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Abstract

While research has established that turning to the Internet for information about health matters is increasingly common, we know little about the strategies that people use to access such information and the accuracy of material they consult online. This paper draws on in-person observations and interviews with a diverse group of 210 young adults about their experiences with looking for emergency contraception (EC) information on the Web. Findings suggest that despite being a highly wired group with much experience using the Internet, many respondents are unable to find accurate information on this important topic. One third of participants were unable to find any relevant information about EC and the majority of the whole group could not identify the most efficient way to acquire EC in a time of need. Results suggest that despite vast amounts of information available online, many people do not have the necessary skills to navigate online content well with policy implications for educating people about informed and efficient Internet uses.

KEYWORDS: information seeking, health, ehealth, young adults, emergency contraception, credibility, education, search engines

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Introduction

People increasingly turn to the Internet for health information (Cotten and Gupta 2004; Fox 2005; 2006; 2011; Rice 2006). However, finding accurate and helpful content is not always straightforward on the Web given the "the multiplicity of sources embedded in the numerous layers of online dissemination of content" (Sundar 2007, 74). Research on credibility assessment has found that the seriousness of a scenario determines the extent to which people will consider the credibility of content carefully (Metzger et al. 2003). Health matters, in particular, are the type of material that people tend to approach with much more care than many other topics. In this article, we investigate empirically how over 200 young adults search for and evaluate information about emergency contraception, a serious health issue that saw considerable changes in accessibility in the United States shortly before the time of our study. Given the importance of finding credible and accurate health-related content, the study has policy implications that we take up in the Discussion section after a presentation of our findings.

Emergency contraception is a topic especially relevant to young adults in their late teens as they may be sexually active, but are not yet planning on having children. Emergency contraception pills (ECPs) can reduce the risk of unintended pregnancy up to 120 hours after unprotected intercourse, but many people are unaware of the drug, misinformed about what it is or how it works, or uncertain of how to obtain it (Campbell III, Busby, and Steyer 2008; Mollen et al. 2008; Williamson, Buston, and Sweeting 2009). Due to ECPs' limited window of effectiveness and given that people do not tend to obtain them until the moment when they are needed urgently, it is essential for people to be able to find accurate information about ECPs as quickly as possible. It is important to understand the strategies people use to find information about ECPs in a time of need so that obstacles to information acquisition can be addressed.

Although much research has been done on people's access to emergency contraception, little of this has focused on searching for related material on the Internet (exceptions include seeking answers to frequently asked questions on EC sites; Gainer et al. 2002; Wu et al. 2007; Wynn and Trussell 2005). Our research fills this gap in the literature by looking at how young adults—an important population when it comes to ECPs—find information on the topic through online searches. Although ECPs are available over the counter (OTC) in the United States, in order to take advantage of them, people must understand when there is a risk for unintended pregnancy and recognize ECPs as a way of preventing pregnancy from occurring after unprotected intercourse if they are to obtain and use the drug properly.

Online Health Information Seeking

The Internet has become a premier source for health information online, with 80 percent of American Internet users (59 percent of all U.S. adults) having used the Web for this purpose and young adults even more likely to engage in the activity than their older counterparts (Fox 2011). Other work has shown that the majority of college students turn to the Internet for such information and use it as a source for health content more than they do traditional media or medical professionals (Percheski and Hargittai 2011; Dobransky and Hargittai 2012; Escoffery et al. 2005). The abundance of information on the Web can help consumers make informed decisions about their health (Crutzen and Mevissen 2011), yet precisely because there is so much health content online, it may be difficult for users to find reliable materials quickly (e.g., Hargittai 2002). In fact, research has shown that websites hosting information about the most controversial topics—including ECPs—contain the greatest number of inaccuracies (Buhi et al. 2010). While studies have specifically looked at online health information seeking in depth (e.g., Eysenbach and Köhler 2002; van Deursen 2012), they tend to be based on much smaller data sets. Additionally, given the rapidly changing online media environment, there is value in revisiting how people search for health content on the Web over the years.

Scholars have argued that seeking health information online might be particularly appealing to adolescents and young adults because they have more difficulty accessing traditional health services (Gray et al. 2005) and they may be seeking information on personal topics such as sexual health deemed to be embarrassing by some (Buhi et al. 2009). Adolescents have been shown to have difficulty locating relevant information online, especially concerning local health service providers (Gray et al. 2005). Many students report not always finding desirable information (Escoffery et al. 2005). While adolescents often claim to be comfortable and confident in searching for health information online, they are often unsystematic in their search and seldom concerned with issues of credibility (Buhi et al. 2009; Hansen et al. 2003). In sum, while the Internet is a potentially valuable and attractive source of information about sexual health topics for young adults, difficulty in searching and evaluating credibility may prevent them from finding useful information in a timely manner.

Background on Emergency Contraception

Emergency contraception (EC) has long been heralded as a "second chance" for women to prevent pregnancy after unprotected intercourse (Bastianelli, Farris, and Benagiano 2008; Trussell and Raymond 2012). There are two effective forms of EC available in the United States, including a copper intrauterine device (IUD)

and emergency contraception pills. ECPs are more accessible and inexpensive than an IUD and can be taken up to 120 hours after unprotected intercourse, although at the time of the study the effectiveness was understood to decline over time and the drug was typically recommended for use within three days (72 hours) of unprotected intercourse. ECPs prevent pregnancy by halting ovulation and preventing fertilization, but they do not terminate a pregnancy once it has occurred and are therefore not abortifacients like the medication RU-486. The ECP marketed under the brand name Plan B—and since the study Plan B One-Step—has been available in the United States since 1999, but prior to 2007, its use required a prescription from a doctor. (Since the time of our study, other pills have also become available; Trussell and Raymond 2012.)

The U.S. Food and Drug Administration (FDA) approved over-the-counter (OTC) sales of the drug Plan B for adults 18 and over on August 24, 2006, and this change was enacted beginning January 1, 2007 (FDA 2006). The term "over-the-counter" is a misnomer, however, given that ECPs are kept behind the pharmacy counter, requiring customers to provide proof of age and to obtain the medication directly from a pharmacist despite the fact that at the time of the study it did not require a signed form or special authorization for persons 18 and over. (Since the time of the study, the age limit has been changed so that women and men 17 and over can access Plan B One-Step, Next Choice and Levonorgestrel pills; Trussell and Raymond 2012.) The commercial promotion and use of ECPs has been a highly contentious issue in the United States, a fact that has had a significant impact on legislative action and accessibility (Greene 2008; Kliff 2009; Walker-Jenkins 2007; Weisberg and Fraser 2009).

