

User preferences related to virtual reference services in an academic library

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Abstract

Library users have a wide variety of methods at their disposal for interacting virtually with libraries. This exploratory study examines user preferences with regard to virtual reference services and factors that account for these preferences from a different vantage point than previous literature by relying on semi-structured interviews with users. Using NVivo qualitative data analysis software, I coded interview transcripts and applied grounded theory to identify preferences from among email to the library, email to a liaison librarian, chat and texting. In terms of virtual reference methods currently offered by the library, participants indicated a general preference for chat, highlighting the importance of this service. However, participants were reluctant to use chat on mobile phones, their most used communication technology. Findings also show that relational aspects are major factors influencing participants' choice of communication. Specifically, participants expressed a preference for modes of communication that are personal, informal, perceived as safe and secure and conversational. Participants expressed reservations for texting due to ambiguity about response times, the perception of the method as being too personal and safety and security concerns. Participants were reluctant to use email in general due to response times and its level of formality, but valued email with their liaison librarian for its level of personalness and the level of expertise they felt that the liaison librarian could offer. Understanding these preferences and the factors that account for them is important because it can influence which virtual reference services librarians choose to offer. It can also help to determine how well virtual reference provision is currently meeting user needs and identify ways service delivery and promotion can be improved.

Keywords

Virtual reference; chat; email; text messaging; SMS reference; mobile devices

Introduction

Library users have a wide variety of methods at their disposal for interacting virtually with libraries, often consisting of email, chat, texting and others. Research is needed to better understand user preferences pertaining to virtual reference to determine how well service provision is currently meeting user needs and identify ways to improve delivery and promotion. This exploratory study examines user preferences from a different vantage point than much of the previous literature by relying on semi-structured interviews with users. Employing NVivo qualitative data analysis software, I coded interview transcripts and applied grounded theory to identify user preferences and factors that account for them from among email to the library, email to a liaison librarian, chat and texting. These findings are useful to all librarians in public services but specifically those who design and deliver virtual reference services.

Although there are previous studies that use a qualitative methodology to identify user preferences among virtual reference methods (Chow & Croxton, 2014), this study will be unique in employing in-depth interviews to explore users' virtual reference preferences. This method will permit a deeper analysis than other methods have previously afforded. This study will also fill a gap in the

literature by being one of the few existing studies that examines factors that account for preferences from among exclusively virtual reference methods. Finally, it will contribute to the literature at a point in time where communication practices and preferences are in a high state of flux, which may result in differences in findings from previously published studies.

Literature review

There is a great deal of literature in the area of virtual reference that has been published in the past 20 years, including a systematic review (Matteson, Salamon, & Brewster, 2011). Such literature is essential since it permits librarians to better align services so as to increase the impact that academic libraries have on their communities (Carey & Pathak, 2017, p. 68). Although face-to-face reference remains very important, virtual reference is growing in popularity (Schiller, 2016, pp. 651-652) and is a service that libraries should prioritize (Yang & Dalal, 2015, p. 78). When comparing virtual reference with face-to-face, the latter emerges as the clear winner in the minds of users (Chow & Croxton, 2012, p. 253; Carey & Pathak, 2017, p. 65; Granfield & Robertson, 2008, p. 50; Cummings, Cummings, & Frederiksen, 2007, p. 89). One factor that users value in their choice of method is how personalized it is (Radford & Connaway, 2013, p. 11), with personalized service being identified as a main reason that non-users prefer face-to-face over virtual reference services (Connaway, Radford, & OCLC Research, 2011, p. 31). Similarly, interviews with faculty reveal that they value personal contact with academic librarians assigned to their specific department (Shoham & Klain-Gabbay, 2019, p. 9).

Nonetheless, research shows that users value certain attributes of virtual reference. Previous research suggests that they prefer methods that yield the highest “return-on-investment in terms of time and mental effort” (Chow & Croxton, 2014, p. 319). The convenience and immediacy (or synchronicity) of virtual reference are important to users (Foley, 2002, p. 37; Ruppel & Condit Fagan, 2002, p. 190). As Connaway, Dickey and Radford state, “‘Immediate answers’ [are] among the most highly rated specific features valued in [virtual reference services]” (2011, p. 184). Moreover, Ward reports that the most prominent reason for choosing chat among respondents was that they thought it would be the fastest way to get an answer (2005, p. 36).

Most of the previous research on preferences for different virtual reference methods reports on data gathered from surveys (Carey & Pathak, 2017; Chow & Croxton, 2012; Cummings et al., 2007; Granfield & Robertson, 2008). Literature suggests that it would be of value to employ qualitative methods in the form of interviews to further understand users’ virtual reference preferences (Carey & Pathak, 2017, p. 67). One of the few qualitative studies that compares a variety of different virtual reference methods to one another (and to non-virtual reference methods as well) is the research by Chow and Croxton (2014) where they recruited student participants to analyze and rate a host of virtual reference services offered by two university libraries. Although the study identifies that user satisfaction and preferences were guided by “time of response, convenience, effectiveness, and efficiency” (p. 320), there is little reporting of textual analysis of participant responses, with this type of analysis warranting further exploration.

