Information Seeking Behaviors of Environmental Journalists

Abstract

Journalists and librarians share a common goal of providing information to the public, yet very little is known about how journalists' information seeking behavior (ISB) intersects with libraries. This case study seeks to understand the ISB of environmental journalists by investigating how their information needs intersect with the library and how their ISB changed over the course of their nine-month fellowship at the University of Colorado Boulder. Semi-structured interviews were conducted with seven environmental journalists at the beginning and end of their fellowship, while an open coding approach was used to identify themes. Generally, study participants conducted research by (1) identifying a story idea and conducting a preliminary search, (2) expanding their knowledge on the topic through scientific articles and interviews with experts, (3) conducting field research, and (4) completing research when information is redundant and they are confident with their knowledge. This process, and their growing feelings of confidence as they conducted research, were similar to, but not exactly, Kuhlthau's Information Search Process (ISP) model. Their interactions with the library were mostly limited to accessing books and articles. Overall, there was little change in the participants' ISB, possibly due to limited time to learn new resources, reliance on pre-existing research habits, professional competence, and lack of awareness of library services (e.g., librarians, workshops, and public academic library access). An understanding of journalists' ISB can help librarians conduct instruction and outreach efforts that addresses journalists' information needs.

Keywords: information seeking behavior, information search process, journalists, news gathering, news routines, science journalism

Introduction

Journalism and librarianship, as professions, share the overarching goal of connecting people with accurate information. Both value the ability to find, access, evaluate, and create information (otherwise known as information or media literacy), and to do so with intellectual freedom and without censorship. They value universal and equitable access to factual information, and depend on information communication technologies for information access, production, and dissemination. Despite these commonalities, they each work to inform society in their own distinct ways: libraries strive to provide information to people, while journalists conduct and synthesize research to create information. Libraries teach information literacy skills for evaluating mis/disinformation, while journalists fact-check information and publish stories based on their research.

As only 59% of people who get their news over social media question the accuracy of the news (Shearer and Mitchell, 2021: 8) and nearly half (47%) of adults reported in a survey that they encounter “a lot”, or “some”, “made-up news” about the novel coronavirus (Mitchell and Oliphant, 2020), journalists face growing pressure to produce accurate information. Additionally, since the start of the COVID-19 pandemic, the number of freelance journalists has been increasing as newsrooms cut staff (McCluskey, 2020), leaving freelancers without access to information resources. It is logical to assume that journalists need reliable information for their reporting. Public libraries and public academic libraries can provide access to information that sit behind paywalls and to information professionals who can help journalists discover and access information.

Relationships between journalists and librarians have been fostered in the past through various collaborations. *The Dallas Morning News* and the Dallas Public Library partnered

together to provide high school students opportunities to learn how to use the public library's resources to tell stories (Farmer, 2016). Kansas City Public Library and *The Kansas City Star* investigated locals' questions about their city (Carlson, 2019). Other collaborations have involved journalists training public librarians on news literacy and creating opportunities for the local community to create news (Sepessy, 2020). However, in spite of their shared values and collaborations, there is little recent research from the United States on journalists' information needs and library use. This study calls for a fresh analysis of journalists' information seeking behavior (ISB) and where the library fits into their processes. Librarians stand to benefit from a renewed understanding of how, and when, journalists turn to the library. In turn, journalists, as library patrons, will benefit from librarians that know how to meet their needs.

The Ted Scripps Fellowship in Environmental Journalism

At the University of Colorado Boulder, an R1 public university located in the United States, the University Libraries is privileged to have a unique relationship with professional journalists. Every year, the Center of Environmental Journalism awards five professional journalists with the Ted Scripps Fellowship in Environmental Journalism. These fellows come to campus for nine months to audit classes, attend weekly seminars, participate in field trips, and utilize campus resources like the University Libraries. Each journalist enters the program with a particular research topic and at the end of the program they are encouraged to produce a final product or story. Traditionally, the University Libraries hosts these fellows for a library orientation workshop in August, before their fellowship starts. During this workshop, the fellows receive information about library facilities, services, and relevant resources. They are also given ample time at the end of the workshop to ask specific questions about their research.

The authors began hosting these workshops in 2017, and soon noticed that the ISB of these journalists was different from other academic library users. Typically, these fellows have

been removed from the academic setting for many years, and they are often unaware of the types of information and services provided by an academic library. They were often surprised by the depth and breadth of resources and services available. In subsequent interactions with the fellows, we recognized that our orientation workshop missed the mark in some ways. First, much of the content of the orientation focused on finding articles and books. While these information sources are important, the fellows often sought a broader range of resources like data sets, archival materials, or maps. We also assumed the fellows, being seasoned information professionals, were familiar with standard approaches toward discovering library information (e.g., Boolean searching, common databases, catalog use), which proved not to be the case. It became evident that our work with the fellows could be improved by deepening our understanding of their ISB. To explore these characteristics further, we developed the following research questions:

1. What are environmental journalists' information seeking behaviors and how do they relate to Kuhlthau's (1991) Information Search Process model?
2. At what point do journalists' information needs intersect with the library?
3. How does their information seeking behavior change over the course of their fellowships?

To answer these questions, the authors conducted two rounds of semi-structured interviews, one interview early on in the fellowship and a second interview at the end, to learn more about the participants' projects, research process, search strategies, and interactions with the library. Our general findings are summarized in the results section and are organized by the research questions. The subsequent discussion presents our analysis of the results in tandem with concepts found in Kuhlthau's (1991) Information Search Process (ISP).

This case study has local implications for how we can improve our orientations with the fellows, our work with the Journalism Department, and journalists in our community. More

broadly, librarians who support journalism programs in higher education, journalism instructors who teach research skills to journalism students, and academic and non-academic public libraries that support, or would like to support, journalists' research efforts may find this research applicable to their work.

Literature Review

Journalists' information behaviors have been studied across multiple disciplines and with various frameworks. In the library and information science (LIS) literature, journalists' information behaviors have been studied through the lenses of Kuhlthau's (1991) Information Search Process (ISP) and serendipity. Additional studies from the LIS and mass media fields have explored journalists' ISB as well as the distinctive behaviors of science reporters.

Information Search Process

Kuhlthau's (1991) Information Search Process (ISP) model describes "a user's constructive activity of finding meaning from information in order to extend his or her state of knowledge on a particular problem or topic" (361). This model is based on feelings of uncertainty experienced in the early stages of research, which causes discomfort and anxiety that can affect how a user expresses their topic and evaluates research for relevancy. Certainty (and confidence) increases in the later stages. ISP describes six stages a user experiences when seeking information: *initiation* (realizing they are lacking knowledge), *selection* (choosing a topic to be investigated and conducting a preliminary search for information), *exploration* (researching the general topic to become more oriented), *formulation* (developing a more focused, personalized perspective, while feelings of uncertainty diminish and confidence grows), *collection* (gathering information on the focused topic), and *presentation* (preparing to use the research while any final searches sees a decrease in relevancy and an increase in redundancy). While the stages are presented sequentially, studies of students in universities,

colleges, and secondary schools found the ISP is somewhat recursive and iterative (Kuhlthau, 1991).

The ISP model has been used to understand the information seeking behaviors of journalists. Attfield and Dowell (2002) used ISP as a framework to study newspaper journalists who worked at *The Times* in London, looking at how constraints and available resources affect behavior in the research and writing process. They developed a model for journalists' ISB organized around three major dynamic process stages. *Initiation* establishes the deadline, word-count, and angle (the dominant perspective in a story) that drives the research and writing. *Preparation* involves the activities that lead to information seeking, like searching for information to support the angle and developing personal understanding to write interview questions and refine the search. The journalist develops a plan for research that becomes more elaborate and concrete, which demonstrates the reporter is becoming more certain about their information needs and which information will be useful to their story. Lastly, *production* involves managing multiple information stages including cross-referencing information.

