Students' trust judgements in online health information seeking

Abstract

As one of the most active groups of Internet users, students and other young people are active users of digital health information. Yet, research into young people's evaluation of health information is limited, and no previous studies have focused on trust formation. In addition, prior studies on adults' use of digital information do not reach a consensus regarding the key factors in trust formation. This study seeks to address this gap. A questionnaire-based survey was used to collect data from undergraduate students studying a variety of disciplines in one UK university. The Trust in Online Health Information (TOHI) Scale is proposed, and includes the following dimensions: authority, style, content, usefulness, brand, ease of use, recommendation, credibility, and verification. In addition, inspection of responses to specific items/questions provides further insights into aspects of the information that were of specific importance in influencing trust judgements.

Keywords: credibility; information literacy; online health information; students; trust.

1. Introduction

Judgements of trustworthiness are widely recognised to be a key component of the evaluation processes leading to the use of digital information, in a variety of different contexts. These contexts include: engagement with transactions, as in online banking or retailing; interactions with other people such as in social media environments [1,2,3]; and, most relevant to this research, the use of health information [4,5,6]. A number of researchers have been interested in credibility and trust judgements in digital information environments, with most research focussing on students' use of web content [e.g. 7,8,9,10,11], and on adults' use of online health information [12,13,14,15]. However, whilst prior research has investigated aspects of students and/or young people's use of online health information [e.g. 16, 17, 18, 19], no previous studies have focussed specifically on trust formation.

Young people are recognised to be one of the most active groups of Internet users [18], and many report using the Internet as one of their sources of health information [16, 19]. Indeed, statistics from the UK Office of National Statistics (www.ons.gov.uk) suggest that in 2013, 16-24 and 25-34 year olds were the age groups with the highest levels of use of internet activities, and that 45% of 16-24 year olds used the Internet for seeking health information. Whilst access to online health information can provide many benefits, including empowering users to manage their own health and reducing anxiety

[13, 20, 21], there are concerns about its reliability, accuracy and quality [17,20,22,23]. Coupled with this, there is concern that potential consumers, and especially young people, have limited information evaluation skills [18,24,25, 26, 27]. For instance, Gray et al. [18] showed that although young people had sophisticated internet skills, they still experienced difficulty in locating, evaluating and using online health information.

The aim of the research reported in this paper, then, is to contribute to understanding of trust formation in respect of digital health information, as exhibited by students. More specifically, this is achieved through an integrative approach that seeks to identify the factors that contribute to trust formation in health information seeking. The objectives are to:

1. propose and assess multi-item measurement scales for the factors that affect trust formation in digital health information sources
2. explore the relative importance of factors in influencing students' trust formation in the context of digital health information

This paper is structured as follows. The next section reviews previous research. Next, the methodology is outlined. This is followed by the analysis and findings section, which includes assessment of the measurement model, and exploration of the factors affecting trust judgements. The article concludes with a discussion section, followed by conclusions and recommendations.

2. Literature Review

Prior studies in the health information area that focus on trust judgements in health information tend to focus on adults. Fogg et al. [12]'s study was an important and early large-scale study that investigated how users evaluate the credibility of web sites in ten categories, including e-commerce, finance, search, and health. They found that the top themes most frequently associated with credibility judgements were design look, information design/structure, and information focus. Sillence et al. [28] found that in the context of health websites the top five trust markers were: the site was easy to use, the advice came from a knowledgeable source, the advice appeared to be prepared by an expert, the advice appeared to be impartial and independent, and the reasoning behind the advice was explained to me. They also recognised that the situation was dynamic, and affected by the source available and user experience. In another diary-based study, Sillence et al. [14] found that the factors contributing to the selection and trust of web sites can be divided into design factors (clear layout, good navigation aids, interactive features), and content factors (e.g. informative content, unbiased information, clear, simple language). Another interesting aspect of this study is the focus on trust forming as a process, and the 'habit-forming' that leads to a longer term trusting relationship. Recently, Corritore et al. [29] showed that trust in health information websites was significantly explained by users' perceptions of website credibility, ease of use, and risk. Finally, Ye [15] explored the extent of correlation of consumer trust in online health

4

information with income, education, health status, engagement in social network sites, ease of location of information, understandability, and trust in health information through other media (doctors, family and friends, print media).

