College & Research Libraries

May 2022 • Volume 83 • Number 3

Association of College and Research Libraries

C&RL

COLLEGE & RESEARCH LIBRARIES

May 2022
VOLUME 83
NUMBER 3
ISSN 0010-0870

C&RL

COLLEGE & RESEARCH LIBRARIES

May 2022
VOLUME 83
NUMBER 3
ISSN 0010-0870

Book Reviews (continued)

Responding to a long-overlooked need among researchers and library professionals, *College & Research Libraries* (*C&RL*) is proud to announce an authorial name change policy, which takes effect immediately. This policy supports all requested name changes and applies to all articles published by *C&RL*, past, present, and future. This policy is the work of a *C&RL* Editorial Board working group that responded to a name change policy request by Shannon Devlin and Brian M. Watson. In response, *C&RL* Editor Wendi Arant Kaspar established a small task force composed of Watson, Kristen Totleben, Amy Lazet, and Michelle Demeter. The goal of this group was to examine best practices in alignment with the journal's standards by designing a comprehensive policy outlining the parameters of responsibilities and expectations of both *C&RL* authors and the Editor in regard to name change requests. The policy was approved by the *C&RL* Editorial Board in May 2021 and workflows were then addressed and coordinated in anticipation of the policy's enactment in April 2022.

C&RL hopes that this important policy will implement a more equitable and inclusive publishing practice by supporting all authors—including, but not limited to authors who are trans and gender diverse, who change their name upon marriage or divorce, international authors with misspelt or mistranslated names, and Indigenous, and international authors—who would like their scholarly records to reflect their name changes. To implement this policy for your own name change, please read the policy tenets below and visit *C&RL*'s "Author Guidelines." For more information about why this policy is so important, please read Lazet and Watson's adjoining editorial in this issue of *C&RL*, which provides a brief retrospective on how name change policies have been developed and how they have positively impacted academic publishing.

Michelle Demeter,
C&RL Editorial Board Member,
Head of Undergraduate and Instructional Services at New York University Libraries

Kristen Totleben,
C&RL Editor-Designate,
Humanities Librarian, University of Rochester

College & Research Libraries Authorial Name Change Policy (2022)

College & Research Libraries is committed to supporting requests for author name and/or pronoun changes. Name changes and pronoun changes are available upon request by contacting the editor directly at ktotleben@library.rochester.edu, and approved without documentation. All requests will be handled with confidentiality and as quickly as possible. *C&RL* based its best practices on the five guiding principles noted in "A Vision for a More Trans-Inclusive Publishing World" shared by the Committee on Publication Ethics (COPE).

Authorial name changes to previously published articles may be requested by an author for any reason, including name changes due to marriage or divorce; non-Western naming struc-

tures; or gender identity. Trans and gender diverse authors who wish to request a change to a previous publication are particularly encouraged to contact the editors. Authors will not be asked to provide official or legal documentation of the name change, and all requests will be kept confidential by the editors.

Any request for a name change will result in removal of the earlier name from any and all publication repositories. This extends to both the metadata of the article, as well as the PDF of the article itself. If applicable, any pronoun changes (as in a biographical entry) may be requested at the same time. Although some publication flows may be out of the scope of *C&RL*, the editors will make every effort to ensure that name changes are reflected in reprints and downstream publications.

In order to maintain the author's privacy, name changes will not be announced, nor will any notices be published that draw attention to the changes. Co-authors will not be notified of the change.

Once received, requests will be processed in an expedient manner and will not require deliberation by the editorial board.

C&RL editors will verify citations and bibliographies in future submissions to ensure that the earlier name is not included in any new articles published in *C&RL*.

Guest Editorial

The Case for Retroactive Author Name Changes

Amy Lazet and Brian M. Watson

> "A name is a common way of identifying and understanding a person's subjectivity […] various ways, naming provides cues for one's gender, states, religion, ethnicity, and nationality."[1]

A name is a reflection of the individual, yet for authors who no longer identify with their birth name or whose name has changed, continuing to see their previous name on publications can be painful, annoying, or even potentially dangerous. While this applies to many authors (as will be discussed below) trans and gender-diverse authors are particularly faced with an untenable choice: disassociate themselves from their previous writings (thereby losing their scholarly record), or out themselves as trans by claiming previous publications under their new name. Neither choice is viable, and in response, there is a growing movement to correct the published record to reflect these authors' true names.

Background

Authors' names have long been an issue in publishing as the Western naming structure of "first name last name" is not universally applicable.[2] Chinese names are typically structured so that the name listed first is the surname while the second-order name is the given name.[3] South Indians, on the other hand, do not typically have a surname, and are known only by their given name. In order to fulfill the Western-based authorial naming criteria, the father's given name is commonly used, often leading to confusion as to who deserves the credit for the publication—the author or their father.[4] Similarly, women in academia have traditionally faced issues related to assuming a partner's name.[5] If a woman has established a professional reputation under her maiden name, how can she continue to associate that record with herself if she changes her name upon marriage or divorce?

Open Researcher and Contributor ID (ORCID) is the most well-known workaround and offers authors the ability to register with the free service and receive a unique identifier.[6] This identifier allows all of one's published works to be associated with the author as a unique individual, a useful feature if one's name changes or if one has a common name that could be confused with other authors. What ORCID does not do, however, is allow authors to retroactively change their name on previously published works.

Amy Lazet is Digital Scholarship Librarian at College for Creative Studies; email: amylazet@gmail.com. Brian M. Watson is Ph.D Student and Research Assistant at University of British Columbia iSchool; ORCID: 0000-0001-5151-0471; email: brimwats@mail.ubc.ca

Importance of Retroactive Name Changes

For authors who change their name due to a change in their gender identity (the primary focus of *C&RL*'s Authorial Name Change Policy), this continued association with a deadname (a given name that typically aligns with one's assigned-at-birth gender but is now no longer used) is painful and can even be dangerous.[7] For an author to claim publications under a deadname effectively outs them as trans and can lead to transphobic attacks.[8] This has led to a growing recognition of the necessity of allowing name changes not just in article metadata but also in the article itself.

According to Dr. Theresa Jean Tanenbaum, a researcher and author at the forefront of the issue of retroactive name changes, altering the article itself is a necessary element of these policies. Retroactive name changes that neglect to change the author's name on the previously published article itself (i.e., not just in the attendant metadata) are a non-starter for her—they will still lead to deadnaming, misgendering, or anti-trans bias rather than focusing on the scholarship.[9] Tanenbaum also rejects the established convention of issuing an erratum or corrigendum when changing a trans author's name, as this effectively announces to the entire readership of the journal that the author is transgender.[10]

Issuing a correction related to the author's name is in keeping with the International Association of Scientific, Technical & Medical Publishers' guidelines, which state that "articles that have been published as the version of record should remain extant, exact and unaltered to the maximum extent possible."[11] However, while a case can be made for keeping the author's original name associated with the article for the sake of preservation of the record, does the need for historical information and context surrounding a work supersede the need of the author for privacy and even, possibly, safety? Are there other instances where the benefit to an individual outweighs the benefit of creating greater context for a work? The answer within the archival field is a resounding yes.

Privacy and Anonymity

Sara S. Hodson acknowledges the "competing ethics" of privacy versus traditional archival goals. Even Hodson, however, outlines the importance of maintaining anonymity in the archives for those mentioned in archival documents, specifically focusing on the invasion of privacy.[12] As defined by William Prosser, invasion of privacy has four facets: "intrusion upon an individual's seclusion or solitude, or into [their] private affairs; public disclosure of embarrassing or private facts about the individual; publicity that places the individual in a false light in the public eye; and appropriation, for another person's advantage, of the individual's name or likeness."[13] Knowing the details of an author's identity, particularly for trans authors, has the potential to violate the first and second tenents outlined by Prosser.

Although Hodson states that "conventional wisdom suggests that the right of privacy ends at death, since the dead obviously can no longer be embarrassed by the revelation of personal information," this notion is directly at odds with social justice issues surrounding identity.[14] In his think piece for NBC titled "A transgender person's deadname is nobody's business. Not even a reporter's," Chase Strangio of the American Civil Liberties Union argues that to violate the identity and language surrounding the gender of a trans individual, even after death, constitutes a violation of decency. The subtitle of the piece states, "An obituary is supposed to be a sign of respect for who a person was, but deadnaming is a way to shame

trans people for who they are."[15] In this construct, then, the right to privacy does not end at an individual's death but should be maintained whenever referencing the individual; to do otherwise is discriminatory. As Strangio says, "Your prurient curiosity shouldn't get to trump our right to dignity and respect."[16]

Although anonymity in the archives can be viewed as a negative (it has been used to erase the identities and even the presence of minorities in historical documents),[17] lack of knowledge of the author of a work does not lessen the value of the work, and indeed is common in some types of works (ephemeral objects, photographs, etc.).[18] As pointed out by Emily Ross, knowing the name of an author does not guarantee knowledge of the context surrounding the creation of the work, nor does *not* knowing the author's name translate to a complete lack of context.[19] While knowing the details of an author's background can be *helpful* in interpreting their work, it is not *necessary* in understanding the work. Information about the author can supply context for the text but not knowing "does not make the text itself any more unreliable."[20]

Furthermore, authors have long been able to choose how they are identified at the time of publication, i.e., using their legal name, publishing anonymously, or using a pseudonym.[21] Ellen Gruber Garvey points out that many authors have used pseudonyms to assume a mantle that may or may not be accurate, yet the veracity of the author's name is not verified at the time of the original submission for publication.[22] While the difference is the name provided upon publication versus retroactively, as Tanenbaum points out, the historical record is a living, breathing artifact; it is not static.[23] To hold the historical record as sacred and inviolate is at odds with the very nature of the discipline of history; new information is constantly being uncovered and used to amend the record.[24]

Changes in the Field of Publishing

Within the field of publishing itself, there is an increasingly widespread acceptance of retroactive name changes. The American Psychological Association states that "respecting authors' autonomy and recognizing that authors' names may change after articles have been published, APA Publishing will update author names without publishing an accompanying correction notice. Changes will be made to the digital record for APA-published eBooks or journal articles that have already appeared in print."[25] Some of the first major organizations to allow retroactive name changes on articles include: American Psychological Association Publishing; American Chemical Society; Association for Computing Machinery (ACM); Wiley-Blackwell Publishing; and now the Association of College & Research Libraries' *College & Research Libraries*.[26]

The path to the adoption of these changes, however, was hardly smooth. According to Tanenbaum, who led the initiative for ACM to allow retroactive name changes, the editorial board raised concerns related to the layout and pagination of articles if they underwent an authorial name change. The ACM also expressed concerns about published articles being subpoenaed for a legal proceeding; if this were to happen, how would they prove the content itself had not been altered? ACM's solution was to keep a copy of the original on a dark server that would only be accessed if subpoenaed.[27]

Furthermore, the workarounds provided for authorial naming conventions (i.e., ORCID) have severe limitations; as South Indian author V. Raveenthiran points out, "the ORCID number may be a useful supplement; but it cannot replace [the] author's name in publications because *identification is not the same as identity*. [The] ORCID number may facilitate unequivocal identification of individuals but the identity of authors still rests with their names" [emphasis added].[28]

Considering all the above concerns, the *C&RL* Name Change Policy Task Force wrote an Authorial Name Change Policy. This brings *C&RL* in line with the more than 50 publishers that have announced or implemented policies since 2020 that are close to or aligned with the five principles outlined by *C&RL*'s Name Change Policy Working Group (NCPWG): accessibility; comprehensiveness; invisibility; expediency and simplicity; and recurrence and maintenance.[29]

Implications for Information Science

The use of an author's name for cataloging and authority control is one of the fundamental tenets of library and information science. Melvil Dewey felt that proper naming warranted more concern in the first edition of *Classification and Subject Index for Cataloguing and Arranging the Books and Pamphlets of a Library* than subject cataloging. It remains one of the most important fields in MARC 21 (1XX), occupies a significant portion of *RDA: Resource Description and Access* (chapters 9-11), and explaining it required Daniel N. Joudrey, Arlene G. Taylor, and David P. Miller (2015), and Lois Mai Chan and Athena Salaba (2016) to write more than one hundred pages each to properly discuss the issue.[30] In recent years, a number of authors—including academics, activists, and classically trained catalogers—have raised concerns around the use of names as identifiers and access points. These ethical issues include the use of women's maternal or married names, the use of colonial and anthropological nomenclature, misspelled or miscopied non-Western names, and racist terminology.[31]

Traditionally, within the field of library science, catalogers have been to instructed to include all iterations of author's name, and authors have been directed to self-cite earlier publications.[32] Lorraine J. Pellack and Lori Osmus Kappmeyer demonstrated, through an analysis of 1,159 citations from 380 publications by eight academics, that authors (in this case women who changed their names, likely due to marriage) "who do not include their former name as part of their new name have less opportunity for the surnames to match between the publication and the index[ing conducted by databases]."[33]

Authors applying queer theory to cataloging have also focused on other ways information in authority records out transgender individuals. In the article "More Than a Name: A Content Analysis of Name Authority Records for Authors Who Self-Identify as Trans," Kelly J. Thompson examines the authority records for 60 authors who self-identify as trans to ascertain if, and how, the authority records out these authors. By examining the fields for recording gender and name (among others), Thompson identified 39 out of 60 records that effectively outed the authors.[34] Of these 39, only 21 cited the author as the source for the information about their gender identity. Thirty-four of the 39 provided more than one name for the author, either as a name set (alternate versions of a name used simultaneously) or name sequence (names that the author has used in the past but does not currently use).[35] That so many authority records contained sensitive information that did not come from the authors themselves verified Thompson's concern that authority records may unwittingly—and unacceptably—expose the authors in ways the authors never intended. This issue has been also explored by others[36] who demonstrate that including gender identity in authority records is not necessary for bibliographic purposes.