These stages occur in a context of product and resource constraints or challenges. Product constraints are directed at the journalist's final product and can include the angle, newsworthiness, deadline, originality, and word-count. Resource constraints involve external resources like electronic news archives, personal contacts, software, and so on, while internal resources include internalized plans, working memory, accumulated subject knowledge, and more.

Kemman et al. (2013) studied Dutch journalists using the ISP model, confirming that journalists' search process is similar to the ISP's six stages. However, they found that the *initiation* and *selection* stages are performed in one step but note that might be due to their study's design. They also noticed that the *collection* and *presentation* stages are executed simultaneously. These findings indicate that journalists' information behaviors may not fit into the ISP's distinct stages.

Like these studies, our paper will also use the ISP model as a framework to understand the information behaviors of the journalists in our sample. While other studies' participants were composed of journalists who write for various beats and departments, our paper builds upon the existing research on journalists' behaviors seen through the ISP model by examining journalists who cover environmental topics and have more time to complete an assignment than a typical reporter at a daily newspaper.

Serendipity

While the articles that examined journalists' behaviors with the lens of ISP focused more on how journalists go about finding information (Attfield and Dowell, 2002; Kemman et al., 2013), the concept of serendipity can be applied to situations where people unexpectedly discover information. *Information seeking behavior* has been critiqued for describing active, process-oriented information acquisition (Erdelez, 1999). Active information seeking is not always applicable for describing journalists' behaviors because sometimes they use information as *stimulus*, in which journalists "do not know what they are looking for" and may "stumble upon information when they are looking for something else" (Nicholas and Martin, 1997: 45).

Nicholas and Martin's description of *stimulus* is similar to the concept of serendipity in information behaviors. Bird-Meyer et al. (2019) found serendipity plays a role in journalists' story ideation process. Journalists have an educational background, experience, and knowledge that gives them a "highly developed news sense," or an ability to identify when a story is newsworthy (Bird-Meyer et al., 2019: 1009). Additionally, beat reporters or specialized reporters (journalists who focus on covering a particular subject, industry, or institution) have specialized knowledge that contributes to their news sense for stories in their subject area. Journalists have also developed routines like "getting out of the office, meeting new people, cultivating sources, attending events, and listening and being alert for something unique, off-beat, and interesting" that increases their chances of serendipitously encountering information (Bird-Meyer et al.,

2019: 1009). Their heightened news sense guides journalists to follow up and research a story further. Analyzing journalists who practice long-form journalism or have more time to complete a project than a daily reporter with the concept of serendipity can be helpful for understanding the information behaviors of these types of reporters because they likely have time to browse and explore topics.

Journalists' Information Behaviors

Journalists' information behaviors have also been studied in the Library and Information Science (LIS) field from the perspective of information literacy (Boss et al., 2019; MacMillan, 2009), which are the skills or abilities people need to find, evaluate, and use information, allowing them to participate effectively in society or a workplace. Other articles from LIS and journalism fields have examined the types and formats of information journalists need, how journalists use libraries, and the challenges that affect journalists' information behaviors. Most of these studies were published over a decade ago and studied journalists outside of the United States. However, these studies provide insight into what kinds of information seeking behaviors have and have not changed over time, especially with the emergence of new technologies like social media and the internet and changes in the journalism landscape.

Types and Formats of Information Journalists Need

Nicholas and Martin (1997) found journalists need information for five functions: fact-checking, keeping current awareness on a topic (particularly relevant to beat reporters), researching, obtaining context such as providing history, and stimulus for when reporters do not always know what they are looking for and may "stumble upon information" (45). Secondary research is useful to gain background knowledge that can lead to interview questions (Boss et al., 2019; Attfield and Dowell, 2002). Public records can provide a wealth of information, but it can take time and effort to obtain them (Boss et al., 2019). Phone calls and humans are also

key sources of information (Anwar and Asghar, 2009; Machill and Beiler, 2009; Nicholas and Martin, 1997).

A variety of research has been conducted on how journalists use the internet for research purposes. Studies from Kuwait (Abdulla, 2006) and the United Kingdom (Nicholas et al., 2000) found the World Wide Web and newspaper websites were the most frequent internet activities and are useful for fact-checking. Amongst many reasons, U.K. journalists' lack of time to learn how to use the internet or attend training sessions may have added to their slow adoption (Nicholas et al., 2000). In Germany, Machill and Beiler (2009) found search engines, particularly Google, are frequently used by reporters to identify sources and published news media is used to monitor the news. Despite the opportunities that computer-aided technologies provide, the authors concluded that the telephone is "the most important research tool" (200). Journalists also turn to social media. Facebook is useful for querying friends and conducting research, while Twitter is useful for querying followers and using them as sources and conducting background research (Santana and Hopp, 2016). Social media platforms also provide professional development or educational opportunities and networking with other journalists (Kramer, 2015).

Library Use

Studies of newspaper journalists from Pakistan (Anwar and Asghar, 2009) and the United Kingdom (Nicholas and Martin, 1997) have examined how these reporters used libraries. For Pakistani journalists, their main purpose for using libraries was to borrow materials and read old newspaper articles, while asking for help from library staff was one of the two least used services (Anwar and Asghar, 2009). Nicholas and Martin (1997) found libraries are a last resort to journalists who have so much information already available and so little time to examine it. Overall, little research can be found on how journalists use and perceive libraries, and our study attempts to fill this gap.

Information Challenges

Journalists face a number of challenges or obstacles that keep them from meeting their information needs. Characteristics of the final piece like newsworthiness and word-count can limit how much information a journalist can research or write (Attfield and Dowell, 2002; Campbell, 1999). Access to too much information can cause information overload (Nicholas and Martin, 1997). Tight deadlines keep journalists from conducting in-depth research and comprehending information (Abdulla, 2006; Attfield and Dowell, 2002; Nicholas and Martin, 1997), and following up on serendipitously encountered stories (Bird-Meyer et al., 2019). While daily journalists may only have time to synthesize information sources, investigative journalists perform “a great deal of original reporting, information gathering, and research” that leads to knowledge creation rather than only synthesis (Boss et al., 2019: 737). Lastly, a lack of time also hinders journalists' ability to learn new resources (Nicholas et al., 2000). While journalists show an interest in the idea of training, few follow through, possibly because they have other skills they can depend on to get the information they need (Nicholas and Martin, 1997). MacMillian’s (2009) study on college journalism students shows the potential training can have in changing a journalists’ information seeking behavior. MacMillan (2009) analyzed students’ self-assessment surveys to find that over the course of their journalism program, students' skills changed from basic searching of the internet to comfortably using advanced search techniques and searching more sites, search engines, and article databases.

Science and Environmental Journalists

Beat or specialized reporters, such as environmental journalists, focus their work to a specific subject area, and because of their specialty, may have different information seeking behaviors than other journalists. Relevant to our examination of environmental journalists, Campbell (1999) studied environmental print and broadcast journalists in Scotland to examine how scientific research is constructed and mediated through the news process. For gathering

information, first, journalists establish the basic facts and then follow other angles and developments. Other information strategies carried out by reporters could include conducting a self-initiated test (of air pollution, for example) and using the library, electronic databases, and the internet. People are heavily consulted as information sources. In environmental journalism, scientific subject specialists are important sources of information, as are people from government, industry, and technical organizations. Experts (e.g., scientists) are called upon to help journalists comprehend and critique information when the journalists lack the knowledge to comprehend the information themselves (Boss et al., 2019). They are also used as "a contact who will add credence to the news report and therefore to the reality being emulated" (Campbell, 1999: 114). Journalists also rely on their colleagues to recommend contacts and "victims," or people who can provide a human face of an issue.