In order for ECPs to be effective at reducing instances of unintended pregnancy, people at risk for unintended pregnancy must be aware of ECPs, understand the circumstances in which their use would be beneficial (i.e., when they are at risk for unintended pregnancy), and be able to access the drug within 120 hours of unprotected intercourse. An overall lack of functional knowledge about sexual health and contraceptive practices often results in failure to access ECPs (Merchant et al. 2006; Schwarz et al. 2007; Sorensen, Pedersen, and Nyrnberg 2000). Even in cases where knowledge of the drug is sufficient, many women underestimate or neglect the risks associated with unprotected intercourse (Perez and Nelson 2007; Rocca et al. 2007; Sorensen, Pedersen, and Nyrnberg 2000; Wynn, Foster, and Trussell 2009). While making ECPs available OTC improves their accessibility, it also eliminates opportunities for doctors to counsel patients about more reliable and consistent methods of contraception (Trussell and Raymond 2012).

Even in cases where people are aware of the risk of unintended pregnancy and the purpose of ECPs, other barriers stemming from confusion about ECPs prevent people from using the drug. Confusion about the mechanism of action in

ECPs is widespread and frequently discourages use by women who have moral objections to terminating a pregnancy, which is what they believe ECPs do even though that is not what they do (Campbell III, Busby, and Steyer 2008; Fagan et al. 2006). Studies of university populations find that approximately half of students confused ECPs with the abortifacient RU-486 (Corbett et al. 2006; Hickey 2009). The very name of ECPs, the often-used "morning after pill," can also be misleading as it implies that the effectiveness of ECPs is limited to the morning following unprotected intercourse (Bastianelli, Farris, and Benagiano 2008; Trussell and Raymond 2012).

Given the many barriers to emergency contraception, the Internet holds much potential in leveling the playing field when it comes to accessing accurate information about ECPs in a timely manner. But this potential can only be met if (1) there is helpful related information available about ECPs online; and (2) people in need of ECPs are able to access and evaluate such material quickly. Given that plenty of relevant content is available online about ECPs (addressing the first point), the focus of this article is on the second matter. How do people fare when it comes to learning about ECPs online in a time of need?

Data and Methods

The data presented here are part of a larger study involving two college campuses in the Midwestern United States, one public and one private, designed to study how college students are incorporating digital media into their lives. Both survey and in-person observational data were collected from a representative group of first-year students aged 18 and over at an urban public university in the Spring of 2007 and a Midwestern suburban private university in the Fall of 2007 and Winter of 2008. The survey included questions about students' Internet uses in addition to details about their demographic background. The in-person observations looked at how participants searched for and evaluated online content in a myriad of domains.

The data described in this article consist of the observational interviews and so most of our methodological description concerns that part of the study. At the public university, students who participated in a larger survey study were asked if they would be interested in participating in a follow-up session. From these students, 192 students were selected for contact using a stratified random sample to ensure representativeness on gender and Internet skill level (information gleaned from the surveys). Of these students, 102 agreed to participate, yielding a 53 percent response rate. From the private university, a random sample of 185 students was selected from a roster of first-years provided by the university's Registrar. One hundred and eight students agreed to participate

in the observation session, resulting in a 59 percent response rate. In sum, we conducted 210 observation interviews. The data collected from the two universities are combined for the purpose of this article, as there were few significant differences in strategies used by students on the two campuses for this particular task.

Students were offered $40 for their participation. Respondents met one-on-one with a researcher and sat at a network-connected computer. They were asked to perform a dozen information-seeking tasks on topics ranging from college admission requirements to finding their way around the city. The observation sessions lasted just under an hour, on average. The researcher observed users' behavior and encouraged the think-aloud method (Fonteyn, Kuipers, and Grobe 1993). After the completion of all tasks, the interviewer asked some questions about the participants' actions throughout the session. The researcher kept a record of questions until the end of the session to make sure that questions asked would not influence subsequent actions on the part of the respondent. Participants were told that there were no right or wrong answers and that the researchers' primary interest was in learning about how people find different types of information online, which was indeed the focus of the study.

The browser's cache was cleared prior to each session to make sure that other participants' online actions did not influence respondents' behaviors. There was no search bar on the browser (Internet Explorer) and no default site or search engine when the program launched. Students were invited to set their own starting page on the browser. They were permitted to use their cell phones for specific questions during the session if they so wished, but very few did so. Software installed on the computer recorded a video screen capture of all on-screen action. An audio recorder captured respondents' comments. The transcription of the interviews supplemented with information from the screen captures forms the corpus of the data analyzed in this paper.

To address the questions outlined above, we analyze data obtained during one specific task of the in-person observation sessions. Students were given the following hypothetical scenario:

> You are at home in the middle of summer. A friend calls you frantically on a Friday at midnight. The condom broke while she was with her boyfriend. What can she do to prevent pregnancy? Remember, neither of you is on campus. She lives in South Bend, Indiana.

The hypothetical incident took place in the summer and off campus so as to avoid students simply suggesting that their friend go to campus health services. The timing was so as to discourage the likelihood of easily reaching a medical professional. The location was chosen after pretests revealed that many

respondents may simply look for Planned Parenthood and thus the study emphasized a town that does not have such a facility. Interviewers read the above question and made no additional comments about the task. They made no mention of ECPs and did not provide students with any direction or information regarding how to find a solution to the question.

At the time of the study, ECPs had just been made available OTC for adults 18 and over in the United States so visiting a pharmacy to purchase ECPs OTC (i.e., without prescription) was the ideal solution to the task.

Coding and Analysis

We began the coding process by reading several transcripts and viewing several video screen shots to discern behavioral patterns. We took notes on categories to be included in the coding sheet such as sites visited, search terms used, and respondents' final answer. When it appeared that no new patterns were emerging, we finalized the coding sheet and trained coders to use it for the coding of each session. Coding remained an iterative process, however, and if coders encountered new pieces of information of interest, upon consultation with the principal investigator, they were added to the spreadsheet and previously coded videos were reanalyzed for corresponding data.