Previous literature identifies that there is a gap in understanding pertaining to how different types of virtual reference compare to one another (Greenberg & Bar-Ilan, 2015, p. 139). Studies comparing preferences among exclusively virtual reference methods are sparse, with most studies including face-to-face and/or telephone reference (Carey & Pathak, 2017; Chow & Croxton, 2012; Chow

& Croxton, 2014; Connaway, Radford, & OCLC Research, 2011; Cummings et al., 2007; Granfield & Robertson, 2008), few including texting (Carey & Pathak, 2017; Chow & Croxton, 2012; Chow & Croxton, 2014) and none differentiating between email to the library and email to one's liaison librarian. Among different methods of virtual reference, reported preferences are often contradictory. For example, some studies suggest that chat is the most preferred virtual reference method among students (Carey & Pathak, 2017, p. 55; Chow & Croxton, 2014, p. 319). Still other research claims that chat is least preferred among students (Cummings et al., 2007, p. 89) and email is most preferred (Chow & Croxton, 2012, p. 251).

Few studies on virtual reference methods include texting and those that do suggest that users do not prefer this method (Carey & Pathak, 2017, p. 54; Chow & Croxton, 2014, p. 317). Chow and Croxton's study suggests that texting in the context of the library does not rank as highly as one would anticipate given its popularity in daily life (2014, p. 319). Authors attribute the low ratings to participants having to remember a phone number, to poor quality service (with some participants reporting that they never received a reply) and to a preference for chat because they could see when the librarian was typing a response (2014, p. 319).

Nevertheless, technology is changing rapidly as texting is now an extremely popular form of communication in daily life. In Chow and Croxton's study, where data was collected in 2011, student participants were only "moderately experienced with text messaging" (2014, p. 314). The situation is certainly different for library users today, where texting, particularly for students, is arguably their predominant form of communication. One might speculate that changes in adoption of technology might impact users' preferences for methods of communicating with the library.

Institutional context

McGill University Library's primary clientele is the staff, students and alumni of McGill University, a research-intensive university with a full-time enrolment of 40,000 students. The university conducts research and offers doctoral-level education in many fields of study including medicine and law (McGill University, 2019). McGill Library's virtual reference services include email to the library, email to liaison librarians, live chat and texting, all of which are advertised via the library website on the "Ask Us" page, in addition to via other online and physical locations. Chat began in 2006, with email to the library and email to liaison librarian options already available for many years prior. Texting began in 2016. Virtual reference services are staffed on a non-consortial basis using QuestionPoint software, with an integration for texting using Upside Wireless. Although occasionally referred to as instant messaging in the research literature, in the current study, chat or live chat refers to the library's web-based chat software. Public services librarians and graduate student employees from McGill's School of Information Studies deliver chat, email to the library and texting services. Emails to liaison librarians go directly to the staff member responsible. For the purposes of this study, only the virtual reference methods advertised on the "Ask Us" page were analyzed. Service accounts to specific branches or units within the library (such as Interlibrary Loan) were not investigated. Although there has been previous research into McGill Library's virtual reference services (Côté, Kochkina, & Mawhinney, 2016; Hervieux & Tummon, 2018; Mawhinney & Kochkina, 2019; Wheatley, 2019), there has been no analysis of the services from a user perspective beyond a short satisfaction survey conducted in Winter 2018.

Methods

The purpose of this exploratory study is to investigate the following research questions:

Research Question 1: How do virtual reference methods, consisting of live chat, email to the general library, email to one's liaison librarian and texting, compare to one another from a user perspective?

Research Question 2: What factors influence user preferences for certain virtual reference methods over others?

The research questions are informed by broader questions from previous literature, especially those from the "Seeking synchronicity" study undertaken by Connaway, Dickey, Radford and OCLC Research and reported in a variety of publications (Connaway, Dickey, & Radford, 2011; Connaway, Radford, & OCLC Research, 2011; Radford & Connaway, 2013). Their research questions were: "Why do people choose one information source instead of another?" and "What factors contribute to their selection of information sources?" (Connaway, Dickey, & Radford, 2011, p. 179) and included internet search engines, library websites, electronic databases and family and friends as information sources (Connaway, Dickey, & Radford, 2011, p. 182). In the current study, rather than examining users' choices of information sources in general, the study will be limited to users' choices from among virtual reference methods. The question will be broader than previous literature that investigates user perceptions of only one or two forms of virtual reference such as texting (Luo, 2014; Luo & Weak, 2013), chat (Ward, 2005), instant messaging (Ruppel & Condit Fagan, 2002) and instant messaging and web-based chat (Rourke & Lupien, 2010). Instead, it will draw out what users prefer from among four methods and examine how the methods compare to one another from a user perspective.