Additional studies have noted the distinctive information behaviors of science journalists. Health and science reporters may read books or journals in their area to stay current (Nicholas and Martin, 1997). They may have more intellectually demanding work as they need to read technical information and report it in layman's terms (Campbell, 1999; Nicholas and Martin, 1997). Viswanath and colleagues (2008) conducted a survey of over 400 health and medical science reporters and editions, finding they rely on scientific literature, press releases, press conferences, and wire service reports for story ideas. They also discovered government websites and nonprofit websites are useful for providing background information (Viswanath et al., 2008). Shoenberger and Rodgers (2017) also conducted surveys of over 250 health and science journalists and editors from community newspapers in the state of Missouri and found government and nonprofit websites are reliable information resources at the initial stage of reporting. Health and science journalists value websites that are convenient to access for their ability to save time when working under tight deadlines (Shoenberger and Rodgers, 2017; Viswanath et al., 2008). The internet is heavily used by science journalists, with the top activities being researching articles and reference materials and reading publications (Grando, 2011).

Unlike general reporters, national health reporters heavily rely on scientists, possibly to help interpret complex information (Viswanath et al., 2008). This is in line with Boss et al. (2019) who found that reporters use experts to critique information if the journalists lacked the knowledge and authority to interpret it themselves.

The research presented here represents an update and expansion of the existing literature. The existing research on journalists' information behaviors has provided insight into their processes for conducting research, such as finding story ideas, identifying and using human sources, and using information resources like the internet. Research has also explored journalists' affective state (e.g., confidence) and the rules and constraints they face when seeking information. We could only find a few studies that examined journalists' behavior over a period of time (MacMillian, 2009) and how they use libraries (Anwar and Asghar, 2009; Nicholas and Martin, 1997). Few recent studies have specifically focused on journalists' ISB through the lens of Kuhlthau's (1991) ISP model, particularly since the onset of the internet age (see Attfield and Dowell, 2002 and Kemman et al., 2013), and the rapid evolution of the media and information landscape merits an update to the literature. These past studies primarily focused on the behaviors of journalists working in the medium of daily news, while the present study researches the behaviors of journalists working on a long-form project and they cover a specific beat, the environment. This study also specifically seeks to understand how the participants' information seeking behavior may change during their nine-month fellowship, and identify the point(s) in the ISP when journalists use library resources or seek librarian assistance—an aspect of journalists' ISB as yet unexamined.

Methodology

Prior to recruiting participants in this research, the study's protocols were reviewed by our university's institutional review board (IRB). The IRB ruled that this research was exempt

from regulation. We used purposive sampling, deliberately “seeking out of participants with particular characteristics” (Lewis-Beck et al., 2004: 885), to identify potential subjects. Purposely seeking out journalists from the Ted Scripps Fellowship in Environmental Journalism allowed us to identify professional environmental journalists who are all at the beginning stages of a research project and have access to the same university campus and academic library. We recruited study participants from two cohorts of Ted Scripps Fellowship in Environmental Journalism during the academic years of 2018–2019 and 2019–2020. There were a total of 10 fellows during this two-year period. The 10 fellows learned about the study when it was briefly discussed during their respective fall orientation sessions, and we sent the potential participants emails with a formal description of the project soon after. Participation in the study was optional, and seven fellows agreed to participate. All subjects signed a letter of informed consent prior to engaging with the research.

Seven journalists participated in the interviews, six of which agreed to be interviewed twice, and one only interviewed during the first round. This sample size is nearly identical to Kuhlthau and Tama’s (2001) study of lawyers’ ISB, which had a sample size of eight. Each participant was assigned a pseudonym based on the first seven letters of the English alphabet, from “Subject A” through “Subject G”. All of the study participants described themselves as professional journalists, with years of experience ranging from nine years to over 30 years. The subjects self-identified as several different types of journalists, including “investigative”, “daily”, and “long-form”. When asked about the medium they work in, the interviewees described practicing journalism for television, radio, magazines, and newspapers. Some had been formerly employed directly for news organizations, while others have spent their careers as freelance journalists. Many of the study participants have worked for nationally-known media companies. As some of the participants’ backgrounds include long-form or investigative reporting and they are all working on long-form fellowship projects, this study differs from

previous studies of the ISP model that primarily used daily journalists (Attfield and Dowell, 2002; Kemman et al., 2013).

The seven fellows who agreed to enter the study participated in two rounds of semi-structured, recorded interview sessions (with the exception that one subject only participated in the first round). The first interview took place soon after they agreed to participate in the study, during the first months of their fellowships (typically September). The second interview coincided with the final months of their fellowships (typically April).

We developed our interview questions based on Kuhlthau and Tama's 2001 study of lawyers that used Kuhlthau's 1991 ISP as a framework for understanding their behaviors. The questions, and potential follow up questions, were treated as prompts meant to initiate discussion of the subjects' ISB, with the goal of gaining a complete picture of their process and specific information sources. The questions used in these semi-structured interviews began by asking about the subjects' current professional backgrounds, followed by a set of questions about the projects they were pursuing during their fellowships. Next, the subjects were asked about their ISB, specifically their information sources, how their types of journalism informs their ISB, and what challenges they face for obtaining and using information. The full list of the round one interview questions are available in Appendix I. During the second round of interviews, we asked further questions about the participants' ISB, as well as questions about how they engaged with the library during the course of their fellowship. We also asked how their behavior may have changed during this time. The full list of round two questions is available in Appendix II. The interview sessions were one on one, and the interviewer recorded each interview session with the interviewee's consent. We then transcribed each interview recording.

Coding

With the interview phase completed, we began developing a codebook. Codebook development followed the guidance of *Learn to Build a Codebook for a Generic Qualitative Study* (SAGE Publications, 2019). We used Google Docs and Google Sheets spreadsheets to record coding information and develop the codebook. Following grounded theory, “a data-driven methodology for building models from qualitative data” (Attfield and Dowell, 2002: 190), we used an open coding approach to develop the codebook in which many initial codes or themes were established and then compared and consolidated (Corbin and Strauss, 1990). Attfield and Dowell’s (2002) earlier work investigating journalists’ ISB took a similar open coding methodological approach. We developed codes inductively, meaning we discerned the codes as we reviewed the interview transcripts (SAGE Publications, 2019). We initially reviewed all of the transcripts and coded for themes, then refined these themes into a code list. Next, two members of our research team combined and grouped codes together and removed duplicative or peripheral codes. This became the basis of the codebook. After developing the initial codes, a member of our research group who had not participated in combining the initial codes for the codebook reviewed, tested, and further refined the codebook. The final codebook contains 48 unique codes (subcodes) falling into the seven categories (primary codes) defined in Table 1 (see Appendix III for the complete codebook). We attempted to use interrater reliability techniques to quantify coder agreement, however the relatively low sample depth of our data prohibited a robust interrater process. As a result, we moved forward with “consensus coding”, described by Richards and Hemphill (2018) as more reliable but also more time-consuming. Our consensus coding process involved the two team members meeting to review each transcript and assign codes. We discussed disagreements until there was consensus. Theoretical saturation of the data, the point where we were no longer adding new codes or categories

(Olshanksy, 2014), was achieved in the first round of interviews by the sixth out of seven participants, and in the second round of interviews by the fifth out of six participants.

Results

We report the results of the interviews in the context of the study's three research questions. In response to the first research question, *What are environmental journalists' information seeking behaviors?*, we report the study subjects' descriptions of their research processes, frequently used resources for research, and the challenges they described in their information seeking. Next we discuss the subjects' use of the library and their responses to the second research question, *At what point do journalists' information needs intersect with the library?* Next we address the subjects' answers to our third research question, *If and how does their ISB change over the course of their fellowships?* All quotes are attributed to the subjects' pseudonyms (Subjects A through G). Figure 1 depicts the stages of the study participants' research processes and these stages' relationships to Kuhlthau's 1991 ISP framework.

Q1: What are environmental journalists' information seeking behaviors?

Research Processes

During the early stages of developing a story, several subjects described a period of "prospecting" or "casting around" to find an interesting topic or "a new take on" a particular subject matter. In Figure 1, this stage is "Topic Formation". Subject C described using social media during topic formation to pose questions and see different perspectives in peoples' responses. Another participant, Subject D, described the early stage of a story as such, "... we are just, you know, making phone calls and gathering information, potential, kind of vetting potential people for as sources, you know... gathering research." When asked about the early stages of their research, Subject A underscored the importance of human sources: "I get

information. I mean... I'll often get the initial idea of a story from a person. Directly from some source." Another early step the participants described was a brief review of the popular literature as an initial check to see what has been recently written on the topic. Subject C described this step as such:

> ...If I talk to a scientist and they mention to me a story or an idea that I think is interesting, one of the first things I might do is just Google that and see what's been written about it, and if it's worth me pursuing a story because maybe, you know, 10 people have already written about in the last couple months.