While the resulting spreadsheet provides a way to quantify basic information about respondents (e.g., initial strategy, first search term, final answer) in order to make conclusions about a variety of information-seeking approaches, it is important to draw on the great richness of qualitative material also available in the audio transcripts and video captures that are not conducive to quantitative aggregation. Audio transcripts of both the think-aloud method and post-session interviews shed light on respondents' thoughts, knowledge, and opinions about ECPs, sexual health, and searching for this type of information online. Video screen shots helped understand how respondents approached the various sites they accessed. Accordingly, after the quantitative coding of the material, we reviewed the content again with an eye toward picking out quotations that were particularly insightful or interesting while also representative of the group's approach. The spreadsheets with aggregated codes and the document we compiled from the quotations served as the bases for the development of the categories of interest described in the results of this article.

Sample Descriptives

Respondents come from different backgrounds as indicated in Table 1. Men and women each make up about half of the sample. Although more than half are White (57 percent), we also have a significant proportion (28 percent) of Asian

Americans as well as Hispanic (11 percent) students, with fewer African Americans (3 percent). Most students come from families where at least one parent has a college degree, but close to a third come from households where neither parent has a college degree, suggesting some diversity in socioeconomic status.

It is important to note that all study participants have considerable experience with using the Internet, that is, we were not observing novice users. Every respondent had access to the Internet at least on campus if not elsewhere (the vast majority reported other access locations as well). On average, respondents had been online for over six years and indicated spending about 16 hours weekly on the Web (excluding time spent on email, chat, and voice services). These figures suggest that we are dealing with a group of highly wired young adults who have considerable experience to draw on when it comes to using the Internet. Accordingly, failure to find credible content cannot be explained by insufficient prior experience with the Web.

Results

When confronted with the hypothetical task of helping a friend prevent unintended pregnancy following an incident with a broken condom, participants reacted in a number of ways and used a variety of strategies to find a solution to the task. The time to complete the task averaged just under five minutes (4:53), ranging from one minute (58 seconds) to a quarter hour (15:01) with a few giving up without finishing the task. Duration of task, however, has limited utility in assessing participants' search abilities given that a respondent might feel confident in an answer after a quick search despite the solution being incorrect. Accordingly, we analyze participants' actions in depth to assess how young adults approached the task.

We classified final answers as successful versus unsuccessful and additionally distinguished between successful versus ideal responses. If a participant suggested that the friend take ECPs, that response was counted as a "successful" answer regardless of the method of ECP acquisition they recommended. An ideal response meant that the respondent specifically suggested that the friend go to a pharmacy to purchase ECPs. Because ECPs had recently been made available over the counter without requiring a prescription, we were especially interested in determining whether students would suggest this particular option. An "unsuccessful" answer was a final answer that did not mention ECPs.

Two thirds (66 percent) of respondents arrived at a successful final answer, meaning in turn that a third (34 percent) of the 18- and 19-year-olds in

our study, after looking online for information on the question, were unable to conclude that the friend should seek out ECPs. Moreover, less than half (40 percent) of all students gave what we consider the ideal response: to have the friend purchase ECPs over the counter at a pharmacy. Approximately a quarter (26 percent) of all respondents (or 40 percent of the successful respondents) recommended finding ECPs through other means (e.g., by visiting a doctor, hospital, or clinic). While not the ideal solution per se as it may delay acquisition of the drug, being able to pass along information about ECPs could expedite the friend's acquisition of the drug swiftly. However, there are greater barriers to visiting a doctor, clinic, or hospital—especially on a Friday at midnight—than to visiting a pharmacy where ECPs are available OTC, which is why we decided that there was a qualitative difference between recommending ECPs versus specifically recommending that they be obtained OTC at a pharmacy.

Close to a fifth (19 percent) of all participants concluded that their friend should seek medical care without suggesting anything beyond that. Without specifying the need for ECPs, however, this does not constitute an informed response as the friend may wait until the following week to contact a physician, potentially reducing the effectiveness of the drug. The remaining answers, each provided by only one respondent, included: "wait it out," "wash genitals," "adoption," "RU-486," "ascorbic acid," visiting a gynecologist in the incorrect locale, taking a pregnancy test, and purchasing another condom. Three percent of respondents were unable to come to any conclusion on the question. Overall, these findings suggest that despite information theoretically available on the Web about emergency contraception, even highly wired young adults may not be able to find it in a time of need. How did students go about approaching the question? What were the most popular sources of information? We describe participants' approaches to the task in detail below.

Initial Reactions

Worthy of note is that upon hearing the task, many respondents were uncertain of how to begin looking for an answer to the question. Some expressed hesitation and did not immediately consider the Internet as a primary source for this information, which is interesting given the highly wired nature of the group. A few respondents indicated that they would prefer to rely on an acquaintance, medical professional, or hotline for a solution to the problem. Several respondents suggested that their friend talk to her parents, an interesting idea given the sensitive nature of the issue.

The desire to speak to someone about the question rather than searching for a solution online seemed to stem from a number of causes including the personal nature of the matter, the perceived urgency of the situation, and the sense

that one is unqualified to make a recommendation. As one male journalism major said upon hearing the task, "That's kind of odd. I don't know why I'd be resorting to the Internet for something that personal. […] I don't know, I'd talk it out on the phone." Other respondents stated that they would prefer to make a phone call to find the information rather than searching on the Internet because it would be easier, faster, or more reliable. As one female respondent put it:

> [S]he's probably freaking out at that time so I could call and find out for her. Again, you know, I think it's easier to use those [hotline] phone numbers and call and make sure you're looking for the right thing, 'cause if you talk to someone they could ask you what happened and how it happened and what's the best way to go.

However, the assumption that someone will always be available to take a phone call is problematic, particularly on a Friday at midnight, which was the time frame of the hypothetical scenario. While it is beyond the scope of this study to offer a systematic analysis of hotline options, it may well be that respondents would encounter a system of menus or a complicated phone tree, which could potentially discourage some people from pursuing a timely solution to the problem. In this study, students who stated a preference for offline sources were given the option of seeking information in that way, but they did not pursue other avenues.