I chose to employ a qualitative method, and specifically, to conduct interviews in order to explore virtual reference preferences and factors influencing these preferences from a broad perspective and without having a preconceived idea of what participants would convey. I decided to conduct interviews because it is a method that works well for research that seeks to discover people's individual perspectives (Roulston & Choi, 2018) and is an ideal way to elicit people's preferences and opinions. As Seidman explains, "I interview because I am interested in other people's stories. Most simply put, stories are a way of knowing" (2006, p. 7). This method is useful in understanding users' experiences of the library's services from their perspective.

Study sample

This study uses a qualitative method in the form of in-person interviews to investigate preferences among virtual reference methods and factors that influence these preferences. Unlike previous studies that had participants test all virtual reference methods (Chow & Croxton, 2014), the current study seeks to examine participants' natural behaviour and preferences with regard to virtual reference. The study was granted McGill University's Research Ethics Board I Certificate of Ethical Acceptability of Research Involving Humans in Fall 2019. It employed a purposive sampling method and in particular, aimed at maximum variation sampling by seeking out a sample that would reflect a wide variety of users and aim for a diversity of perspectives. I explicitly sought out both on and off-campus users, those with various academic statuses, those from a variety of age groups and disciplines, both women and men and both domestic and international users. Interviews were carried out in person in

Winter 2019, with the exception of one interview, which was conducted by Skype with a distance student in Mexico. The sample size was based on theoretical saturation. I continued until I was not gaining many more additional insights from the interviews I was conducting.

Recruitment

I recruited participants both virtually and through other means since previous studies suggest that recruiting either exclusively online or in person can influence preferences for methods of communicating with the library. For instance, in Granfield and Robertson's study where they conducted both an online and in-person survey, the online respondents reported much higher satisfaction rates with virtual reference than did the in-person survey respondents (2008, p. 48). Similarly, in Carey and Pathak's study, how participants were recruited seems to have influenced their reported preferences for methods of contacting the library. After recruiting participants exclusively in physical locations, the authors reported a marked preference for face-to-face communication (2017, p. 65) and higher negative than positive ratings for live chat and email (2017, p. 54), leading them to state that this form of sampling "might limit the generalizability of these findings to other college library users" (2017, p. 67). In order to address the stated problems, I used a variety of recruitment methods, both in physical locations (through posters placed across campus and word of mouth) and online (through an online university classified advertisement, social media, solicitation by email from a list of students gathered during the library's orientation activities and solicitation by library staff during email, text and chat interactions). Participants received compensation for their time in the form of a \$15 bookstore or coffee shop gift card.

Interview guide and protocol

I conducted semi-structured interviews with participants. In developing my interview questions, I modified those used by Chow and Croxton in their online survey on information-seeking preferences (2012, pp. 260-262) and by Connaway, Dickey, and Radford in their interviews with library users who had not used virtual reference services before (2011, p. 189). Like the latter researchers, I employed "critical incident data (responses regarding subjects' memories of a single successful or unsuccessful incident)" (2011, p. 186) when asking participants to think back to a time when they had contacted the library. This technique asks participants to describe an incident, or tell a story, which provides enough detail to permit inferences about the issue at hand (Flanagan, 1954, p. 327). Like Connaway, Dickey, and Radford (2011, pp. 188-189), I included probes and employed them when needed in order to illicit further details from participants. I followed a similar interview structure to the one used by Luo and Weak (2013, p. 16) in their focus groups with teens on library texting services where they first asked questions pertaining to participants' use of library reference services in general and continued with questions about their awareness and perceptions of texting services.

My interview questions were generally open-ended in order to identify preferences for virtual reference methods and factors that influenced these preferences. Specific interview questions can be found in Appendix A. Although I used the interview questions to guide me, the questions varied based on the course of each interview, and they evolved somewhat over the data collection process. The general interview protocol remained the same and consisted of explaining the definition of virtual reference services as employed in the research study, demonstrating where each service was available on the library website and conducting the interview.

I obtained face validity for the interview protocol by seeking expert review of the questions from other McGill librarians (the user experience librarian, members of the library's virtual reference committee and the assessment librarian) and by conducting a pilot interview with a virtual reference student worker. All interviews were recorded and transcribed, except for one interview where the participant did not want to be recorded and for which I relied on my hand-written notes.

