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Sense-Making and Synchronicity: Information-Seeking and Communication Behaviors of Millennials and Baby Boomers

Notes

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and

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Abstract

A major challenge facing today's libraries is to develop and update both traditional and digital collections and services to meet the needs of the multiple generations of users with differing approaches to information seeking. The different characteristics and information needs of Boomers and Millennials present a dichotomy for library service and system development. Results are reported for two research projects (Dervin, Connaway, and Prabha 2003; Radford and Connaway 2005) that investigated habits and needs of library users and non-users. Both studies employed a multi-method research design to identify how and why individuals seek and use information. The first study (Dervin, Connaway, and Prabha 2003) reports the findings of focus group interviews with seventy-eight randomly selected participants, and fifteen semi-structured interviews with a subset of these participants. The second study (Radford and Connaway 2005) reports the results of focus group interviews with twenty-three Millennials, and an analysis of 492 virtual reference services (VRS) transcripts. The studies indicate that both generations consistently identify Google and human sources as the first sources they use for quick searches. The younger Millennials (Screenagers) mentioned consulting parents most frequently, while the older Millennials consult friends and professors. Boomers indicated they consult their personal libraries and colleagues. The findings have implications for the development of next generation library online catalogs, as well as services, including VRS.

Introduction and Problem Domain

In an era of staggering changes to the global information environment, library and information science faces numerous challenges. The current digital landscape demands that library practice both becomes more intensely user-centered in all of its systems and services, and simultaneously return to its core philosophies in the face of cyberspace's limitless information sources and unregulated chaos. The accessibility and immediate delivery of full-text content on the Internet adds another dimension to users' expectations and experiences in information delivery.

Libraries are vying for information seekers' attention in the digital environment. Previously information resources were scarce; therefore people's attention centered on the library where numerous resources were organized, stored, and made accessible. Now information is abundant on the Internet and the information seekers' attention to library sources has become scarce (Prabha, et al. 2007; Harley, et al. 2006; OCLC 2006; "HotTopics: 2006 User Update" 2006). Traditionally, library-centered processes, systems, and services have required users to build and adapt their workflow around them. Librarians now must build systems and services around the users' workflow and habits. LIS professionals desiring to make changes have found it difficult to change libraries as quickly as other technology-based information providers because library systems and the services constructed around them have been in place (and deeply ingrained) for centuries. Libraries also must serve various constituencies with differing information-seeking habits and needs.

To remain relevant in this environment, libraries must provide services that match the information-seeking habits of a new generation, the Millennials, who “...*think and process information fundamentally differently* from their predecessors” (Prensky 2001a, np), along with those of one of their largest constituencies – the Baby Boomers. These two groups display different characteristics and information needs, presenting a dichotomy for library service and system development.

Two research projects, “Sense-making the Information Confluence: The Whys and Hows of College and University User Satisficing of Information Needs” (Dervin, Connaway and Prabha 2003) and “Seeking Synchronicity: Evaluating Virtual Reference Services from User, Non-User, and Librarian Perspectives” (Radford and Connaway 2005), studied the habits and needs of information seekers to identify patterns and characteristics for discovering and accessing information. Both studies include multi-method research designs to identify how and why individuals seek and use information. This discussion focuses on the information-seeking habits of Millennials and Baby Boomers, reporting the portions of the project findings relating to focus group and semi-structured interviews and Virtual Reference Services (VRS) transcript analyses phases for each project.

Study Population

Baby Boomers

After World War II ended in 1945, and there was an exponential increase in births in the United States stretching between 1946 and 1964 (Krohn 2004; Dempsey 2007). Those born within this period are referred to as the “Baby Boom Generation” (Gillon 2004). Boomers are the largest growing generational demographic, representing over 25% of the

US population (Kahlert 2000). As life expectancies increase, this statistic is likely to increase. Boomers are often divided into two cohorts. According to Campbell (2005), older Boomers are born between 1946 and 1956 and younger Boomers were born between 1956 and 1964. (For an in-depth discussion of the two cohorts, see Schuman and Scott 1989.)

During the 1950s, the US experienced prosperity and great economic growth, while the 1960s reflected times of social upheaval and cultural change (Gillon 2004). Although difficult to generalize, Boomers growing up in the 1950s and 1960s display certain characteristics which may be attributed to the social, cultural, and political environments experienced during their development (Campbell 2005). Overall, Boomers are better educated, more technology literate and economically more advantaged than any generation before them (Williamson, et al. 2006). Described as optimists and believers in the American Dream, they are self-absorbed, strive to be the center of attention, and tend towards a desire for self-gratification. Work is very important to them and they have a team orientation, while longing for personal and spiritual growth. Boomers are concerned with their health and believe “aging is optional” (Grossman 2000). Key characteristics are the desire to stay young, keeping their minds busy and maintaining mental agility, to remain active in the workforce longer, and to be in touch with technology (Dempsey 2007).

Boomers are heralding a shift in how previous generations approached work and technology. Older individuals are populating the workforce at an increasing rate, exposing them to technology which becomes integrated into daily life. Boomers have different requirements for information, as they read more and use public libraries more

than previous generations (Joseph 2006). “The majority (56% of those currently ages 50-64 years, the early Boomers) have Internet access, have used computers and the Internet in their work lives, and report that they would miss the Internet if they could no longer use it” (Willis 2006, p. 44). During a six year period (2000-2006) there was an increase from 13% to 43% of older individuals having Internet access and actively using it (Willis 2006). For Boomers, information-seeking and e-mail are the most prominent uses for computers and the Internet (Willis 2006).