After an initial phase of topic formation, most of our subjects discussed going through a deeper dive of background research during the "Background Research" stage. Subject G described this process much like a positive feedback loop:

> I read [a book], now I have a list of articles I want to read because of that book, and I have more people I want to meet now including the author of that book. These people are probably going to give me more people to meet, more sources to read, and it just keeps adding up. Yeah, basically, that's how I do it.

Several of the participants offered similar descriptions of a background research process that builds on itself slowly toward a holistic understanding of their topic. All subjects mentioned using books and research articles. Somewhat surprisingly, even participants that did not self-describe as "long-form" style journalists, still noted their reliance on academic literature. The research process during this stage involved database or aggregator searches ("I tend to use Google Scholar a lot" [Subject F]; "I have definitely used Web of Science" [Subject C]) as well as citation tracing ("I just basically follow references." [Subject F]). The participants also reported various other sources to supplement academic literature or to make scientific articles easier to comprehend. Some subjects noted using popular literature and white papers to gain foundational knowledge as these formats are easier to understand. Others mentioned the coursework taken during their fellowships also added to their knowledge base. Government information was also brought up as a source of background information, with several mentions of court hearings, government data, reports, and other documents.

Once again human sources of information were discussed in regards to background research. Several participants mentioned searching for academic faculty with expertise on their story topic on university web sites. Others directly contacted authors of academic books or articles they had read. Subject A described using a faculty member's web page to find articles she had written prior to interviewing her "to get versed in what we're going to be talking about so I wasn't a complete idiot," perhaps showing a lack of confidence in the subject matter. Government officials were also discussed as background information sources.

The "Field Work" stage was noted as a crucial phase of information gathering. Most described field work as a step that takes place after a certain amount of background research. Subject B described it thus:

> So you do that sort of [background] research first just to see what's there. Then you're always looking for sources. These kinds of stories that I do are... you don't report them from your desk. You do some reporting from your desk but you go into the field. And so you look for key witnesses—key informants on the ground. And then I travel there, make appointments, walk around with them.

Field sources were occasionally described as experts, but more often as individuals who have a personal connection to the journalist's story. Subject A described the need for telling the human side of a scientific or environmental subject and developing "human stories." Field research may also entail seeking out local government documents that were only available in print. One such example provided by Subject B was travelling to a state in the southwest to review documents in a county clerk's office.

The study participants offered several different opinions when asked about the final "Write and Report" stage of their information gathering. Subject A described the point of knowing when enough information had been gathered as feeling "confident that I can explain what's happening." Another mentioned instances when an interview subject cited a lot of studies that the journalist was already familiar with. Most pointed toward gaining the ability to speak with authority on a subject as the moment when they know their information seeking is complete. On

the other hand, Subject D described the end of their information gathering more in terms of what is required for a story. They said:

> ...it's more like all the things or all the pieces that I need to tell a complete story together. And, if I have a great list of information, how can I make this, how can I personify this information. Those are… kind of like the equation that I like to put together to get a story done.

While some described their process as seeking a complete understanding of a topic, this participant framed their process in the telling of a story.

Frequently Used Resources

Overall, the information sources most often cited by the study participants were background literature and humans. All seven participants noted they use scholarly articles and books and popular media, while only one participant mentioned they use grey literature. Background literature was often used in the earlier phases when they conducted background research. All seven participants said they use human sources, with five mentioning they use domain experts, three noting they use government officials, and three said they use field sources. Human sources were relied upon throughout the research process.

Challenges

The subjects described facing a variety of challenges as they seek information. The most often mentioned impediment to their information seeking was simple resource access. Paywalls, expensive materials, lack of library access, and opaque government websites were often discussed as information access challenges. Subject B described difficulty in obtaining data from a local police department: “I started writing a report about urban heat deaths… I went to the police and realized I don't know what the protocol is for what information the police can give me and so I was sort of stymied." The journalists also mentioned problems with information discovery—many described situations where they were unable to find data or statistics. As Subject C put it, “It was kind of really dancing around the margins of what I wanted. And I think we ended up having to use a little bit of a different figure. Because it was just so hard to find.”

Additionally, multiple times throughout the interviews, the subjects mentioned a lack of access to a resource that the library did in fact subscribe to—pointing to a lack of awareness of library resources as another common information challenge. With their frequent reliance on human sources came the difficulty of establishing contact with experts, government officials, and field witnesses and informants. Several noted unwillingness to be interviewed as a common problem when approaching experts or field sources.

Time and format were also mentioned as challenges. Multiple participants spoke of time constraints and how they dictate the amount of information gathered. When asked about their biggest challenge to finding information, Subject E replied:

> Time. Time just makes all the difference in the world. And that changes on the articles, too. So if you are writing something that is short, so you don't even have a lot of room for information even if you've gathered it, which is often an obstacle, and you just don't have time.

Others discussed how their specific journalistic medium (i.e., daily journalism, magazine articles, books) can impose some restraints on their information seeking. Subject E, discussing a political topic, said, "... answering that question is not a 500 word answer, but you have to write a 500 word article. And so you do." Inversely, some of the participants who were freelance or more long form-oriented described the extra time afforded by their format as beneficial.

Q2: At what point do journalists' information needs intersect with the library?

Study participants relied heavily on our academic library as a means to access information during their fellowships, but they also shared other routines or habits for accessing information both prior to and during their fellowships. The subjects frequently mentioned using the library for scholarly materials like books and journal articles. They used a variety of online library resources as well (e.g., library databases, online catalog, subject guides, etc.). As these

resources were mostly used when forming a topic or conducting background research, the participants tended to only use the library during the early stages of their project.

Perhaps more interesting is how they access information outside of a library context. Several of the participants described leveraging their social networks to gain access to information existing behind a paywall. Subject F described previously using a university-affiliated username and password of a sibling who was a student as a means of access to journal articles. Subject B said, "*The Wall Street Journal* is behind a paywall. Sometimes I find a story there then call my friend that has a subscription instead of going all the way to the library to pull out a journal article." Social networks were also leveraged by the study participants as a means of connecting with human sources. Three subjects specifically described instances when a field source connected them with another potential source. Online social networks like Twitter were also mentioned as being useful for connecting with experts, and Subject C described an occasion in which a scientist reached out to pitch a story to them via the social media platform.

Freely available online resources, public libraries, employers, and even personal purchases came up in the interviews as other methods of accessing information. Freely accessible online search engines like Google, Google Scholar, online directories, and government databases were common information access points for the subjects. In a few instances, the subjects mentioned that former employers paid for subscriptions to newspapers or databases like LexisNexis, though this was rare—many participants had worked mostly as freelancers. The subjects occasionally resorted to buying materials when employers, social networks, or libraries provided inadequate information access. Buying materials was usually noted as a last resort, and several described personally paying for access to information as "prohibitively expensive."

Subjects viewed the library chiefly as an information source, but rarely used other library services during their fellowship. They rarely reported seeking reference or subject librarians services, and only one subject attended a library workshop. Many of the freelance journalists

noted using a public library for a place to work. Several subjects mentioned they had browsed the library stacks but also noted the difficult nature of browsing a large academic library. Subject A described the utility of browsing our library while aptly summing up its difficulties:

> I don't really browse this library. We used to browse other public libraries, I'd just kind of walk around and 'till something grabs my eye, but this library, I tend to like, come in just for specific books that I know where they are, well I think I know where they are. I take half an hour to find them [laughter].

Q3: How does their information seeking behavior change over the course of their fellowships?