Coding

I analyzed the interview transcripts in order to identify common themes related to participants' preferences for various forms of virtual reference and factors that accounted for them. Similar to Connaway, Dickey, and Radford, I employed the principles of grounded theory "allowing the codes to emerge from the respondents' language" (2011, p. 185). I developed a coding scheme as I coded and, like Luo and Weak, I employed the constant comparison method by Glaser and Strauss, where "events are constantly compared with previous events" (2013, p. 16) and re-analyzed previously coded data to "identify repeating ideas" (2013, p. 16).

I used NVivo qualitative data analysis software to carry out the coding. It was beneficial as a data management tool in that it allowed me to create a database of all interview transcripts and facilitated the task of identifying recurring themes in the data. I was able to search all transcripts simultaneously, enabling me to quickly locate specific words. Once I coded the data and identified important themes, I could easily rank them by those that occurred most frequently. The software also allowed me to easily retrieve needed quotations to use for illustrative purposes.

Findings and discussion

People were eligible to participate if they were 18 years and over and had used one or more of McGill Library's virtual reference services before. I conducted interviews with 14 participants from a wide variety of disciplines and academic statuses at the university (participant details in Appendix B). In most cases, participants chose a pseudonym themselves. Otherwise, I assigned one to them.

The findings will outline three main themes that emerged from the study, namely participants' preferences for certain virtual reference methods over others, that relational aspects were important to them in their choice of virtual reference methods and that participants were reluctant to use chat on mobile devices. Findings show similarities with and notable differences from previous studies with regard to factors that influence users' preferences. Similar to previous research by Chow and Croxton (2014), Foley (2002), Connaway, Dickey, and Radford (2011) and Ruppel and Condit Fagan (2002) outlined in the literature review, the current study identified that convenience and the synchronicity of a method were important factors to participants. More surprising was the extent to which relational aspects of a method such as its *personalness*, its *informality*, *users' feelings of safety and security using a method* and its *conversational nature* were important. Despite having a clear preference for chat and despite using mobile phones extensively in their daily lives, participants in the current study expressed doubts about using chat on their phones for a variety of reasons, which merit careful consideration. These three themes will be addressed in the following section of the paper.

Participants' preferences

Live chat

From among the four virtual reference methods, participants in the study expressed a clear preference for live chat. They often praised the service, which yielded generally high levels of satisfaction. Participants valued the synchronicity and personalness of this method, among other features. As Sarah, a graduate student, explained, "It's very quick and I could tell, you know, it was a real person there to help me, so, yeah, very satisfied." There were a few participants in the study who did not like chat, none of whom had, in fact, used the service before. Participants often expressed a marked preference for chat due to the true synchronicity of this method. They generally reported that their expected response times among virtual reference methods would be fastest with chat. In fact, several participants valued the synchronicity of chat so much that they were willing to wait until the service reopened to benefit from the immediacy of the interaction, rather than use email or texting and be unsure when they would receive a reply. This preference for choosing chat for the timeliness of the response mirrors findings from Ward as noted in the literature review (2005, p. 36).

Participants found chat to have distinct advantages over other virtual reference methods in terms of convenience. They expressed that chat required minimal effort and was available at their point of need, in part due to its presence on the library website and in the library catalogue. Daniel, an alumni, describes a typical scenario he encountered while he was a student, which mirrors the experiences of other students in the study: "Because I was studying, I had my laptop. I was working on a paper and I used the chat. I thought it was more convenient that way." Participants in the current study found chat easiest to use and most useful from among virtual reference methods. That participants in the current study generally deemed convenience and ease of use to be important concurs with studies by Chow and Croxton (2014), Foley (2002), Connaway, Dickey, and Radford (2011) and Ruppel and Condit Fagan (2002) discussed in the literature review.

Email to liaison librarian

A surprising finding from the study was the extent to which many participants had negative impressions of email both to the library and to one's liaison librarian, especially considering email's general ubiquity in our daily lives. Ryan, a graduate student, summed up the general dissatisfaction many participants expressed: "Email is one of the least efficient ways to communicate...in terms of turnaround times, in terms of taking work home with you, in terms of just general satisfaction." Participants had an aversion to emailing the library, although their views of emailing their liaison librarian were more positive, rendering it the second most preferred method of communicating with the library, after live chat. Participants valued the advantages of email to one's liaison librarian, namely its personalness. They were less favourable to it for its perceived lengthy response times and its level of formality.

The primary disadvantage of email to one's liaison librarian (and email to the general library) was participants' perceptions that it was too slow. As Sarah stated, "I probably wouldn't use email...because I'm thinking about my needs and things and if I need something, it would probably be something that I want right away or need to know right away." In the current study, although participants generally found response times to be long, several participants found email to be efficient

and save them time since the method enabled them to draft an email when it was expedient for them and devote less time overall than they would to a live chat interaction. Granfield and Robertson report similar findings of participants' perceptions that the turn-around time for email did not meet their expectations, even when it was within 24 hours (2008, p. 50).