In the specific context of the evaluation and formation of trust judgements by young people, there have only been a few studies, although some general studies that examine the use of online health information by young people, either adolescents or students, also offer insights into their approach to evaluation. For example, both Percheski & Hargittai [19] and Dobransky & Hargittai [16] found that in their samples of first-year undergraduate students young women were more likely than young men to seek health information, and to visit a health website. Dobransky & Hargittai [16] also found that those who are more knowledgeable about the Internet are more likely to consult websites for treatment information. Gray et al. [18], when working with students aged 11-19, report health information searching as being a part of the students' everyday lives, but that perceived credibility varied because students sometimes found expertise and trustworthiness difficult to determine, a finding endorsed by Fergie et al. [17]. More general studies of young people's evaluation of online information also confirm that young people are not always confident in their evaluation and credibility judgements but that they nevertheless undertake evaluation, based on their current knowledge on the topic, quality control mechanisms, and verification (through using

multiple sources and co-referencing) [10]. Hargittai et al. [7], on the basis of a large study of first year undergraduate students, suggested that the following factors were the most important in credibility assessment: identifiably of information, currency, other sources for validation, whether fact or opinions are presented, authorship, and linking sites. Student participants in Iding et al. [6]'s study associated web site credibility with information focus or relevance, educational focus, and name recognition; they recognised that information might be wrong on the basis of corroboration with other web sites, own expertise, information focus, information design, and bias.

In summary, whilst prior research has investigated aspects of students and/or young peoples' use of health information, no previous studies have focused specifically on trust formation or judgements. In addition, earlier research in trust formation, some of which has studied adults' evaluation of digital health information, typically adopts a selective approach to the factors considered, and, overall, there is a lack of consensus on the key factors. Hence, this study also contributes by offering a more all-embracing approach as a basis for the development of a scale.

3.Methodology

3.1 Research design

Previous research on trust formation has adopted a mix of qualitative and quantitative approaches; both approaches have valuable, but different contributions to make to knowledge and theory-development. Qualitative approaches are particularly useful for understanding the processes associated with trust formation, and for example, how this relates to context. Qualitative research can develop deep insights, but since the nature of qualitative data collection typically constrains sample size, there is limited potential for generalization. On the other hand, quantitative approaches, whist being arguably more superficial in the nature of the data that they collect, are valuable for gathering large amounts of data from many respondents [30], and hence can be used to identify patterns across a sample, and to establish the relationships between variables. Since the aim of this study is to profile the factors that contribute to trust formation in a specific sample, this study adopted a quantitative, survey-based research design, in order to gather sufficient data to be able to test measurement scales, and to be able to include a relatively wide range of factors in trust in online health information scale. Questionnaires are also a widely used method of data collection in previous studies on health information seeking and trust judgments in digital environments [e.g. 5, 7, 13, 19].

A four-sided, paper-based questionnaire was developed. The core of this questionnaire was a bank of five-point Likert-style statements, designed to investigate respondents' perceptions of the relative importance of various aspects health and medical information that they found on the internet on their evaluation of its trustworthiness. The inclusion of specific factors was informed by previous research on trust and credibility judgements relating to both health and other types of information, and with various demographic groups. Table 1 identifies these factors, and indicates the authors that have cited them as influencing trust and/or credibility judgements. Since there is no previously validated measurement scale in the area of trust formation, we have not been able to use an existing scale, but rather have used the questions and, in some cases, findings of the sources listed in Table 1 to help us to formulate the Likert-style questions in the questionnaire for each construct/dimension. In some instances, we have been able to adopt or adapt existing items, but since few researchers have proposed multi-item scales of trust and its associated factors, in many instances it was necessary to generate new items in pursuit of proposing and validating a new scale.

Prior to responding to the Likert-style statements, respondents were asked to think about a specific instance when they had looked for health or medical information on the internet. They were then invited to indicate whether their search was triggered by

general interest, or because they or a member of their family had a specific complaint. At the end of the questionnaire, respondents were asked about their disposition to trust, and their health status, before being asked to provide basic demographic data such as gender, age, course level, course subject, and, student status (UK or International).