We conducted a second round of interviews during the final months of the participants' fellowship to understand how the participants' ISB may have changed over the course of the academic year. Participants described some, but not many, changes in their behavior. Some articulated developing a more nuanced search strategy. For example, Subject A said, "I don't use Google Scholar… [I] started really searching through some of the more specific databases, you know aggregators… I've gotten deeper, I think." Subject F described how they would have first used Google Scholar to search, but now starts with our libraries' discovery search interface.

While the subjects were familiar with accessing information from libraries, most of them were surprised to learn of the diversity of resources available to them during their fellowship, which points to a general lack of awareness of library resources. Regarding library databases, according to Subject E, "I had no idea, I'll be honest, that there were that many and that specific." Five participants were surprised to learn during the course of their fellowship that libraries at public universities were typically open to the general public. "Something that was important to me was that now I realize that a lot of these resources are available to the public, before I kind of thought of [the academic] library as a closed, members-only kind of place," said Subject G when asked how their information routines had changed.

Overall the changes of the study participants over the course of the study were modest at best. During the second interview, we asked the participants how their ISB might have

changed, many of the subjects began their answers with phrases like, “I don’t know…” or “hmm… let me think.” Three subjects described challenges accessing articles or databases, or needing help looking for a particular piece of information but they did not contact a librarian (on the other hand, two participants noted one instance each where they asked a librarian for help). Subject E relied heavily on our integrated library system (ILS) for finding articles throughout the fellowship, citing a lack of time as a reason for not using other databases: “So it's always just like, I know Chinook [CU Boulder’s catalog], I do it. And if I can't then that's the extent of the time I feel like I have to spend on it. [laughs] It always feels like that.” When Subject C was asked, “Has anything changed about how you use the library sources or finding information?,” they answered plainly: “Not yet.”

Discussion

This study sought to understand the information seeking behavior of environmental journalists and how their behavior relates to Kuhlthau’s (1991) Information Search Process model (ISP), pinpoint where their needs intersect with the library, and understand whether or not their information behavior changed over the course of a nine-month fellowship. Figure 1 depicts the research stages we discovered from the interviews with the corresponding ISP stages from Kuhlthau (1991). Overall, our findings about journalist’s information behaviors confirmed past studies. The results of this study and the existing literature show journalists turn to human information sources (subject experts, field sources, victims) as primary sources of information and as a means of introducing “human elements” into their stories (Anwar and Asghar, 2009; Machill and Beiler, 2009; Nicholas and Martin, 1997). The lack of time to gather and comprehend information (Abdulla, 2006; Attfield and Dowell, 2002; Nicholas and Martin, 1997) and learn new resources (Nicholas et al., 2000), plus the final word-count or format of a piece can limit how much journalists can research and write (Attfield and Dowell, 2002; Campbell, 1999) has been reported in prior research. Interestingly, newsworthiness did not come up as a

challenge as it had in other studies (Campbell, 1999), perhaps because these participants have the freedom to pick their topic.

Environmental Journalists' Research Process

The Ted Scripps Fellowship in Environmental Journalism participants demonstrated Kuhlthau's (1991) Information Search Process (ISP) model, although we failed to see a distinction between some of its stages.

Initiation, Selection, and Serendipity

The biggest difference between the ISP and our analysis of the participants were seen in the stages of *initiation* and *selection*. The ISP begins with *initiation*, or the realization of a lack of knowledge. Our findings suggest that the journalists' information seeking start with their topic selection. They are always on the lookout for a new story through conferring with other sources, editors, or other journalists and conducting a preliminary search often using Google to find existing information and news articles. Sometimes stories may also be assigned to them by an editor. This behavior aligns more with the second stage of the ISP, *selection*. While our findings indicate that the participants experience *selection* first and then *initiation*, we do not have enough information on if and how the lack of knowledge motivates the subjects to select a topic. This topic should be studied further.

One concept that is not discussed in the ISP model but emerged from our analysis was the role serendipity plays at the early stages of topic formation. The subjects often discussed a "casting around" phase in their topic formation, which includes activities such as browsing library stacks, consuming media (e.g., watching documentaries, reading magazines), and talking to field sources and experts to seek fresh angles on potential stories. Perhaps our participants' lengthy timeline for completing their projects allows them to experience these activities more than a journalist who is working on daily deadlines. These activities reflect the concept of serendipity (Bird-Meyer et al., 2019) and the need for information for "stimulus," in which

reporters may read books or engage with primary and secondary sources in hope that they will "stumble upon information" (Nicholas and Martin, 1997: 45). For the subjects of this study, a serendipitous moment seemed to bridge the gap between a vague interest in a topic and a more clear idea for a story.

Exploration and Formulation

The stages of *exploration* and *formulation* seemed to be experienced by the participants simultaneously. At this point, the subjects expanded their knowledge base by using more scientific or technical sources (e.g., scholarly articles) than popular media. We hypothesize that the backgrounds of the study participants—most of which identified as long-form journalists—and the nature of their nine-month fellowship play a role in what information sources they sought. While time was noted as a frequent challenge with uniformity across participants, the lengthy fellowship offers the participants the time to seek out in-depth sources created by experts, such as scholarly books and articles, and follow the citations to find additional articles, contact the authors to use as sources, and develop interview questions for the experts based on their research. Also distinctive to the study participants, they took advantage of being on a college campus to meet with researchers who are experts on their project topics. This dependence on experts as sources (Boss et al., 2019; Campbell, 1999; Viswanath et al., 2008), use of scientific literature (Viswanath et al., 2008), and use of background research to develop interview questions (Attfield and Dowell, 2002; Boss et al., 2019) is consistent with prior research.

Collection

Next, the journalists move to the *collection* stage, where they gather information on their focused topic, often going into the field to speak with people or visit organizations to find primary materials. However, the participants noted it can be a challenge to establish contact with

sources and convince sources to go on the record. The participants knew they were near the end of searching for information when experts they met with recommend articles they have already read, and they are feeling confident in their ability to speak with authority on an issue.

Presentation

In ISP's *presentation* stage there is an increase in redundancy. Throughout the ISP model, uncertainty is experienced by the user at the early stages and confidence increases in the later stages (Kuhlthau, 1991). The participants expressed feelings of confidence when they were near the end of searching for information.

Our research contributes to the various studies that seek to understand the ISP model by looking at journalists who cover the environmental beat and are working on long-form projects. Our findings are consistent with previous studies that primarily used daily journalists as subjects (Attfield and Dowell, 2002; Kemman et al., 2013). Like Kemman et al. (2013), we discovered that our participants' information seeking does not always fall into clearly defined categories of the ISP model. Most notably, it seems our participants experience the stage of *selection* first, and then *initiation*. The stages of *exploration* and *formulation* seemed to be performed simultaneously. Perhaps the ISP model is more of an iterative process than how it is presented, a point suggested by Kuhlthau (1991) in a previous study.

We also found the concept of serendipity, which is not part of the ISP model, plays a role in how our participants discover a topic. Our participants had the benefit of working on a project for nine months, a circumstance daily journalists in the previous studies were likely not afforded. Perhaps this extended time allowed our participants to engage in activities that lead to serendipitous discovery and could conduct in-depth research. Thus, the ISP model alone is not enough to address our environmental journalists' information behavior. Future studies of the ISP

model should examine the role of serendipity and how the stages may be experienced iteratively.

Library Use and Changes in ISB

The journalists in our study interacted with the library the most at the *exploration* and *formulation* stages of the ISP model, usually for borrowing books and accessing articles. The participants also leveraged both professional and non-professional social networks for access to secondary sources. The subjects depended on family members, other journalists on listservs and social media, and authors of scholarly articles and books to help them access information behind paywalls. Findings from our second round of interviews revealed some participants in our study continued to reach out to other journalists and experts to gain access to articles even though they likely already had access to such resources via the library. We gather from this occurrence that journalists tend to rely on their established information seeking routines even when presented with an alternative—and perhaps more effective—means of access. However, a few participants described at the end of their fellowship a change in ISB by learning to leverage complex, specific research databases like Web of Science to find articles during their fellowship. Other subjects did not use resources beyond our discovery layer or their pre-existing routines.