Email to the general library

No participant identified email to the general library as their preferred method of communicating with the library. Some participants expressed that this method could be useful if they had a basic question or if they did not know who to contact. One participant in particular seemed to have an extra aversion for email to the general library because he perceived that this method would be even slower than email to his liaison librarian. Blue, an undergraduate student, would make an effort to find out who to email within the library rather than wait while his email was triaged because "that would just take an extra day." A couple of participants did perceive that email to the library might yield more fruitful results than chat since the method might be more conducive to receiving detailed help but this advantage did not outweigh its disadvantages.

Texting

Despite that nearly all participants used texting extensively in their daily lives, no participant identified texting as their preferred method of communicating with the library. It should be noted, however, that only Daniel, the alumni participant, had actually used the service and most participants were unaware of its existence. Participants expressed limited interest in texting the library despite it being very personal, informal and made for mobile use, all factors that participants identified as being important to them generally in their choice of virtual reference methods. Several participants expressed that they did not see texting as having any additional advantages over chat and, as a result, were unlikely to try it.

One perceived advantage of texting is its access when wifi is not available. Although some participants shared the view that they would text the library if they did not have access to wifi, this factor did not seem to influence participants' preferences since the ubiquity of wifi both off and on-campus was a common feature for nearly all participants. As Jenna, an undergraduate student, explained, "We have [wifi] pretty much all over campus....Like free wifi in cafes, home wifi, wherever my friends would be. Even certain parts of the city just have wifi. I'm pretty much always connected." Factors other than access to wifi seemed to dictate participants' preferences from among virtual reference methods.

Participants perceived that texting should be immediate and for urgent matters. Confusion about the time it would take to receive a response deterred them from using the service. They stated that if texting was not in fact synchronous, they would question its utility. Some participants thought the response times via texting should be really fast and, as Kim, a faculty member, asserted, "even faster than chat." Others conceded that librarian responses via texting would likely take longer. Not only did participants perceive that response times would be slow on the librarian's part, they also recognized that their own response times would likely be slow using this method. Priya, an international graduate student, described a potential scenario of her sending a text to the library and the library responding: "Then will I be free? Because I have classes and stuff. I'm not always with my phone so if I miss it and

have to wait for the other round of, for the other week day, another time. Texting is more unpredictable.” She recognized that, in reality, the method may not permit a synchronous interaction. Due to the ambiguity of response times, participants were inclined to prefer chat to texting for urgent matters.

Despite that most participants were not especially interested in using the texting service, a number of participants agreed that the service was good to have. When prompted for the reasons they felt this way, it was not always clear. As Louise, an international undergraduate student, explained, “It’s good...I like it. It feels like [the library] is adapting, adjusting to the society that we have now. Like before, even just a couple years ago, I doubt the library in general would try texting. So it’s good that they’re adapting to our needs and what we like to do on a daily basis because then it makes us want to go there more, use the services more, so I like it. I doubt I would ever use texting. I think it’s a good thing to have but I doubt I would ever use it.” Other participants also shared this view that by offering texting, the library was showing itself willing and able to keep up with new forms of communication technology.

The lack of interest in texting identified in the current study concurs with previous research by Chow and Croxton (2014) discussed in the literature review. In addition to the reasons they provided for texting’s lack of popularity (p. 319), the current study identified certain relational aspects of texting, including that participants deemed texting too personal and that it generated concerns about safety and security, that led participants to prefer other methods. These were two of four relational aspects identified in the study that influenced participants’ preferences for certain virtual reference methods over others. Each of these four aspects will be addressed in order of importance in the following section.

Importance of relational aspects

Personalness

Personalness was defined as how personal a method was and pertained to the level of closeness of an interaction. Despite not knowing who they would be contacting when initiating a chat, participants valued chat for its personalness. Several participants also expressed sentiments about the value of emailing their liaison librarian due to the personalness of this method. Alex, a doctoral student, who identified email as his preferred method of communication, lauded its personal aspect: “It puts it on a personal level which is, I think, important all the time regardless of whether it’s the library we’re talking about or otherwise.” This sentiment was especially prevalent among the two professors/instructors, both of whom expressed preferences for contacting their liaison librarian by email. Perhaps this could be expected given their more permanent status as university employees, which may have rendered them more willing than students to value and foster a personal connection with their liaison librarian. As Kim explained, “I feel like I have a one on one relationship with my liaison librarian.” The findings on the importance of personalness concur with previous research as discussed in the literature review (Radford & Connaway, 2013, p. 11; Connaway, Radford, & OCLC Research, 2011, pp. 17 & 31; Shoham & Klain-Gabbay, 2019, p. 9).