The questionnaire was pre-tested with a panel of expert researchers and piloted with student volunteers to remove any inconsistencies and to confirm its wording, structure and design. Piloting also offered insights into the responses to the questionnaire and its comprehensibility. Questionnaires were distributed to students in class settings. Most students in the classes were willing to participate in the research. After a brief introduction, students were invited to complete the questionnaire. Completed questionnaires were immediately collected by the researchers.

3.2 Participants

Participants were first year undergraduate students on a range of courses at a large metropolitan university in the UK. Consistent with previous research studies on student and young people's health information seeking behaviour, and trust judgements in digital environment [e.g. 7, 16, 18, 31,32], convenience sampling was employed to maximise response rate. Nevertheless, we took measures to ensure that respondents were recruited from a range of courses across the different discipline areas, and included

students studying humanities, business, and sport. Working with first year undergraduate students enhanced the comparability of our findings to previous research, both in the specific area of trust judgements, and also in the more general area of the use of health information [16,19]. Most respondents were aged between 18 and 21, and there was a relatively even distribution on gender, and between the main subject categories. Most participants had a level of involvement that fell into the general interest category, although 39% were answering in respect of their information searching with regard to a recent personal health issue. On health status, 77% either agreed or strongly agreed that they were generally healthy, whilst 14% either agreed or strongly agreed that they had recently experienced a major health issue. Table 2 summarises the sample characteristics.

4. Data analysis and Findings

Data were entered into SPSS. Any spoiled questionnaires were not entered into the dataset. First, the measurement scale was assessed and refined using Cronbach's alpha. Second, using the descriptive statistics the contribution of each of the constructs to trust judgements was evaluated. Finally, we investigated whether gender, health status, or subject studied, or involvement significantly affected the factors included or their importance. Independent-samples t-tests were used both to determine if there were differences between males and females, and whether there was any difference on the basis of university

10

subject studied. One-way analysis of variance was used to explore whether health status, and involvement affected trust judgements. Although, there were some minor differences that were statistically significant, overall, nothing worth reporting emerged, and we concluded that these factors did not affect behaviour. Hence, we do not report on these tests in detail in this article.

4.1 Assessing the measurement scale

The measurement scale's content validity derives from its grounding in previous literature, and its pilot testing, and subsequent revision. Reliability, in terms of internal consistency was tested by calculating Cronbach's alpha coefficients for all constructs; items that had a negative effect on the Cronbach's alpha were removed. Cronbach's alpha coefficients for all constructs are higher than the minimum cut-off of 0.70 (DeVellis, 2003) and ranged from 0.720 to 0.834 (Table 1). Cronbach's alphas for *Authority* and *Triangulation* were below the required minimum of 0.70, but on the basis that both were concerned with 'checking out' the source, they have been merged into one construct, labelled *Verification*. Many of the items in this scale are new. Table 3 shows the final measurement scale. It is important to observe that this scale advances on most other studies in that it offers multi-item measurements of all of the constructs associated with trust judgements. In addition, as opposed to some other studies, credibility is not measured in terms of some of the cues that may suggest credibility (such as style or authority), but rather by items that it is typically associated with such

11

as believability, objectivity, impartiality, quality, and containing facts rather than opinions.

4.2 Exploring the contribution of different factors to trust judgements

The descriptive statistics show that the overall mean for all of the constructs is similar (Table 1), suggesting that all of the constructs make a similar level of contribution to trust judgements. In other words, this means that there are a range of factors influencing judgments of the trustworthiness of online health information, and confirms assertions by other authors that these judgements are complex. Specifically, on the basis of the means, the following factors are most important in influencing trust judgements: credibility (3.89), content (3.76), style (3.72), usefulness (3.64), and brand (3.59). Recommendation (3.33) is the least important. There are also some interesting responses to specific items, within the factors. On the basis of their means, the following were of high importance in influencing trust judgements: reliability (4.24), information quality (4.16), that the information assists in understanding a health issue (4.13), the extent to which the source contains facts rather than opinions (4.05), accuracy (4.00), and believability (4.00). On the other hand, factors that were seen to be of low importance in trust judgements were: recommendations from members of a social network community (2.74); whether the information was tailored to them personally (3.03); the speed with which they found the information (3.08); hyperlinks

through to other web pages and documents (3.08); and, online recommendations from other users of the site (3.17). The last of these is particularly topical, since there is increasing research interest in the role of social media sites for the exchange of information, and concerns amongst health practitioners regarding its reliability. Reassuringly, a recent study by Fergie et al. [17] suggests that students use 'fact' websites for health information, and social media for interaction, such as to exchange views with and seek support from their friends in respect of their health concerns.