In fact, the major citation style guides differ on how they approach the issue. The print version of the Chicago Manual of Style does not offer clear direction on the names of transgender authors, but the Chicago Manual of Style Online offers a "Q&A" section on their website for questions not covered in the published guide. One user wrote to the Chicago

Manual editorial team via the website's FAQ, inquiring how to deal with deadnames and the harm done by them: "[a] dead name [sic] may come with unhappy emotional associations and moreover is in any case no longer the real or current name of the author concerned[…] citing the author with that dead name [sic] may therefore be an ethically compromised act, be hurtful, or simply be factually incorrect."[37] In response, the editorial board wrote, "obviously, changing the author's name on a source citation in a note or bibliography is unhelpful to readers who go looking for that work. It also misrepresents the publishing history of the work."[38] However, they do note that the best practice is to "contact the author for permission and instructions on cross-referencing or glossing the names." In the event the author cannot be contacted, it is best practice to prefer the deadname and "use your judgment with regard to adding the current name."[39]

In contrast, the MLA guidelines were updated in 2021 to include the following information:

> *When not to supply information, cross-reference, or use the published form of a name:* If you are writing about or working directly with an author whose name changed and you know that they do not use their former name in references to their work—for example, for trans authors—list their works under the name they use, regardless of the name that appears in the source. Do not supply information about the name change or cross-reference entries, and avoid using the former name in your prose.[40]

Finally, the latest edition of the *Publication Manual of the American Psychological Association* is nearly comprehensive. Sections 5.1 and 5.2 cover reducing bias, and the online style guide includes a detailed section titled "General Principles for Reducing Bias." The "Principles" observe that descriptors with modifiers (for example, "cisgender women") are "more specific" but that an author should not "mention characteristics gratuitously" and to "choose terms that are appropriately specific."[41] The same section also strongly recommends that authors should "acknowledge people's humanity" by choosing labels carefully and avoiding pejorative language.[42]

The APA style guide also offers a 6,000-word section on gender that differentiates gender from sexuality and offers considerations of all aspects of gender: cisgender; transgender; nonbinary; and gender nonconforming.[43] Other recommendations include using "sex assigned at birth" to describe the usually binary assignment of birth sex to individuals; the terms "transprejudice" and "transnegativity" to "denote discriminatory attitudes toward individuals who are transgender;" and the use of the umbrella term TGNC (transgender and gender-nonconforming).[44] The APA style guide echoes the Chicago style guide by recommending that authors "consult the person and respect their preferences in whether and how to address the name change" but does not offer a recommendation on what to do in the event that an author cannot be reached.[45] Finally, in a departure from many style guides, the APA specifically discusses the use of pronouns, instructing that the individual's choice should be preferred in all cases, and recommends the use of the singular "they" when discussing a person whose gender is unknown.[46]

Conclusion

As pointed out by Tanenbaum, et al, "Disclosing someone's transition through the use of their previous name not only endangers that person's life, and livelihood, but also exposes them

to implicit and explicit bias in terms of citations, tenure and promotion, and other aspects of their professional life. A trans scholar should be evaluated based on their scholarship, not their transness."[47]

In one of the first peer-reviewed articles on retroactive name changes, Leo Chan Gaskins and Craig R. McClain point out that inequity is currently embedded in the publishing industry for transgender authors. "Invisible" name changes (ones implemented without publishing an erratum or corrigendum) are necessary to correct this, since "academic journals should not act as gatekeepers for a transgender person's ability to protect and control their own information and narrative […] non-visible name change policies return that control to the individual."[48]

Retroactive, invisible authorial name changes are essential. Despite concerns about the integrity of the record if authorial names are changed retroactively, information science has long held that protection of one's identity is a tenet worth preserving. Indeed, it is a necessity in a world that is moving toward greater equity for all. In this regard, *C&RL*'s new retroactive name change policy is crucial in protecting authorial identity, and a proud day for the field of information science.

Notes

1. Durba Ghosh, "Decoding the Nameless: Gender, Subjectivity, and Historical Methodologies in Reading the Archives of Colonial India," in *A New Imperial History: Culture, Identity, Modernity, 1660-1840*, edited by Kathleen Wilson (Cambridge: Cambridge University Press, 2004): 300.

2. This paper was initially inspired by the November 11, 2020 Mina Rees Library Conversation Series "Trans and Gender Diverse Voices in Library & Information Science" with panelists Kalani Adolpho, Krista McCracken, & Stephen G. Krueger.

3. Armen Yuri Gasparyan, et al, "Scientific Author Names: Errors, Corrections, and Identity Profiles," *Biochemia Medica* 26, no. 2 (June 10, 2016): 171, https://doi.org/10.11613/BM.2016.017.

4. Nalini Puniamoorthy, Jeevananthinee Jeevanandam, and Sujatha Narayanan Kutty, "Give south Indian authors their true names," *Nature* 2008; 452: 530, http://dx.doi.org/10.1038/452530d.

5. Lorraine J. Pellack and Lori Osmus Kappmeyer, "The Ripple Effect of Women's Name Changes in Indexing, Citation, and Authority Control," *Journal of the American Society for Information Science and Technology* 62, no. 3 (2011): 440, https://doi.org/10.1002/asi.21469.

6. ORCID, "About ORCID," accessed November 24, 2020, https://info.orcid.org/what-is-orcid/.

7. Merriam Webster Dictionary, "Definition of DEADNAME," accessed March 28, 2021, https://www.merriam-webster.com/dictionary/deadname.

8. Theresa Jean Tanenbaum, "Publishers: Let Transgender Scholars Correct Their Names," *Nature* 583, no. 7817 (July 22, 2020): 493, https://doi.org/10.1038/d41586-020-02145-3.

9. Ibid.

10. Theresa Jean Tanenbaum, et al, "Towards A Trans Inclusive Publishing Landscape," *Medium*, September 11, 2020, https://tesstanenbaum.medium.com/towards-a-trans-inclusive-publishing-landscape-893339b9868d.

11. International Association of Scientific, Technical and Medical Publishers, "Preservation of the Objective Record of Science: An Objective Guideline," issued April 2016, updated September 5, 2017: 1, https://www.stm-assoc.org/2017_09_05_STM_Guide_Preserving_the_Record_of_Science_5_September_2017.pdf.

12. Sara Hodson, "In Secret Kept, In Silence Sealed: Privacy in the Papers of Authors and Celebrities," *The American Archivist* 67, no. 2 (September 1, 2004): 194, https://doi.org/10.17723/aarc.67.2.b53338437x161076.

13. Ibid, 195, citing William L. Prosser, "Privacy," *California Law Review* 48 (August 1960): 383-423.

14. Hodson, "In Secret Kept," 196.

15. Chase Strangio, "Opinion | Nobody Needs to Know a Transgender Person's Deadname—Not Even a Reporter," NBC News, accessed January 28, 2021, https://www.nbcnews.com/think/opinion/transgender-person-s-deadname-nobody-s-business-not-even-reporter-ncna1206721.

16. Ibid. Tanenbaum also briefly mentions in "Publishers: Let Transgender Scholars Correct Their Names" that (at the time of her writing), 15 "countries criminalize the gender identity or expression of trans people—a crime that in some cases carries the death penalty."

17. Ghosh, "Decoding the Nameless," 301.

18. Hodson, "In Secret Kept," 242.

19. Emily Ross, "The Problem of Anonymity in Archives: A Literature Review," *Bilgi Dünyası* 14, no. 2 (October 31, 2013): 242, https://doi.org/10.15612/BD.2013.119.

20. Ibid, 243.

21. Tanenbaum, et al, "Towards A Trans Inclusive Publishing Landscape;" Ellen Gruber Garvey, "Anonymity, Authorship, and Recirculation: A Civil War Episode," *Book History* 9, no. 1 (2006): 159-178, https://doi.org/10.1353/bh.2006.0005.

22. Garvey, "Anonymity, Authorship, and Recirculation," 159; Tanenbaum, et al, "Towards A Trans Inclusive Publishing Landscape."

23. Tanenbaum, et al, "Towards A Trans Inclusive Publishing Landscape."

24. Peter N. Stearns, "Why Study History?," American Historical Association (2008), accessed March 28, 2021, https://www.historians.org/about-aha-and-membership/aha-history-and-archives/historical-archives/why-study-history-(1998).

25. American Psychological Association, "Policy on Author Name Changes after Publication," accessed November 24, 2020, https://www.apa.org/pubs/journals/resources/policy-author-name-changes.

26. American Chemistry Society, "Name Change Policy," accessed November 24, 2020, https://publish.acs.org/publish/publishing_policies/name_change; Association for Computing Machinery, "ACM Publications Policy on Author Name Changes," accessed November 24, 2020, https://www.acm.org/publications/policies/author-name-changes; Wiley Online Library, "History," accessed March 28, 2021, https://doi.org/10.1111/(ISSN)1468-229X.

27. Tanenbaum, "Publishers," 493.

28. Venkatachalam Raveenthiran, "Insensitivity of Editors and Indexers Regarding the Cultural Variations of Authors' Surnames," *Biochemia Medica* 26, no. 2 (June 10, 2016): 166, https://doi.org/10.11613/BM.2016.016.

29. Name Change Policy Working Group, "Five Guiding Principles and Best Practices," accessed March 22, 2022, https://ncpwg.org/resources/principles/.

30. Melvil Dewey, *A Classification and Subject Index for Cataloguing and Arranging the Books and Pamphlets of a Library* (Hartford, CT: Case, Lockwood & Brainard Company, 1876): 41-42; Joint Steering Committee for Development of RDA, American Library Association, Library Association of Australia, Cataloguing Committee, British Library, Canadian Committee on Cataloguing, Library of Congress, Canadian Library Association, Chartered Institute of Library and Information Professionals (Great Britain), and Deutsche Nationalbibliothek, *RDA: Resource Description & Access* (Chicago, IL: American Library Association, 2015): 313-419; Lois Mai Chan and Athena Salaba, *Cataloging and Classification: An Introduction* (Maryland: Rowan and Littlefield, 2016): 331-428.

31. See the Bibliographic Appendix.

32. Lorraine J. Pellack and Lori Osmus Kappmeyer, "The Ripple Effect of Women's Name Changes in Indexing, Citation, and Authority Control," *Journal of the American Society for Information Science and Technology* 62, no. 3 (2011): 447, https://doi.org/10.1002/asi.21469.

33. Ibid, 444-445.

34. Kelly J. Thompson, "More Than a Name: A Content Analysis of Name Authority Records for Authors Who Self-Identify as Trans," *Library Resources & Technical Services* 60, no. 3 (July 28, 2016): 147, https://doi.org/10.5860/lrts.60n3.140.

35. Ibid, 149, 144, citing Frank Exner, Little Bear, "North American Indian Personal Names in National Bibliographies," in *Radical Cataloging: Essays at the Front*, edited by K. R. Roberto (Jefferson, North Carolina: McFarland, 2008): 150-164.

36. Thompson, "More Than a Name;" Amber Billey, Emily Drabinski, and K. R. Roberto, "What's Gender Got to Do with It? A Critique of RDA 9.7," *Cataloging & Classification Quarterly* 52, no. 4 (May 19, 2014): 412-421, https://doi.org/10.1080/01639374.2014.882465; Amber Billey and Emily Drabinski, "Changing Library Cataloging Standards to Be More Inclusive to a Gender Identity Spectrum," *TSQ* 6, no. 1 (2019): 117-123, https://doi.org/10.1215/23289252-7253538.

37. Chicago Manual of Style, "Citation, Documentation of Sources," *The Chicago Manual of Style Online* (17th ed.), accessed March 22, 2022, https://www.chicagomanualofstyle.org/qanda/data/faq/topics/Documentation/faq0274.html.

38. Ibid.

39. Ibid.

40. Modern Language Association, section 5.15, *MLA style manual and guide to scholarly publishing* (9th ed.), New York: Modern Language Association of America, 2021.

41. American Psychological Association, "General Principles for Reducing Bias," *apastyle.org*, accessed March 22, 2022, https://apastyle.apa.org/style-grammar-guidelines/bias-free-language/general-principles.

42. Ibid.

43. American Psychological Association, "Gender," *apastyle.org*, accessed March 22, 2022, https://apastyle.apa.org/style-grammar-guidelines/bias-free-language/gender.

44. Ibid.

45. American Psychological Association, "Citing Authors with the Same Surname," *apastyle.org*, accessed March 22, 2022, https://apastyle.apa.org/style-grammar-guidelines/citations/basic-principles/citing-authors-same-surname.

46. American Psychological Association, "Gender."

47. Tanenbaum, et al, "Towards A Trans Inclusive Publishing Landscape."

48. Leo Chan Gaskins and Craig R. McClain, "Visible Name Changes Promote Inequity for Transgender Researchers," *PLOS Biology* 19, no. 3 (March 9, 2021): 2-3, https://doi.org/10.1371/journal.pbio.3001104.

Bibliographic Appendix

Brian M. Watson

Adler, Melissa A. "Classification Along the Color Line: Excavating Racism in the Stacks." *Journal of Critical Library and Information Studies* 1, no. 1 (January 29, 2017). https://doi.org/10/gdb8q3.

Allen, Paula Gunn. *The Sacred Hoop: Recovering the Feminine in American Indian Traditions: With a New Preface*. Boston: Beacon Press, 1992.

Antracoli, Alexis, Annalise Berdini, Kelly Bolding, Faith Charlton, Amanda Ferrara, Valencia Johnson, and Katy Rawdon. "Archives for Black Lives: Anti-Racist Descriptions." Philadelphia, USA: Archives for Black Lives in Philadelphia (A4BLiP), October 2019.

Antracoli, Alexis, and Katie Rawdon. "What's in a Name? Archives for Black Lives in Philadelphia and the Impact of Names and Name Authorities in Archival Description." In *Ethical Questions in Name Authority Control*, edited by Jane Sandberg, 307–36. Sacramento, CA: Library Juice Press, 2019.

Arastoopoor, Sholeh, and Fatemeh Ahmadinasab. "From Personal to Corporate and from Names to Titles: The Challenges of Iranian Scholars with Scientific Publications." In *Ethical Questions in Name Authority Control*, edited by Jane Sandberg, 215–42. Sacramento, CA: Library Juice Press, 2019.

Billey, Amber. "Just Because We Can, Doesn't Mean We Should: An Argument for Simplicity and Data Privacy With Name Authority Work in the Linked Data Environment." *Journal of Library Metadata* 19, no. 1–2 (April 3, 2019): 1–17. https://doi.org/10.1080/19386389.2019.1589684.

Biswas, Paromita. "Rooted in the Past: Use of 'East Indians' in Library of Congress Subject Headings." *Cataloging & Classification Quarterly* 56, no. 1 (January 2, 2018): 1–18. https://doi.org/10/gg9cbm.

Cataloging, Cooperative, Advisory Committee, Executive Summary, P C C Steering Committee, Advisory Committee, and The Advisory Committee. "Name Authorities in Transition : Implications for the PCC," no. 1 (2014): 1–18.

Chan, Lois Mai, and Athena Salaba. *Cataloging and Classification: An Introduction*. Fourth edition. Lanham, Maryland: Rowman & Littlefield Publishers, 2016.

Cohen, Ahava. "Free to Be… Only He or She: Overcoming Obstacles to Accurately Recording Gender Identity in a Highly-Gendered Language." In *Ethical Questions in Name Authority Control*, edited by Jane Sandberg, 133–54. Sacramento, CA: Library Juice Press, 2019.

Cushman, Ellen. "Supporting Manuscript Translation in Library and Archival Collections: Toward Decolonial Translation Methods." In *Libraries and Archives in the Digital Age*, edited by Susan L. Mizruchi, 53–68. Cham: Springer International Publishing, 2020. https://doi.org/10.1007/978-3-030-33373-7_6.

Dewey, Melvil. *A Classification and Subject Index for Cataloguing and Arranging the Books and Pamphlets of a Library*. Hartford, CT: Case, Lockwood & Brainard Company, 1876. https://hdl.handle.net/2027/miun.aey7382.0001.001.

Diao, Junli. "'Fu Hao,' 'Fu Hao,' 'FuHao,' or 'Fu Hao'? A Cataloger's Navigation of an Ancient Chinese Woman's Name." *Cataloging & Classification Quarterly* 53, no. 1 (January 2, 2015): 71–87. https://doi.org/10.1080/01639374.2014.935543.

Duarte, Marisa Elena, and Miranda Belarde-Lewis. "Imagining: Creating Spaces for Indigenous Ontologies." *Cataloging & Classification Quarterly* 53, no. 5–6 (2015): 677–702. https://doi.org/10/gghn2c.

Dudley, Michael Q. "A Library Matter of Genocide: The Library of Congress and the Historiography of the Native American Holocaust." *International Indigenous Policy Journal* 8, no. 2 (March 10, 2017). https://doi.org/10/ggxj6d.

Elzi, Erin, and Katherine M. Crowe. "This Is the Oppressor's Language Yet I Need It to Talk to You: Native American Name Authorities at the University of Denver." In *Ethical Questions in Name Authority Control*, edited by Jane Sandberg, 71–98. Sacramento, CA: Library Juice Press, 2019.

Fernandez, Maria Victoria. "The Coloniality of Metadata: A Critical Data Analysis of the Archive of Early American Images at the John Carter Brown Library." Master's Thesis, University of Texas at Austin, 2018.

Genovese, Taylor R. "Decolonizing Archival Methodology: Combating Hegemony and Moving towards a Collaborative Archival Environment." *AlterNative: An International Journal of Indigenous Peoples* 12, no. 1 (March 2016): 32–42. https://doi.org/10/gg6sg9.