Despite participants valuing personal methods of communication, many participants were reluctant to use texting because they perceived it to be too personal a method to use with the library. Many considered texting to be for using exclusively within the realm of family and friends. As Ryan stated, “I think I still have that...conceptual difference. Texting is more personal and more for personal

uses...It feels like then it's sort of impinging on that little personal space." Several participants voiced concern with texting an organization, rather than a person they knew. Although acknowledging that her natural instinct was to view texting as being for personal communication only, Sarah was willing to reconsider her point of view but recognized that accepting texting as a service required a change of perspective, which would not necessarily come naturally.

Informality

Somewhat surprisingly, many participants expressed an aversion to formal methods of communication and chat's level of informality was a major factor that influenced their preference for this method over others. Conversely, participants generally had negative perceptions of email as being too formal. As Amy, an undergraduate student, explained, "I use email generally to be a bit more formal...Because of the degree of formality associated with email, if you're live chatting with a librarian, it's like okay, cool. We're all here for learning and for education and stuff, so I guess it makes it feel a little bit closer." Using an informal method has the advantage of allowing the user and the service provider to be more connected through the sharing of similar goals, namely those related to learning. It also puts users and service providers more on the same level and likely reduces users' feelings of intimidation when requesting assistance.

Although informality was an important consideration for participants, such a marked preference for informal methods of communication does not appear very prominently in previous research and when questions of formality are addressed, users' preferences are mixed. For example, in Waugh's study on formality within chat, participants' preferences for formal or informal interactions were very divided (2013, p. 28). Similarly, in Rourke and Lupien's comparison study of two different types of live chat (instant messaging and web-based library chat), which classified instant messaging interactions as primarily informal and web-based library chat interactions as primarily formal, participants reported an overall preference for the less formal instant messaging (2010, pp. 69-70). This preference may suggest that users favour informal methods over formal ones, but it is not clear.

Feelings of safety and security

Participants' feelings about safety and security using a method was another important relational aspect that influenced their preferences. This theme included concerns about confidentiality and information privacy/security. Participants expressed concerns about safety and security mostly in relation to texting and it was a leading factor in their reluctance to use it. They expressed concerns both that an organization would have confidential information about them (such as their phone number) and that this information might be inadvertently shared with others. As Louise stated, "I don't really know what McGill Library would do with my number but you never know...If it's banking or important things, I would rather call someone. Just because, I don't know, I'm scared it could be a scam or something bad like my information could get out...I would get scared and would rather talk to someone in person or on the phone." Unless a company or organization needed to reach them urgently or if they themselves had initiated the texting interaction (e.g. for PIN verification), they felt they would have doubts about the legitimacy of texting. Although Daniel expressed satisfaction with the texting service, he nevertheless voiced safety and security concerns about it. He felt safer using live chat since he could initiate it from the library website and not run the risk of inadvertently sending his text message to the wrong number. Participants had fewer concerns about safety using live chat and email, although one expressed that she

might be wary of using the library's chat unless its branding on the library website made it clear that it was legitimate.

Generally, privacy and security concerns pertaining to virtual reference concur with those identified in previous literature, namely that young people may be reluctant to use virtual reference from having been taught to be cautious online. The literature emphasizes that it is important to introduce users to virtual reference services in face-to-face contexts so that they can bring their trust of librarians into online spaces (Connaway, Radford, & OCLC Research, 2011, p. 3).

Conversational nature

The conversational nature of a method was defined as the degree to which a method facilitated a conversation. It was an important factor in participants' choice of virtual reference methods and often led them to choose chat since they perceived it to be the method most able to replicate an in-person conversation. They expressed that chat was conducive to helping clarify their query and clear up any misunderstandings between themselves and the service provider. As a distance student, Margarita particularly valued the kind of dialogue that was possible via chat and described it as "for when I just have no clue how to even pose the question. You know, and you need to kind of go through the puzzle with somebody." Often participants were inclined to use chat to help them develop their question when they were not even sure how to ask it.

Reluctance to use chat on mobile devices

The ubiquity of smartphones came up repeatedly throughout the interviews. All but one participant had at least one smartphone and used it a great deal. One surprising finding was that, despite nearly all participants having ready access to smartphones and that they had an obvious preference for live chatting with the library, many did not want to use chat on their phones, instead preferring to use it on a laptop or desktop. Participants mentioned various reasons, most of which were related to technical aspects of smartphones, including concerns that the chat software might not work properly. As Blue explained, "Chat is always on the computer because I don't know if it supports the mobile version yet." Not only were participants concerned about the software not working, they also felt that chat would not be convenient or easy to access from a phone. Others believed that the small size of the screen would make it difficult to conduct a chat, and especially to type, and that the chat would time out if the user did not have the tab open for a certain period of time, which would render it difficult to multitask.