Discussion

The Trust in Online Health Information (TOHI) Scale is an advance on previous measurement approaches regarding the factors that influence trust formation in information seeking in both health and other contexts. For example, as compared with Briggs et al. [33] and Sillence et al. [13]'s scales that seek to measure trust formation in the context of online health advice which are a simple list of items, the TOHI Scale organises items into groups relating to more overarching factors. Corritore et al. [29] undertook a scale development for online trust in health information websites with undergraduate students, but include a more limited number of factors. In addition, their measurement items are heavily dependent on an earlier study by McKnight [34] concerned with trust measures for e-commerce, and hence are not fully informed by the prior literature on trust in digital information. Other studies that have developed multi-

item scales for trust and its antecedents and consequents, and proposed and tested a model of the relationships between trust and its antecedents are limited in the range of factors that they consider, and some have been conducted in studies other than health [4, 35, 36].

In general, the data in this study confirms findings from earlier studies on trust and credibility in online information, in relation to, for example, the importance of credibility, content, style and usefulness. As discussed earlier, the link between trust and credibility is confused in both theoretical and empirical literature. This study views credibility as one of the factors influencing trust judgements, and the descriptive data demonstrates that it is the most important of the factors.

On the basis of the descriptive statistics, content is the second most important factor influencing trust judgments. In other words, the key components of content, *viz* currency, comprehensiveness, reliability, and accuracy, are key contributors in developing perceptions of trustworthiness. Sillence et al. [14] also suggest that content factors are important in health information searching. Fergie et al. [17] also report that young people seek to assess reliability and information quality in health information seeking. The construct of content is partially aligned with information quality that other researchers have suggested is an antecedent to credibility or trust [e.g. 4, 36, 37,38].

On the basis of the descriptive statistics, style is an important factor in trust judgements. Style refers to the way in which the information is presented and written, and includes understandability, information structure, and presentation. Style features in many studies on the evaluation of digital information (e.g. 8, 14, 32, 39, 40, 41). Again, studies often examine one or more aspects of style. For example, Fergie et al. [17] found that young people were looking 'a professional look', and Ye [15] found that ease of understanding influenced trust in online health. Style is sometimes intertwined with design, but in this study we link design with ease of use, and discuss it further below.

Usefulness is defined as 'the extent to which the user is informed by and can make use of the information'. In general, prior studies deal with components of usefulness separately. For example, items included under usefulness could be viewed as reflecting relevance (sometimes referred to as information focus), personalisation, and empathy. In their study of student's judgments of web site credibility, Iding et al. [8] found that participants associated credibility with relevance or information focus. Fogg et al. [12] also proposed information focus as one of the antecedents of credibility. On the other hand, Sillence et al. [13] asked questions about tailoring to personal needs, identification with the site, and feeling involved, which might all be associated with empathy.

15

Ease of use is well-established as a precedent to technology adoption [e.g. 42]. Various prior authors have captured this as an antecedent to trust, but it is labeled and measured differently and is often associated with design. For example, Sillence et al. [14] capture ease of use through what they term design factors. Fogg et al. [12] talk about design look, and information design and structure, and Robins et al. [43] demonstrated that visual design influenced credibility ratings. In our scale, we have sought to ensure that the items in both style and ease of use relate to the information (i.e they use the word information, and not website) and not to website design, and, as with all of the factors, seek to measure these through items that reflect the users' experience, rather than the functionality of the web site.