Gillman, Len Norman, and Shane Donald Wright. "Restoring Indigenous Names in Taxonomy." *Communications*

Biology 3, no. 1 (October 23, 2020): 1–3. https://doi.org/10.1038/s42003-020-01344-y.

Guimarães, José Augusto Chaves. "Knowledge Organization and the Power to Name: LGBTQ Terminology and the Polyhedron of Empowerment." *Pp.* 6 (n.d.): 7.

Holloway, Steven W. "LCSH in the Southern Levant*." *Cataloging & Classification Quarterly* 56, no. 7 (October 3, 2018): 571–91. https://doi.org/10/gg9cbn.

Hughes, Heather K., and Katherine M. Crowe. "Cataloging Kurdistan: Imagining Liberated Geographies." In *Ethical Questions in Name Authority Control*, edited by Jane Sandberg, 99–110. Sacramento, CA: Library Juice Press, 2019.

Joint Steering Committee for Development of RDA, American Library Association, Library Association of Australia, Cataloguing Committee, British Library, Canadian Committee on Cataloguing, Library of Congress, Canadian Library Association, Chartered Institute of Library and Information Professionals (Great Britain), and Deutsche Nationalbibliothek. *RDA: Resource Description & Access*. Chicago, IL: American Library Association, 2015.

Joudrey, Daniel N., Arlene G. Taylor, David P. Miller, and Arlene G. Taylor. *Introduction to Cataloging and Classification*. Eleventh edition. Library and Information Science Text Series. Santa Barbara, California: Libraries Unlimited, 2015.

Kam, D. Vanessa. "Subject Headings for Aboriginals: The Power of Naming." *Art Documentation: Journal of the Art Libraries Society of North America* 26, no. 2 (1992): 18–22. https://doi.org/10/gft79w.

Kazmer, Michelle M. "Identity Theft: How Authority Control Undermines Women's Agency." In *Ethical Questions in Name Authority Control*, edited by Jane Sandberg, 25–42. Sacramento, CA: Library Juice Press, 2019.

Knowlton, Steven A. "Three Decades Since Prejudices and Antipathies : A Study of Changes in the Library of Congress Subject Headings." *Cataloging & Classification Quarterly* 40, no. 2 (August 2005): 123–45. https://doi.org/10/c257mw.

libraries Australia. "Australian Extension to LCSH." National Library of Australia, nd. https://www.nla.gov.au/librariesaustralia/australian-extension-lcsh.

Mai, Jens-Erik. "Marginalization and Exclusion: Unraveling Systemic Bias in Classification." *Knowledge Organization* 43, no. 5 (2016): 324–30. https://doi.org/10/gg9cbt.

Martin, Jennifer M. "When Public Identity Meets Personal Privacy: Ethical Considerations for the Use of Dates of Birth in Name Authority Records for Living Persons." In *Ethical Questions in Name Authority Control*, edited by Jane Sandberg, 43–56. Sacramento, CA: Library Juice Press, 2019.

Olson, Hope A. "How We Construct Subjects: A Feminist Analysis." *Library Trends* 56, no. 2 (2008): 509–41. https://doi.org/10/b99rmj.

———. "Patriarchal Structures of Subject Access and Subversive Techniques for Change." *The Canadian Journal of Information and Library Science* 26, no. 2–3 (2001): 1–29.

Olson, Hope A., and Rose Schlegl. "Standardization, Objectivity, and User Focus: A Meta-Analysis of Subject Access Critiques." *Cataloging & Classification Quarterly* 32, no. 2 (September 2001): 61–80. https://doi.org/10/cbqjmz.

PLOS. "Implementing Name Changes for Published Transgender Authors." *The Official PLOS Blog* (blog), October 12, 2020. https://theplosblog.plos.org/2020/10/implementing-name-changes-for-published-transgender-authors/.

Rigby, Carol, and Riel Gallant. "Creating Multilingual and Multiscript Name Authority Records: A Case Study in Meeting the Needs of Inuit Language Speakers in Nunavut." In *Ethical Questions in Name Authority Control*, edited by Jane Sandberg, 351–78. Sacramento, CA: Library Juice Press, 2019.

Roberts, Sarah T., and Safiya Umoja Noble. "Empowered to Name, Inspired to Act: Social Responsibility and Diversity as Calls to Action in the LIS Context." *Library Trends* 64, no. 3 (2016): 512–32. https://doi.org/10/f8hgr8.

Rubis, June Mary. "The Orang Utan Is Not an Indigenous Name: Knowing and Naming the Maias as a Decolonizing Epistemology." *Cultural Studies* (June 22, 2020): 1–20. https://doi.org/10.1080/09502386.2020.1780281.

Seeman, D. "Naming Names: The Ethics of Identification in Digital Library Metadata." *Knowledge Organization* 39, no. 5 (2012): 325–31. https://doi.org/10.5771/0943-7444-2012-5-325.

Shiraishi, Naomi. "Accuracy of Identity Information and Name Authority Records." In *Ethical Questions in Name Authority Control*, edited by Jane Sandberg, 181–94. Sacramento, CA: Library Juice Press, 2019.

Thompson, Kelly J. "More Than a Name: Content Analysis of Name Authority Records for Authors Who Self-Identify as Trans." *Library Resources & Technical Services; Chicago* 60, no. 3 (July 2016): 140–55.

Vaughan, Crystal A. "The Language of Cataloguing: Deconstructing and Decolonizing Systems of Organization in Libraries." *Dalhousie Journal of Interdisciplinary Management* 14, no. Spring (2018): 1–15.

Watson, Brian M. "Advancing Equitable Cataloging." *NASKO* 8, no. 1 (November 12, 2021): 1–28. https://doi.org/10.7152/nasko.v8i1.15887.

Whittaker, Thomas A. "Demographic Characteristics in Personal Name Authority Records and the Ethics of a Person-Centered Approach to Name Authority Control." In *Ethical Questions in Name Authority Control*, edited by Jane Sandberg, 57–68. Sacramento, CA: Library Juice Press, 2019.

Teacher, Librarian, or Both? A Quantitative Investigation of Instruction Librarians' Teacher Identity

Lisa Becksford

This study investigates instruction librarians' potential teacher identity and the factors that may contribute to it. Responses to a survey of instruction librarians in the United States suggest that respondents see themselves as teachers and devote a significant portion of their time to teaching, though they received little pedagogy training in library school. In addition, a relationship was found between pedagogy knowledge and teacher identity. However, respondents reported having insufficient time for pedagogy-related professional development although they actively seek such opportunities. This research underscores the importance of institutional support so that instruction librarians can engage in pedagogy-related professional development.

Introduction

Instruction librarians' professional identity includes elements related to librarianship and teaching, both of which can be entire professional identities on their own. An understanding of instruction librarians' professional identity can impact two major groups: instruction librarians themselves and those with whom they work on campus. Thus, the issue of instruction librarians' professional identity is not merely one of professional navel-gazing. As an instruction librarian works with others within the library and on campus, their professional identity influences how they show up for these interactions[1] and may influence how they communicate their role to others. If campus partners do not fully understand the role that teaching plays in instruction librarians' work, instruction librarians may find their effectiveness limited in these partnerships.[2] Furthermore, research on teacher identity in K–12 teachers suggests that "a teacher's realization of [their] identity" contributes to a "sense of agency"[3] as well as to their commitment to teaching and how fulfilled they are professionally.[4]

The discussion about librarians' potential roles as teachers is not new, surfacing as early as the 1940s.[5] However, as teaching has become an increasingly large part of many academic librarians' jobs, it has become difficult to agree with the broad assertions of Glenn H. Brown and others that librarians are not teachers.[6] When a significant portion of a librarian's entire job is dedicated to instruction, it may seem obvious that these librarians are teachers, yet anecdotal evidence suggests that many librarians are reluctant to identify themselves as such.

*Lisa Becksford is Online and Graduate Engagement Librarian in the University Libraries at Virginia Tech; email: lisab5@vt.edu ©2022 Lisa Becksford, Attribution-NonCommercial (https://creativecommons.org/licenses/by-nc/4.0/) CC BY-NC.

While there have been many arguments both for and against viewing librarians as teachers, less frequently have instruction librarians themselves been questioned about this aspect of their professional identity and the factors that contribute to their self-perception. Only after we understand how instruction librarians perceive themselves can we further explore how their identities impact their work and campus partnerships. This study, which analyzes the results of an online survey, explores instruction librarians' teacher identities and the factors that may contribute to a teacher identity, including the amount of teaching, the length of time teaching, and training in pedagogy. The results of this study have implications not only for instruction librarians but also for their campus partners and library administrators and help further the field's understanding of instruction librarians' professional identities.

Literature Review

Teacher identity is widely studied in education, particularly in the field of teacher education. However, understanding teacher identity is complicated by the difficulty of defining it because of the dynamic nature of identity and the many facets that contribute to teacher identity.[7] In addition to attempting to define teacher identity, many studies have examined the interplay between an individual's teacher identity and other factors. In their review of the literature on teacher identity, Catherine Beauchamp and Lynn Thomas highlighted issues related to teacher identity, such as the relationships between identity and other factors, including the self, emotions, narrative, reflection, agency, and context.[8] In their review, Douwe Beijarrd, Paulien C. Meijer, and Nico Verloop concluded that identity development is ongoing, determined by the teacher's context, not monolithic but composed of subidentities, and shaped by teachers' agency in forming their identity through professional development.[9] Similarly, John Coldron and Robin Smith argued that "being a teacher is a matter of being seen as a teacher by himself or herself and by others."[10]

While education literature presupposes teachers' teacher identity, library literature has long grappled with the question of whether or not academic librarians are teachers. For instance, in the 1940s Brown argued that librarians' and teachers' jobs are inherently different: "the librarian's functions are to preserve, organize, and make available written and printed records of all ages and all subjects; the teacher's functions are to organize and transmit knowledge in a limited subject field."[11] This debate was revived in the 1970s as the Association of College and Research Libraries advocated for faculty status for academic librarians, with a number of articles in the 1970s and 1980s continuing the discussion. Topsey Smalley noted that, while librarians "function as teachers in many respects," they lack knowledge of pedagogy.[12] Pauline Wilson called the idea of librarians as teachers "an organization fiction" designed to support the notion of faculty status for librarians, combat unflattering librarian stereotypes, and elevate the status of the profession.[13] Echoing Smalley, she noted that librarians may sometimes function as teachers, but it is not their core function. Similarly, David Peele saw the argument that librarians are teachers as an attempt to justify librarians' faculty status and a symptom of librarians' dissatisfaction with their roles as librarians.[14] In contrast, John Budd argued in favor of librarians as teachers, agreeing that teaching is a function of many librarians' jobs, and that "reference librarianship …provides the embodiment of that teaching function."[15]

The issue of academic librarians' professional identity has become more complex as academic libraries themselves have changed. As academic libraries transformed themselves in

response to dramatic shifts in technology, information access, and student needs and expectations, librarians' roles changed as well.[16] As teaching became a larger part of many librarians' roles, researchers turned to examining various aspects of the librarian's potential teacher identity, noting that functioning as a teacher does not necessarily mean that someone identifies as a teacher or fully embraces the role. Kaetrena D. Davis noted that many librarians experience teacher anxiety since they may not have gone into librarianship to teach and may lack the needed pedagogy training.[17] Similarly, Eveline Houtman found that many of the instruction librarians she interviewed learned to teach on the job and felt strong personal responsibility for learning to do their job well.[18] In contrast, Laura Bewick and Sheila Corrall, in their study of subject librarians in the United Kingdom, found that most respondents felt that their level of pedagogical training was sufficient for their teaching role.[19] Other studies examined librarians' emotional labor,[20] the role that campus relationships play in their teaching experience,[21] librarians' attitudes toward the faculty with whom they work,[22] and the differences among different types of librarians' teaching roles.[23] The underlying assumption in these studies is that librarians do function as teachers, though a teacher identity is not a given.

The relationship between instruction librarians' potential teacher identities and their identities as librarians can be challenging to tease out. Many, using a qualitative approach, have asked whether or not librarians view themselves as teachers. Trevor Austin and Janine Bhandol noted that many librarians move into a teaching role during the course of their careers and therefore may feel "a lack of legitimacy in the teacher role" and resist identifying as a teacher.[24] In a study of academic librarians who have been in the profession for 10 or more years, Laura Sare and Stephen Edward Bales found that learning to accept the constant change, including an evolving professional identity, that characterizes the profession was important to academic librarians' job satisfaction.[25] Scott Walter, in interviews with six librarians, found that teaching was central to the work of these librarians, yet there were multiple demands on their time that made it difficult for them to devote as much time to teaching as they wanted. Additionally, many noted that they did not have adequate training in pedagogy while they were in library school. Finally, others noted that librarian stereotypes are still prevalent, leaving no room for the idea of the librarian as a teacher.[26] Emily Wheeler and Pamela McKinney, who interviewed six librarians, articulated four conceptions that their participants had of their identity: "teacher librarian," "learning support," "librarian who teaches," and "trainer." These were not mutually exclusive conceptions, as participants articulated multiple identities during their interviews.[27] A few studies have taken a quantitative approach. Erin L. Davis, Kacy Lundstrom, and Pamela N. Martin examined the relationship between librarians' views on two information literacy instruction models and self-identifying as teachers,[28] and Lauren Hays and Bethani Studebaker examined how librarians' teacher identity is developed through participating in the scholarship of teaching and learning.[29] In contrast to asking librarians about their teacher identities, Mark Aaron Polger and Karen Okamoto asked students whether or not librarians are teachers, finding that a majority (66%) of respondents viewed librarians as teachers.[30]

This study fills a gap in the literature because few large-scale, quantitative studies investigating the potential teacher identity of instruction librarians have been published before, and no existing studies have addressed the specific research questions of this study. While the small-scale, qualitative studies described above examine instruction librarians' teacher identity, they have been limited by a small sample size and did not fully examine the factors that may contribute to a librarian's teacher identity.

Methodology

The goal of this research project was to understand instruction librarians' perceptions of their potential teacher identity and identify any factors that might contribute to their self-perception. For the purposes of this research, an "instruction librarian" is anyone who holds a master of library science or equivalent (such as a master of information science or master of library and information science) and currently teaches as part of their work in an academic library. While "teacher identity" is a complex concept, as noted above, it is understood in this study to mean seeing oneself as a teacher, a definition based on descriptions by Coldron and Smith.[31]

Objective 1: To measure the extent, if any, to which instruction librarians self-identify as teachers

RQ1: To what extent, if any, do instruction librarians view themselves as teachers?

Objective 2: Identify factors that contribute to instruction librarians' self-identity as teachers

RQ2: Is there a relationship between the amount of teaching someone does and how they perceive their teacher identity?

RQ3: Is there a relationship between the length of time someone has been teaching and how they perceive their teacher identity?

RQ4: Is there a relationship between someone's training in pedagogy and how they perceive their teacher identity?

The population of this study was academic librarians (holding an MLS or equivalent) in the United States who teach as part of their current work in libraries. Participants were recruited to take the survey via a posting to ALA's Information Literacy Instruction Discussion List (ili-l). This is a purposive sample in that instruction librarians are likely to subscribe to this listserv. Prior to distribution, the survey was pretested with librarians who fit the requirements of the survey, and their feedback helped to develop the final version of the survey. This paper focuses on the research questions stated above; future publications will focus on other research questions addressed by data not included in this article.

Data was collected over 2.5 weeks in October and November 2019 via an anonymous Qualtrics survey using predominantly multiple-choice questions, with one optional free-response question (see survey in appendix A). A second email invitation was sent out 12 days after the initial email. In total, 209 responses were gathered; because display logic within Qualtrics was used to display some questions only in response to answers given on others, not every participant was shown every question. Jamovi, an open-source statistical software, was used to develop descriptive statistics and to determine potential correlations between respondents' self-perception of their teacher identity and the factors that contribute to these perceptions.