The Importance of Prior Knowledge and Experiences

While this study did not explicitly assess prior knowledge about or experiences with ECPs so as not to bias participants' responses to the task, several students voluntarily mentioned having prior experience with a similar situation. Often, these students said they would draw on first-hand and vicarious experiences to help their friend, as was the case with this male social science major:

> I'm pretty sure they can just like go to Walgreens [because] I had to do this actually. You don't even need like a prescription for it anymore so I think you can just pretty much go to any drugstore and they can give you a morning after pill.

A male health sciences major said a friend of his had been in a similar situation and "they just went to Walgreens the next day and they bought the [morning after pill]." A female social science/sciences double major already familiar with ECPs said her knowledge came from "health classes" as well as

"previous social experiences." A female nursing major recounted the experience she had had with a friend who was in a similar position.

> That's so funny, that sounds like it happened to me. It happened to one of my friends. Okay, this is really dumb, but I'm going to do exactly what we did last time, we did WebMD, I think, it has, like, health stuff. We were looking for Plan B. Yeah. Morning after pill, over the counter. There you go.

This woman's ability to find the correct answer might also have to do with the fact that she is a nursing major. Respondents with a background in medical studies or employment experiences in that sector were often familiar with ECPs and knew that they were available OTC before doing any research during the study session. A female nursing student employed at a pharmacy at the time of the study immediately responded after the researcher finished reading the task by saying, "I would tell her [to] take Plan B. I wouldn't have to go online for that, though." After searching for *pharmacies in south bend, IN*, the respondent specified a pharmacy where her friend could request ECP. Another female sciences major who also worked at a pharmacy said, "Well, since I work at Walgreens I know the morning after pill—that's what it's for." Students who were already aware of ECPs and were confident that their use was appropriate in the hypothetical situation were encouraged by the researchers to use the Internet to find a specific place where their friend could obtain ECPs and to provide the address and hours of operation. While these examples point to participants who had prior knowledge about ECPs and thus were able to offer the ideal response, most students did not seem to have prior knowledge of the drug and many were unable to learn about it during their search.

The Importance of Search Terms

The initial strategy students pursued online often shaped the trajectory of their search for information. Students were able to choose the website they would use to begin their search. The majority (88 percent) of students began by entering a query into a search engine (most often Google, sometimes another service such as Yahoo!), while others went to a topic-related site directly such as WebMD (4 percent started here) or Planned Parenthood (2 percent went to this site first).

Unless a student is aware that ECPs exist to prevent pregnancy after unprotected intercourse, he or she may assume automatically that there is nothing a woman can do to prevent pregnancy once the condom has broken. Interestingly, while some students, upon hearing the task, began by searching for information based on the text of the question posed to them (e.g., *broken condom* or *prevent*

pregnancy), other respondents assumed, incorrectly, that they already knew the best answer, which then may have led them down a path that is unlikely to produce the ideal answer. For example, some respondents who automatically assumed that there was nothing their friend could do to prevent pregnancy after unprotected intercourse, rather than searching for additional information, said they would instruct their friend to wait to see if she missed a period, take a pregnancy test, or visit an abortion clinic. In some cases, they proceeded to search for abortion clinics or pharmacies at which the friend could purchase a pregnancy test without exploring other options. Had they started by researching the *problem* (i.e., a broken condom) rather than *their own solution*, they would have been more likely to encounter information about ECPs than by searching for the address of an abortion clinic, for example. As one male computer science major said after he suggested his friend wait to find out if she was actually pregnant, "it would be pointless for her to try to stop a pregnancy that didn't happen." This approach misses the fact that ECPs could prevent a possible pregnancy in such a situation.

Respondents used a variety of search terms to begin their search, which in some cases seemed to influence the successful completion of the task. The most commonly used query, *prevent pregnancy*, serves as an example of the way in which the terms used can shape the outcome of a search task. The phrase *prevent pregnancy* or a similar term (e.g., *pregnancy prevention*) was used by a third of respondents in their first query. This is potentially a result of the wording of the task, which concludes with the prompt, "How can she prevent pregnancy?" However, it often did not yield the desired result because, as one male communications major pointed out:

> [M]ost websites [that appear in the results of a search for "prevent pregnancy"] aren't going to be specific as to what happens if a condom does break because most of these websites are built around what you can do to prevent it before anything happens.

In fact, all but one of the respondents who did not come to a conclusion about the task (i.e., those who were unable to provide any final answer) began their search with a query similar to *prevent pregnancy*. An important pattern among most of these respondents was that they did not try a query that varied drastically from *prevent pregnancy* during the course of their search. Nearly half (44 percent) of respondents with unsuccessful final answers (i.e., an answer that does not mention ECPs, as opposed to no final answer) began their search with a query related to *prevent pregnancy*, whereas less than a fifth (18 percent) of respondents who provided successful answers had done so. This disparity points to the important role of search terms in shaping the type of results users encounter and their ability to reach a successful conclusion.

Location (i.e., *South Bend* or *Indiana*) was used by close to a quarter (23 percent) of respondents as part of their initial query. Fifteen percent of initial search queries included *Planned Parenthood*. Roughly the same number of respondents (14 percent) included *broken condom* in their initial query. In most cases, search terms were used on their own, but occasionally respondents combined queries (e.g., *prevent pregnancy broken condom* or *Planned Parenthood South Bend*).

A synonym for ECPs (i.e., *morning after pill*, *plan b*, *or emergency contraception*) was used by close to a quarter (24 percent) of respondents. These terms clearly reflect prior knowledge of ECPs and not surprisingly, people who used such terms in their searches were able to find information about how the medication works, where to obtain it, and how long it would be effective. Interestingly, of the respondents who began with a search term related to ECPs, a few (12 percent) nonetheless came to an unsuccessful conclusion. The inclusion of such terms in the initial query indicates some form of prior knowledge about ECPs, yet the variety of terms used to describe ECPs seemed to be a source of confusion for several respondents, and inclusion of a term to describe ECPs in the initial search query does not necessarily indicate a comprehensive understanding of the drug and its uses.