Although participants acknowledged that texting was ideal for use on mobile devices, they were very reluctant to use this service. Sarah was one of the few participants who expressed interest in using the texting service, saying, "If I wasn't on my laptop, I'd probably use the texting service." Participants mentioned their choice of device as a factor in their possible use of texting, although it did not persuade many that the texting service would be useful to them.

Recommendations

The study was qualitative in nature, which prevents the findings from being generalizable. Nevertheless, recommendations regarding virtual reference delivery and promotion may prove useful beyond McGill Library in other academic libraries with similar services and clientele. It is clear from the

findings that participants had a marked preference for live chat and valued this service highly, which indicates that libraries should offer it and fund it adequately. It should also be noted that although some virtual reference methods were clearly more popular than others, participants mentioned distinct uses for all four methods. They valued the personalness of emailing their liaison librarian, especially for research-related questions. They noted that email to the general library was useful when their query was basic and not urgent or when it was not clear to whom they should direct it. They identified that texting was useful when on their mobile devices, a situation that is taking place more and more frequently. For this reason, it is recommended that all methods be retained.

Ensure services function well on mobile devices

Among participants in the current study, there were mixed views on the use of virtual reference methods on their smartphones. The findings from the current study suggest that due to the ubiquity of smartphones, decreased use of these services may result if users are not comfortable engaging in virtual reference on their phones. If virtual reference methods are tied to use on laptops and desktops, they could become marginalized as we become more and more comfortable carrying out tasks of ever-increasing complexity on smartphones. As Peters states in his article on the future of reference services, “Unless we rethink and redesign library reference services to better meet the information needs of the mobile legions, library reference services will become marginalized and much less valuable to the population served” (2010, p. 93). Within the context of ubiquitous mobile phone use, it is incumbent on virtual reference service providers to ensure that all methods of virtual reference, especially chat given its popularity, are adapted to a mobile experience.

Rather than have web-based library chat interfaces that can be cumbersome and resemble online forms more than live chat systems, libraries should ensure that chat interfaces align with user expectations and function seamlessly on mobile devices (like instant messaging on popular mobile instant messaging apps do). Ways to make chat easy to find and use include ensuring that the library’s chat interface is highly visible on the mobile version of the website and requires as few clicks as possible to initiate. The onus is on service providers to seek out solutions to issues such as those related to the difficulty of multitasking while engaging in a chat. One solution could be to ensure there are visual notifications to alert users once the librarian has responded to their chat.

Not only is it important that chat and other forms of virtual reference work well on mobile devices, it is also important that library users are aware of their functionalities in this regard. Otherwise, users may question them and subsequently reduce their use of this service as they continue to increase the number of activities that they carry out on smartphones. As part of promotion efforts, libraries should make clear how virtual reference services work with respect to mobile devices.

Address privacy and security concerns

Privacy and security concerns were important to participants and were a factor that influenced their preference for chat and email over texting. These concerns should be carefully considered in designing any type of virtual reference service and adequately addressed through the provision of service policy information regarding privacy and confidentiality on the library’s website. RUSA’s *Guidelines for Implementing and Maintaining Virtual Reference Services* with their emphasis on the importance of patron privacy and recommendations for stripping patron identifiers, developing

retention schedules for maintaining patron data and informing patrons of privacy policies are useful in this regard (American Library Association, 2017). It is also important to design and brand all virtual reference services to match other aspects of the library website in order to create a consistent look and feel, thus increasing users' comfort levels that virtual reference services are legitimate and secure.

Personalize virtual reference

Since the personalness of a method was important to participants, ways of personalizing all aspects of virtual reference would be beneficial. Within chat and texting, service providers can personalize interactions by using their first names to identify themselves during interactions and/or provide their contact information at the end in case users have follow-up questions. Service providers can personalize email to the general library by replying with their name in the signature at the end of interactions, rather than using generic service account signatures. Another way to personalize interactions in chat, email and texting is to have policies and software that both allow users to engage in a conversation with the same service provider over the course of an interaction and enable easy transfer of tickets to individual experts within the library. Some participants in the study were reluctant to text since their perception was that it was for interacting with a specific person that they knew. Although there would be work-load implications to consider and privacy and security concerns of both users and service providers to address, one possible suggestion is to pilot having a texting service to individual liaison librarians. Such a service is worth considering as a means of fostering the personal interaction that users value.

Address formality/informality dichotomy

It is clear from the study that users prefer communicating in informal ways and prefer methods that facilitate this type of communication. However, it is also important to temper informal language in a live chat since users can view informality as a sign of inexperience on the part of the service provider (Waugh, 2013, p. 29). Explicit guidelines and training are needed for delivering virtual reference services that are informal yet that meet high standards. Some strategies include "syntactic mirroring" (Kingsbury, 2015, pp. 38-39), which emulates the user's level of formality, and "professional ethos awareness," which consists of communicating a professional demeanor and being conscious of how one's language choices can either "raise or lower the formality level" in a way that can lead to a positive outcome in a reference transaction (Kingsbury, 2015, p. 41).