The survey was designed to take around 15 minutes, collecting information about the work of librarians who teach and also gauging their views of themselves as teachers and how they work with teaching faculty at their institutions. After two questions designed to filter out respondents who did not fit the criteria for the survey, the next 11 questions asked participants about their current teaching context, including the type and amount of instruction they currently do. Following these questions, participants were asked to drag a slider bar to indicate the extent to which they agreed or disagreed with a series of statements designed to assess their perception of their teacher identity. References for each of the statements can be found in appendix B.

Limitations

Because the sample of this survey was not a random sample, inferences to instruction librarians in general cannot be made. Potential downsides to using a purposive sample include the fact that survey respondents were self-selected, so those who responded may already have had a strong interest in their professional identity. In addition, because the focus of the listserv is on information literacy, librarians who teach but who do not consider their focus to be information literacy may not have had the opportunity to take this survey. Finally, some potential participants may have overlooked the survey invitation in their email due to the number of emails often received via listservs. Because a common educational background for participants was desired, this study was limited only to those holding an MLS or equivalent; however, because of this restriction, this study does not reflect the experiences of those with different educational backgrounds who teach as part of their work in libraries. Finally, the study was limited to those working in the United States, so the results do not reflect the experiences of those currently working in other parts of the world.

Results

Demographics of Participants

While the survey was limited to those employed at an institute of higher education in the United States who held an MLS or equivalent and who taught as part of their current work in libraries, respondents varied in other details. Of the 200 who responded to the question about the nature of their employment at their institution, the majority (68%, n = 136) were faculty of some sort, with 43 percent (n = 86) of those respondents tenured, tenure track, or equivalent; 24.5 percent (n = 49) non–tenure track or equivalent; and .5 percent (n = 1) limited-term faculty. Of those who did not identify themselves as faculty, 27.5 percent (n = 55) were staff, while 4.5 percent (n = 9) chose "Other." Of those who selected "Other," 3 respondents indicated that they were administrators, and 3 indicated that they were considered staff in some contexts and faculty in others. Two hundred responded to the question about gender identity, with 83.5 percent (n = 167) choosing female/feminine, 13 percent (n = 26) choosing male/masculine, 1.5 percent (n = 3) preferring to self-describe, and 2 percent (n = 4) preferring not to answer. This gender distribution is fairly close to 2017 survey data from the American Librarian Association that found that 81 percent of ALA members identify as female and 19 percent identify as male.[32] A variety of ages (see figure 1) was represented by the 200 who answered the question about their age range, with 25–34 years represented most frequently (35.5%, n = 71).

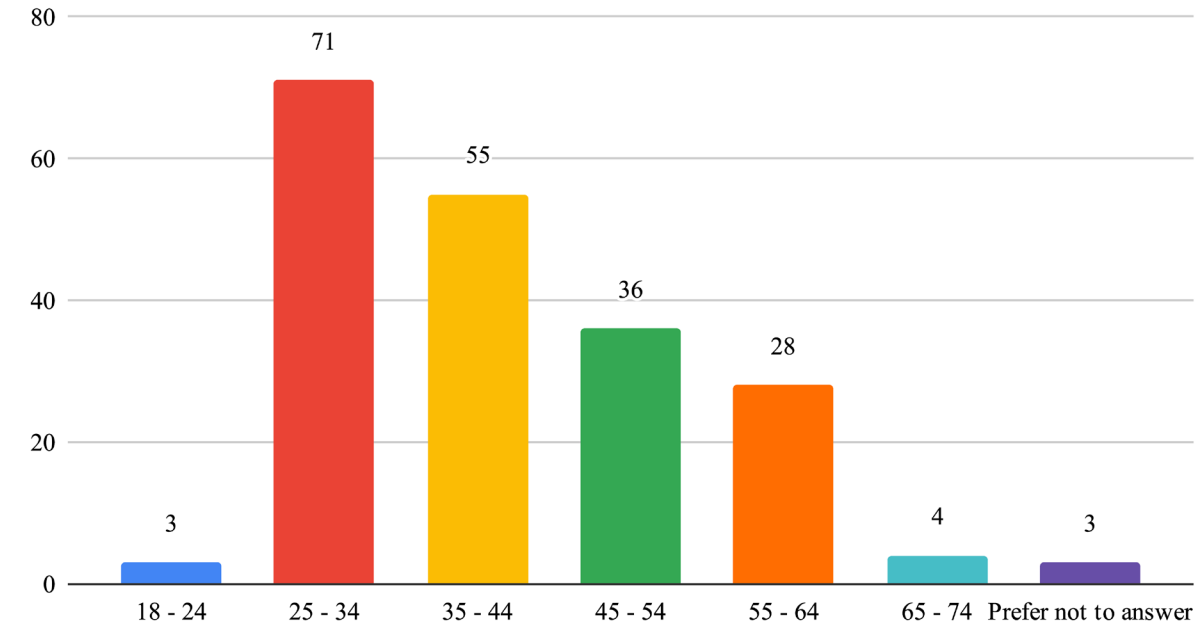
Finally, participants' length of time teaching professionally in libraries varied, though a majority of respondents could be considered early-career librarians. Of the 208 who responded to the question, 56.73 percent (n = 118) had 0–7 years of experience. A full breakdown can be seen in figure 2.

A range of institution types was represented as well. Of the 200 respondents who indicated an institution type, the majority (69%, n = 138) were at public institutions, with 31 percent (n = 62) at private, not-for-profit institutions.

Participants' Work in Library Instruction

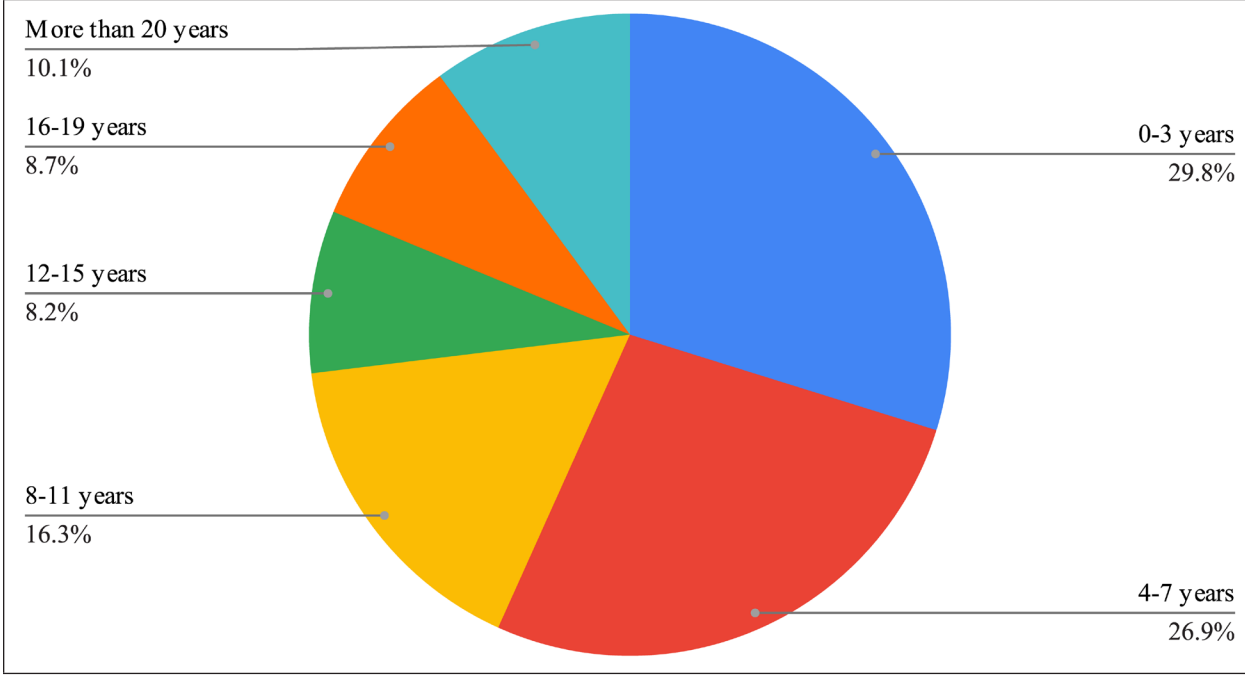
While all participants confirmed that they did teach as part of their current work in libraries, their responses indicated a variety of different contexts and responsibilities, beginning with their job titles. Of the 208 who responded to the question "Does your current job title contain

FIGURE 1
Age of Respondents



any of the words or phrases below? Select all that apply," 42.03 percent (n = 88) said that their title contained the words "instruction or instructional," 12.5 percent (n = 26) said that their title included "learning," 5.76 percent (n = 26) had the word "teaching" in their title, and 11.05 percent (n = 23) had the words "information literacy" in their title. However, 39.9 percent (n = 83) had none of these teaching- or instruction-related terms in their title. (The total number equals more than 208 because participants could select more than one response.)

FIGURE 2
Length of Time Teaching Professionally in Libraries



Participants also taught a variety of session types. Of the 208 who responded to the question about the type of library teaching they had done in the last academic year, 98.07 percent (n = 204) reported teaching one-shot sessions, 67.30 percent (n = 140) reported teaching multiple sessions for the same class, 23.55 percent (n = 49) reported teaching credit-bearing courses as the instructor of record, 55.76 percent (n = 116) reported teaching a session not connected to a class, and 3.84 percent (n = 8) reported "other," such as online tutorial creation (percentages exceed 100 because respondents could select multiple responses). Those respondents who indicated that they taught more than one type of session in the last year were shown a question asking which type of teaching they did most frequently. Of the 177 who responded, 83.05 percent (n = 147) taught one-shots most frequently, with 5.64 percent (n = 10) teaching multiple sessions for the same class most frequently, 6.21 percent (n = 11) teaching a credit-bearing course most frequently, and 4.51 percent (n = 8) most frequently teaching sessions not connected to a class.

Participants also reported teaching in a variety of modes. Of the 207 who responded to the question "In which modes do you deliver instruction? Select all that apply," 100 percent (n = 207) teach in person, 43.96 percent (n = 91) teach online, and 25.12 percent (n = 52) teach in hybrid (a combination of in-person and online instruction for a single session) modes. Participants who indicated teaching one-shots, multiple sessions for a course, or standalone sessions were also asked how many sessions they taught in the last academic year. Of the 85 respondents who answered the question, 3.52 percent (n = 3) taught 1–15 classes, 28.23 percent (n = 24) taught 16–30, 25.88 percent (n = 22) taught 31–45, and 42.35 percent (n = 36) taught 46 or more classes. Some participants also indicated that they taught credit-bearing courses; of the 49 who answered the question about how many sections they taught in the last academic year, 38.77 percent (n = 19) taught 1, 42.85 percent (n = 21) taught 2, 0 percent (n = 0) taught 3, 6.12 percent (n = 3) taught 4, and 12.24 percent (n = 6) taught 5 or more.

Participants were also asked about their formal training in pedagogy. Of the 207 who answered the question, 22.7 percent (n = 47) reported no formal training in pedagogy, including professional development, coursework, or a degree. The remainder (77.3 percent, n = 160) reported a variety of types of training, as shown in table 1 (participants could select more than one option; percentage is of total respondents to question).

TABLE 1
Type of Training in Pedagogy

Type of Training	Count	Percentage
Professional development in pedagogy	125	60.38%
Graduate coursework in education, but not a graduate degree	57	27.53%
Graduate degree in education	23	11.11%
Undergraduate coursework in education, but not an undergraduate degree	17	8.21%
Undergraduate degree in education	15	7.24%

Librarians' lack of training in pedagogy has been brought up in many discussions of librarians' teacher identity. Smalley[33] cited lack of pedagogy knowledge as a reason that librarians are not teachers, Kenneth Kister[34] viewed pedagogy as something outside the librarian's purview, and Davis[35] found that lack of pedagogy knowledge was a source of teacher anxiety among instruction librarians. Yet the results of this survey indicate that instruction

librarians do have training in pedagogy, whether they gained it through formal coursework or professional development opportunities. Indeed, participants (n = 206; percentage below is of respondents, not total responses) reported a variety of teaching-related professional development activities (see table 2).

TABLE 2
Type of Professional Development

Type of Professional Development	Counts	Percentage
Reading journal articles or books related to teaching	197	95.63%
A workshop related to library instruction	158	76.70%
A webinar related to library instruction	158	76.70%
Teaching observations	155	75.24%
Library conference related to instruction (such as LOEX)	112	54.37%
Facilitated discussions about pedagogy	109	52.91%
A workshop related to teaching but not specific to library instruction	96	46.60%
A webinar related to teaching but not specific to library instruction	58	28.15%
Conference related to teaching but not specific to library instruction	57	27.67%
An ACRL Immersion program related to instruction	47	22.81%
Other (please specify)	10	4.85%

Participants were also asked about their prior teaching experience. Of the 206 who answered this question, 56.31 percent (n = 116) reported no prior teaching experience, while the remainder reported experience in other contexts (responses exceed 100 percent because participants could select more than one option for yes). See table 3 for more details.

TABLE 3
Prior Teaching Experience

Prior Teaching Experience	Count	Percentage
Yes, in K–12 setting	37	17.96%
Yes, in higher education	49	23.78%
Yes, in a corporate setting	9	4.36%
Yes, in another setting (please specify)	15	7.28%
No	116	56.31%

Of those who indicated another setting, 8 named some sort of community setting.

RQ1: To what extent, if any, do instruction librarians view themselves as teachers?

Participants were asked to indicate the extent to which they agreed with a series of statements asking about their perceptions of themselves as teachers, where 0 indicated strong disagreement and 100 indicated strong agreement. Results from this question can be seen in table 4.

This study was not designed to create a measure of teacher identity. Rather, these results help create a picture of respondents' responses to various facets of teacher identity. Overall, respondents tended to agree that teaching is central to their work, yet slightly fewer also agreed that their roles as both teacher and librarian are in harmony with each other. Respondents

tended to agree somewhat with the idea that their teaching was equivalent to that of others at their institution yet seemed to neither agree nor disagree that they became librarians because they wanted to teach. However, most agreed that they seek opportunities to develop as teachers, though it is difficult for them to devote enough time to developing as teachers. Considering the centrality of teaching to these librarians' current jobs, the fact that respondents tended to strongly disagree that they received sufficient training for their teaching role during library school and do not have enough time to pursue it now is concerning and underscores the need for institutions to support librarians' professional development in pedagogy. Finally, the fact that respondents tended to agree that they enjoyed teaching is remarkable in light of this lack of preparation, since insufficient preparation is likely to make teaching more challenging.

To answer the research questions posed above, additional statistical analyses were conducted to find relationships between participants' perceptions of themselves and other factors that might relate to their self-perception.

RQ2: Is there a relationship between the amount of teaching someone does and how they perceive their teacher identity?

Number of instruction sessions taught

Spearman's rho, which measures the relationship between two ordinal variables,[36] was used to explore the relationship between the number of instruction sessions taught and teacher identity. Of the statements listed in table 4, a relationship was found for one statement, "My roles as a librarian and as a teacher are in harmony with each other," with p significant at the $p < .05$ level, indicating that, as the number of instruction sessions taught increased, so did the likelihood of agreeing with this statement. This relationship may indicate that, the more someone teaches, the more likely it is that their job is focused on instruction. A librarian who is expected to focus on instruction may find less of a conflict between their dual roles as teacher and librarian.