Verification is a factor that has received much attention in prior research, and emerges strongly particularly in qualitative studies [e.g. 10, 14, 41]. Verification is defined as 'the extent to which information can be verified by triangulation with other sources or by assessment of the authority of the author'. In proposing this definition to embrace both authorship and verification, we follow the lead provided by Walraven et al. [32] in their study of secondary school students' evaluation of information sources. Various authors provide evidence that young people and students verify digital information through checking authorship and other sources [e.g. 7, 10, 11] and some do this in the

context of health information [13, 41]. Indeed, there is evidence that young people use the Internet as only one of several sources of health information [18, 19].

The remaining two factors that emerge as influencers of trustworthiness, recommendation and brand have received relatively less attention. Brand refers to 'brand indicators and reputation' and brands are recognized to be important for transaction websites. Since other recent studies have also identified that young people check brand logos, and website url's, [17] and that these are regarded as essential signifiers of quality [7] it may be worthwhile to explore further the role of brand logos, url's and brand reputation on trust judgments. Finally, recommendation emerged as the least important factor in influencing judgments of trustworthiness. It has received occasional mention in previous studies, including Hargittai et al. [7] who found that people in the young adults' networks play important roles in online information seeking and evaluation, and Rieh & Hilligoss [10] who discuss the role of teachers in the credibility judgments of young people. Arguably, the role of recommendation would merit further investigation.

Conclusions and recommendations

Our scale, the Trust in Online Health Information (TOHI) Scale is an advance on previous measurement approaches regarding the factors that influence trust formation in

information seeking in both health and other contexts. The scale distils and builds on earlier research to gather the key factors that influence trust judgements. It proposes that these are: style, content, usefulness, brand, ease of use, recommendations, credibility, and verification. It firmly positions credibility as the most important antecedent to trust. In addition, the findings from the study demonstrate that trust formation involves a range of factors, and is a complex process. Exploration of the descriptive statistics generated by this study, at the item level also offers additional insights trust judgements in the context of digital health information. Specifically, online recommendations from other users of the site, and recommendations from members of a social network community, have a relatively limited impact on trustworthiness judgements, which suggest that students exhibit appropriate levels of scepticism regarding health information, advice and comment on social media sites.

Given the combination of the importance of trust judgements in the context of online health information, the potential health risk associated with mis-placed trust, and the complexity of trust judgements, there is plenty of scope for further studies into trust formation in the context of digital health information, and in health information seeking, more generally. It is important that further studies are conducted on both sides of the qualitative/quantitative divide. It is important to try to gather deep insights into users' approaches to the evaluation of health and other types of information, and indeed,

whether their approach differs between types of information, as well as to try to develop more general models and frameworks that can assist in structuring understanding of and prediction of behaviours. As is evidenced by the diversity in conceptualisations and measurement constructs in both theory and empirical research associated with trust and credibility, developing the understanding required to underpin an authoritative knowledge base in which there is some consensus on fundamentals is not easy. However, these complexities only serve to support the case for further research into trust judgements and related factors and processes in relation to digital information. Specifically in the context of health information searching further research should embrace both quantitative and qualitative approaches. Quantitative studies might include:

1. The further refinement of multi-item scales for key factors that determine information behaviour and judgements, not only of trustworthiness, and credibility, but also of usefulness and, ultimately, intention to use.

2. Studies that explore whether factors such as gender, level of involvement, or importance, previous experience of Internet use, not only affect the extent of use of health information sources, and the choice of those sources, but also the approaches to evaluating them and judging their trustworthiness.

3. Studies with different demographic groups, in terms of age, gender and socio-economic status to establish whether the same scale applies, or whether trust

formation involves different factors for different groups, or whether when the same factors apply, they have different levels of relative importance.

Qualitative studies are also important to promote understanding. For instance further research should include studies that:

1. Lead to further development of insights into the unconscious and heuristic nature of trust and related judgements in health information searching.

2. Promote understanding of the role of trust formation in the use of multiple sources. For instance, with a view to understanding whether approaches to evaluating digital health information are distinct from the approaches to the evaluation of health information from other sources such as friends and family.

3. Explore the importance of trust judgements for health information for young people by further investigation of how they use the information that they find on the internet, for example, to inform their interactions with health professionals, or to otherwise help them to manage their health.

References

1. Dwyer N. Online trust: A moving target. In: Folk M and Apostel S (eds.) *Online credibility and digital ethos: Evaluating computer-mediated communication*. 2012, pp. 24-36.