The fact that confusion about ECPs stems in part from the variety of names for the drug has been noted in previous literature (Bastianelli, Farris, and Benagiano 2008; Corbett et al. 2006; Hickey 2009; Trussell and Raymond 2012). A male architecture/design student demonstrated the way in which terminology for ECPs can be misleading when he referred to the "morning after pill" despite lacking basic knowledge about the drug. This student said he would have his friend request "either […] [the] morning after pill or […] abortion or birth control" at a clinic in East Chicago, Indiana. The respondent scrolled past links labeled "Emergency Contraception" without clicking on them, which seemed to indicate that he also failed to recognize that term as interchangeable with "morning after pill," which he had previously recommended. This respondent demonstrates the fact that, although students might be familiar with the term "morning after pill," their understanding of the drug, its many names, and its uses is often insufficient. Respondents without prior knowledge of ECPs who encountered information about the drug through the course of their search faced even greater potential for confusion and often overlooked relevant information because they were not aware of the variety of terms used to describe ECPs.

Even for people with adequate knowledge of the drug and its uses, the term "morning after pill" can be misleading. Although the effectiveness of ECPs does decline over time, they are helpful at reducing the risk of pregnancy for at least 72 hours rather than only until the "morning after." A male health sciences major said he would recommend his friend take "the day after pill," but when

asked by the researcher how long his friend could wait before visiting the pharmacy, he said that she should go "as soon as possible, because the day after pill is the day after." Misconceptions such as these could incorrectly lead people to believe that the medication would no longer be effective a day after the incident, potentially causing them to eliminate ECPs as a viable option.

Websites Visited

Certain sites came up multiple times during the study sessions. Respondents could visit more than one site throughout the course of their search. Aside from search engines like Google and Yahoo!, the most commonly accessed sites were Planned Parenthood (plannedparenthood.org), accessed by close to a quarter (21 percent) of respondents, and the site specifically for Planned Parenthood of Indiana (ppin.org,), which was accessed by 14 percent of participants. In total, almost a third (31 percent) of all respondents visited one or both of these sites. A few additional websites came up during several people's sessions. The website morningafterpill.org, which is sponsored by the pro-life organization American Life League, was accessed by a tenth of participants. The informational site ec.princeton.edu operated by the Office of Population Research at Princeton University was accessed by 8 percent of respondents, Wikipedia was accessed by 6 percent, and the Plan B manufacturer's website, go2planb.com, was accessed by 4 percent of respondents. We discuss the two most popular ECP-related sites (the two Planned Parenthood sites, which are grouped together here, and the American Life League's morningafterpill.org) in more detail below in order to shed light on how respondents came to encounter them and their subsequent evaluations of the sites.

Planned Parenthood. Almost a third (31 percent) of users accessed one or both of the websites for Planned Parenthood and Planned Parenthood of Indiana during their sessions. Both have a dot-org domain, a professional design, and have no advertisements. The organization describes itself as "the nation's leading sexual and reproductive healthcare provider and advocate" and serves over three million women, men, and teenagers each year (Planned Parenthood Matters – Annual Report, 2008). According to their 2008 annual report, one in four women in the United States has turned to Planned Parenthood for healthcare at least once in her life. In 2008, Planned Parenthood provided sexual education programs to 1.2 million youth and adults in the United States.

Sending the friend to Planned Parenthood was an overwhelmingly popular answer to this task despite the absence of a Planned Parenthood office in South Bend, Indiana (the location of the hypothetical friend), as the organization is widely seen as a trustworthy source of health information by participants. Issues

of credibility were of general concern to several of the respondents during the task search. They emphasized that they would not want to provide their friend with inaccurate information about health matters. Over a fifth (18 percent) of respondents recommended visiting Planned Parenthood either to request ECPs or for medical attention as their final answer. For many people, "Planned Parenthood" seemed to be the first thing that came to mind when thinking about issues relating to pregnancy. As one woman majoring in the social sciences reported, "That's their specialty. I guess it's just a personal knowledge thing, like you come up with associations." Another woman majoring in computer science expressed a similar sentiment saying:

> I don't know, that's just what I think of when I think of 'pregnant.' I've never really had experience with anything like that but I feel like they're a very reputable source that can give you help.

A female humanities major called Planned Parenthood an "established, credible kind of place." These statements point to the importance of this organization in particular when it comes to educating people about sexual health. And although there is no Planned Parenthood office in South Bend, Indiana, the organization's website could educate people about ECP access anywhere.

MorningAfterPill.org. While many respondents encountered the website for Planned Parenthood intentionally by searching for it explicitly, morningafterpill.org was accessed unintentionally by clicking on highly ranked results on search engines. It appeared as the first link in a list of results on Google for queries relating to ECPs (e.g., *morning after pill* or *emergency contraception*), which led some respondents to assume that it was an "official" website. A female science major first approached the task by searching for information about contraceptives in general on Google. This eventually led her to construct the following query: *contraceptive broken condom*. She selected the first result, which directed her to a forum. On the discussion board, someone mentioned the morning after pill, at which point the respondent proceeded to seek information from another source.

> Respondent [after reading the forum content]: Oh that's what I was thinking of, the morning after pill. [..] Then since this [the forum] isn't really like a valid source, probably just look up "morning after pill," then go to the main website for it, since it would be the most, I guess, correct information.

The site she assumed was "the main website" for *the morning after pill* was morningafterpill.org, which is sponsored by the American Life League, a pro-life organization. Its mission statement—not available directly on the homepage of the morningafterpill.org site—read at the time:

> American Life League exists to serve God by helping to build a society that respects and protects individual innocent human beings from inception to natural death—without compromise, without exception, without apology. (http://www.all.org/nav/index/heading/MTQ/cat/MjA3/)

The site morningafterpill.org included articles with titles such as "Emergency Contraception: the Truth, the Whole Truth, and Nothing but the Truth," as well as advocacy by medical professionals matching those of the American Life League.

The case of this website demonstrates ways in which people and organizations with a particular agenda can publicize any type of information—in this case erroneous health information—to the public. The fact that the site comes up as a top result in response to various ECP-related search queries lends it credibility as suggested by research on the level of trust people have in search engine results (Hargittai et al. 2010; Pan et al. 2007). In the end, relatively few respondents ended up relying on this site for information, however.