Increasingly, Boomers engage with technology in libraries. They have high expectations for public libraries to provide the latest and best resources (Kahlert 2000). Their interests and habits bring new demands for information and technology: “...as the World Wide Web increasingly became a central resource for information, Boomer doggedness would shape the culture of that medium as well, turning it into an investigative tool for any citizen or consumer seeking the truth about the policies and products they were asked to consume.” (Steinhorn 2006, p. 202). Although Boomers and Millennials demonstrate different behaviors and characteristics, they do share some similarities.

The “Millennial” Generation

Born between 1979 and 2000, the “Millennial” generation (Howe and Strauss 2000) has also been called: “Net Generation,” “Generation Y,” or “Echo Boomers.” The 76 million Millennials may constitute the most-studied generation in history. The defining characteristic of the Millennial mindset is that they are “digital natives” (Prensky 2001a), growing up immersed in technologies which for them are invisible and taken for granted, “like the air” (Tapscott 1998, p. 39). Far surpassing the general public, 20% of

Millennials began using computers between the ages of 5 and 8, 72% check e-mail at least once a day, and 78% browse the Web for fun (Jones and Madden 2002).

Technology surrounds them and dominates their socialization: “over 10,000 hours playing video games, over 200,000 e-mails and instant messages sent and received; over 10,000 hours talking on digital cell phones; over 200,000 hours watching TV ... – all before the kids leave college” (Prensky 2001b, p.1; see also Hempel 2005; Junco 2005; Gibbons 2007). Some specific generational features pertinent to libraries and information-seeking include the following:

Immediacy. According to Sweeney (2006), “Millennials, by their own admission, have no tolerance for delays” (p. 3). They respond quickly to communications from others, expect the same in return (Oblinger and Oblinger 2005), and seek information sources that are convenient (Van Scoyoc and Cason 2006).

Collaboration. Highly team-oriented, Millennials’ relational patterns tend to be non-hierarchical and they can operate as an organism, “a single networked whole” (Rushkoff 1996). This especially applies to their online communication styles, which have evolved around instant messaging (IM) and chat rooms (Walter and Mediavilla 2005).

Experiential learning. Preferring to learn actively and by discovery (Oblinger and Oblinger 2005), their lifelong navigation of the Internet may give Millennials greater critical thinking skills and judgment (Tapscott 1998).

Visual orientation. Millennials work and learn well in a visual environment and process visual information efficiently (Rushkoff 1996). This can lead to difficulties in interactions with current library systems (Lippincott 2005).

Multitasking. Often charged with having shorter attention spans than previous generations, Millennials also seem to have developed a broader “attention *range*” to diverse inputs (Rushkoff 1996, p. 50-51). Their minds leap about in the manner of hypertext (Prensky 2001).

Results orientation. Millennials are practical, caring deeply about concrete results, grades, and achievements (Sweeney 2006).

Confidence. Millennials have positive outlooks, and feel high levels of “self-efficacy” in the information search process (Fields 2006; Fallows 2005). 70% of incoming college students rate themselves highly in “learning effectively,” although approximately one third will not continue to the second year (Indiana University 2006; Ishler 2005, p. 29). While older generations go to the Web for specific tasks, Millennials are comfortable both on and offline (Lippincott, 2005 p. 13.3).

Researchers have begun delineating the information behaviors specific to Millennial teenagers. Rushkoff (1996) described the non-linearity of the thinking patterns of those he terms “children of chaos,” coining the term “screenagers” to describe those who grew up surrounded by television and computers (p. 3). Julien (1999; 2004) studied the information-seeking behaviors of teenagers, concluding that many did not know where to look for information amid a plethora of sources, and desired emotional support during the process. Agosto and Hughes-Hassell (2006a; 2006b) found that the everyday life information needs of urban teenagers tended to mirror those of more advantaged, non-minority groups. One aspect of teens’ information behaviors that seems certain is their preferences *against* traditional libraries (Agosto and Hughes-Hassell 2005; Edwards

and Poston-Anderson 1996) and *for* digital libraries, which are increasingly important to them (Valenza, 2007).

Theoretical Frameworks

Sociological and communication theories are the premise for the phases of the two studies discussed in this paper.

Study 1: Sense-making the Information Confluence

The analysis of academics' information-seeking behaviors is based on sociological theory. Herbert Simon (1955, 1957), whose major area of research was organizational behavior, specifically decision-making and problem solving, believed that people do not have the capacity or cognitive ability to make optimal decisions. Instead, they make the best decisions possible within cognitive boundaries, referred to as *bounded rationality* (Simon 1957). Simon further suggests that individuals assess the amount of effort they will expend on gathering information to solve a problem; settling for "good enough," *satisficing*, instead of pursuing the optimal solution. Simon's term *satisficing*, a combination of the words satisfy and suffice, suggests that individuals settle for what can be accomplished within pre-determined or imposed parameters. Satisficing is a component of rational choice theory, which also provides a framework for describing information-seeking behaviors.

Rational choice theory describes a purposive action whereby individuals judge the costs and benefits of achieving a desired goal (Allingham 1999; Cook and Levi 1990; Coleman and Fararo 1992). Humans, as rational actors, are capable of recognizing and

desiring a certain outcome, and of taking action to achieve it. This suggests that information seekers rationally evaluate the benefits of information's usefulness and credibility, versus the costs in time and effort to find and access it.