2. Knight M L, Knight R A, Goben A, and Dobbs A W. Theory and application: Using social networking to build online credibility. In: Folk M and Apostel S (eds.) *Online credibility and digital ethos: Evaluating computer-mediated communication*. 2012, pp. 285-301.

3. Li, F, Pienkowski D, Van Moorsel and Smith C. A holistic framework for trust in online transactions. *International Journal of Management Reviews* 2012; 41(1): 85-103.

4. Harris P R, Sillence E and Briggs P. Perceived threat and corroboration: Key factors that improve a predictive model of trust in Internet-based health information and advice. *Journal of Medical Internet Research* 2011; 13(3): e51; doi:10.2196/jmir.1821

5. Smith D. Health care consumer's use and trust of health information sources. *Journal of Communication in Healthcare* 2011; 4(3): 200-210.

6. Xiao N, Sharman R, Rao H R and Upadhyaya S. Factors influencing online health information search: An empirical analysis of a national cancer-related survey. *Decision Support Systems* 2012, in press.

7. Hargittai E, Fullerton L, Menchen-Trevino E and Yates T K. Trust online: Young adults' evaluation of web content. *International Journal of Communication* 2010; 4(1): 468-494.

8. Iding M K, Crosby M E, Auerheimer B and Klemm E B. Web site credibility: Why do people believe what they believe? *Instructional Science* 2009; 37(1): 43-63.

9. Pickard A J, Gannon-Leary P and Coventry, L. The onus is on us? Stage one in developing an i-trust model for our users. *Library and Information Research* 2011; 35(11): 87-104.

10. Rieh S Y and Hilligoss B. College students' credibility judgements in the information seeking process. In: Metzger M J (ed.) *Digital media, youth and credibility*. Cambridge, MA: MIT Press, 2008, pp.49-71.

11. Lim S and Simon C. Credibility judgement and verification behaviour of college students concerning Wikipedia. *First Monday* 2011: 16(4): 1-19.

12. Fogg B J, Soohoo C, Danielson D R, Marable L, Stanford J and Tauber E R How do users evaluate the credibility of web sites? A study with over 2,500 participants. *Proceedings of DUX2003*, Designing for User Experiences Conference, 2003.

13. Sillence E, Briggs P, Harris P and Fishwick, L. Going online for health advice: Changes in usage and trust practices over the last five years. *Interacting with Computers* 2007; 19(3): 397-406.

14. Sillence E, Briggs P, Harris P and Fishwick L. How do patients evaluate and make use of online health information? *Social Science & Medicine* 2007; 64(9): 1853-1862.

15. Ye Y. Correlates of consumer trust in online health information: Findings from the Health Information National Trends Survey. *Journal of Health Communication* 2011; 16(1): 34-49.

16. Dobransky K and Hargittai E. Inquiring minds acquiring wellness: Uses of online and offline sources for health information. *Health Communication* 2012; 27(4): 331-343.

17. Fergie G, Hunt K and Hilton S. What young people want from health-related online resources: A focus groups study. *Journal of Youth Studies* 2012; 16(5): 579-596.

18. Gray N J, Klein J D, Noyce P R, Sesselberh, T S and Cantrill J A. Health information-seeking behaviour in adolescence: The place of the Internet. *Social Science & Medicine* 2005: 60(7): 1467-1678.

19. Percheski C and Hargittai E. Health information-seeking in the digital age. *Journal of American College Health* 2011; 59(5): 379-386.

20. Cline R J W and Haynes K M Consumer health information seeking on the Internet: The state of the art. *Health Education Research: Theory & Practice* 2001; 16(6): 671-692.

21. Ybarra M L and Suman M. Help seeking behaviour and the Internet: A national survey. *International Journal of Medical Informatics* 2006;75(1): 29-41.

22. Eysenbach G, Powell J, Kuss O and Eyn-Young S. Empirical studies assessing the quality of health information for consumers on the World Wide Web: A systematic review. *Journal of the American Medical Association* 2002; 287(20): 2691-2700.

23. Kitchens B, Harle C A and Li S. Quality of health-related online search results. *Decision Support Systems*, in press. (2012).

