
Information Seeking and Evaluation of Online Sexual Health Resources among Late Adolescents

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Abstract

UPDATED – February 2016. Adolescents increasingly rely on the Internet as a private resource for sexual health information. Despite growing interest in adults' use of online health resources in HCI, we lack a deeper understanding of adolescents' information-seeking processes and assessments of trustworthy online health information. We conducted a qualitative, observational study of late adolescents as they searched for sexual health and sexuality information and a "think aloud" protocol to concurrently capture user thoughts and perceptions of online content *in situ*. Our results reveal a four-phased process that late adolescent users employ for searching and evaluating sexual health information on the web, as well as several emergent themes regarding credible and trustworthy information.

Author Keywords

Health; Trust; User experience; Late adolescents

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous

Introduction

Online repositories of searchable health information are built with the intention of providing timely help to people with pressing health concerns. Adolescents rely heavily on the Internet as a source of health information.¹ While many adolescents in developed countries use the Internet for a wide range of purposes, individuals in late adolescence or emerging adulthood (ages 18-24) increase their use of the Internet at this age to find information about pressing, personal health problems.² Late adolescence developmentally signals initiations into lifetime health behaviors and regular clinical care, marking this age group as an important research demographic. The reliance on health information online in late adolescence raises important questions about the trustworthiness and lasting health implications of these online health resources during a critical adolescent development period.

HCI researchers observe that seeking and using online health information is a complex experience, occurring across systems used by a broad range of users.³ Current experimental work in HCI and health information search indicates that even basic presentational differences can affect user outcomes.⁴ Despite this growing amount of HCI research in online health, most work focuses solely on older adults.^{5 6}

To date, understanding the user experiences of late adolescents as they search, evaluate and use online sexual health information is an understudied problem in

both HCI and public health outcomes research. Of critical importance for the current study is the fact that late adolescents may use online sexual health resources in private ways, which may not allow for the social and contextual interactions that can inform assessments of trustworthiness and reliability of online health information among youth. Furthermore, the lack of two-way interaction between providers and users limits feedback about the effectiveness of these resources for designers and developers.

As late adolescents consult the open web about sexual identity, development, maturation, and related topics, they face risk and uncertainty about the credibility and reliability of information they consume. Research consistently shows that individuals rely on a variety of heuristics to assess inaccurate, irrelevant, or misleading information.⁷ Risks may be compounded if searching the web is motivated by imminent sexual health concerns intended to guide a health decision or subsequent sexual behavior.

We address the core research problem of assessing the trustworthiness of online sexual health information by empirically examining the behaviors and experiences of youth as they attempt to seek and use open, shared, online sexual health resources. Our primary goal is to enhance our understanding of late adolescent processes for finding and interpreting trustworthy online sexual health information *in situ*.

We explore user processes to find and consult sexual health and sexuality resources in this key age group, and uncover specific perceptions and beliefs related to online trust and web credibility for online sexual health information. In doing so, we advance our knowledge of

about the link between the consumption of online sexual health information and behavioral intentions for sexual decision-making among late adolescents.

Methodology

We employed an innovative qualitative interview approach to elicit “think aloud” verbalizations on the process of web searching for sexual health information, while also capturing real-time web navigation and activity through audio and video capture. Think aloud protocols help elicit underlying judgments when coupled with observable behaviors.^{8 9 10} We also ask participants in our study to verbalize and comment on their earlier web movements using a video playback feature of recent navigations. By combining real-time “think aloud” discussions (*in situ*) with reflective evaluations of prior search and selection activities, our method allows for deep reflection on how individuals judge, select, and avoid specific web resources.

Procedure

We used purposive sampling at a large, public university in the US to select individuals between 18 and 20 years in late adolescence.¹¹ In partnership with an on-campus social science experiment laboratory (X-Lab), we recruited participants who met our age requirements via an online announcement to X-Lab email subscribers.

We supplemented our purposive age sampling with snowball sampling from enrolled participants to reach a higher number of under-represented minorities (URMs) and to recruit an equal number of men and women. No one was excluded based on prior experiences with online sexual health information. Fifteen men and 15 women (n=30) comprised the final sample.