Confusion Over Top-Level Domain Names

Some users felt that they should be able to trust plannedparenthood.org as well as morningafterpill.org because of the top-level dot-org domains. The presence of a dot-org at the end of the site address was frequently relied upon by respondents as a measure of credibility. The following exchange took place between the researcher and a female health sciences major after she looked for information using Yahoo! and the Encarta Encyclopedia.

> Respondent: I would definitely look for websites that end with o-r-g to be on the safe spot.
> Researcher: Dot-org, why specifically that?
> Respondent: Cause it's like a government issued kind of website. For those that end in dot-com, it's usually like opinions from random people who have posted and in some sense it's not worth trusting it.

While it is encouraging to know that some students are aware of the differences between various top-level domain names, it is alarming that their knowledge of what the various names signify is wrong. Contrary to the claims made by the above-quoted respondent, dot-org sites are not sanctioned any more

than are dot-com sites. Just as a dot-com site can be obtained and hosted by anybody so can a dot-org site, and accordingly, differentiating about the credibility of sites based on a distinction between a dot-org versus a dot-com ending is incorrect and problematic.

Another female majoring in the social sciences and humanities preferred information from a dot-gov or dot-org site because she found those more credible. When asked if she found a particular site she was viewing credible, she responded:

> It is a dot-org. since it's womenscarecenter.org, [...] since it's not dot-com, it's not a company, it's an organization so you know this really is their goal, they're not trying to sell you off with something.

The problem with this reasoning is that there is, in fact, nothing inherent that sets dot-org domains apart from dot-com domains. Although initially they may have been intended to serve different functions (the former for nonprofits, the latter for commercial organizations), in reality, obtaining and hosting a dot-org or a dot-com domain is the exact same process.

Mistrust in Commercial Influence

Several students were concerned that the type of information they might find online on a topic of this sort would not be helpful to their friend due to the presence of commercial influence and unrelated or offensive information. In some instances, this concern affected the respondent's initial strategy. A female social science major stated that she preferred to begin her search by looking for information on the health site WebMD. In contrast to many of her peers, she expressed skepticism toward search engines:

> If you type it in Google or something, it will probably be just a whole bunch of useless stuff. I don't really trust Google for that kind of stuff [health-related information].

What this comment seems to imply is that the type of information found by searching on the open Web may not always be relevant or reliable, which is of particular concern when dealing with questions of serious consequence. Such an expression of lack of trust in search engines, however, was very rare among respondents.

A female social science major worried that commercial influence online might interfere with her ability to find reliable information, saying:

> I wouldn't want to use the Internet for something like that [...] just because I don't feel like it's reliable. I'm sure there [are] a bunch of advertisements for [the] morning after pill.

All of these respondents have presuppositions about what kind of information will appear in the search results, which caused them to access a particular, presumably trusted, site directly in order to avoid encountering offensive or misleading information that may result from a search on a generic search engine.

Discussion

This study on how over 200 young American adults find information about preventing pregnancy after an incident with a broken condom raises important questions about health information seeking in the digital age. Fewer than half of the students were able to provide the ideal solution of suggesting that the friend go to a pharmacy and obtain emergency contraceptive pills over the counter despite the wealth of information available on the Web on the topic. The proportion of correct responses is even less encouraging if we consider that several of the people who arrived at the ideal solution had prior knowledge about ECPs. These findings suggest that despite the availability of quality health information on the Web, many students are unable to find accurate information about important health matters online.

Few students made a concerted effort to verify information they found during their search. There was evidence, however, that students relied on some traditional indicators of credibility such as brands before deciding to accept a piece of information (e.g., Hargittai 2010). For example, the large number of students who mentioned Planned Parenthood, visited its websites, and recommended their friend visit an affiliated clinic is evidence of the importance of traditional name recognition when it comes to sexual healthcare services and the salience of that organization in that space in particular. But what about people who do not have prior familiarity with relevant services for, and ready-made answers to, a particular health concern? An important policy implication of this study is that it is problematic to assume that just because content exists online, it is easily within the reach of all users (Hargittai 2000). In particular, it is a mistake to think that just because young people grew up with digital media, they are universally savvy with finding and evaluating Web content (Hargittai et al. 2010; Bennett, Maton, and Kervin 2008; Livingstone and Helsper 2007). Rather than taking such know-how for granted, educational institutions should think about incorporating related content into their curricula. Additionally, related services

should be available at establishments such as public libraries available to those not enrolled in school.

Results suggest that the particular search terms used were important to whether people found the ideal solution to the question at hand. Providers of content about emergency contraception need to be aware of this and should incorporate additional terms (e.g., "pregnancy prevention") into their search-engine optimization strategies (i.e., efforts to insure that people looking for certain content reach their sites). The results also raise questions about search engine practices. While search engine companies seem to take pride in letting their algorithms sort out the ranking of search results (Granka 2010), is it ideal or responsible to leave content important to people's health in the hands of automated processes (Introna and Nissenbaum 2000) that are, in fact, open to manipulation (Bar-Ilan 2007)? Algorithms themselves are not neutral, yet the idea of "algorithm literacy"—the understanding of how programs themselves include lots of decisions by their creators—is not a topic taken up in educational curricula (Striphas 2011) or public conversations.

Like all studies, this one has its share of limitations, which offer opportunities for future research. By asking respondents to look for information for a friend rather than themselves, the research design may have removed a level of urgency from the task that may be present in a real-life situation. Nonetheless, we opted for the wording as such to avoid offending respondents by making assumptions about their sexuality. Additionally, prior work has shown that people's health status relates to their online information-seeking actions (Houston and Allison 2002), yet our data set offers no information about this variable and thus we could not consider its relationship to participants' ability to find accurate content. It may also be that prior knowledge of the topic influences search actions, although the existing literature on this point is mixed (Hargittai 2003). Another limitation of the present study is that respondents were not in their natural environment when performing the search task. Depending on their access point, filtering software may have prevented them from finding the most relevant information (Richardson et al. 2002). Moving forward, especially interesting and important will be incorporating social media in the research design to see how they may play a role in the search process. This is something that our study did not do due to the lack of popularity of such services at the time of the project.