24. Eysenbach G and Kohler C. How do consumers search for and appraise health information on the World Wide Web? Qualitative study using focus groups, usability tests, and in-depth interviews. *British Medical Journal* 2002; 324(7337): 573-577.

25. Hansen D L, Derry H A, Resnick P J and Richardson C R. Adolescents search for health information on the internet: An observational study. *Journal of Medical Internet Research* 2003; 5(4): e25; doi:10.2196/jmir.5.4.e25

26. Nettleton S, Burrows R and O'Malley L. The mundane realities of the everyday lay use of the internet for health, and their consequences for media convergence. *Sociology of Health and Illness* 2005; 27(7): 972-992.

27. Skinner H, Biscope S, Poland B and Goldberg E. How adolescents use technology for health information: Implications for health professionals from

focus group studies. *Journal of Medical Internet Research* 2003; 5(4): 53-68; doi:10.2196/jmir.5.4.e32

28. Sillence E, Briggs P, Fishwick L and Harris, P. Trust and mistrust of online health sites. In: *Proceedings of CHI 2004*. ACM Press, 2004, 663-670.

29. Corritore C, Wiedenbeck S, Kracher B and Marble R P. Online trust and health information websites. *International Journal of Technology and Human Interaction* 2012; 8(4): 92-115.

30. Saunders M, Lewis P and Thornhill A. *Research methods for business students.* 5th ed. Harlow: Pearson Education, 2009.

31. Menchen-Trevino E and Hargittai E. Young adults' credibility assessment of Wikipedia. *Information, Communication & Society* 2011; 14(1): 24-51.

32. Walraven A, Brand-Gruwel S and Boshuizen H P A. How students evaluate information and sources when searching the World Wide Web for information. *Computers & Education* 2009; 52(1): 234-246.

33. Briggs P, Burford B, De Angeli A and Lynch, P. Trust in online advice. *Social Science Computer Review* 2002, 20(3), 321-332.

34. McKnight H D, Choudhury V and Kacmar C. The impact of initial consumer trust on intentions to transact with a web site: A trust building model. *Journal of Strategic Information Systems* 2002, 11(3-4), 297-323.

35. Cugelman B, Thelwall M and Dawes P. The dimensions of website credibility and their relation to active trust and behavioural impact. *Communications of the Association for Information Systems* 2009; 24(26): 455-472.

36. Shen X-L, Cheung C M and Lee M K O. What leads students to adopt information from Wikipedia? An empirical investigation into the role of trust and information usefulness. *British Journal of Educational Technology* 2012; 44(3): 502-517.

37. Stvilia B, Mon L and Yi Y J. A Model for online consumer health information quality. *Journal of the American Society for Information Science and Technology* 2009; 60(9): 1781-1791.

38. Yaari E, Baruchson-Arbib S and Bar-Ilan J. Information quality assessment of community-generated content – A user study of Wikipedia. *Journal of Information Science* 2011; 37(5): 487-498.

39. Metzger M J. Making sense of credibility on the Web: Models for evaluating online information and recommendations for future research. *Journal of the American Society for Information Science and Technology* 2007; 58(13):2078-2091.

40. Wang Y D and Emurian H H. An overview of online trust: Concepts, elements, and implications. *Computers in Human Behaviour* 2005; 21(1): 105-125.

41. Rowley J and Johnson F.. Understanding trust formation in digital information sources: The case of Wikipedia. *Journal of Information Science* 2013; 39(4): 494-508.

42. Davis F D. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *Management Information Systems Quarterly* 1989; 13(3): 319-340.

43. Robins D, Holmes J and Stansbury M. Consumer health information on the web: The relationship of visual design and perceptions of credibility. *Journal of the American Society of Information Science and Technology* 2010; 61(1): 13-29.

