misleading. Some of the women did not understand the derivation of the risk information and were unfamiliar with clinical trials or large datasets. Most did not understand the difference between absolute and relative risk. They often felt overloaded with numbers and alarmed by some of the bolder risk statements:

The headlines say increased risk of breast cancer but you when they do that that that's actually five women in a million or 2 million or 25 million you think oh (relieved sigh) yes, absolutely so you know that's tiny (P12)

Yes but when I read 50,000 and I think how do they get exactly 50,000? You know? I don't think I really believe these figures whichever. (P6)

Phase 2

The participants were asked to keep diaries for six months following phase 1 in order to assess how they followed up the information and advice they had read online. They were asked to record any sites that they visited during that time and to make a note of what prompted them to go online. They

were also asked to note any “offline” interactions (e.g. with media, health professionals, friends or family) concerning HRT. The diaries were subject to a thematic analysis and examples of the integration of information across sources were noted.

Of the 15 women, three did not complete the diaries at all and two returned empty diaries saying that they had not had time to look at sites or had not needed to over the last six months. Entries tended to be sparse—participants tended to restrict their advice-seeking activities to only two–three sites during this time, with few new sites visited—and so the diaries provided little information about factors leading participants to “stick” to certain sites over time. However they did provide useful evidence about the integration of material across different sources. The following representative diary timeline is illustrative of this. Participant 12, aged 52, was on HRT during the study but wanted to stop taking medication:

24th September: Following searches at the Internet café I have decided to come off HRT and I’ve made an appointment to see G.P.

22nd October: Stopped taking HRT

19th November: Looked at www.johnleemd.com because the sweats are back and I need a natural replacement

4th February: Following discussions with friends who are using natural alternatives and are fine I looked again on www.hrtaalternatives.co.uk because the sweats are now becoming unbearable. This is a last resort before seeking medical advice again. I emailed a friend, a homeopath, about this alternative remedy to see what she thinks she suggested I try it. I am sceptical but order it anyway.

18th February: Looked at www.cancer.gov just browsing looking for reasons to go back on HRT

10th March: I have been taking an alternative product for a month now and it’s had no effect on symptoms, they are really too much. Reluctantly I am ready to go back to the GP and probably onto HRT again.

The extract is typical in illustrating the way in which participants would use online information to prepare themselves for a discussion elsewhere—with friends or physician—and also illustrates the way in which consumers were motivated to engage in particular activities and would use the Internet as a source of evidence to support their choices.

Phase 3

All interviews were recorded on audiotape and transcribed. One member of the research team read the transcripts and coded them using the interview question themes and emergent themes. Then at least one other research team member read the transcripts and considered the codes. Constant comparison was used in the analysis to ensure that the thematic analysis represented all perspectives. Discrepancies between coders were resolved through discussion and mutual agreement before analysis.

The first thing to note is that very few of the women made repeat visits to sites in order to seek further information for themselves, although a number of women said that they had gone back to the Internet in order to get information to share with physicians, friends and family. Most of the women felt that the Internet played an important role in the early stages of decision-making, with some pointing out that the Internet could be an important first port of call in the event of a new health scare (either public or private):

I would look online first of all to get a feel for the issue before going to see my GP (P3)

I would go on the Internet first of all if I had read it in the paper or heard it on the radio or seen it on the television I would go to the internet if its in the press then I would go straight away and look on the website and see what it said (P5)

The information available online allowed many of the women to act much like “scientists”, developing and testing their own hypotheses about the way the menopause affected them. Participants used the Internet to investigate specific concerns, to compare sites and to assess risk. As well as testing out ideas online, the participants were also keen to test out ideas on themselves. This included finding answers to questions such as “could I manage with a lower dose” and “will I feel better if I stop taking HRT?” Some were keen to develop a more sophisticated model of the workings of their own body. Participant 12, for example, was keen to invest in a piece of individual research to discover how her own body would react to the withdrawal of HRT:

I suspect that part of the reason that I did come off HRT in the first place was, looking at the various things that were going on in the media at that point, but another part of me was saying,

well you've been on five years you've no idea what your body is doing on its own so lets find out so it was the two things really. (P12)

While nearly all participants felt the information they had read online had affected their thinking and decision-making in some way, few found that the online advice led to a fundamental change in behavior. Most found that it simply reinforced a decision that had already been made. As noted earlier, these women were often motivated to seek information and advice that supported their own viewpoint and used this to build confidence in their decision-making. This pattern was maintained throughout:

I wasn't too keen on HRT before and I'm certainly not now. I wouldn't be convinced to go on HRT. (P9)

Participants viewed this new-found confidence very positively. They reported feeling better equipped to go to the physician and more empowered. One participant expressed this as follows:

It made me realise that I felt a lot better equipped to go to the doctor than I had done. Prior to that I had just taken her advice, adding a bit of common sense and not a lot else, but I think that research that I did has really made me think about looking into things further, rather than just accepting people's advice without looking at it yourself. (P1)

Discussion

The results of this study are generally supportive of the staged model of trust in that, as predicted, genuine consumers drew upon different trust factors at different stages of engagement with a particular site. This is particularly clear in stages one and two, although the longer-term trusting relationship underpinning stage three is less clearly in evidence, in part because of the limited evidence generated by the diaries in phase 2.