Conclusion

The current study advances research by identifying preferences and factors that influence them from among four methods of virtual reference. One area of future research could compare users' perceptions of virtual reference services with content analysis of actual transcripts to identify how users actually use the services. It would also be useful to explore the perspectives of non-users and investigate what factors impede them from using virtual reference services, what would motivate them to use them and what specific methods they would be most inclined to use. This type of study could build on the work of Connaway, Dickey, and Radford that suggests that convenience plays a significant role in terms of preferences for virtual reference users and non-users alike (2011, p. 184) and could perhaps identify other factors that might entice this group to become users of a library's virtual reference services. In the

current study, there was a discernible lack of awareness of all the virtual reference methods available to them, which is likely even more pronounced among non-users.

The findings make clear that users value methods that are fast and easy to use (synchronous and convenient), have certain relational aspects (personal but not too personal, informal, conversational and with which they feel safe using) and are adapted to mobile devices. These findings allow libraries to investigate ways of not only improving popular virtual reference methods offered today, but also provide criteria by which to judge goodness of fit of virtual reference methods that may exist in the future.

Limitations

In the current study, some limitations should be considered. Most of the participants had not used all the virtual reference methods available to them and therefore could only speculate about use of virtual reference methods with which they were unfamiliar. As a result, participants' preference for chat may be overstated in comparison with other methods, given participants' greater awareness and experience with this method than with other virtual reference offerings. Notably, there was only one participant who had previously used the texting service and very few were aware of it before hearing about the study. This lack of experience with the texting service brings into question the extent to which it could be compared fairly with other methods. Further research into the attitudes and perceptions of actual users of the texting service could shed additional light on this service.

Another limitation to consider is the extent to which self-selection bias may have contributed to the highly positive perceptions of virtual reference services expressed by participants. Participants in the current study were self-selected in the sense that they chose to respond to online or printed advertisements or agreed to be contacted when solicited. Library users who were willing to participate in the study were likely more interested in virtual reference services and more positive about them than library users who have not previously used virtual reference services.

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Declaration of competing interest

None.

Appendix A. Interview questions

1. Think back to the last time you reached out to a library staff member (from among any method including in person) and tell me about that interaction. (Probe: What were the specific circumstances that influenced how you chose to contact the library?)
2. How would you characterize that experience? (Probes: Did you find that it was successful or unsuccessful? How did the chosen method impact the interaction?)
3. Before hearing about this research study, did you know that the library offered live chat, texting, email to the general library and email to your liaison librarian? If so, how did you hear about them?
4. What do you think of the library offering these methods?
5. Which have you used before?
6. Tell me about the last time you used any of these virtual reference methods. (Probes: Did you find that it was successful or unsuccessful? How did the chosen method impact the interaction?)
7. Which method(s) do you prefer and why?
8. What factors do you consider when choosing from among virtual reference methods? (Probes: Does the type of question influence your choice of method? Does the device you are using influence your choice of method?)
9. From among the methods you have not used, which, if any, would you be interested in trying? What about this or these methods interests you?
10. Tell me about your expectations of the different virtual reference methods offered by the library (Probes: Do you have different expectations in terms of level of expertise of staff, formality, response time, hours of service, etc.?)
11. What suggestions or comments do you have about virtual reference methods for contacting the library?

Appendix B. Study participant data

Pseudonym	Age	Gender	Academic status (student, alumni, etc.) and field of study	International student? (If so, country of origin)
Students				
Alex	31-35	M	Doctoral student, Music	No
Amy	20 and younger	F	Undergraduate student, Faculty of Arts and Science	No
Ashley	21-25	F	Undergraduate student, Science	No
Blue	21-25	M	Undergraduate student, Engineering	No
Jenna	20 and younger	F	Undergraduate student, Arts	No
Kevin	26-30	M	Master's student, Engineering	Yes, Indonesia
Louise	20 and younger	F	Undergraduate student, Education	Yes, France
Margarita (interview conducted via skype)	41-45	F	Doctoral student, Arts	Yes, Mexico
Priya	21-25	F	Master's student, Engineering	Yes, India
Ryan	31-35	M	Master's student, Information studies	No
Sarah	21-25	F	Master's student, Education	No
Faculty and staff				
Kim	41-45	F	Professor/Instructor, Nursing	No
Michael	46-50	M	Professor/Instructor, Science	No
Alumni				
Daniel	31-35	M	Alumni, Management	No

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