Role theory offers a person-in-context framework within the information-seeking situation which situates behaviors in the context of a social system (Mead 1934; Marks 1996). Abercrombie, et al. (1994, p. 360) state, "When people occupy social positions their behavior is determined mainly by what is expected of that position rather than by their own individual characteristics." Thus the roles of information-seekers in the academic environment influence the expectations for performance and outcomes. For example, faculty would be expected to look for information differently than undergraduate students. Faculty members are considered researchers and experts in their disciplines, while undergraduate students are novices and protégés, roles that place them differently within the organizational structure of the academy (Blumer, 2004; Biddle, 1979; Mead, 1934; Marks, 1996; Marks, 1977).

Study 2: Seeking Synchronicity

The Seeking Synchronicity study drew from two heuristically rich theoretical frameworks, those of Goffman (1967) and Watzlawick, Beavin, and Jackson (1967). Human conversation can be analyzed in various ways, and according to Goffman (1967), interactions are comprised of civility rituals and conventions. The analysis of interpersonal communication in VRS transcripts parallels analysis of face-to-face (FtF) relational dynamics. As each VRS session generates an artifact, a complete transcript of the conversation, it is possible to capture relational aspects along with the query clarification and information exchange. Goffman draws attention to the idea that in FtF,

as well as in computer-mediated communication (CMC), each person's goal and obligation is to uphold the other's "face" as well as their own. He defines "face" as the "positive social value a person effectively claims for himself by the line others assume he has taken during a particular contact" (1967, p.5) and used the term "face-work" to refer to the strategies people use in conversation to protect one another's positive social value.

In VRS transcripts, the cyber "face" of the librarian and user are observable in their adherence to or neglect of interpersonal rituals, including greetings, closings, and politeness conventions of deference, such as using "please" or "thanks" as appropriate (Goffman 1956, 1972; see also Chelton 1997). Chat text can be closely analyzed to gain insight into the dynamics of this goal-directed interaction as participants engage in the creation and maintenance of face during the encounter. The relational analysis of the chat transcripts draws on Goffman's framework to identify chat behaviors which can be classified as positive or negative face-work and builds on previous research (Radford 2006a).

Watzlawick, Beavin, and Jackson's (1967) relational theory informs the development of the themes and coding categories for the Seeking Synchronicity study. Their seminal work *Pragmatics of Human Communication* (1967) posits the dual nature of human communication in which all messages have two dimensions, content (information) and relational (affect, interpersonal) aspects. Relational theory formed the basis of numerous studies, including exploring communication in virtual environments (e.g., Walther 1996). This theory has been applied by Radford (1993, 1999) to FtF reference encounters and to developing a classification scheme for interpersonal aspects of VRS interactions (Radford 2006a, 2006b). The research questions addressed in this

study derive from the gaps uncovered in the literature and application of the Watzlawick et al. (1967) and Goffman (1967) perspectives. These research questions are:

- What relational dimensions are present in chat reference transcripts?
- What is the relationship between content and relational dimensions in determining the quality of chat reference encounters?
- What are the critical factors that influence the decision to select and use virtual reference services (VRS)? Why do non-users opt to use other means?
- Are there differences in the relational dimensions/patterns of teen-aged VRS users, other users and librarians? If so, what are they?
- How do VRS users and librarians compensate for lack of nonverbal cues in chat reference?

Results and Discussion of the Two Studies

Study 1: Sense-Making the Information Confluence

A three-year project (Dervin, Connaway, and Prabha 2003; Prabha et al. 2007; Connaway 2007) investigated the information-seeking behaviors and satisficing (Simon 1955, 1979) of faculty and graduate and undergraduate students from a sample of forty-four colleges and universities within a Midwestern region in the U.S. Seventy-eight randomly selected participants completed sense-making focus group interviews and a subset (N=15) of the focus group interview participants were selected for individual semi-structured interviews. The research's premise was to illuminate the information-seeking "hows" (activities and practices moment-to-moment) and "whys" (choices and changing criteria for evaluation), with emphasis on the richest possible context per episode. The findings may be parsed among the generations, by comparing results from undergraduate students (principally Millennials), graduate students (majority of older Millennials), and faculty (largely Boomers).

Focus Group and Semi-Structured Interview Results and Discussion

Undergraduate students (Millennials) tend to seek academic and personal information based on speed and convenience. When describing their information behaviors, they overwhelmingly cited Google as a first choice, with human sources (parents and friends) second. Many of the undergraduate students mentioned asking parents for information in academic situations, specifically their fathers. This correlates with the “helicopter parents” phenomenon identified in the behaviors of undergraduate students at the University of Rochester (Carlson 2007; Gibbons 2007) and discussion of the interactions of Baby Boomer parents with college-age children (Lum 2006; Lipka 2005). Library sources, if mentioned, tended to be via electronic mediation and students may have been unaware they were library sources. Finding library OPACs difficult to navigate, some use Amazon.com as a discovery tool, and *then* go the library site. They do consider the authority of electronic sources, but seem to make many choices based on convenience (cost/benefit), concluding a search when minimum assignment requirements are met.

Graduate students, who overlap between the generations but are principally older Millennials, reveal somewhat different information behaviors for academic situations. Google remains high on their source list for quick searches, followed by human sources, but human sources included academic superiors and friends. They, too, value the Internet for convenience and currency, and access library sources electronically. Their research techniques, however, tend to be more sophisticated and exhaustive, including citation searching, interlibrary loans, and library databases. They may stop searching for information when reaching assignment limits, but also consider the impossibility of truly exhausting topics. Some of the graduate students mentioned parents as sources for

personal information-seeking situations. One of the graduate students stated, "... I just go ask my dad, and he'll tell me how to put in a fence, you know? So why sort through all this material when he'll just tell me."