Construct	Construct definition	Mean	s.d.	Adapted from
Credibility	The believability and impartiality of the information	3.89	0.639	Sillence et al., 2007a; Menchen-Trevino & Hargittai, 2011; Lim & Simon, 2011
Content	The core characteristics of the information, such as reliability, accuracy and currency	3.76	0.692	Fogg et al., 2003; Metzger, 2007; Walraven et al., 2009; Hargittai et al., 2010; Hjørland, 2012
Style	The way in which the information is presented and written	3.72	0.699	Fogg et al., 2003; Wang & Emurian, 2005; Metzger, 2007; Sillence et al., 2007a,b; Walraven et al., 2009; Hjørland, 2012
Usefulness	The extent to which the user is informed by and can make use of the information	3.64	0.591	Fogg et al., 2003
Brand	Brand indicators and reputation	3.59	0.821	Fogg et al., 2003; Sillence et al., 2007a; Walraven et al., 2009; Hargittai et al., 2010; Li et al., 2012
Ease of Use	The ease of locating, accessing and using the information	3.45	0.904	Metzger, 2007
Recommendation	Recommendations regarding the information from known person(s)	3.33	0.706	Kelton et al., 2008; Rieh & Hillgoss, 2008; Hargittai et al., 2010; Lim & Simon, 2011
Authority	The expertise and standing of the author or organization responsible for providing the information	3.70	0.651	Fogg et al., 2003; Sillence et al., 2004; Metzger, 2007; Sillence et al., 2007a,b; Walraven et al., 2009; Hargittai et al., 2010; Hjørland, 2012
Triangulation	The extent to which the information is consistent with other information on the same topic	3.49	0.725	Wang & Emurian, 2005; Metzger, 2007; Rieh & Hillgoss, 2008; Hargittai et al., 2010; Menchen-Trevino & Hargittai, 2011; Lim & Simon, 2011
Verification		3.57	0.657	

Table 1. Constructs and constructs definitions.

	No. of students	% of students
Gender		
Male	104	43.5
Female	135	56.5
Subject		
Business	103	43.1
Sport	40	16.8
Humanities	96	40.1
Level of involvement		
General interest	143	60.3
Not serious	78	32.9
Serious	16	6.8
Health status		
Generally healthy	182	76.8
Recent major issues	33	14.0
Not responded	24	9.2

Table 2: Sample characteristics

Scale	Code	Statement
Brand	BR1	The website features the logo of a respected brand
	BR2	The website carries the logo of a well-known brand
	BR3	The source brand has a good reputation
	BR4	The source is on the website of a specialist health charity
Content	CO1	The currency of the information
	CO2	The comprehensiveness of the information
	CO3	The reliability of the information
	CO4	The accuracy of the information (or the absence of errors in the information)
	CO5	The extent to which the information includes mention of recent developments in treatment
Credibility	CR1	Whether I feel I can believe the content
	CR2	The objectivity of the information
	CR3	The impartiality of the information
	CR4	The quality of the information
	CR5	The extent to which the source contains facts rather than opinions
Ease of use	EU1	The information source is easy to access
	EU2	It was easy to find the information
	EU3	The information is free
	EU4	The speed with which I found the information
Recommendation	RE1	Family and friends have recommended the source to me
	RE2	A health professional has recommended the source to me
	RE3	Online recommendations from other users on the site
	RE4	Recommendations from members of a social network community
	RE5	Whether I have been advised against using a certain source
	RE6	The fact that my friends and family use the source
Style	ST1	The information is easy to understand
	ST2	The information is easy to read
	ST3	The information is clearly structured
	ST4	The information is professionally presented
	ST5	Evidence of proofreading oversights, such as spelling mistakes
Usefulness	UF1	The information tells me most of what I need to know
	UF2	The information helps me to understand the issue better
	UF3	The interest level of the article
	UF4	The extent to which the article adds to my previous knowledge
	UF5	The extent to which the article gives me information that I can use
	UF6	Whether it felt like the information was tailored to me personally
	UF7	The advice seemed to be offered in my best interest
	UF8	The extent to which I felt that the site tried to help me
Verification	VE1	The author/org responsible for the information can be easily identified
	VE2	The information appears to be objective (i.e. no hidden agenda)
	VE3	The author's qualifications and/or expertise are indicated
	VE4	Inclusion of references to related sources
	VE5	Hyperlinks through to other web pages and documents

	VE6	Extent of consistency with information found elsewhere
	VE7	Extent of consistency with my prior knowledge

Table 3. Trust in Online Health Information Scale