TABLE 4
Level of Agreement with Statements Related to Teacher Identity

Statements Related to Teacher Identity	Mean	n
Teaching is central to my work as a librarian.	88.08	202
I view my teaching as equivalent to that of other teachers at my institution.	64.22	199
The training I received in library school prepared me sufficiently for my teaching role.	28.46	178
My roles as a librarian and as a teacher are in harmony with each other.	76.58	201
I became a librarian because I wanted to teach.	45.57	171
I seek opportunities to develop as a teacher.	85.33	202
I am able to devote sufficient time to developing as a teacher.	54.23	195
I enjoy teaching.	80.21	199

Credit-bearing courses taught

Spearman's rho was also used to find the relationship between the number of credit-bearing courses taught and teacher identity. Of the statements listed in table 4, a relationship was found for the statement "I enjoy teaching," with p significant at the $p < .05$ level, indicating that those who taught more credit-bearing classes were more likely to agree with this state-

ment. While many instruction librarians may teach a combination of one-shot sessions and credit-bearing courses, it's likely that teaching multiple credit-bearing courses would result in a decrease in one-shot sessions taught. One-shot instruction sessions, particularly for first-year students, are often similar in content; this repetitiveness could lead to dissatisfaction in teaching.[37] While credit-bearing courses are not immune to repetition, being in charge of one's own class, rather than serving as a guest in another's, as well as teaching more complex content than is usually possible in a one-shot, may result in more enjoyment of teaching, and working with the same students across a credit-bearing class can help librarians get to know students in a way that they often cannot during one-shot sessions.[38]

RQ3: Is there a relationship between the length of time someone has been teaching and how they perceive their teacher identity?

Spearman's rho was also used to explore the relationship between the length of time teaching in academic libraries and teacher identity. Of the statements listed in table 4, a relationship was found for two. For the statement "I view my teaching as equivalent to that of other teachers at my institution," p was significant at the $p < .001$ level. A longer time teaching may result in increased confidence in teaching skills and an understanding of how library instruction fits within the larger institutional context.

A relationship was also found between the length of time teaching in academic libraries and the statement "The training I received in library school prepared me sufficiently for my teaching role," with p significant at the $p < .05$ level. However, rho was –0.202, indicating an inverse relationship: the longer that someone has been teaching in academic libraries, the less they tended to agree that they received sufficient training in library school. Since those who have been teaching in academic libraries for longer are likely to have gone to library school a longer time ago, it is likely that their library school curriculum did not offer a pedagogy course or training in teaching.[39]

RQ4: Is there a relationship between someone's training in pedagogy and how they perceive their teacher identity?

To determine if there was a relationship between training in pedagogy and teacher identity, Student's t-test was used. This test is used to find the statistical significance of the difference between the means of two groups; while it typically is used with data that is distributed normally, it can be used with data with a nonnormal distribution if the sample size is sufficiently large.[40] While the data for this question was not distributed normally, the t-test was used because of the large sample size. Responses to the question "Do you have any formal training in pedagogy?" were consolidated so that responses were sorted into two groups: those who reported having any formal training and those who did not. Student's t-test found relationships between training in pedagogy and teacher identity for many of the statements described above, as shown in table 5.

Overall, those respondents who had formal training in pedagogy were more likely than those without pedagogy training to feel that their library school training prepared them sufficiently for their instruction role, to report enjoying teaching, to being able to devote sufficient time to developing teaching skills, to seek opportunities to develop as a teacher, and to enjoy teaching. Instruction librarians with pedagogy training are even more likely to report becoming a librarian because they wanted to teach, although it's difficult to know the nature of the relationship between those two characteristics.

TABLE 5
Relationship between Pedagogy Training and Teacher Identity

Statements	*p* value
Teaching is central to my work as a librarian.	0.125
I view my teaching as equivalent to that of other teachers at my institution.	0.063
The training I received in library school prepared me sufficiently for my teaching role.	0.008*
My roles as a librarian and as a teacher are in harmony with each other.	0.781
I became a librarian because I wanted to teach.	<.001**
I seek opportunities to develop as a teacher.	0.025*
I am able to devote sufficient time to developing as a teacher.	0.008*
I enjoy teaching.	0.017*
*Significant at $p<.05$; **Significant at $p<.001$	

Discussion

While the results cannot be generalized to all instruction librarians because of the method of sampling, they do shed light both on the work of respondents and on their perceptions of their teacher identity. First of all, the instruction librarians who responded to this survey teach a lot, particularly in-person one-shot sessions, and they are also teaching credit-bearing courses and online sessions. Despite this focus on teaching, nearly 40 percent reported that their job titles did not include a reference to instruction, which may make it difficult for colleagues both inside and outside the library to understand the role that teaching plays in these librarians' professional lives. While more descriptive job titles alone will not be sufficient to make instruction librarians' teaching role clear to others, they could be a way to demonstrate teaching's centrality to the work of many librarians. The instruction librarians represented in this survey generally do have training in pedagogy, whether through formal coursework or professional development opportunities, though not from training in library school. However, having formal training in pedagogy does not necessarily mean that they had formal teaching experience prior to becoming a librarian, with approximately 56 percent reporting no such experience.

This combination of a lot of teaching, a job title that may not reflect the educational role, and a lack of sufficient preparation in library school is troubling. While this study did not focus on burnout, library instruction in general, and one-shot instruction sessions in particular, has been identified as a potential source of burnout for nearly 30 years,[41] with instruction librarians' role conflict between librarian and teacher a potential burnout risk factor.[42] Additionally, the repetitive nature of much library instruction has been cited as a cause of burnout.[43] This potential relationship between instruction librarians' professional identities and burnout is one that deserves future study.

When looking at the relationship between these facets of teacher identity and other characteristics related to work as an instruction librarian, it becomes clear that there is no magic formula for developing a teacher identity in instruction librarians. Simply teaching more or teaching for longer doesn't seem to make a difference, although teaching more did seem to suggest a greater sense of harmony in the dual librarian-teaching role and teaching longer suggests a likelihood of viewing one's teaching as equal to that of others. What does seem to have an impact is training in pedagogy, whether that's through undergraduate/graduate courses or degrees or professional development. This finding challenges decades-old arguments that

librarians cannot be teachers because they do not have training in pedagogy. However, this survey supports previous research that shows that instruction librarians are not likely to get much of this training in their graduate library education,[44] and the prevalence of learning about pedagogy through professional development suggests that instruction librarians are gaining pedagogical knowledge after they finish library school. However, respondents to this survey also indicated that they lack as much time as they would like to developing as teachers. This professional development in pedagogy is key not just for teacher identity development and the associated increase in agency[45] and professional satisfaction,[46] but also for the effectiveness of instruction librarians in the classroom. Therefore, it's important that instruction librarians receive support from their institutions and departments to engage in professional development, such as pedagogy-focused workshops, classes, conferences, and webinars. Because such professional development requires time and often additional funding, librarians should not be the only ones advocating for themselves; they need the support of both library administrators and university administrators.

Conclusion

This study fills a gap in the research by taking a quantitative approach to studying instruction librarians' teacher identity as well as the factors that may contribute to teacher identity development. The results of this study directly benefit librarians who teach; better understanding of other librarians' teacher identities may empower them to examine their own and advocate for the time and resources to gain training in pedagogy. With a firmer grasp of their own teacher identities, instruction librarians may also be better able to navigate their own professional paths and their collaborations with others outside the profession.

There are many future directions for this research. Because identity is constructed in part through our interactions with others, further research could look into how interactions with others shape teacher identities. Because academic librarians are not the only librarians who teach, other types of librarians, such as K–12 and public librarians, could be studied. Additionally, because pedagogical knowledge seems to be a key factor in contributing to the teacher identity of instruction librarians, further research on how and when instruction librarians gain pedagogical knowledge is needed, as well as research on what pedagogical approaches instruction librarians are encountering. Another potential area of research is a range of other factors that were not explored in this study, such as gender and race, that may contribute to instruction librarians' professional identity.

One of the goals of this research was to discover the extent to which instruction librarians identify as teachers. When viewed in its entirety, the research presented here suggests that many instruction librarians do see themselves as teachers, devote a significant portion of their time to teaching, and actively seek to become better teachers. While much of the early conversation about the educational role of librarians was focused on whether or not academic librarians could even be considered teachers, it seems now the question is more of delving into the complexities of what it means to be both a librarian and a teacher. The development of the role of instruction librarian means that instruction librarians do not have to choose between identifying as teachers and identifying as librarians. Rather, the librarian identity needs to have room within it for teacher identity, setting the stage for instruction librarians and library administrators to advocate for their instructional roles on campus and for support from their institutions to gain pedagogical knowledge and develop further as teachers.

Acknowledgments

The author would like to express her gratitude to those who have helped make this research possible, including Nathaniel Porter for his help with survey design and data analysis and the faculty, participants, and mentors of the Institute for Research Design in Librarianship, particularly Kris Brancolini, Marie Kennedy, Lili Luo, and Courtney Block.

APPENDIX A. Survey Instrument

Thank you for your interest in the following survey, which examines instruction librarians' self-perceptions of their teacher identity and the factors that may contribute to their views. For the purposes of this study, **teaching includes** leading instruction for a class (either in-person or online), teaching a credit-bearing class (either in-person or online), or leading a standalone workshop (either in-person or online). It **excludes** one-on-one instruction at the reference desk or in a consultation.

Your participation is entirely voluntary, and you may exit the survey at any time. All responses will be kept anonymous. Data generated from the information you provide in this survey may be shared with the research community (most likely in digital form via the internet) to advance scholarly knowledge and may also be used in presentations and research papers.

This study is reviewed by the Virginia Tech Institutional Review Board. You may communicate with them at [redacted] or [redacted] if: You have questions about your rights as a research subject. Your questions, concerns, or complaints are not being answered by the research team. You cannot reach the research team. You want to talk to someone besides the research team to provide feedback about this research. You may also contact Lisa Becksford, Principal Investigator, at lisab5@vt.edu.

Completing the survey should take approximately 10–15 minutes.

After you complete the survey, you will have the opportunity to provide your email address if you wish to receive a report of the survey's findings. This step is entirely optional, and your email address will not be connected to survey results.

The target population for this survey is librarians currently employed at an institute of higher education in the United States who have completed their MLIS or equivalent and teach as part of their current work in libraries.

By agreeing to participate in this survey, you acknowledge that you are 18 years of age or older.

1) I confirm that I meet the criteria for the target population of this survey: I am currently employed at an institute of higher education in the United States, I have completed my MLIS or equivalent, I teach as part of my current work in libraries.

- □ Yes
- □ No

Skip To: End of Survey If I confirm that I meet the criteria for the target population of this survey: I am currently employ… = No

2) I agree to participate in this survey.

- □ Yes
- □ No

Skip To: End of Survey If I agree to participate in this survey. = No

3) Is teaching part of your primary job responsibilities?

- □ Yes
- □ No
- □ I'm not sure.

4) Does your current job title contain any of the words or phrases below? Select all that apply.

- □ Instruction or instructional
- □ Teaching
- □ Learning

- □ Information literacy
- □ None of the above

5) In total, how long have you worked professionally **in instruction** in academic libraries? Include part-time professional work but not internships, graduate assistantships, or student worker positions.

- □ 0–3 years
- □ 4–7 years
- □ 8–11 years
- □ 12–15 years
- □ 16–19 years
- □ More than 20 years

The following questions ask about your teaching work.

6) In the academic year that just ended (include fall, spring, and summer, as applicable), what kinds of library teaching did you do? Select all that apply.

- □ One-time session for individual class ("one-shot")
- □ Multiple sessions for the same class
- □ Credit-bearing course for which you are the instructor of record
- □ Session not connected to a class
- □ Other (please specify)

Display Question 7:
If "In the academic year that just ended (include fall, spring, and summer, as applicable), what kinds of library teaching did you do?" Select all that apply Choices Count Is Greater Than or Equal to 2
Carry Forward Selected Choices from "In the academic year that just ended (include fall, spring, and summer, as applicable), what kinds of library teaching did you do? Select all that apply."

7) Considering your overall teaching work during the course of the last academic year, what one type of teaching would you say that you did most frequently?

- □ One-time session for individual class ("one-shot")
- □ Multiple sessions for the same class
- □ Credit-bearing course for which you are the instructor of record
- □ Session not connected to a class
- □ Other (please specify)

8) In which modes do you deliver instruction? Select all that apply.

- □ In person
- □ Online
- □ Hybrid (a combination of in-person and online instruction for a single session or course)

Display Question 9:
If In the academic year that just ended (include fall, spring, and summer, as applicable), what kind… = One-time session for individual class ("one-shot")
And In the academic year that just ended (include fall, spring, and summer, as applicable), what kind… = Multiple sessions for the same class
And In the academic year that just ended (include fall, spring, and summer, as applicable), what kind… = Session not connected to a class

9) Think back to the academic year that most recently ended (include fall, spring, and summer, as applicable). **Approximately** how many sessions, both in-person and online, did you

teach? Include one-shots, multiple sessions for the same class, and sessions not connected to a class, but **exclude** any credit-bearing courses for which you were the instructor of record.

- □ 1–15
- □ 16–30
- □ 31–45
- □ 46 or more
- □ I'm not sure.

Display Question 10:
If In the academic year that just ended (include fall, spring, and summer, as applicable), what kind… = Credit-bearing course for which you are the instructor of record

10) In the academic year that most recently ended, how many **sections** of a credit-bearing course did you teach, either online or in person?

- □ 1
- □ 2
- □ 3
- □ 4
- □ 5 or more

The following questions ask about your training in pedagogy and other teaching experience you may have had. For the purposes of this survey, pedagogy refers to the methods and principles of teaching.

11) Do you have any formal training in pedagogy? Please select all that apply.

- □ Yes, undergraduate coursework in education, but not an undergraduate degree
- □ Yes, undergraduate degree in education
- □ Yes, graduate coursework in education, but not a graduate degree
- □ Yes, graduate degree in education
- □ Yes, professional development in pedagogy
- □ No

12) During the course of your time teaching in academic libraries, what kinds of **teaching-related** professional development opportunities have you participated in? Select all that apply.

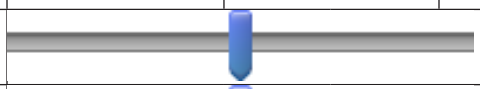
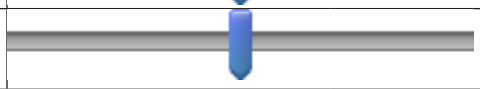
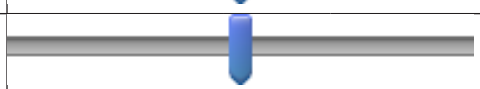
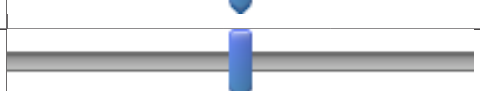
- □ An ACRL Immersion program related to instruction
- □ A workshop related to library instruction
- □ A workshop related to teaching but not specific to library instruction
- □ A webinar related to library instruction
- □ A webinar related to teaching but not specific to library instruction
- □ Library conference related to instruction (such as LOEX)
- □ Conference related to teaching but not specific to library instruction
- □ Reading journal articles or books related to teaching
- □ Teaching observations
- □ Facilitated discussions about pedagogy
- □ Other (please specify)

13) Did you have formal, nonlibrary teaching experience before you became a librarian? Select all that apply. Formal teaching experience **includes** both paid and unpaid instructional work but **excludes** one-on-one instruction such as tutoring.

- □ Yes, in K–12 setting
- □ Yes, in higher education

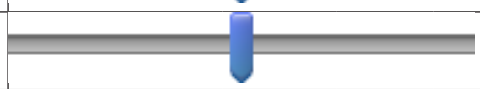
- □ Yes, in a corporate setting
- □ Yes, in another setting (please specify)
- □ No

14) The questions below ask about your perceptions of yourself as a teacher. Drag the slider bar to indicate the extent to which you agree or disagree with the statements below.