When presented with the opportunity to search freely, participants first engaged in rapid heuristic processing of information. Within the first few minutes of interaction they were able to efficiently sift information, quickly recognizing and rejecting general portals and sales sites and sites they did not trust, primarily on the basis of design features affecting the “look and feel” of a site. Poor visual design, confusing displays, low-density of relevant

information, busy “pop-up” advertisements all led to rapid rejection.

Participants then selected sites to engage with further and to evaluate in more depth and during this more evaluative second stage, three key influences were noted. Firstly, and perhaps most reassuringly, the credibility of the information was assessed in terms of perceived expertise and absence of bias. At this point, pharmaceutical sites, often cited as providers of good quality medical information, were commonly rejected, while charitable sites were often viewed favorably—indeed were generally preferred over government sites—a finding similar to that of [Marin and Marin \(1990\)](#) concerning AIDS advice in the late 1980s. Secondly, participants looked for information that was highly relevant to their query and that was presented in an accessible way. Sites that included frequently asked questions (FAQs), for example, showed some sensitivity to the patient's perspective and this fostered trust. Finally, participants were motivated to trust those sites that reflected their social identity. These included sites that were written by women and were specifically for women like themselves. A number of medically credible sites were ignored because they lacked sufficient social identification markers. Such identity preferences are consistent with self-verification theory ([Swann & Read, 1981](#)), which explicitly predicts that people will seek the advice of others whose experiences and beliefs overlap with their own.

These results are consistent with [Eysenbach and Köhler's \(2002\)](#) suggestion that patients with a genuine stake in their future would be careful evaluators of online content once they had made an initial very rapid selection of sites of potential interest. The results are also consistent with a number of other studies in the persuasion literature that show that people use cognitively intense analytical processing when the risks involved are great, or the task is particularly engaging, but use affect or other simple heuristics when they lack the motivation or capacity to think more deeply about the issues involved ([McAllister, 1995](#); [Petty & Wegener, 1999](#)).

The analysis of the diaries in phase 2 indicated that relatively few consumers developed a long-term trusting relationship with one particular site. However the diaries did suggest that most consumers integrated online and offline sources of advice, consulting physicians, friends and family in order to guide their behavior and decision-making.

During the follow up interviews in phase 3 all participants expressed the opinion that they were now more careful evaluators of online and offline content. They also reported a new found confidence with respect to doctors and medical information. The Internet afforded increased feelings of social support and identity and gave the participants valuable time to explore alternative approaches to healthcare. The Internet allowed certain individuals to act much like scientists and treat themselves as guinea-pigs, testing out ideas and theories about HRT. The online information and advice influenced patients' decision making without threatening their desire to communicate with physicians. Indeed the physician was still viewed as the single most important source of advice on health issues, although not necessarily the first port-of-call. Patients felt that they would often turn to the Internet first, in order to be informed about a topic prior to visiting a physician. This is a particularly interesting finding in light of the fact that physicians may be less positive about this development. Bastian (2003) has argued that "knowledgeable" patients take up more of the physician's time and can add to health inequalities by leaving needier patients waiting. Indeed, Potts and Wyatt (2002) found that 23% of doctors interviewed in a study on Internet use by patients reported problems with patients who had sought online advice. Many of the reported problems were associated with too much information rather than problems of poor quality information.

In investigating the means by which patients build up trust in online advice and use this to inform subsequent interactions, this study has made use of a novel methodology that is not without its drawbacks. On a positive note, it involved genuine consumers all of whom were facing risky decisions concerning HRT and mapped their behavior using diverse methods over a six-month period. On a more critical note, the sample size was relatively small and at various points these consumers were directed to particular websites that may have influenced subsequent decision-making. Thus, for example, participants were explicitly directed to sites containing risk information during week three of phase 1 in order to assess the extent to which such information was useful for them. It is possible that participants would not naturally have consulted such sites and that such sites might affect subsequent behavior. However such concerns should not prejudice the validity of the staged trust

model presented here, as support for the heuristic and analytic stages comes from data collected during the early stages of phase 1, in which participants were free to direct their own searches, and most of the subsequent engagement (reported in the diaries of phase 2 and the telephone interviews of phase 3) was with sites discovered in the early stages by the participants themselves. In any case, the passing on of recommendations concerning which sites to visit is a natural process and one that we observed throughout the study, both in and out of the laboratory. One further concern is the relative paucity of evidence collected via diaries in phase 2. Participants were reminded regularly to complete diaries, but relatively few entries were made. Future studies need to focus on this phase in particular to determine the extent to which this reflects low levels of Internet activity or low motivation to complete diaries and, if the latter, to work with participants to improve completion rates. More research is also needed to explore in more detail the processes by which people integrate online and offline information in stage 3.

Finally, it is worth considering the generalizability of these data across different patient groups. These participants were a group of white, Caucasian, working and middle-class women and groups with other demographics or health issues may respond differently. Nevertheless, the trust factors we have outlined are entirely consistent with other studies; our contribution has been to make explicit the ways in which these factors come into play over time. Moreover, we recently found similar results in a comparative study of patients suffering from hypertension, which included males as well as females.

In summary, then, clinicians should be aware that the trust model we present has a number of important implications for the design of trusted sites. We can see, for example, that participants may reject many clinically credible sites simply on the basis of poor design and may trust less medically accurate sites simply because they resonate with patients' own lives. We should further understand that patients' decision making is influenced by the Internet and understand that the consultation process—in which the physician is retained as the most trusted source of advice—is increasingly one in which the patient wishes to test out Internet-informed hypotheses about their own treatment.

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