An interesting dualism emerged regarding information access as both a challenge and a benefit. As many of our participants were freelancers, the cost to access scholarly articles, books, databases, and other information behind paywalls was often noted as the greatest challenge, but the subjects also most frequently mentioned the access provided by libraries as a great benefit to their work. From this one could surmise that journalists' biggest challenge is indeed something the library is equipped to help them with the most. The benefit gained by using a library for resource access, however, could be hindered by the challenge of time to learn how to use the resources (Nicholas et al., 2000), journalists' lack of awareness that public

academic libraries are open to the public, and their lack of awareness of library resources. We attribute lack of awareness that public academic libraries can be used by the public to the reality that some academic libraries are public and others are private, depending on the type of institution, and we suggest that public academic libraries take steps to inform the general public, including journalists, that they are welcome in this setting.

The lack of awareness of library resources also extended to one type of human resource that the study participants rarely sought: librarians. The subjects very rarely reported asking librarians for help in their information seeking. This includes interacting with librarians over email, face-to-face consultations, and librarian-led workshops. The participants' limited use of librarians reinforces the idea that journalists' established routines predominate their information seeking behaviors. We can offer two possible explanations for this. First, there was some evidence that library awareness played a role. One participant, even after their library orientation session and a full academic year on campus, admitted they were unaware that there was a librarian that specialized in History and said that they would have used their services if they had known. Second, the participants of our study were already highly accomplished professionals and researchers. Because of this, it is reasonable to assume that some of the subjects simply did not believe that they needed the help of librarians nor the use of specialty library databases. The time it takes to learn about new resources, the general lack of awareness of library services, pre-existing information seeking routines, and professional competence may help explain our participants' non-use of librarians and library resources, and little change in information seeking behaviors. This particular question warrants future study.

Implications for Libraries

These findings led us to rethink the content of our orientation sessions to the fellows. We conducted an informal pre-orientation survey with the newest fellows, asking about their research interests in advance. These pre-orientation survey results provided us with a list of

specific resources and questions. Using these results and our knowledge that the journalists heavily depend on people for information, we now stress the various types of expertise CU Boulder librarians have. As the survey indicated some fellows were interested in researching an area we were not familiar with, we invited a librarian to the orientation to cover this area. We also pointed out University of Colorado Boulder's expert directory as a resource. Although we demonstrated specific databases in previous sessions, for the most recent orientation, we focused on where to access different databases in hopes of creating awareness of resources beyond our library discovery layer, which is featured prominently on our library's homepage. Lastly, we emphasized that journalists are welcome to come in and use our resources after their fellowship as we are a public academic library.

More broadly, these findings have practical implications for librarians. An understanding of journalists' ISB can help librarians conduct instruction and outreach efforts by creating messaging that addresses journalists' information needs, as well as develop librarianship and journalism partnerships. Academic librarians who support journalism courses should consider teaching students about which libraries and library services they can access after they graduate. Libraries that are open to the public could conduct outreach efforts to educate journalists about their resources, particularly workspaces, access to costly information, and the expertise of librarians.

Limitations

One limitation to this study is the small sample size of seven participants. However, the sample size is justifiable because after interviewing the last few participants, information was being repeated and we were able to identify themes in research behaviors. This sample size is also similar to Kuhlthau and Tama's (2001) study of lawyers' ISB, which had eight participants. Another limitation is we focused on journalists who are part of a singular program on our campus, and thus, we cannot generalize information behaviors and library use across all

environmental journalists and academic libraries. By interviewing participants after an orientation session, we acknowledge that our study took place in a setting where the participants were encouraged to use the library. The extent to which their library use increased is perhaps limited by the efficacy of our orientation. An important aspect of information behaviors that this paper did not cover is how journalists apply information to their work.

Conclusion and Future Direction

This paper analyzed how environmental journalists involved in a nine-month academic program seek information. Most behaviors and affective state (e.g., confidence) followed Kuhlthau's (1991) Information Search Process (ISP) model. We found the participants interacted with the library the most during the *exploration* and *formulation* stages, usually to borrow books and access articles. However, the subjects rarely used the advanced library resources and librarians and they relied on their pre-existing routines from before they started their fellowships. Access to information and time to research, comprehend, and write are the two most mentioned challenges the participants face during their research, but the library's ability to provide access is one of the most mentioned benefits. Limited time to learn new resources, reliance on pre-existing research habits, professional competence, and lack of awareness of library services and resources may explain the little change we noticed in the participants' ISB.

This study adds to the existing research on journalists' research practices and information behavior in the journalism and LIS fields. It examined long-form journalists' research processes and how they use libraries—topics that are rarely explored in prior studies. The Kuhlthau ISP model (1991) provided the framework for understanding the journalists' behaviors, and thus, this paper contributes to understanding how ISP can be studied in different populations. This study was unique in that it examined when journalists might visit or use libraries, and by including this element we have expanded on Kuhlthau's ISP framework. Future studies

could further examine how knowledge motivates the study participants to select a topic during ISP's *initiation* stage. Further research on this topic could benefit from a larger sample size and a wider-range of experience from the journalists and the type of journalism the participants practice (e.g., daily journalists, television journalists, etc.).

References

Abdulla AT (2006) *Technology and internet-related information behaviors of print journalists in Kuwait*. University of Pittsburgh ETD. University of Pittsburgh. Available at: http://d-scholarship.pitt.edu/10343/ (accessed 11 May 2020).

Anwar MA and Asghar M (2009) Information seeking behavior of Pakistani newspaper journalists. *Pakistan Journal of Information Management and Libraries* 10(0). 0. Available at: http://111.68.103.26/journals/index.php/pjiml/article/view/803 (accessed 26 October 2020).

Association of College and Research Libraries (ACRL) (2015) *Framework for information literacy for higher education.* The Association of College and Research Libraries. Chicago, Illinois. Available at: http://www.ala.org/acrl/sites/ala.org.acrl/files/content/issues/infolit/framework1.pdf.

Attfield S and Dowell J (2002) Information seeking and use by newspaper journalists. *Journal of Documentation* 59(2): 187–204. DOI: 10.1108/00220410310463860.

Bird-Meyer M, Erdelez S and Bossaller J (2019) The role of serendipity in the story ideation process of print media journalists. *Journal of Documentation* 75(5): 995–1012. DOI: 10.1108/JD-11-2018-0186.

Boss KE, De Voe KM, Gilbert SR, et al. (2019) Reporting in the "post-truth" era: Uncovering the research behaviors of journalism students, practitioners, and faculty. In: *Association of College & Research Libraries (ACRL) Conference*, Cleveland, OH, 2019, p. 15.

Available at: http://www.ala.org/acrl/sites/ala.org.acrl/files/content/conferences/confsandpreconfs/2019/ReportinginthePost-TruthEra.pdf.

Campbell F (1999) *The Construction of Environmental News: A Study of Scottish Journalism*. Aldershot: Ashgate Publishing.

Carlson, E (2019) Journalism and libraries: “Both exist to support strong, well-informed communities”. *Nieman Reports* 73(3): 38.

Corbin JM and Strauss A (1990) Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative Sociology* 13(1), 3–21. DOI: 10.1007/BF00988593.

Erdelez S (1999) Information encountering: It’s more than just bumping into information. *Bulletin of the American Society for Information Science and Technology* 25(3): 26–29. DOI: 10.1002/bult.118.

Farmer L (2016) Dallas Public Library, Morning News seek high school students eager to report. *The Dallas Morning News*, 26 November. Available at https://www.dallasnews.com/news/2016/11/26/dallas-public-library-morning-news-seek-high-school-students-eager-to-report/ (accessed 27 February 2021).

Grando A (2011) Slaves to journals, serfs to the web: The use of the internet in newsgathering among European science journalists. *Journalism* 12(7): 794–813. DOI: 10.1177/1464884911412702.

Kemman M, Kleppe M, Nieman B, et al. (2013) Dutch journalism in the digital age. *ICONO14. Revista científica de Comunicación y Tecnologías emergentes* 11(2): 163–181. DOI: 10.7195/ri14.v11i2.596.