All in-depth interviews took place in a quiet room with only the interviewer and the interviewee at a private lab computer station. Our procedure included a web observation component consisting of three guided activities on a standard PC with a web browser: 1) warm-up to get familiar with the computer and setting; 2) observably searching the web for sexual health information according to a specific protocol (described below); and 3) reviewing an on-screen video recording of completed web searches. During all activities, the interviewer instructed participants to think aloud and verbalize their thought process.

We instructed participants to perform uninterrupted search tasks with four different search prompts corresponding to diverse, but common sexual health topics: (1) safer sex, (2) sexual risks, including STIs, (3) sexual responsibility, and (4) sexual identity. For example, when prompted about sexual responsibility, participants were asked to imagine that they were in a new romantic relationship and wanted to go online to find information about how to be sexually responsible. After receiving prompts, we activated web recording and instructed participants to guide the conversation freely while searching the web.

After the search tasks, we played back participants’ own web movements as screen-captured videos from their prior search activities (including typing, mouse trajectory and clicks). This final procedure allowed deeper probing and reflection following the search tasks. Together, the three major parts of the interview did not exceed 90 minutes.

We analysed the transcripts of verbal data and video files of web navigations using a modified grounded

theory approach, including two *a priori* constructs of online trust and web credibility. In addition to these two core themes, we identified and coded emergent themes in an inductive, iterative fashion.¹² We used MaxQDA (v. 11.2.2), a qualitative software program that allows researchers to code textual, video and audio data, for all coding and analysis.

A team of three trained coders (SS, RS, and AM) iteratively identified the two existing themes (online trust and credibility), as well as emergent themes. First, team members reviewed all audio transcriptions for possible themes. Next, we coded transcriptions of the audio interviews in MaxQDA. Using the resulting preliminary code list, the team used a subset of transcripts to code segments, discuss functionality of the codes, and further revise the code list. We repeated this process by reviewing and discussing all sets of transcripts. To address reliability, all discrepancies in interpretations of codes were discussed and resolved between the three coders via consensus to reach full agreement for the final codebook. All audio transcriptions were then coded by RS and AM according to the codebook. SS and the second author coded the video files using the final codebook. Finally, we collated and analysed the browser histories in Excel.

Results and Interpretation

We present two main findings specific to our sample of late adolescent users (LAUs). First, we present their process of finding sexual health information online in four unique phases (See Figure 1.) Second, we identify seven (7) distinct themes corresponding to these phases.

All findings are based on participant verbalization and researcher observation, drawn from 26 video recordings of participants' search processes and web navigations; 28 corresponding interview transcripts; and 30 browser histories. Four participants declined to have web activity recorded; two declined to be audio recorded.

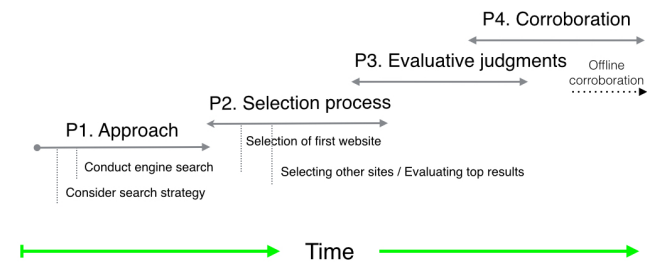


Figure 1: Four phases (P1.-P4.) of LAU participation in online systems for sexual health and sexuality information seeking.

Phase 1: Initial approach. When given prompts to find different types of sexual health information, LAUs in our sample first considered how to conduct a search strategy, what search engine to use, and whether the web would likely meet their informational needs. Before navigating the web, 26% of participants expressed that the Internet is not the best place to seek sexual health information, either because they prefer to consult another source first or because the Internet would not be useful in certain circumstances.

We identified three core themes in the initial approach phase: (1) Users overwhelmingly began searches by conducting untargeted search strategies (USS) or opening preferred search engines and typing in

descriptive keywords without a specific intended online destination. (2) Men and women search for different kinds of information about how to be sexually responsible, but are consistent in what they search for other types of sexual health information. (3) To find information about sexual identity, participants relied more often on search terms related to identity through a first-person or narrative lens rather than medically-oriented terms (sample search terms for sexual identity: "am i gay," "i think my friend is gay," "coming out issues for latina," "queer stories"). In approaching the sexual identity prompt in Phase 1, almost a quarter (24%) of search terms used by participants related to identity through a first person or narrative lens, and less on a didactic instructional format.