Generally older and more experienced, faculty members reveal yet another stratification in information-seeking patterns. Faculty admitted that they use Google for quick searches, but even there it came in second, behind personal libraries. Their human sources tended to be colleagues or other experts. They cited ease of locating information on the Internet (including access to library sources like databases and electronic journals), but praised the physical library collection, and specified the criteria of trustworthiness and authority that they apply to non-library sources. Not only were their information-seeking processes more sophisticated, they tend to continue searching until completely saturated with information on a topic.

Study 2: Seeking Synchronicity

Seeking Synchronicity has studied the needs, behaviors, and impressions of librarians, users, and non-users of VRS. Results from the first two phases (focus group interviews and transcript analysis) of a four phase project are presented here. (See Radford and Connaway 2005 for a detailed description of the project phases.) Phase one involves focus group interviews with users, non-users and librarians to explore their experiences with VRS, as well as to discover non-users' reasons for not using VRS and factors that might prompt future use. Phase two examines VRS transcripts to reveal multiple aspects of the interactions, including the nature of interpersonal communication.

Focus Group Interview Results

Focus group interviews with eighteen Screenager and five graduate student non-users reveal a number of information-seeking patterns and concerns about VRS. Screenager non-users prefer to find information independently, asserting: “I wouldn’t really trust my librarian. I trust Google” (see Radford and Connaway 2007). Participants said some librarians help by only pointing toward resources, evoking negative librarian stereotypes (see Radford and Radford 1997). However, Screenagers value the interpersonal communication of FtF interactions with librarians over “cold” VRS environments. Disinclined to use VRS, they feared encounters with Internet stalkers or “psycho-killers” masquerading as librarians. Also, they are skeptical of the speed and convenience of the service, the accuracy of information obtained in VRS, and the librarian’s ability to answer difficult questions.

Graduate student non-users prefer FtF interactions, preferring a personal relationship with librarians. They favor Internet tools for information seeking, including Google and library Web pages. They are reluctant to use VRS because their questions are complex, question the reliability of VRS information, and worry about being logged into chat rooms. They fear appearing stupid or being negatively judged by the librarian (see also Swope and Katzer 1972). Additionally, the graduate students worry that professors may see their transcripts and make negative judgments. One admitted: “With Internet or computer-mediated things, I always worry that they are being saved ... if the Department would get a report about what questions [I asked].”

All non-user groups would try VRS if it were recommended by a trusted librarian, colleague or friend or if there were expanded marketing/promotion. Screenager non-users

said that the ability to choose a trusted librarian could influence future VRS usage. Graduate student non-users would use VRS if they became confident in its use, efficiency, and speed. One wondered: “Yeah, the utility of it. How useful is it? If it like they went there and it took twenty minutes and I didn’t even get my question answered. I’d be like, ‘I’m not going to do that.’”

Focus group interviews with nine VRS users (a mixture of Millennials and older generations including Boomers) also revealed information-seeking patterns. They value convenience and appreciate saving a trip to the library by using VRS. The collaborative nature of VRS is appreciated as noted: “It’s helpful to have another person looking for you so you get twice as much information – which is quicker.” Users like access to a knowledgeable professional who can guide their information search and enjoy chat’s pleasant interpersonal environment and anonymity. VRS transcripts increased the utility of the service for the users who, reflecting Millennial preferences, also applaud immediacy and opportunities to multi-task. There is no consensus on the utility of VRS, however, as some users discuss their preference, like Screenager non-users, for independent information-seeking.

Users also report concerns about VRS. It can seem like just another search engine, with librarians entering search terms exactly as expressed by users. Others find that question responses seem generic, prompting them to wonder if the librarian is paying attention, or is a robot. Users express distrust in information received through VRS, and value FtF interactions for reliable information. Users want accessibility improvements such as larger and movable chat windows and automatic Web-links, but disliked the prospect of Voice Over Internet Protocol, believing it to be “completely unnecessary.”

Like the Screenager non-users, users are concerned with the abilities and subject expertise of VRS librarians and fear overwhelming them.

Transcript Analysis Results

The study included an in-depth analysis of a sample of 850 transcripts randomly selected from over 500,000+ sessions from the QuestionPoint VRS. For this article, 492 transcripts were analyzed, and 431 were deemed usable after discarding system tests, major technical problems, and sessions without a discernable question. Following the theories of Goffman (1967) and Watzlawick, et. al (1967) discussed above, each usable transcript was coded for relational/interpersonal communication themes (see Radford and Connaway 2007 for complete relational coding scheme; see also Radford 2006a) facilitated through use of QSR NVivo 7 (QSR International 2003-2006) qualitative analysis software. The three coders had an intercoder reliability rating of 93% after differences were discussed and resolved.

Transcripts were also coded into one of five educational/age levels: Primary School Student (K-5), Secondary School Student (6-12), College Student, Adult (not in college), and Unknown. For this article, the Millennial group was formed by combining Secondary School Student with College Student groups. Coding was based on the self-identified or inferred education/age level of the VRS user. In self-identified cases, the user mentioned their year/grade or age, or the transcripts had grade level tags in the XML data. Other candidates for self-identification included users who referred to children, discussed college assignments, or indicated education level during login. When such information was unavailable, cues such as context, nature of the query, or use of slang and abbreviations in transcripts were used to infer education/age level. Evidence included

user's mentioning adult responsibilities, such as real estate ownership, questions about school or college level assignments, or the use of slang, spelling, and abbreviation patterns associated with younger users. Of the 431 users, 189 (44%) were coded as Millennials, and 48 (11%) as Adults with the remainder being Primary School or Unknown. The two coders had an intercoder reliability rating of 99% after differences were discussed and resolved.