	Strongly disagree		Strongly agree
	0	50	100
Teaching is central to my work as a librarian.			
I view my teaching as equivalent to that of other teachers at my institution.			
The training I received in library school prepared me sufficiently for my teaching role.			
My roles as a librarian and as a teacher are in harmony with each other.			
I became a librarian because I wanted to teach.			
I seek opportunities to develop as a teacher.			
I am able to devote sufficient time to developing as a teacher.			
I enjoy teaching.			

The questions below ask about your interactions with others as part of your teaching role. "Teaching faculty" refers to instructors within a discipline with whom you work, such as a first-year writing instructor for whose class you teach an information literacy session.

15) Drag the slider bar to indicate the extent to which you agree or disagree with the statements below.

	Strongly disagree		Strongly agree
	0	50	100
When I work with teaching faculty at my institution, I have autonomy in what I teach.			
I work with teaching faculty to create lesson plans and curriculum.			
Others at my institution value my teaching.			
When I teach one-shot sessions, my status as a guest limits my effectiveness as a teacher.			
Other teachers at my institution view my teaching as equivalent to theirs.			
Teaching faculty understand the role that teaching plays in my job.			
The teaching faculty that I work with view me as a fellow teacher.			

16) Have you ever experienced a conflict between your understanding of your professional identity and how others see you?

- □ Yes
- □ No

Display Question 17: If Have you ever experienced a conflict between your understanding of your professional identity and… = Yes

17) Please describe an experience that demonstrates this conflict.

The questions below ask about your institution and your status within it.

18) What is the nature of your employment at your institution?

- □ Faculty (tenured, tenure track, or equivalent)
- □ Faculty (nontenure track)
- □ Faculty, limited-term (such as library fellow or resident)
- □ Staff
- □ Other (please specify)

19) At what type of academic institution do you work?

- □ Private, not-for-profit
- □ Public
- □ For-profit
- □ Other (please specify)

20) What is the highest degree granted at your institution?

- □ Associate (AA, AS, etc.)
- □ Bachelor (BA, BS, etc.)
- □ Master (MA, MS, etc.)
- □ Doctoral (PhD, EdD, etc.)
- □ Professional (JD, MD, PharmD, etc.)
- □ Other (please specify)

The final questions collect demographic information.

21) What is your gender identity?

- □ Female/Feminine
- □ Male/Masculine
- □ Prefer to self-describe
- □ Prefer not to answer

22) What is your age?

- □ 18–24
- □ 25–34
- □ 35–44
- □ 45–54
- □ 55–64
- □ 65–74
- □ 75 years or older
- □ Prefer not to answer

APPENDIX B. References for Statements of Teacher Identity

The statements in question 14 are based on previous studies of instruction librarians' teacher identity and studies of teacher identity in general. Below are the references for each item in the question.

- Teaching is central to my work as a librarian.[47]
- I view my teaching as equivalent to that of other teachers at my institution.[48]
- The training I received in library school prepared me sufficiently for my teaching role.[49]
- My roles as a librarian and as a teacher are in harmony with each other.[50]
- I became a librarian because I wanted to teach.[51]
- I seek opportunities to develop as a teacher.[52]
- I am able to devote sufficient time to developing as a teacher.[53]
- I enjoy teaching.[54]

Notes

1. Cate Watson, "Narratives of Practice and the Construction of Identity in Teaching," *Teachers and Teaching* 12, no. 5 (Oct. 2006): 509–26, https://doi.org/10.1080/13540600600832213.

2. Nora F. Belzowski, J. Parker Ladwig, and Thurston Miller, "Crafting Identity, Collaboration, and Relevance for Academic Librarians Using Communities of Practice," *Collaborative Librarianship* 5, no. 1 (2013): 3–15; Mary Biggs, "Librarians as Educators: Assessing Our Self-Image," *Public & Access Services Quarterly* 1, no. 1 (1995): 41–50; Scott Walter, "Librarians as Teachers: A Qualitative Inquiry into Professional Identity," *College & Research Libraries* 69, no. 1 (Jan. 2008): 51–71, https://doi.org/10.5860/crl.69.1.51.

3. Catherine Beauchamp and Lynn Thomas, "Understanding Teacher Identity: An Overview of Issues in the Literature and Implications for Teacher Education," *Cambridge Journal of Education* 39, no. 2 (June 2009): 175–89, https://doi.org/10.1080/03057640902902252.

4. Christopher Day, "School Reform and Transitions in Teacher Professionalism and Identity," *International Journal of Educational Research* 37, no. 8 (Jan. 2002): 677–92, https://doi.org/10.1016/S0883-0355(03)00065-X.

5. Glenn H. Brown, "College Librarians Are Not Teachers," *Library Journal* 65 (1940): 910–11.

6. David Peele, "Librarians as Teachers: Some Reality, Mostly Myth," *Journal of Academic Librarianship* 10, no. 5 (Nov. 1984): 267–71; Topsy N. Smalley, "Bibliographic Instruction in Academic Libraries: Questioning Some Assumptions," *Journal of Academic Librarianship* 3, no. 5 (Nov. 1977): 280–83; Pauline Wilson, "Librarians as Teachers: The Study of an Organization Fiction," *Library Quarterly* 49, no. 2 (Apr. 1979): 146–62.

7. Beauchamp and Thomas, "Understanding Teacher Identity."

8. Beauchamp and Thomas, "Understanding Teacher Identity."

9. Douwe Beijaard, Paulien C. Meijer, and Nico Verloop, "Reconsidering Research on Teachers' Professional Identity," *Teaching and Teacher Education* 20, no. 2 (Feb. 2004): 107–28, https://doi.org/10.1016/j.tate.2003.07.001.

10. John Coldron and Robin Smith, "Active Location in Teachers' Construction of Their Professional Identities," *Journal of Curriculum Studies* 31, no. 6 (Nov. 1999): 711–26, https://doi.org/10.1080/002202799182954.

11. Brown, "College Librarians Are Not Teachers."

12. Smalley, "Bibliographic Instruction in Academic Libraries."

13. Wilson, "Librarians as Teachers: The Study of an Organization Fiction."

14. Peele, "Librarians as Teachers: Some Reality, Mostly Myth."

15. John Budd, "Librarians Are Teachers," *Library Journal* 107, no. 18 (1982): 1944–46.

16. Lisa O'Connor, "Information Literacy as Professional Legitimation: The Quest for a New Jurisdiction," *Library Review* 58, no. 7 (Aug. 2009): 493–508, https://doi.org/10.1108/00242530910978190; Robert Zai, "Neither Fish nor Fowl: A Role Theory Approach to Librarians Teaching," *Journal of Library Administration* 55, no. 1 (Jan. 2015): 1–23, https://doi.org/10.1080/01930826.2014.978680.

17. Kaetrena D. Davis, "The Academic Librarian as Instructor: A Study of Teacher Anxiety," *College & Undergraduate Libraries* 14, no. 2 (Nov. 2007): 77–101, https://doi.org/10.1300/J106v14n02_06.

18. Eveline Houtman, "'Trying to Figure It Out': Academic Librarians Talk about Learning to Teach," *Library and Information Research* 34, no. 107 (2010): 18–40.

19. Laura Bewick and Sheila Corrall, "Developing Librarians as Teachers: A Study of Their Peda-

gogical Knowledge," *Journal of Librarianship and Information Science* 42, no. 2 (June 2010): 97–110, https://doi.org/10.1177/0961000610361419.

20. Heidi Julien and Shelagh K. Genuis, "Emotional Labour in Librarians' Instructional Work," *Journal of Documentation* 65, no. 6 (2009): 926–37.

21. Heidi Julien and Jen L. Pecoskie, "Librarians' Experiences of the Teaching Role: Grounded in Campus Relationships," *Library & Information Science Research* 31, no. 3 (Sept. 2009): 149–54, https://doi.org/10.1016/j.lisr.2009.03.005.

22. Lisa M. Given and Heidi Julien, "Finding Common Ground: An Analysis of Librarians' Expressed Attitudes towards Faculty," *Reference Librarian* 43, no. 89/90 (Apr. 2005): 25–38, https://doi.org/10.1300/J120v43n89_03.

23. Heidi Julien and Shelagh K. Genuis, "Librarians' Experiences of the Teaching Role: A National Survey of Librarians," *Library & Information Science Research* 33, no. 2 (Apr. 2011): 103–11, https://doi.org/10.1016/j.lisr.2010.09.005.

24. Trevor Austin and Janine Bhandol, "The Academic Librarian: Buying Into, Playing Out, and Resisting the Teacher Role in Higher Education," *New Review of Academic Librarianship* 19, no. 1 (Jan. 2013): 15–35, https://doi.org/10.1080/13614533.2012.740438.

25. Laura Sare and Stephen Edward Bales, "Professional Identity: A Grounded Theory Study of Veteran Academic Librarians," *Library Review* 63, no. 8/9 (Oct. 2014): 574–89, https://doi.org/10.1108/LR-02-2014-0020.

26. Walter, "Librarians as Teachers: A Qualitative Inquiry into Professional Identity."

27. Emily Wheeler and Pamela McKinney, "Are Librarians Teachers? Investigating Academic Librarians' Perceptions of Their Own Teaching Skills," *Journal of Information Literacy* 9, no. 2 (Nov. 2015): 111, https://doi.org/10.11645/9.2.1985.

28. Erin L. Davis, Kacy Lundstrom, and Pamela N. Martin, "Librarian Perceptions and Information Literacy Instruction Models," *Reference Services Review* 39, no. 4 (Nov. 2011): 686–702, https://doi.org/10.1108/00907321111186695.

29. Lauren Hays and Bethani Studebaker, "Academic Instruction Librarians' Teacher Identity Development through Participation in the Scholarship of Teaching and Learning," *International Journal for the Scholarship of Teaching and Learning* 13, no. 2 (May 2019), https://doi.org/10.20429/ijsotl.2019.130204.

30. Mark Aaron Polger and Karen Okamoto, "'Can't Anyone Be a Teacher Anyway?': Student Perceptions of Academic Librarians as Teachers," *Library Philosophy and Practice*, 2010, 1–16.

31. Coldron and Smith, "Active Location in Teachers' Construction of Their Professional Identities."

32. American Library Association, "2017 ALA Demographic Study" (2017), www.ala.org/tools/sites/ala.org.tools/files/content/Draft%20of%20Member%20Demographics%20Survey%2001-11-2017.pdf [accessed 10 February 2020].

33. Smalley, "Bibliographic Instruction in Academic Libraries."

34. Kenneth F. Kister, "A View from the Front," *Library Journal* 96 (1971): 3284–86.

35. Davis, "The Academic Librarian as Instructor."

36. W.P. Vogt, *Dictionary of Statistics & Methodology*, 3rd ed. (Thousand Oaks, CA: SAGE Publications, Inc., 2005), s.v. "Spearman Correlation Coefficient (Rho)."

37. Charles D. Patterson and Donna W. Howell, "Library User Education: Assessing the Attitudes of Those Who Teach," *RQ* 29, no. 4 (1990): 513–24.

38. Kimberley Donnelly, "Reflections on What Happens When Librarians Become Teachers," *Computers in Libraries* 20, no. 3 (2000): 46–49; Jane Kemp, "Isn't Being a Librarian Enough? Librarians as Classroom Teachers," *College & Undergraduate Libraries* 13, no. 3 (2006): 3–23.

39. Heidi Julien, "Education for Information Literacy Instruction: A Global Perspective," *Journal of Education for Library and Information Science* 46, no. 3 (2005): 210–16, https://doi.org/10.2307/40323845; Maureen Kilcullen, "Teaching Librarians to Teach: Recommendations on What We Need to Know," *Reference Services Review* 26, no. 2 (Jan. 1998): 7–18, https://doi.org/10.1108/00907329810307623; Barbara J. Smith, "Background Characteristics and Education Needs of a Group of Instruction Librarians in Pennsylvania," *College & Research Libraries* 43, no. 3 (May 1982): 199–207, https://doi.org/10.5860/crl_43_03_199.

40. Vogt, *Dictionary of Statistics & Methodology*, s.vv. "Student's t Distributions," "t-Test."

41. Michele C. Russo, "Recovering from Bibliographic Instruction Blahs," *RQ* 32 (Jan. 1992): 178–83.

42. Mary Ann Affleck, "Burnout among Bibliographic Instruction Librarians," *Library & Information Science Research* 18, no. 2 (Mar. 1996): 165–83, https://doi.org/10.1016/S0740-8188(96)90018-3.

43. Patterson and Howell, "Library User Education."

44. Merinda Kaye Hensley, "Improving LIS Education in Teaching Librarians to Teach," in *The Proceedings of the ACRL 2015 Conference* (ACRL 2015, Portland, OR: Association of College and Research Libraries, 2015); Julien, "Education for Information Literacy Instruction"; Smith, "Background Characteristics and Education Needs of a Group of Instruction Librarians in Pennsylvania"; Claudeen Sproles, Anna Marie Johnson, and Leslie Farison,

"What the Teachers Are Teaching: How MLIS Programs Are Preparing Academic Librarians for Instructional Roles," *Journal of Education for Library & Information Science* 49, no. 3 (2008): 195–209.

45. Beauchamp and Thomas, "Understanding Teacher Identity."

46. Day, "School Reform and Transitions in Teacher Professionalism and Identity."

47. Walter, "Librarians as Teachers: A Qualitative Inquiry into Professional Identity."

48. Davis, Lundstrom, and Martin, "Librarian Perceptions and Information Literacy Instruction Models"; Wheeler and McKinney, "Are Librarians Teachers?"

49. Walter, "Librarians as Teachers: A Qualitative Inquiry into Professional Identity"; Wheeler and McKinney, "Are Librarians Teachers?"

50. Beijaard, Meijer, and Verloop, "Reconsidering Research on Teachers' Professional Identity"; Walter, "Librarians as Teachers: A Qualitative Inquiry into Professional Identity."

51. Walter, "Librarians as Teachers: A Qualitative Inquiry into Professional Identity."

52. Hays and Studebaker, "Academic Instruction Librarians' Teacher Identity Development through Participation in the Scholarship of Teaching and Learning"; Wheeler and McKinney, "Are Librarians Teachers?"

53. Walter, "Librarians as Teachers: A Qualitative Inquiry into Professional Identity."

54. Davis, "The Academic Librarian as Instructor"; Houtman, "Trying to Figure It Out."

"Looking for Pictures of Clouds": Defining the Unique Research Needs of Creative Communities

Laura Dimmit Smyth, Ian Moore, and Kodi Saylor

The purpose of this study is to define the unique research needs of creative communities as seen by the academic librarians supporting those communities. After surveying academic librarians, visual practice, information relating to the practice of a creative discipline, and inspiration were identified as unique research needs of these populations. Survey respondents also identified challenges to serving creative communities, including perceptions of library relevance, buy-in, and scheduling. While past literature has engaged with supporting specific creative disciplines, this study focuses on the collective research needs of creative communities.