Conclusion

Looking at the online health-search behavior of over 200 young American adults, our study finds that despite considerable experience with the medium, several participants were unable to come up with the ideal response to dealing with an

important health-related matter: emergency contraception. The results highlight limits to young adults' abilities in searching the Web (Flanagin and Metzger 2010). Despite lots of relevant material on the sought topic, many highly wired students with plenty of experience of using the Internet were unable to find material that would address the question they were posed. Users need to be educated about how the Web works and how to approach content they find online through a critical lens. The widespread erroneous belief that dot-org sites are inherently different from dot-com sites is one example of how people are lacking in some of the basics of how the Web works. Given the increasing trend for people to turn online for health information (Fox 2011), users must possess the necessary skills to make effective and efficient uses of their Internet connectivity (Hargittai 2008). An important component of this may concern educational efforts to help people navigate the vast contents of the Web better.

Table 1. Demographic Background of Study Participants

	Respondents
Women	53.3
Age	
18	66.7
19	32.9
20	0.5
Race and ethnicity	
African-American, non-Hispanic	3.3
Asian-American, non-Hispanic	28.2
Hispanic	11.0
Native American, non-Hispanic	0.5
White, non-Hispanic	56.9
Parent's highest level of education	
Less than high school	3.8
High school	11.0
Some college	14.3
College graduate	30.5
Graduate degree	40.5

References

Bar-Ilan, J. 2007. "Google Bombing from a Time Perspective." *Journal of Computer-Mediated Communication* 12 (3): 32.

Bastianelli, C., M. Farris, and G. Benagiano. 2008. "Emergency Contraception: A Review." *The European Journal of Contraception & Reproductive Health Care* 13 (1): 9-16.

Bennett, S., K. Maton, and L. Kervin. 2008. "The 'Digital Natives' Debate: A Critical Review of the Evidence." *British Journal of Educational Technology* 39 (5): 775-786.

Buhi, E.R., E.M. Daley, H.J. Fuhrmann, and S.A. Smith. 2009. "An Observational Study of How Young People Search for Online Sexual Health Information." *Journal of American College Health* 58 (2): 101-111.

Buhi, E.R., E.M. Daley, A. Oberne, S.A. Smith, T. Schneider, and H.J. Fuhrmann. 2010. "Quality and Accuracy of Sexual Health Information Web Sites Visited by Young People." *Journal of Adolescent Health* 47 (2): 206-208.

Campbell III, J., S. Busby, and T. Steyer. 2008. "Attitudes and Beliefs About Emergency Contraception Among Patients at Academic Family Medicine Clinics." *Annals of Family Medicine* 6 (Supplement): S23.

Corbett, P.O., C.P. Mitchell, J.S. Taylor, and J. Kemppainen. 2006. "Emergency Contraception: Knowledge and Perceptions in a University Population." *Journal of the American Academy of Nurse Practitioners* 18 (4): 161-168.

Cotten, S.R., and S.S. Gupta. 2004. "Characteristics of Online and Offline Health Information Seekers and Factors that Discriminate Between Them." *Social Science & Medicine* 59: 1795-1806.

Crutzen, R., and F.E.F. Mevissen. 2011. "Just Another Manic Monday: Peaking Sexual Concerns After the Weekend." *Archives of Sexual Behavior* 40: 1105-1106.

Dobransky, K., and E. Hargittai. 2012. "Inquiring Minds Acquiring Wellness: Uses of Online and Offline Sources for Health Information." *Health Communication* 27 (4): 331-343.

Escoffery, C., K.R. Miner, D.D. Adame, S. Butler, L. McCormick, and E. Mendell. 2005. "Internet Use for Health Information Among College Students." *Journal of American College Health* 53 (4): 183-188.

Eysenbach, G., and C. Köhler. 2002. "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." *BMJ* 324: 573.

Fagan, E.B., H.E. Boussios, R. Moore, and S.L. Galvin. 2006. "Knowledge, Attitudes, and Use of Emergency Contraception Among Rural West North Carolina Women." *Southern Medical Journal* 99 (8): 806-810.

Flanagin, A.J., and M.J. Metzger. 2010. *Kids and Credibility: An Empirical Examination of Youth, Digital Media Use, and Information Credibility*. Cambridge, MA: The MIT Press.

Fonteyn, M., B. Kuipers, and S. Grobe. 1993. "A Description of Think Aloud Method and Protocol Analysis." *Qualitative Health Research* 3 (4): 430.

Food and Drug Administration. 2006. *FDA Approves Over-the-Counter Access for Plan B for Women 18 and Older*. Washington, DC: U.S. Department of Health and Human Services.

Fox, S. 2005. *Health Information Online*. Washington, DC: Pew Internet & American Life Project.

Fox, S. 2006. *Online Health Search 2006*. Washington, DC: Pew Internet & American Life Project.

Fox, S. 2011. *The Social Life of Health Information*. Washington, DC: Pew Internet & American Life Project.

Gainer, E., C. Sollet, M. Ulmann, D. Levy, and A. Ulmann. 2002. "Surfing on the Morning After: Analysis of an Emergency Contraception Website." *Contraception* 67: 195-199.

Granka, L. 2010. "The Politics of Code: A Decade Retrospective." *Information Society* 26 (5): 364-374.

Gray, N.J., J.D. Klein, P.R. Noyce, T.S. Sesselberg, and J.A. Cantrill. 2005. "Health Information-Seeking Behaviour in Adolescence: The Place of the Internet." *Social Science & Medicine* 60 (7): 1467-1478.

Greene, M. 2008. "Emergency Contraception: A Reasonable Personal Choice or a Destructive Societal Influence?" *Clinical Pharmacology & Therapeutics* 83 (1): 17-19.

Hansen, D.L., H.A. Derry, P.J. Resnick, and C.R. Richardson. 2003. "Adolescents Searching for Health Information on the Internet: An Observational Study." *Journal of Medical Internet Research* 5 (4).

Hargittai, E. 2000. "Open Portals or Closed Gates? Channeling Content on the World Wide Web." *Poetics* 27 (4): 233-254.

Hargittai, E. 2002. "Second-Level Digital Divide: Differences in People's Online Skills." *First Monday* 7(4).