Kramer M (2015) A list of every hidden journalism-related social media group I could find. *Poynter*, 3 August. Available at: https://www.poynter.org/reporting-editing/2015/a-list-of-every-hidden-journalism- related-social-media-group-i-could-find/ (accessed 5 November 2020).

Kuhlthau CC (1991) Inside the search process: Information seeking from the user's perspective. *Journal of the American Society for Information Science* 42(5): 361–371. DOI: 10.1002/(SICI)1097-4571(199106)42:5<361::AID-ASI6>3.0.CO;2-#.

Kuhlthau CC and Tama SL (2001) Information search process of lawyers: a call for 'just for me' information services. *Journal of Documentation* 57(1): 25–43. DOI: 10.1108/EUM0000000007076.

Lewis-Beck MS, Bryman A and Futing Liao T (2004) 'Purposive sampling,' in *The sage encyclopedia of social science research methods*, vol 0, Sage Publications, Inc. Thousand Oaks, CA, doi: 10.4135/9781412950589.

Machill M and Beiler M (2009) The importance of the internet for journalistic research. *Journalism Studies* 10(2): 178–203. DOI: 10.1080/14616700802337768.

MacMillan M (2009) Watching learning happen: Results of a longitudinal study of journalism students. *The Journal of Academic Librarianship* 35(2): 132–142. DOI: 10.1016/j.acalib.2009.01.002.

McCluskey M (2020) Estimates of COVID-19's impact on journalism fail to count freelancers, whose livelihoods have vanished overnight. *Poynter*, 23 June. Available at https://www.poynter.org/business-work/2020/estimates-of-covid-19s-impact-on-journalism-fail-to-count-freelancers-whose-livelihoods-have-vanished-overnight/ (accessed 27 February 2021).

Mitchell A and Oliphant JB (2020) 2. Knowledge and perception surrounding COVID-19. *Pew Research Center*, 18 March. Available at https://www.journalism.org/2020/03/18/knowledge-and-perception-surrounding-covid-19/(accessed 27 February 2021).

Nicholas D and Martin H (1997) Assessing information needs: a case study of journalists. *Aslib Proceedings* 49(2): 43–52. DOI: 10.1108/eb051447.

Nicholas D, Williams P, Cole P, et al. (2000) The impact of the internet on information seeking in the Media1. *Aslib Proceedings* 52(3): 98–114. DOI: 10.1108/EUM0000000007004.

Olshansky EF (2014) Generating theory using grounded theory methodology. In: de Chesnay, M (ed) *Nursing Research Using Grounded Theory: Qualitative Designs and Methods in Nursing*. New York: Springer Publishing Company, pp. 19–27.

Richards KAR and Hemphill MA (2018) A practical guide to collaborative qualitative data analysis. *Journal of Teaching in Physical Education* 37(2): 225–231. DOI: 10.1123/jtpe.2017-0084.

SAGE Publications (2019) Learn to Build a Codebook for a Generic Qualitative Study. Available at: https://methods.sagepub.com/base/download/DatasetStudentGuide/ build-codebook-general-qualitative-study (accessed 20 May 2020).

Santana AD and Hopp T (2016) Tapping into a new stream of (personal) data: Assessing journalists' different use of social media. *Journalism & Mass Communication Quarterly* 93(2): 383–408. DOI: 10.1177/1077699016637105.

Sepessy C (2020) 6 examples of newsroom-library collaborations. *International Journalists' Network*, 3 January. Available at https://ijnet.org/en/story/6-examples-newsroom-library-collaborations (accessed 27 February 2021).

Shearer E and Mitchell A (2021) News use across social media platforms in 2020. *Pew Research Center*, 12 January. Available at https://www.journalism.org/2021/01/12/ news-use-across-social-media-platforms-in-2020/ (accessed 27 February 2021).

Shoenberger H and Rodgers S (2017) Perceived health reporting knowledge and news gathering practices of health journalists and editors at community newspapers. *Journal of Health Communication* 22(3): 205–213. DOI: 10.1080/10810730.2016.1266715.

Viswanath K, Blake KD, Meissner HI, et al. (2008) Occupational practices and the making of health news: A national survey of U.S. health and medical science journalists. *Journal of Health Communication* 13(8). Taylor & Francis: 759–777. DOI: 10.1080/10810730802487430.

Appendix

Appendix I: Round One Interview Questions

Background Questions

“I would like to start by asking you some questions about your career as a journalist”

1. How long have you been a journalist?
2. How do you categorize yourself - investigative, beat, etc...?
    a. Could you describe your work? What kind of tasks do you perform? What are your goals?
3. Does the organization(s) that you work for or have worked for in the past pay for subscriptions to information sources like the New York Times, LexisNexis, Westlaw, or Gallup?
    a. Do your employers support your acquisition of resources? (i.e., if you need an article through Elsevier, do they purchase it for you?)
4. Do you normally use any sort of library or library resources for your research?

Project Questions

“I would like to ask you a few questions about the project that you’re working on during this fellowship”

1. Tell me about your project
2. What stage of your project are you in?

Information Seeking Behavior

“Now I would like to talk about how you find and use information in your work”

1. How do you get information?
    a. If answers are vague, ask follow up:
        i. name the top three services in the library? do you use library books or articles?
        ii. do you use social media? Name top 5 social media sites
        iii. do you use Google
        iv. do you use personal contacts
        v. for what purpose do you use google, personal contacts, social media, and a library?
2. How does the type of journalism that you do inform your information gathering activities?
    a. For example, do you rely more on personal contacts or first-hand witnesses, or do you do a lot of background reading to develop a more complex narrative? (E.g., TV reporters vs writing a book or making a documentary)
3. Are some research tasks more difficult than others?
    a. How do you find and use information in different tasks?
    b. Could you describe 1-2 scenarios where you’ve really struggled to find the information that you need?
4. How do you know when you have enough information?

    a. Specially, what about when you are in the initial research stage?
5. How do you think your research skills might change during this fellowship?
    a. Why?

Wrap up

1. Is there anything else you want to tell us?

Appendix II: Rounds Two Interview Questions

Project Questions

"First, I would like to ask you a few questions about your fellowship project"

1. How is your project going and has anything changed since we met last semester?
    a. What stage of your project are you in now?
2. What are you, or what were you, struggling with the most in terms of information seeking or availability?
    a. Are there any sources you wish the University had access to?
    b. Is there anything the library can do or have done to help?

Information Seeking Behavior

1. What information sources have you been using during this fellowship?
    a. Ex. Google? Social media? Personal contacts? Library books? Articles?
    b. Follow up by asking for information about examples that they shared and ask "What are you looking for when you use ___"
    c. For what purposes do you use (any of the sources shared)?
    d. Follow-up: Have you used your login password to log in to a database or access an article; google scholar
2. Have the ways you sought out information have changed since starting the fellowship?
    a. If so, how or why not?
3. When you leave the program, do you think you will wish you had access to a particular resource CU Boulder provides?
    a. Ask for the names of the specific resource(s)

Library Engagement Questions

"Now I am going to ask a few questions about your library usage since we last met. If you haven't used the library, that's ok."

1. Do you go to CU Boulder libraries? What for?
2. Have you sought out other libraries? (such as a public library)
3. Have you worked with any librarians since we last met?
    a. If so, could you describe that experience?
4. After you leave the fellowship, do you think you will work with librarians?