Relational Facilitators

Relational Facilitators are the interpersonal aspects of the chat conversation that have a positive impact on the librarian-client interaction and that enhance communication (Radford 2006a, Radford 1993, 1999). As shown in Table 1, below, Millennials have lower percentages than Adults for using polite expressions and for expressing gratitude. Chat conventions for Millennials are informal and may result in fewer politeness rituals. Millennials tend to avoid self disclosure to adults and are less likely to give personal information or opinions than Adults who may be more self-confident (Sweeney 2006).

Millennials appear to seek reassurance less often than Adults (OCLC 2006; Sweeney 2006) and the findings reflect this confidence (see Table 1). This reduced need for reassurance also demonstrates the Millennials' comfort with chat as a medium for communication, just as the Adults' greater need for reassurance may indicate uneasiness with chat. The lower percentages of closing rituals for Millennials are reflected in higher percentages of Abrupt Endings (see Table 3) and below discussion.

Table 1 Lower Averages Relational Facilitators, Millennial vs. Adult

Facilitator Category	Number Per Transcript Millennials (n=189)	Number Per Transcript Adults (n=48)
Thanks	113 (60%)	34 (71%)
Self-Disclosure	86 (46%)	30 (63%)
Facilitator Category	Number Per Occurrence Millennials (n=189)	Number Per Occurrence Adults (n=48)
Seeking Reassurance	108 (57%)	38 (79%)
Closing Ritual	83 (44%)	25 (52%)
Polite Expressions	55 (29%)	17 (35%)

(n=237 transcripts)

As seen in Table 2, below, Millennials are more likely than Adults to agree to suggestions made by librarians and to admit their lack of knowledge. This finding is surprising in light of previous research which found a reticence on the part of young Millennials to accept advice or disclose lack of knowledge (Radford and Connaway 2007). Here the Millennial category includes both younger and older segments. College students, whose typical reference questions focus on how to use databases or find articles, may be more willing to admit they lack knowledge or to go along with librarians' suggestions.

Millennials are more likely to engage in greeting rituals with VRS librarians, demonstrating their tendency to make connections through online communication and their use of chat for socializing. Adults may see the conversation as more businesslike than social and may not be as prone to engage in politeness rituals at the start of VRS interactions. Similarly, Millennials use more interjections, slang, and lower case which

are transferred from social chat or reflect text messaging conventions (Radford and Connaway 2007).

Table 2 Higher Averages Relational Facilitators, Millennial vs. Adult

Facilitator Category	Number per Occurrence Millennials (n=189)	Number per Occurrence Adults (n=48)
Agree to Suggestion	132 (70%)	22 (46%)
Lower Case	36 (19%)	5 (10%)
Greeting Ritual	36 (19%)	5 (10%)
Admit Lack Knowledge	36 (19%)	3 (6%)
Interjections	36 (19%)	3 (6%)
Slang	14 (7%)	0

(n=237 transcripts)

Relational Barriers

Relational Barriers are interpersonal aspects of the chat conversation that have a negative impact on the librarian-client interaction and that impede communication (Radford, 2006a; see also Radford, 1993, 1999). As seen in Table 3, Millennials have higher averages than Adults for abrupt endings, impatience, and for being rude/insulting. The Millennials' propensity to forgo closing rituals and sign off abruptly reflects their comfort with the evanescence of the relationship formed with VRS librarians and their impatience. Additionally, abrupt signoff could be an indication of multi-tasking activities (Radford and Connaway 2007; Sweeney 2006). The higher percentages of impatience and rude/insulting categories confirm research findings for Millennial characteristics,

including adolescent irreverence in anonymous environments (Radford and Connaway 2007, Radford 2006b, Sweeney 2006).

Table 3 Higher Averages Relational Barriers, Millennial vs. Adult

Barrier Category	Number per Transcript Millennials (n=189)	Number per Transcript Adults (n=48)
Abrupt endings	72 (38%)	15 (31%)
Impatience	9 (5%)	1 (2%)
Rude or Insulting	3 (2%)	0

(n=237 transcripts)

As shown above, transcripts have much to reveal regarding interpersonal dimensions of VRS and differences between the generations in communication style and preferences.

Findings Common to Both Studies

Both the Seeking Synchronicity and Sense-Making studies included graduate students as participants in the research. There are common behaviors demonstrated by these older Millennials and the Screenagers. The Screenagers perceived that asking a follow-up question was “pestering” the librarian, a finding echoed in the older Millennials. In focus group interviews with doctoral students, these participants expressed fear that they would be perceived as “bothering” the librarian if they were to approach to ask a question. While Screenagers cited “embarrassment” as a deterrent from seeking help from a librarian, the graduate students were concerned of “looking stupid” by asking the librarian for assistance.

Both studies indicate that Screenagers and older Millennials consistently identify Google as one of the first sources they use for quick searches and they value the Internet for its convenience and currency. Human sources are also consistently named, but the older Millennials mentioned friends and professors while the Screenagers mentioned parents more frequently. The older Millennials tend to use electronic mediation to access library sources and tend to stop searching for information when they meet the requirements of an assignment. As one graduate student stated, "I obviously turn to electronics first, then library second...because it's convenient. But if I want more in-depth info, then I go to the library."