Phase 2: Selecting online resources. After deciding their initial approach, participants then reviewed search results lists for credible resources and those they recognized. In this section, we note two key findings. (4) A clear majority of users only opened websites appearing in the top of search results lists. Users defined "top" results as those at the top of the Google or Yahoo! search results lists, including links inside preview boxes, but did not consider paid suggested links or link ads on the sides of the web page to be part of top results. Very rarely did users consult resources on the 2nd or 3rd pages of results lists. Participants expressed top resources to contain the most relevant, highest quality, and most accurate information. We note that (5) less medically-oriented sites were commonly selected for learning about sexual identity, including vlogs, blogs, aggregation blogs such as Tumblr, forums, documentary links, and other content published in first-person narrative.

Phase 3: Assessing chosen websites. As a sixth theme, we find that (6) website layout, appearance, color scheme, and general organization influenced assessments of credibility. As expected, these results reflect known strategies for assessing trustworthy websites and online resources.¹³ Advertisements, particularly pop-up ads, and unrelated images detracted from users' trust in sites. Importantly for our focal subpopulation of late adolescents, we find that layouts perceived as overly "teen friendly" were thought to be *less* reliable for in-depth information about sexual health topics. This is particularly significant given the strong emphasis in many youth health resources to tailor online information based on perceived accessibility for target demographics.

Phase 4: Corroborating information found online. Participants explained that confirming or corroborating what they find online is an important step for reaching a satiation point for learning about sexual health. The action of "double checking" or corroborating online sexual health information was highly consistent across our sample. (7) Users corroborated information in one or more ways: with other online resources, with offline resources, or through personal experiences. We observed the act of online corroboration during the open web search process – opening new tabs, conducting new USSs, toggling between open web pages to compare information – for all participants. We note in our last finding that LAUs in this study were particularly interested in whether online information matched their personal experiences. When corroborating online resources with offline information and lived experiences, four participants did so by comparing what they were viewing online to what they learned in classroom-based sexuality education

experiences. Four users also noted when information was verifiable from experiences with health care providers or in clinical settings.

Discussion

LAUs consistently judged websites for their utility and credibility based on initial impressions about aesthetics and ease of use.¹⁴ Non-content cues about the quality and accuracy of a site, like design features, basic functionality, and presence of advertisements and pop-ups, were also part of their process for deciding whether to spend more time on a particular site, confirming key findings about web credibility assessment by Fogg¹⁵, Sillence¹⁶, and other researchers. Also consistent with prior research was LAUs reliance on top search results as a way to bound and scope what resources they actively investigate.

Importantly, late adolescents appear to interpret some types of sexual health information with distinct judgements specific to their needs. It is striking that credibility assessments of resources about *sexual identity* were distinct from other sexual health topics. Adolescents were sometimes more liberal or tolerant of errant displays or extraneous information on websites if the focal content of the site related to sexual maturation. Professional, authoritative design layouts were valued for communicating credibility for most of the sexual health information users sought and found, but for sexual identity information, users seemed to tolerate more uncertainty to learn about other people's experiences with understanding their sexual identity.

Implications and Conclusion

Our findings have important implications for the sexuality education advocacy arena and for those

developing online interventions in HCI. Quality online interventions must not only present valuable, relevant, and accurate sexuality and sexual health content, but also must prioritize their placement on search engines and web rankings to reach young users.

For online sexual health providers and designers, sources of information about sexual identity will likely have more receptivity among adolescent audiences when framed with stories and first-hand adolescent accounts of what sexual maturation entails in their social networks and communities. Interventions online may more effectively address sexual identity by referring users to other online personalities or resources more in line with their expectations.

Finally, sexuality education websites are not a panacea to reach late adolescents on the Internet, or a replacement for reliable access to comprehensive sexuality education during adolescence. Rather, adolescents' procedures for corroborating information across sources in their lives underscores that searching and using online sexual health information is part of a process of sensemaking rather than an end unto itself.

Further comparative research is highly encouraged to explore how adolescents and adults differ in their strategies for seeking sexual health information online, particularly among younger adolescents.

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