Hargittai, E. 2008. "The Digital Reproduction of Inequality." In *Social Stratification*, ed. David Grusky. Boulder, CO: Westview Press, pp. 936-944.

Hargittai, E. 2010. "Digital Na(t)ives? Variation in Internet Skills and Uses among Members of the "Net Generation"." *Sociological Inquiry* 80 (1): 92-113.

Hargittai, E., F. Fullerton, E. Menchen-Trevino, and K.Y. Thomas. 2010. "Trust Online: Young Adults' Evaluation of Web Content." *International Journal of Communication*.

Hickey, M. 2009. "Female College Students' Knowledge, Perceptions, and Use of Emergency Contraception." *Journal of Obstetric, Gynecologic, & Neonatal Nursing* 38 (4): 399-405.

Houston, T.K., and J.J. Allison. 2002. "Users of Internet Health Information: Differences by Health Status." *Journal of Medical Internet Research* 4 (2).

Introna, L., and H. Nissenbaum. 2000. "Shaping the Web: Why the Politics of Search Engines Matters." *The Information Society* 16 (3): 1-17.

Kliff, S. 2009. "Plan B's Complicated History." *Newsweek*, August 25.

Livingstone, S., and E. Helsper. 2007. "Gradations in Digital Inclusion: Children, Young People and the Digital Divide." *New Media & Society* 9 (4): 671-696.

Merchant, R.C., J.A. Damergis, E.M. Gee, B.C. Bock, B.M. Becker, and M.A. Clark. 2006. "Contraceptive Usage, Knowledge, and Correlates of Usage Among Female Emergency Department Patients." *Contraception* 74: 201-207.

Metzger, M.J., A.J. Flanagin, K. Eyal, D.R. Lemus, and R.M. McCann. 2003. "Credibility for the 21st Century: Integrating Perspectives on Source, Message, and Media Credibility in the Contemporary Media Environment." *Communication Yearbook* 27 (1): 293-335.

Mollen, C., F. Barg, K. Hayes, M. Gotcsik, N. Blades, and D. Schwarz. 2008. "Assessing Attitudes About Emergency Contraception Among Urban, Minority Adolescent Girls: An In-depth Interview Study." *Pediatrics* 122 (2): e395.

Pan, B., H. Hembrooke, T. Joachims, L. Lorigo, G. Gay, and L. Granka. 2007. "In Google We Trust: Users' Decisions on Rank, Position and Relevancy." *Journal of Computer-Mediated Communication* 12 (3): 801-823.

Percheski, C. and E. Hargittai. 2011. "Health Information Seeking in the Digital Age." *Journal of American College Health* 59 (5): 379-386.

Perez, M., and A.L. Nelson. 2007. "Assessment of Urgent and Ongoing Contraceptive Needs in an OB/GYN Urgent Care Setting." *Contraception* 75: 108-111.

Planned Parenthood Federation of America. 2008. *Planned Parenthood Matters—Annual Report*. .

Rice, R. 2006. "Influences, Usage, and Outcomes of Internet Health Information Searching: Multivariate Results from the Pew Surveys." *International Journal of Medical Informatics* 75 (1): 8-28.

Richardson, C.R., P.J. Resnick, D.L. Hansen, H.A. Derry, and V.J. Rideout. 2002. "Does Pornography-Blocking Software Block Access to Health Information on the Internet?" *Journal of the American Medical Association* 288 (22): 2887-2894.

Rocca, C.H., E.B. Schwarz, F.H. Stewart, P.D. Darney, T.R. Raine, and C.C. Harper. 2007. "Beyond Access: Acceptability, Use, and Nonuse of Emergency Contraception Among Young Women." *American Journal of Obstetrics and Gynecology* 196: 29.e21-29.e26.

Schwarz, E.B., M.F. Reeves, B. Gerbert, and R. Gonzales. 2007. "Knowledge of and Perceived Access to Emergency Contraception at Two Urgent Care Clinics in California." *Contraception* 75 (3): 209-213.

Sorensen, M.B., B.L. Pedersen, and L.E. Nyrnberg. 2000. "Differences Between Users and Non-users of Emergency Contraception After a Recognized Unprotected Intercourse." *Contraception* 62 (1): 1-3.

Striphas, T. 2011. "Culturomics." http://www.thelateageofprint.org/2011/04/05/culturomics/.

Sundar, S.S. 2007. "The MAIN model: A Heuristic Approach to Understanding Technology Effects on Credibility." In *Digital Media, Youth, and Credibility*, eds. M.J. Metzger and A.J. Flanagin. Cambridge, MA: The MIT Press, 73-100.

Trussell, J., and E.G. Raymond. 2012. *Emergency Contraception: A Last Chance to Prevent Unintended Pregnancy*. Princeton, NJ: Office of Population Research, Princeton University. http://ec.princeton.edu/questions/ec-review.pdf.

van Deursen, A.J.A.M. 2012. "Internet Skill-Related Problems in Accessing Online Health Information." *International Journal of Medical Informatics* 81 (1) 61-72. doi: 10.1016/j.ijmedinf.2011.10.005.

Walker-Jenkins, A. 2007. "Emergency Contraception OTC: The Drug, the Conflict, the Decision." *Nursing for Women's Health* 11 (1): 24-28.

Weisberg, E., and I. Fraser. 2009. "Rights to Emergency Contraception." *International Journal of Gynecology & Obstetrics* 106 (2): 160-163.

Williamson, L., K. Buston, and H. Sweeting. 2009. "Young Women's Perceptions of Pregnancy Risk and Use of Emergency Contraception: Findings from a Qualitative Study." *Contraception* 79 (4): 310-315.

Wu, J., T. Gipson, N. Chin, L.L. Wynn, K. Cleland, C. Morrison, et al. 2007. "Women Seeking Emergency Contraceptive Pills by Using the Internet." *Obstetrics and Gynecology* 110 (1): 44-52.

Wynn, L., A. Foster, and J. Trussell. 2009. "Can I Get Pregnant from Oral Sex? Sexual Health Misconceptions in E-mails to a Reproductive Health Website." *Contraception* 79 (2): 91-97.

Wynn, L., and J. Trussell. 2005. "The Morning After on the Internet: Usage of and Questions to the Emergency Contraception Website." *Contraception* 72 (1): 5-13.