Conclusion and Implications

Sense-making the Information Confluence

When asked to describe the ideal information system, Millennials suggested that the library catalog be more like an Internet search engine or Amazon.com. They also wanted the library to provide space for them to socialize and work in groups and suggested 24/7 access to a librarian via telephone, such as a 'lifeline' (referring to the television program, *Who Wants to be a Millionaire?*) Older Millennials were most interested in expediency, desiring roaming librarians, drive-up book drops, library delivery of print materials to their campus addresses, and a coffee house like environment. The faculty (the majority were Baby Boomers) wanted a less intimidating library with better signage, and a book store like environment

Seeking Synchronicity Study

Preliminary results of the Seeking Synchronicity study make it readily apparent that Screenagers have different communication and information behaviors in the chat reference environment than those of previous generations (see also Agosto and Hughes-Hassell 2005, 2006) and librarians. Comparison of patterns of interpersonal communication styles reveals differences in relational dimensions for adolescents who are experiencing a period of rapid emotional as well as physical development (see also Kuhlthau 2004). Valenza (2006) notes that a blend of FtF and electronic services may be best for young people. Walter and Mediavilla (2005) recommend involving teens in the development and evaluation of VRS to ensure that their preferences and needs are considered. To effectively meet the needs of Millennial youth, librarians must develop a range of services that are customizable and flexible, incorporate regular feedback, provide trusted guidance, include the opportunity for social and interactive learning, be visual and kinesthetic, and feature communication that is real, raw, relevant and relational (Partridge and Hallam 2006). This project has endeavored to gain a greater understanding of Millennial needs and behaviors to ensure that virtual and traditional library services are responsive to their preferences. The stakes are high for maintaining relevance and sustainability of reference services to today's young users in recognition of their rapidly changing, My Space, Google, and Wikipedia dependent information environment.

Implications for Libraries

Findings from the phases of these two studies imply that libraries need to include traditional print and audiovisual sources, as well as electronic. The library Web site should be updated often to include current information, personalized online services, and

interactive capabilities (Storey 2005). Librarians need to create different areas for different user needs. Millennials want social areas that also provide “multiple streams of information” (Storey 2005, 10). Boomers want more quiet spaces that resemble the book store environment with access to refreshments, comfortable seating, and good lighting. Above all, both Millennials and Boomers demand attention and want librarians to be available to them as guides and assistants, but not as gatekeepers. As more information about the characteristics and behaviors of the Boomer and Millennial generations becomes available, librarians can develop services and systems that meet the needs of both. Contemporary users are becoming increasingly disenchanted with traditional library services and systems. Business as usual will please neither the large Millennial or Boomer populations who are inquisitive, savvy, demanding, and increasingly independent information seekers.

Future Research

Sense-making the Information Confluence

Focus group and semi-structured interviews were preceded by large scale online survey and telephone interviews. The analysis of the results of the surveys and telephone interviews can be compared to similar studies of academics’ information-seeking behaviors. These comparison and analyses can be used to develop information-seeking models that can be used for future study of information-seeking behaviors as well as for the development of library systems and services.

Seeking Synchronicity Study

The chat transcript analysis findings reported for the Seeking Synchronicity project are preliminary results from the initial year of a two year study. Transcript analysis has

continued with a goal of analyzing a total of 800+ chat sessions. Also, nearing completion are two further data collection phases involving 600 Web-based surveys (200 with each participant group of users, non-users, and librarians) and 300 phone interviews (100 with each group). The Web-based surveys and phone interviews are in progress, building on preliminary results and probing more deeply into user/librarian preferences for modes of communication and on issues of satisfaction. Following the conclusion of data analysis, results will be compared to those from other related studies and a theoretical model will be constructed encompassing content and relational dimensions in the VRS environment.

References:

- Abercrombie, N., S. Hill, and B. Turner. 1994. *The Penguin dictionary of sociology*. 3rd ed. New York: Penguin.
- Agosto, DE., and S. Hughes-Hassell. 2005. People, places, and questions: An investigation of the everyday life information-seeking behaviors of urban young adults. *Library and Information Science Research* 27(2): 141-163.
- _____. 2006a. Toward a model of the everyday life information needs of urban teenagers, part 1: Theoretical model. *JASIS&T* 57(10): 1394-1403.
- _____. 2006b. Toward a model of the everyday life information needs of urban teenagers, part 2: Empirical model. *JASIS&T* 57(11): 1418-1426.
- Allingham, M. 1999. *Rational choice*. New York: St Martin's Press.
- Biddle, BJ. 1979. *Role theory: Expectations, identities and behaviors*. New York: Academic Press.
- Blumer, H., and TJ. Morrione. 2004. *George Herbert Mead and human conduct*. Walnut Creek: AltaMira Press.
- Campbell, K. 2005. The many faces of the baby boomers. *The Christian Science Monitor*, January 26. URL: <http://www.csmonitor.com/2005/0126/p15s02-lihc.html> [viewed Sept. 14, 2007].
- Carlson, S. 2007. An anthropologist in the library: The University of Rochester takes a look at students in the stacks. *The Chronicle of Higher Education*, 53(50). URL: <http://chronicle.com/weekly/v53/i5050a02601.htm> [viewed Sept. 14, 2007].
- Chelton, MK. 1997. The "overdue kid:" A face-to-face library service encounter as ritual interaction. *Library and Information Science Research* 19(4): 387-399.
- Coleman, JS., and TJ. Fararo, eds. 1992. *Rational choice theory: Advocacy and critique*. Newbury Park: Sage Publications.
- Connaway, LS. 2007. Mountains, valleys, and pathways: Serials users' needs and steps to meet them. Part I: Preliminary analysis of focus group and semi-structured interviews at colleges and universities. *Serials Librarian* 52(1/2): 223-236.