Introduction

Academic librarians tell stories about the needs of the communities they serve—critical resources, certain types of digital project support, instruction for the same course every semester, and other needs. This was true for the three authors, who have worked with varying types of creative communities in three different institutions: creative writers, theater professionals, graphic designers, musicians, acting students, dancers, visual artists, and students in a wide-ranging "interdisciplinary arts" program. All three authors had previously looked to the literature, searching for examples and ideas related to supporting creative communities, and found that comparatively little has been written that ties together the information needs of different arts populations. Separately, and in conversation, they wondered whether this gap meant that the challenges and particular features of the creative communities they worked with were isolated incidents. It is easy to tell a story about the needs of a specific community informed by institutional or geographic context or the challenges of supporting artists in a particular form. It is much more challenging to broaden the scope of this story into one that encompasses multiple disciplines, modes, and contexts—but, in doing so, the authors hope to tease out commonalities across creative communities and to provide the librarians who work with these communities with both solidarity and suggestions about how to continue supporting these groups. The purpose of this study is to define the unique research needs of creative communities as seen by the academic librarians who support those communities. Simultaneously, the authors wanted to investigate what challenges academic librarians encounter when work-

*Laura Dimmit Smyth is Fine Arts & Cultural Studies Librarian, University of Washington Bothell and Cascadia College Campus Library; email: lkd8@uw.edu. Ian Moore is Fine Arts Librarian, University of Minnesota Duluth; email: imoore@d.umn.edu. Kodi Saylor is First-Year Teaching and Learning Librarian, University of Colorado Denver Auraria Library; email: kodi.saylor@ucdenver.edu. ©2022 Laura Dimmit Smyth, Ian Moore, and Kodi Saylor, Attribution-NonCommercial (https://creativecommons.org/licenses/by-nc/4.0/) CC BY-NC.

ing with these communities. There is a clear need to knit together the similarities discussed below and develop applicable suggestions for academic librarians who work with multiple, or interdisciplinary, creative communities.

Literature Review

In examining the literature related to this question, the authors identified three recurring themes: the research needs and preferences of creative communities, common challenges in serving patron populations, and specific approaches to serving creative communities. In each case, the authors found that studies had either explored specific disciplines or had addressed research and information literacy more broadly. Examining the literature about specific creative disciplines reveals similarities between the research needs of practitioners in those disciplines, some of which are explored below.

Needs and Preferences of Creative Communities

Many scholars have investigated the needs and preferences of students and scholars working in specific creative arts. A number of studies have identified inspiration as a key information need for individual creative practitioners.[1] In 2010, Ann Medaille found that "artists may find inspiration during the process of searching for information, when they find an image, a fact, a story, a piece of music, or (most likely) an unspecified combination of all of the above."[2] Although artists and creative practitioners may not develop traditional research papers, they depend on research to inspire their works.

Research by creative practitioners is not necessarily limited to their discipline. Several studies have noted the interdisciplinary needs of specific creative disciplines, and how they are impacted by the availability of materials covering a broad range of disciplines.[3] Jennifer Mayer found that dance students "noted the importance of interdisciplinary research in the field of dance and listed the following areas: medical information, kinesiology, social issues in dance, music, pedagogy, emotional and psychological health of dancers, body image, and visual images."[4] This wide array of topics highlights the need for creative practitioners to explore the social, political, historical, and cultural contexts of their work.[5] Archival and special collections can help researchers to explore these contexts.[6] As Lisa Lazar writes, "historical society libraries and archives offer unique materials and types of collections not readily available elsewhere."[7]

Generally, studies have found a preference for digital materials in some formats, including streaming video, streaming audio, and electronic journals. However, a strong preference for print materials was noted in a number of cases, particularly for visual sources and musical scores.[8] Cathy Goodwin found that the work of a costume designer, for instance, depended heavily on "books on costume history with images of clothing from a particular era."[9] E-books might not always contain the images available in print materials, or they may contain images of a lesser quality or resolution.

Challenges to Serving Creative Communities

Across subject specialties, academic librarians have identified several common challenges in serving creative communities. Communication about library services and buy-in to library services are frequently noted as difficulties. Scott Bennet highlights the challenge of differing priorities between faculty and library workers, which result in "a campus environment that, although rarely hostile, is often uninformed, indifferent, or [otherwise] occupied."[10] Faculty

prefer to focus on delivering content in their own areas of expertise and may not be moved by appeals to broader curricular or pedagogical goals that often accompany library instruction and information literacy work.[11] Choosing to frame library collaborations in terms of direct, disciplinary impact may be a strategic way to make inroads.[12] Interviews with Irish faculty conducted by Claire McGuinness in 2006 identify a perception that developing information literacy skills is a "natural, almost intuitive process" that students will develop on their own.[13] Nicole Pagowsky and Erica DeFrain suggest that students may base their own interactions with librarians on the interactions modeled by faculty. In this way, faculty may serve as unintentional gatekeepers or barriers to library services.[14]

These challenges may be addressed through outreach, new communication strategies, or increased staffing. However, all these solutions come with added costs, which may be impractical given the financial instability of many academic libraries. Indeed, a lack of financial resources creates other personnel or "role-related" challenges, such as the role-related stress and role overload described by Ellen Shupe, Stephanie Wambaugh, and Reed Bramble, whose 2015 study compared academic librarians' level of stress, burnout, and job satisfaction to other professions.[15] It is possible to connect some causes of role-related stress and overload to the 2008 recession, which led many libraries to provide "more services with a combination of less staff, reduced hours, and less funding."[16]

Approaches to Serving Creative Communities

Some librarians frame library services and resources using a disciplinary or professional standard that appeals to their user populations.[17] Whether or not a disciplinary framework is referenced, the vast majority of documented approaches to working with creative communities are bound by some disciplinary or curricular parameters. This has documented advantages and disadvantages. Writing about studio art populations, Leo Appleton, Gustavo Grandal Montero, and Abigail Jones describe the value of library instruction and activities that allow "students to see the library staff differently, as staff who work collaboratively with [faculty], who input into the curriculum and who have real life stories to share about their subject matter."[18] Kasia Leousis also identifies the benefit of librarians practicing or displaying disciplinary knowledge, such as feeling comfortable critiquing and discussing artwork.[19] While these disciplinary approaches are very common, they may be at odds with the very interdisciplinary research needs of many creative communities.[20]

Some successful approaches to supporting creative communities involve one or more librarians deeply embedding within one course, program, or department. Kristina Keough and Stephen Patton describe several models for librarians to support digital scholarship created by artists.[21] Some collaborations, like the one described by Kathleen Abromeit and Victoria Vaughan, are made possible by grant funding, highlighting the human and financial resources necessary for this kind of work.[22]

Since the adoption of the *ACRL Framework for Information Literacy for Higher Education* (*Framework*) in 2015, many academic librarians who work or liaise with creative communities across the disciplines have used the *Framework* to argue for more robust support of creative populations by academic libraries and librarians.[23] As previously noted, much of this research has been situated within the disciplines, particularly visual art, design, and music.

Many scholars have demonstrated how librarians can use the *Framework* to support the information and research needs of creative communities.[24] However, Sarah Carter, Heather

Koopmans, and Alice Whiteside argue that, while the *Framework* fits contemporary research contexts more effectively than the 2001 *Information Literacy Competency Standards for Higher Education*, it fails to fully acknowledge creative works as scholarship.[25] Using the context of indigenous art, Alexander Watkins provides nuanced examples of how to engage with the "Authority Is Constructed and Contextual" Frame. His work offers a critique of the *Framework* while also drawing on it as a way to open up a conversation about authority and information sources with fellow instructors and students.[26]

Methods

The authors designed a 14-question exploratory survey with a combination of closed- and open-ended questions to investigate the current relationship between academic librarians and creative communities. The survey consisted of four sections: library and librarian demographic information, perceptions of creative communities, how librarians interact with creative communities, and the challenges of serving these communities. (For a complete list of questions, see appendix A.)

The survey was approved by the University of Washington IRB, after which it was distributed on a variety of library listservs. (For a list of listservs, see appendix B.) The survey was open for 45 days, from January to March 2019. Halfway through the 45-day period, the authors sent out a reminder to the same set of listservs. In all, 131 responses were recorded.

Coding of Responses

After an initial review of the data, the authors chose to focus on coding and analyzing responses to specific questions. This decision was motivated by a desire to maintain a manageable project scope. In future research, the authors plan to return to other sections of the survey data. Along with the demographic information collected about librarian roles and the libraries they work in, the authors chose two open-ended questions to examine, listed below:

> "Do you think that creative communities have unique research needs? If so, describe them. If not, why?"
>
> "What obstacles or challenges do you encounter/have you encountered when working with these groups [creative communities]?"

Each author read one third of the responses and made a list of recurring themes. As described by Graham Gibbs, the authors used a strategy of "data-driven coding," which involves using the existing data to develop a list of codes rather than approaching a set of data with pre-identified codes.[27] The authors then compared the three lists and identified commonalities and differences. They counted the number of recurrences for each code to identify the most common themes across the entire list of responses. The authors combined the most common codes from the three lists into one final list and created shared definitions for each code. Then the authors embarked on three rounds of norming, which required some revisions of the code definitions. Once the norming process was complete, each of the authors read one third of the responses and applied the codes. In addition to this coding, the authors tabulated responses from specific questions in the demographics section (see Survey Results) to generate a clearer profile of the survey respondents.

Survey Results

The survey received 131 responses. The majority (58.8%) of respondents identified themselves as early career (five years or fewer in professional positions), and 41.2 percent of respondents identified themselves as mid- and late career (more than five years in professional positions). A wide range of institutional sizes was represented, from FTE of under 1,000 to FTE of over 20,000. More than half (56.2%) of responses came from individuals working at institutions granting doctoral degrees.

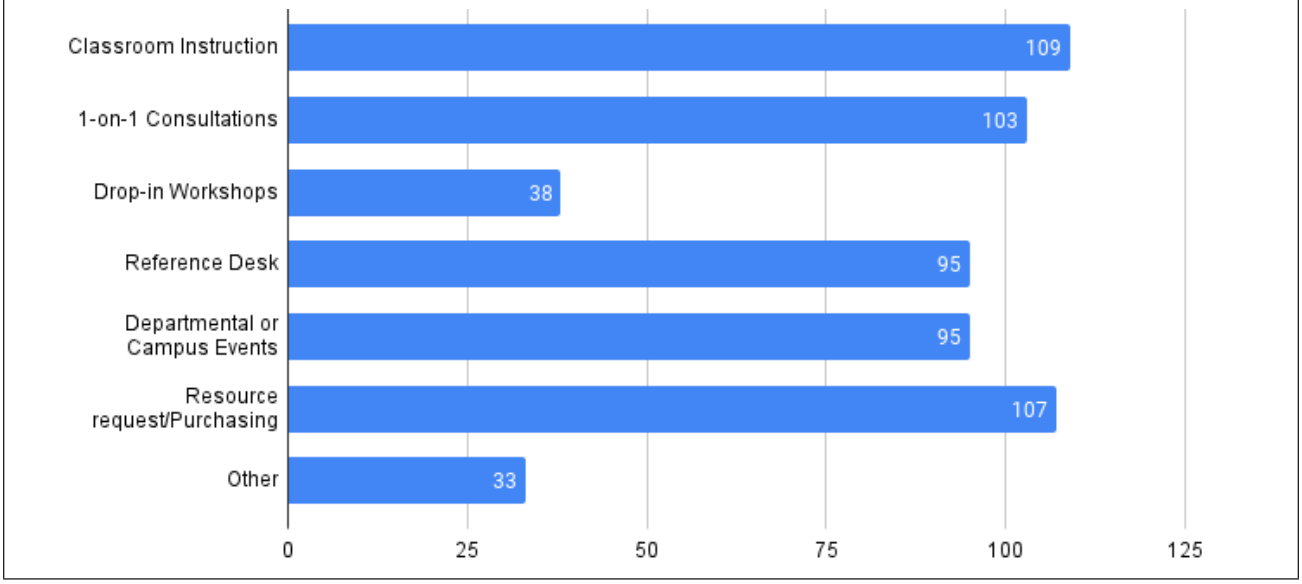
Overwhelmingly, respondents identified as liaison librarians (86%). Of those who did not identify as liaisons, some did not have those responsibilities as part of their current positions, while others worked at institutions that did not use a liaison model.

The survey asked, "How do you currently interact with creative communities on your campus? Check all that apply," and provided six options, with the additional option to write in other answers. In the chart below, the top six responses were provided in the survey. The majority of the respondents selected one or more of these options. Write-in responses ranged from embedded or integrated class partnerships to library tours and exhibits (see appendix D for a complete list).

TABLE 1
Most Common Departments/Units Served

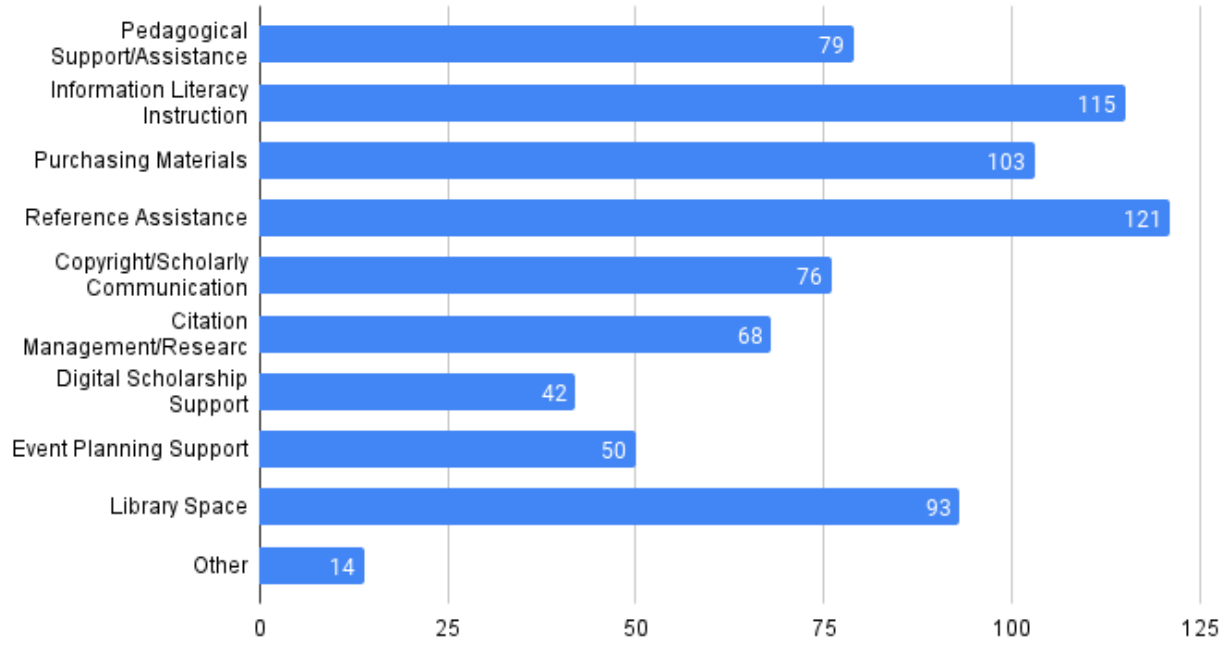
Department or Unit	Number of Responses
Art (including studio art and art history)	66
Design (including video game, graphic, interior, fashion, and others)	51
Theater/Theatre	49
Music	39
History	32
Dance	31
English	25

FIGURE 1
How Do You Currently Interact with Creative Communities on Your Campus? (Check All that Apply)



The survey asked, as a follow-up, "What are you providing during these interactions?" and provided nine options, with the additional option to write in other answers. Again, most respondents chose from among the options provided in the survey.

FIGURE 2
What Are You Providing During Interactions with Creative Communities on Campus?



As described in the Methods section above, the authors assigned codes to the responses of specific survey questions. In the charts below, see the total code counts. Definitions for each code can be found in appendix C.