Wrap up

1. Is there anything else you want to tell us?

Appendix III: Codebook

Code	Code Description and Significance
Background	**Code Description:** Information about the journalists' professional experience and the project they are working on as part of their Fellowship. **Significance:** These codes are helpful for understanding why participants think their work is important and how their profession may influence their information seeking behavior.
Goals	What are the participants trying to achieve with their overarching work, or what are they trying to achieve with their specific project
Career background	Discussed their journalism career, including how many years they've been a journalist; description of self-employment or current or past employers, including organization that paid them to write an article; their specialized beat or subject; and the type of mediums they work in (e.g., daily newspapers, long-form journalism, magazine journalism, documentaries, or podcasts)
Project description	Discussed their Fellowship project, including what type of project they are conducting (e.g., data-driven research, historical research, or contemporary research); the final format or medium the project will take (e.g., magazine article, book, or documentary); and what stage their project is in (e.g., preliminary stage, background research, field work, or writing).
Library Use	**Code Description:** This category tracks how participants use (or do not use) libraries' services or resources. If a participant uses a library service noted below, mark the transcript with the appropriate code. If the participant mentions NOT using a service, code the transcript with the appropriate code followed by "negative." May also require a "Means of Access" code to include the type of library. **Significance:** “Library use” codes provide insight into awareness of library services and which services participants are most interested in.
Librarians	Interacted with a librarian, including seeking general help in using a library, or meeting with a librarian for research assistance.
Workshops	Attended a library workshop or program
Workspace	Used a library as a place to work

Browsing	Browsed the library magazine or books stacks, or other collections
Borrowing	Used the library's borrowing service to retrieve, check out, and return books or other materials, including interlibrary loan and eBooks
Means of Access	**Code Description:** “Means of Access” refers to the places, tactics, and resources participants used to discover, or attempt to find, and access their information sources. It also includes unsuccessful attempts of finding a source. If the participant mentions NOT using a resource, code the transcript with the appropriate code followed by "negative." **Significance:** The discovery and access of sources is a major component of information seeking behavior as it provides insight into how participants search for and access their information.
Public library	Used a public, non-academic, library
Academic library	Used an academic library
Archive / Special Collection	Any mention of using an archive or special collection, including if it's part of an academic library, and include archives' discovery tools like finding aids or accessing digital materials via the archive or special collection's websites
Special library	Used a special library (Map, Court, Government Library)
Online library resources	Used a library's online catalog, discovery layer, online archive, or other online database, including remote access. Used a resource that requires a subscription, such as subscription aggregator databases. Accessed a resource through the library, whether through a subscription or for free
Freely available online resources	Used online resources that are free and available to the public. Includes but is not limited to Internet search engines such as Google or university directories.
Social network	Used their social network, including personal contacts and professional network. Includes but is not limited to asking a family member or friend for help accessing a paper, putting in a request for a document on a listserv, asking for personal introductions to other sources ("word of mouth"), or putting in a request on a social media channel.
Personal purchase	Used their own money to purchase access to a resource
Employer	Used one-off purchases or subscription resources paid by employer to discover and access information, including using any research funds provided to a freelance journalist to purchase

	articles or other materials
Direct source	Went directly to a person or organization who created the source they need to ask for access
Sources	**Code Description:** "Sources" refers to the wide-range of people, papers, documents, media, data, books, archival materials, and so on that participants have used in their past projects or Fellowship projects. For sources that do not fit in the categories below, code as this (Sources). For press releases, code into category that best fits the organization who created the press release (for example, press release for a new academic study is Research Articles and Books code) **Significance:** The type of sources journalists use and when they use a particular source is an essential part of the research process.
Research articles and books	Used research-intensive literature as sources of information for their Fellowship project or a past project. Includes academic articles, academic books, textbooks, and non-fiction long-form journalism books. Includes press releases for a new academic study.
Research Data	Used data created by academia for their Fellowship project or a past project.
Popular Media	Used popular media as sources of information for their Fellowship project or a past project. Popular media includes but is not limited to magazines, newspapers, documentaries, and podcasts.
People Sources	Interviewed and or consulted with people who are experts or have first-hand experience as sources of information for their Fellowship project or a past project. Includes three subcodes:
● Experts	Consulted with, interviewed, or attended classes and workshops by experts, such as academic researchers, for information for their Fellowship project or a past project.
● Government officials	Consulted with or interviewed government officials or employees for information for their Fellowship project or a past project.

• Field sources/key witnesses	Consulted with or interviewed someone with first-hand experience of the topic the participant is researching, usually, but not always, in the field and part of the field research for their Fellowship project or a past project.
Social Media	Used social media content as sources of information for their Fellowship project or a past project.
Trade Media	Used trade media like print magazines or websites as sources of information for their Fellowship project or a past project.
Government Information	Used government-produced information as sources, excluding government officials (see People Sources), for their Fellowship project or a past project. Includes laws, policies, government-issued reports, and government data (e.g., Census).
Special Materials	Used archival, special, or rare books, papers, and other materials as sources of information for their Fellowship project or a past project. Usually, but not always, requires visiting an archive or special library to access, or visiting the archive, special collection, or library's website to access materials.
Maps	Used electronic or physical maps as sources of information for their Fellowship project or a past project.
Grey Literature and data	Used white papers, reports, and data created by non-government organizations, think tanks, non-academic research organizations, non-profits, companies.
Growth	**Code Description:** Expressed interest in developing new research skills or exhibited or discussed a change in how they discovered, accessed, or used information. Add NEGATIVE if participants express not changing a behavior. **Significance**: to track how participants' information seeking behavior changed during the course of the program.
Benefit / Challenge	**Code Description:** Code as BENEFIT if a task or activity was easy to complete, or an external variable (such as time or mobility) benefited or helped their process of completing a task or project. Code as CHALLENGE when a task or activity was difficult to complete or an external variable made their work a challenge. Both BENEFIT and CHALLENGE could include factors that are within the purview of libraries and external to the libraries' control (e.g., deadlines). **Significance**: Understand what activities they might exhibit

	familiarity and confidence, where they get stuck in their research, and what challenges are under their control or under libraries' control
Information management	Mentioned ease (BENEFIT) or difficulty (CHALLENGE) of managing information such as quotes from sources and organizing information.
Resource access	Discussed the ability to (BENEFIT) or lack of access to (CHALLENGE) non-people sources, due to, for example, access to research funds (BENEFIT), was able to get an article because access to a library with the sources (BENEFIT), employer does not provide access (CHALLENGE), and hit a paywall (CHALLENGE).
Time	Discussed time as a constraint (e.g., short deadlines) or benefit (e.g., lots of time to think) to completing a task
Field work / Access to human sources	Mentioned the ability (BENEFIT) or lack of ability (CHALLENGE) to access and conduct field work or get in touch with human sources in general, such as being embedded or invited in the field, access to people sources, and mobility to travel to the field.
Library comfort level	Discussed or exhibited anxiety (CHALLENGE) or comfort (BENEFIT) when using a library and its resources and services. Can include but is not limited to feelings of belonging, confidence using the library, and library anxiety.
Awareness of library access	The types of libraries they are aware they can access (BENEFIT), or not aware they can use (CHALLENGE). Language might include *allow, welcomed*, or *affiliated*.
Usability of library's online resources	Discussed the ability (BENEFIT) or lack of ability (CHALLENGE) to effectively use the library's online resources, including the website, catalog, discovery layer, databases, and online materials like e-books.
Navigating library stacks	Mentioned the ability (BENEFIT) or lack of ability (CHALLENGE) to easily navigate the library stacks
New research areas	Talked about the ease to perform (BENEFIT) or difficulty to perform (CHALLENGE) research in new or unfamiliar areas.
Using information	Discussed the ability (BENEFIT) or lack of ability (CHALLENGE) to comprehend, synthesize, or use information (including using information in an ethical manner)
Information discovery	Discussed discovery of a particular sort of information. Could either be information that was easy to find (BENEFIT) or information that was difficult to discover or non-existent

	(CHALLENGE).
Process	**Definition or Description:** How participants described their overall tasks and activities when going about research, including how they instruct research assistants to carry out their research and work. **Importance**: Texts of process demonstrate how participants go about their information seeking, providing insight into their routines at various stages of their reporting.
Topic formation	Describes their process to generate ideas, brainstorm, and form a topic.
Background research	Describes their process to conduct background research for a story. Including the process of finding background data to support a story and the process of finding experts.
Field work	Describes their process to conduct field work.
Found all information	Describes how they know they found all the information they need.
Write/report	Describes how they create content, such as writing, to report their story