- Cook, KS. and M. Levi, eds. 1990. *The limits of rationality*. Chicago: University of Chicago Press.
- Dempsey, B. 2007. What boomers want. *Library Journal* 132(12): 36-39.
- Dervin, B., LS. Connaway, and C. Prabha. 2003. Sense-making the information confluence: The whys and hows of college and university user satisficing of information needs. URL: <http://imlsosuocproject.jcomm.ohio-state.edu> [viewed September 7, 2007].
- Edwards, S., and B. Poston-Anderson. 1996. Information, future time perspectives, and young adolescent girls: Concerns about education and jobs. *Library & Information Science Research* 18(3): 207-233.
- Fallows, D. 2005. Search engine users: Internet searchers are confident, satisfied, and trusting-but they are also unaware and naïve. Pew Internet and American Life Project. URL: http://www.pewinternet.org/pdfs/PIP_Searchengine_users.pdf [viewed Sept. 12, 2007].
- Fields, AM. 2006. Self-efficacy and the first-year university student's authority of knowledge: An exploratory study. *Journal of Academic Librarianship* 31: 539-545.
- Gibbons, S. 2007. *The academic library and the Net Gen student: Making the connections*. Chicago: American Library Association.
- Gillon, S. 2004. *Boomer nation: The largest and richest generation ever and how it changed America*. New York: Free Press.
- Goffman, E. 1956. The nature of deference and demeanor. *American Anthropologist* 58(3): 475-499.
- _____. 1967. *The interaction ritual, essays on face-to-face behavior*. Garden City: Doubleday.
- _____. 1972. *Relations in public: Microstudies of the public order*. New York: Basic Books.
- Grossman, T. 2000. *The Baby Boomers' guide to living forever*. Golden, Colo.: Hubristic Press.
- Harley, D., J. Henke, S. Lawrence, I. Miller, I. Perciali, D. Nasatir, C. Kaskiris, and C. Bautista. 2006. Use and users of digital resources: A focus on undergraduate education in the humanities and social sciences. URL: http://digitalresourcestudy.berkeley.edu/report/digitalresourcestudy_final_report.pdf [viewed July 29, 2007].

- Hempel, J. 2005, December 12. The Myspace generation: They live online. They buy online. They play online. Their power is growing. *Business Week*: 86.
- HotTopics: 2006 user update: How information providers can keep pace with user demands for time-saving solutions. *Outsell Now* 2 (May 26). URL: <http://now.outsellinc.com/now/> [viewed July 29, 2007].
- Howe, N., and W. Strauss. 2000. *Millennials rising: The next great generation*. New York: Random House.
- Indiana University, Center for Postsecondary Research. 2006. *NSSE: National survey of student engagement*. Bloomington, IN: Indiana University Press.
- Ishler, JLC. 2005. Today's first-year students. In ML. Upcraft, JN. Gardner, BO. Barefoot, and Associates, eds., *Challenging and supporting the first-year student A handbook for improving the first year of college*. San Francisco: Jossey-Bass: 15-26.
- Jones, S., and M. Madden. 2002. The internet goes to college: How students are living in the future with today's technology. Pew Internet and American Life Project. URL: http://www.pewinternet.org/pdfs/PIP_College_Report.pdf [viewed Sept. 4, 2007].
- Joseph, M. 2006. Active, engaged, valued: older people and public libraries in New South Wales. *Aplis* 19(3): 113-117.
- Julien, HE. 1999. Barriers to adolescents' information seeking for career decision making. *JASIS&T* 50(1): 38-48.
- _____. 2004. Adolescent decision-making for careers: An exploration of information behavior. In MK. Chelton and C. Cool, eds., *Youth information-seeking behavior: Theories, models, and issues*. Lanham, MD: Scarecrow Press: 321-352.
- Junco, R. 2005. Technology and today's first-year students. In ML. Upcraft, JN. Gardner, BO. Barefoot, and Associates, eds., *Challenging and supporting the first-year student: A handbook for improving the first year of college*. San Francisco: Jossey-Bass: 221-239.
- Kahlert, M. 2000. The impact of the baby boomers on public libraries: myth and reality. *Australian Public Libraries and Information Services* 13(1): 25-40.
- Krohn, FB. 2004. A generational approach to using emoticons as nonverbal communication. *Journal of Technical Writing and Communication* 34(4): 321-328.
- Kuhlthau, CC. 2004. *Seeking meaning: A process approach to library and information services*, 2nd Ed. Westport, CT: Libraries Unlimited.

- Lipka, S. 2005. State Legislators as Co-Pilots: Some "Helicopter Parents" Play Politics to Protect Their Children's Interests on Campuses. *Chronicle of Higher Education* 52(17): A22-A23.
- Lippincott, JK. 2005. Net generation students and libraries. In DC. Oblinger and JL. Oblinger, eds., *Educating the Net Generation*. Boulder, CO: Educause: 13.1-13.15. URL: http://www.educause.edu/content.asp?PAGE_ID=5989andbhcp=1 [viewed Sept. 4, 2007].
- Lum, L. 2006. Handling "Helicopter Parents." *Diverse: Issues in Higher Education* 23(20): 40-43.
- Marks, SR. 1977. Multiple roles and role strain: Some notes on human energy, time, and commitment. *American Sociological Review* 42: 921-936.
- _____ and SM. MacDermid. 1996. Multiple roles and the self: A theory of role balance. *Journal of Marriage and the Family* 58(2): 417-432.
- Mead, GH. 1934. *Mind, self & society: From the standpoint of a social behaviorist*. Chicago: University of Chicago Press.
- Oblinger, DG. and JL. Oblinger, eds. 2005. *Educating the Net Generation* (Educause). URL: http://www.educause.edu/content.asp?PAGE_ID=5989&bhcp=1 [viewed January 21, 2007].
- OCLC Online Computer Library Center, Inc. 2006. *College students' perceptions of libraries and information resources: A report to the OCLC membership*. Dublin, Ohio: OCLC. URL: <http://www.oclc.org/reports/pdfs/studentperceptions.pdf> [viewed September 12, 2007].
- Partridge, H., and G. Hallam. 2006. Educating the Millennial generation for evidence based information practice. *Library Hi Tech* 24(3): 400-419.
- Prabha, C., LS. Connaway, L. Olszewski, and LR. Jenkins. 2007. What is enough? Satisficing information needs. *Journal of Documentation* 63(1): 74-89.
- Prensky, M. 2001a. Digital natives, digital immigrants. *On the Horizon* 9(5). URL: <http://www.marcprensky.com/writing> [viewed Sept. 4, 2007].
- _____. 2001b. Do they really think differently? *On the Horizon* 9(6). URL: <http://www.marcprensky.com/writing> [viewed Sept. 4, 2007].
- QSR NVivo 7. [Computer Software]. 2003-2006. Doncaster, Australia: QSR International Pty Ltd. URL: <http://www.qsrinternational.com/> [viewed Sept. 14, 2007].
- Pre-print source: <http://www.oclc.org/research/publications/archive/2008/connaway-libri.pdf>
Published in: *Libri*, 58,2 (June 2008): 123-135.

- Radford, ML. 1993. Relational aspects of reference interactions: A qualitative investigation of the perceptions of users and librarians in the academic library. Ph.D. dissertation, Rutgers University.
- _____. 1999. *The reference encounter: Interpersonal communication in the academic library*. Chicago: American Library Association.
- _____. 2006a. Encountering virtual users: A qualitative investigation of interpersonal communication in chat reference. *JASIS&T* 57(8): 1046-1059.
- _____. 2006b. Investigating interpersonal communication in chat reference: Dealing with impatient users and rude encounters. In RD. Lankes, E. Abels, M. White and SN. Haque., eds., *The Virtual Reference Desk: Creating a Reference Future*. NY: Neal-Schuman Publishers: 23-46.
- _____, and LS. Connaway. 2005. Seeking synchronicity: Evaluating virtual reference services from user, non-user, and librarian perspectives. Proposal for a research project, submitted February 1, 2005, to the National Leadership Grants for Libraries program of the Institute of Museum and Library Services (IMLS). URL: <http://www.oclc.org/research/projects/synchronicity/proposal.pdf> [viewed January 21, 2007].
- _____, and LS. Connaway. 2007. Screenagers and live chat reference: Living up to the promise. *Scan* 26(1): 31-39.
- _____, and GP. Radford. 1997. Power, knowledge, and fear: Feminism, Foucault and the stereotype of the female librarian. *The Library Quarterly*, 67(3), 250-266.
- Rushkoff, D. 1996. *Playing the future: How kids' culture can teach us to thrive in an age of chaos*. New York: HarperCollins.
- Schuman, H., and J. Scott. 1989. Generations and collective memories. *American Psychological Review* 54: 359-81.
- Simon, HA. 1955. A behavioral model of rational choice. *Quarterly Journal of Economics* 69(1): 99-118.
- _____. 1957. A behavioral model of rational choice. In *Models of man: Social and rational*. New York: John Wiley & Sons.
- _____. 1979. *Models of thought*. New Haven, CT: Yale University Press.
- Steinhorn, L. 2006. *The Greater Generation: In Defense of the Baby Boom Legacy*. New York: Tomas Dunn Books.
- Storey, T. 2005. The Big Bang! *OCLC Newsletter* 267: 1, 7-12.

- Sweeney, R. 2006. Millennial behaviors and demographics. URL: <http://library1.njit.edu/staff-folders/sweeney/Millennials/Article-Millennial-Behaviors.doc> [viewed Sept. 4, 2007].
- Swope, MJ., and J. Katzer. 1972. The Silent Majority: Why don't they ask questions? *Reference Quarterly* 12: 161-166.
- Tapscott, D. 1998. *Growing up digital: The rise of the Net Generation*. New York: McGraw-Hill.
- Valenza, JK. 2006. They might be gurus. *Teacher Librarian* 34(1): 18-26.
- _____. 2007. "It'd be really dumb not to use it": Virtual libraries and high school students' information seeking and use, a focus group investigation. In MK. Chelton and C. Cool, eds., *Youth information-seeking behavior II: Theories, models, and issues*. Lanham, MD: Scarecrow Press: 292-317.
- Van Scoyoc, AM., and C. Cason. 2006. The electronic academic library: Undergraduate research behavior in a library without books. *Portal: Libraries and the Academy* 6, 47-58.
- Walter, VA., and C. Mediavilla. 2005. Teens are from Neptune, librarians are from Pluto: An analysis of online reference transactions. *Library Trends* 54(2): 209-227.
- Walther, JB. 1996. Computer-mediated communication: Impersonal, interpersonal and hyperpersonal interaction. *Communication Research* 23(1): 3-43.
- Watzlawick, P., J. Beavin, and DD. Jackson. 1967. *Pragmatics of human communication*. NY: Norton.
- Williamson, K., M. Bannister, L. Makin, G. Johanson, D. Schauder, and J. Sullivan. 2006. Wanting it now: Baby Boomers and the public library of the future. *Australian Library Journal* 55(1): 54-72.
- Willis, SL. 2006. Technology and learning in current and future generations of elders. *Generations* 2006: 44-48.