TABLE 2
Coding of Creative Community Needs

Code Name	Total Count
Information Relating to Practice	39
Support for Visual Practice	38
Inspiration	23
Interdisciplinary	16
Research Context	16
Primary Sources, Archives, or Special Collections	12
Browsing	9
Scholarly Communication	9
"Core" Information Literacy Skills	8
No	4
Timing	2

TABLE 3
Coding of Librarian Challenges

Code Name	Total Count
No Challenges	8
Lack of relevance	34
Buy-in	21
Copyright/Content	3
Lack of Resources	15
Silos	13
Population Needs and Preferences	15
Scope of Job	5
Scheduling	22
Project Management	2

Discussion

Librarians who work with creative communities largely agree that those communities do have unique research needs and preferences. In their analysis of survey responses, the authors identified three primary research needs to explore. These three needs—support for visual practice, information related to practice, and inspiration—provide an opportunity to explore some distinctive features of creative research. Similarly, several shared challenges appeared in the survey: lack of relevance, lack of buy-in, lack of resources, and scheduling. These challenges, while acute for librarians working with creative communities, are also representative of the challenges faced by academic librarians.

Support for Visual Practice

The idea of "support for visual practice" as a research need was identified by 38 survey respondents, or roughly one third. The authors defined support for visual practice as: "Nontextual and/or image-based materials. Visual literacy skills. Final research output that is visual in nature." In some ways, the idea that creative communities need support to find and create nontextual materials is low-hanging fruit. Many artistic endeavors are intrinsically visual—film, studio art, modern dance, and the like. Indeed, it may even be surprising that only about a third of respondents identified some kind of visual research need.

The majority of survey responses that the authors tagged as support for visual practice were referring either to materials needed or to the output of someone's research or practice. While "visual literacy" is a concept that underpins many of these activities, it was only explicitly identified by two respondents. This is interesting because visual literacy is well represented in the library literature concerning arts disciplines, yet it was not identified by librarians in this study as a unique need of this population.[28] In a survey of academic librarians from 2018, a majority of respondents indicated that visual literacy was important for many disciplines, but more than half were not incorporating it into their instructional practices in any way. A significant percentage of librarians may still perceive visual literacy as a skill best, or required to be, taught by instructors of record.[29]

For many creative communities, frequent engagement with an art form or practice is essential to growth and success. The library is in a prime position to facilitate that engagement through collections:

> one of our art professors told a class on a library visit "whenever you aren't making art, you should be looking at art." Our art magazines are particularly popular for discovering new artists and students and staff regularly check out books on artists/topics/genres/techniques etc….they are interested in to learn more and get inspiration.

As creative communities search for and interact with visual materials, librarians are in the position to note the material types and themes that are most in demand. In turn, these observations can be translated into more informed decisions about purchasing and outreach. However, both the survey and the authors' review of relevant literature shows that library tools and organizational structures can prohibit creative communities from successfully using visual materials:

> Many [students] are building their visual vocabulary; looking for inspiration for a set design; designing clothing; comparing/contrasting fonts and layouts; etc. It is the visual nature of our book collection that attracts them. A former VP of the library division tried to decree that eBooks only would be purchased. Informed him that one cannot compare/contrast seams/fonts/interiors/etc. with eBooks but it can be done with printed material.

In some scenarios, it is not just the content of library collections, but the physicality and tactile engagement that matters. Data about usage may tell librarians that certain items are popular, but it may not be able to communicate precisely *why* they are popular. This is one example of how physical libraries can still be core sites of experiential learning.

Respondents also highlighted other challenges for those seeking to find and use visual materials:

> Creative individuals tend to work much more with images, other visual media, and tactile materials. They also have different needs, using research as inspiration, for example. Their browsing patterns are different as well; many prefer visual-based searching as opposed to traditional text-based search engines.

These issues related to visual practice vary greatly in both scale and addressability. It is unlikely that, as a field, academic librarians will shift away from the Library of Congress classification system, or that we will soon be able to comprehensively engage with the way that materials are distributed. However, these challenges do point toward tangible actions that librarians can take to support creative communities' information needs. Some possible actions include: making the licensing details of library-owned and subscription resources more visible; pulling together recommended open access/free collections of visual materials by theme, format, or discipline; and identifying departmental partners who may help seek institutional or grant funding for digitization or preservation efforts. None of these are quick fixes, but they do address some of the challenges born of working in highly visual forms.

Information Relating to Practice

"Information relating to practice" refers to the idea that people engaging in creative endeavors need information specific to the practice of their craft. This code was drawn directly from a participant's survey response: "Yes. They [creative communities] need information relating to practice." During the coding process, the authors continued to see responses that referred to this need for information related to practice and developed this definition: "Information relating to the practice of the creative activity. Nonacademic sources. Technical know-how. Accepted norms. Experiential research." This definition is multifaceted and includes specific information about craft that could be nonacademic or technical in nature, that focuses on accepted norms within a creative practice, or that is related to professionalization. As this survey response explains:

> Often members of the creative community I serve need practical, day-to-day resources about professionalism, locating jobs, staying physically and emotionally

> healthy, running a business, negotiating contracts, copyright, etc. These areas are not necessarily common to academic research of other kinds. Other, less "practical" resources may provide inspiration or examples of creative activity outside of the particular creative area—other arts, literature, philosophy, etc.

This quote illustrates the very specific ways that librarians see creative practitioners and communities having the need for information related to practice. However, academic libraries are often organized to collect and focus on scholarly information and scholarly outputs of their users. This means that there may be an internal disconnect in academic libraries between what librarians know users need and how the academic libraries are organized, maintained, and promoted.

The idea that academic librarians need to display or possess some disciplinary knowledge also comes into play when discussing information relating to practice. Many of the librarians writing about working with creative communities situate themselves within those communities, often through the lens of an academic discipline.[30] Many respondents gave specific examples describing the kinds of nonacademic information creative communities need. It is clear that academic librarians facilitate access and discovery of both scholarly and nonscholarly information for creative communities. It may be possible to facilitate opportunities to share information related to practice in more informal, relational ways. For example, supporting or hosting speakers and/or artists in residence, which would allow for informational exchange between practitioners.

Currently, academic libraries are primarily positioned as locations (either physical or digital) of scholarly information. Beyond collections and resources, this has implications for the way academic librarians approach teaching information literacy because the *Framework* "still privileges traditional forms of scholarship."[31] Because academic libraries' resources and services are structured around scholarly information, creative communities may not see academic libraries as relevant to their information needs. The relevance of academic libraries to creative communities was identified by participants as a major challenge and is discussed further in the "Challenges to Serving Creative Communities" section below.

Inspiration

"Inspiration" was identified as a research need of creative communities by 23 respondents. The authors developed the following definition of inspiration during coding: "Library resources and spaces as a source of artistic or creative inspiration. Seeking out information as a tool for inspiration." Inspiration is inherently interconnected with the concepts of browsing and interdisciplinarity. The Frame "Scholarship as Conversation" applies just as much to creative work as it does to research with outputs traditionally valued more highly by the academy. Survey respondents agreed that creative research is as much a "conversation" as work in more traditionally academic disciplines. Students on their campuses took part in scholarly conversations and relied on library resources to inform and inspire their own work:

> Like sometimes to understand a character's motive, it helps to read about what it was like to live during that time period. Or a creative writing person needs help finding out specific facts and dates for a book that she is working on. Sometimes they are just looking for creative inspiration, like they want to look at art books

> and photo collections to get inspired for how a set might look. They may end up using unusual sources or need a lot of different things to look at.

This response identifies browsing behavior, which nine respondents identified as a research need. During coding, the authors defined "browsing" as: "Idea of 'serendipity.' Benefits of browsing vs. doing directed searching, often related to the idea that browsing is more difficult in online information environments." Survey respondents agreed that browsing assisted students in finding inspiration:

> Yes—I think the browse experience is especially important for creative work (it enables creative collaging of serendipitous information finds).

Interdisciplinary research needs, which the authors defined as "Mentions the cross-disciplinary or interdisciplinary nature of creative research. The need to combine resources to create a holistic answer," were frequently referred to by respondents as well. Sixteen respondents identified interdisciplinarity as key to creative research:

> Yes because the range of topics is so wide. A theatre major might need sources on Renaissance costumes one semester and on flapper fashions the next semester. Their research is interdisciplinary, and their research needs are unpredictable.

Creative communities conducting research depend on their ability to browse for information that might spark inspiration, and their research is not necessarily restricted to their own fields. How do libraries facilitate browsing for inspiration? Survey respondents suggested that creative research may be stymied, rather than assisted, by library organizational structures and strictures:

> Yes… often they are searching for inspiration or examples of work similar to what they are trying to accomplish. Sometimes what they are searching for is impossible to find using traditional library tools such as keywords, subject headings, browsing, etc. For example, they might be looking for artwork that deals with a particular theme, but that theme might be vague/broad and not searchable.

Libraries can use the connections between inspiration, browsing, and the interdisciplinarity of creative research to develop more effective services. As noted above, academic libraries are unlikely to shift away from Library of Congress classification. In the face of such institutional constraints, there are no easy answers to the challenges surrounding the facilitation of browsing and inspiration. Librarians might gain familiarity with the disciplines creative practitioners are likely to draw on, through informal exploration or seeking out more formal training. Brainstorming is often addressed in library instruction sessions and consultations as part of the research process, but it is less common to address inspiration and the creative exploration that generates new ideas. Being more explicit about the function of inspiration in the research process could benefit creative communities and students in other disciplines. These potential solutions are not simple, but the needs of a significant population of library

users should not go unmet. Some solutions, like improving the context and detail of catalog records, point to an opportunity for increased collaboration between public services and technical services librarians.

Challenges to Serving Creative Communities

The challenges and obstacles cited by survey respondents clustered strongly around four themes: lack of relevance, lack of buy-in, lack of resources, and scheduling. These challenges are interconnected, making it important to discuss them collectively. Population needs and preferences was an additional challenge identified by respondents; but, because this challenge aligns with the unique research needs and preferences, it is discussed in the section above.

The most common challenge identified by librarians in this survey was "lack of relevance." Through coding, the authors defined lack of relevance as "the library and library resources are perceived to lack relevance to the work of a creative community, or the library is not regarded as being interested in supporting creative work." This code captures a persistent theme in the responses, that the work of librarians and libraries in relation to creative communities is unseen and misunderstood:

> Creative practitioners don't always recognize what they do as research—they often just consider it part of their practice—so it can be difficult for some faculty to see the relevance of the library.

The ways in which creative communities discuss their information use is also part of this relevance disconnect. The response above showcases the issues involved with this challenge, from conceptions of what research is to communicating how the library can support those engaging in creative endeavors.

Beyond library relevance is the problem of "lack of buy-in." The authors define lack of buy-in as the idea that "faculty and students do not perceive value in devoting time to library resources and services." While library relevance and lack of buy-in are similar, lack of buy-in describes direct disinterest in the services and resources of academic libraries, even after communication and outreach. Lack of buy-in is particularly concerning when considering the emphasis on strong partnerships described in the literature.[32] The responses below showcase the difficulties librarians have getting buy-in:

> I think getting buy-in about the value of the library for students. Most people understand it, but it's a large system, and the relationship building takes time.

> Faculty in the creative disciplines often do not perceive a need for our service.

This study, which captured librarian perspectives, indicated that librarians feel underused by creative populations. A potential solution to this challenge is to use this study's findings about the unique research needs of creative populations to guide future outreach and communication. Since librarians see this population as having unique research needs, it may be possible to address these challenges of perception and buy-in via communication, services, or resources that are grounded in serving these unique needs. For example, libraries could

curate physical or digital thematic collections to provide inspiration. These collections could speak to broader current events or societal issues, or it could be themed in consultation with a specific course or departmental interest. Many libraries already do this work, but explicitly connecting curated displays to creative communities and emphasizing their inspirational function could help deepen the affiliation between libraries and creative communities. Librarians could also focus on identifying venues to communicate about career-focused resources and other "information related to practice." Capstone or senior thesis courses, departmentally required research methods courses, or cocurricular groups are all possible places to share these resources, depending on your institutional context.

Different strategies are needed to address the challenges of "lack of resources" and "scheduling." During coding, scheduling was defined as "The librarian's ability to find time to schedule instruction or events with creative groups." Librarians repeatedly described scheduling as a major challenge.

> They are very busy! Not just academic studies but practicing/perfecting their art forms.

The issue of scheduling may feed into lack of buy-in, as the following responses relate the reluctance of faculty to give class time to librarians as not just a question of value but of having the time to give.

> The only obstacles come from faculty not wanting to share class time for information literacy instruction.

It is also possible that scheduling problems are caused by lack of resources, as it is hard to schedule when a library and campus departments are understaffed. Several responses linked scheduling and lack of resources, including funding, together.

> Timing is tricky—our creative faculty are so busy and keep hours that are not necessarily 9–5pm. Their tenure demands are extensive, since they often need to produce print research as well as maintain [a] performance program. Our creative disciplines are understaffed for instruction, so it is even more challenging to work together to come up with new ideas for library workshops in their classes.

Lack of resources may refer to information resources, or it may refer to funding. Because our survey recorded responses from librarians at institutions of different sizes, availability of resources and workload vary widely in our survey. Scheduling and lack of resources stem from larger structural challenges related to the fact that "a majority of the libraries have experienced flat or reduced budgets."[33] Given the current and predicted economic climate, it is likely that lack of resources will be a continuing, and perhaps increasingly challenging, issue. The relationship between the challenges of lack of resources and scheduling should be explored further in relation not only to the work of academic librarians but also the populations they work with, as these systemic challenges are part of the larger landscape of higher education.

If scheduling is a structural issue within higher education where librarians, instructors, and students feel strapped for time because of their required responsibilities, then the challenge of finding time to work with creative communities is not unique to this population. Regardless, further study is needed on how the issue of time impacts partnerships in higher education. Viewing the challenges of scheduling and lack of resources as structural means that, unlike lack of relevance and lack of buy-in, these challenges may not be solvable on the individual librarian level.

Further Research

The authors chose to focus this study specifically on the experiences and observations of academic librarians who work with creative communities. Framing the study this way was productive both because it helped fill an existing gap in the literature about academic liaison services and because it prevented scope creep. A natural continuation of this study would be to survey members of creative communities that are served by academic libraries.

Further work to identify the vocabulary and language used by different creative communities could facilitate more effective outreach. Taking the time to match library services and resources to the information needs of creative communities could be a way to build stronger buy-in and demonstrate value.

This study has illuminated the ways in which building library liaison services around traditional departments or schools has created some structural challenges, especially for creative communities. The liaison model, especially at institutions already experiencing pressure due to lack of resources, may exacerbate previously documented role-related stress and librarian burnout. When a single librarian is made responsible for increasing numbers of students, faculty, or programs, diminishing returns are likely. Further exploration of the tensions between existing patron needs and academic library service design could be informative, but it poses significant challenges. This research could also be expanded beyond creative communities to other groups within academic institutions that do not produce traditional scholarship, such as entrepreneurship programs, community-based learning programs, and applied sciences.

Finally, researchers with an interest in creative communities could investigate makerspaces and digital media services as sites of librarian engagement with creative activities. In the authors' survey, only three mentions of "makerspace" appeared, and, in all of those mentions, makerspaces were only places that used library *spaces*, rather than an example of deep librarian-community partnerships.

Study Limitations

The authors chose to use the phrase "creative communities" as a collective term for the programs, departments, teams, and individuals that academic librarians might work with. This term refers to people who are engaging in creative endeavors, either alone or collectively. They may be working in one or across several fields or mediums. The phrase "creative communities" was chosen deliberately because it allows for a more expansive scope of creative activity, providing space for commonalities between different types of creative research to emerge. The study's description made reference to populations doing creative work and provided examples including visual art, theater, dance, graphic design, and creative writing.

While the intent of using this phrase was to reach beyond disciplines, many of the questions in the survey primed people to think about disciplines, because of the examples provided.

The use of this phrase was also a response to the fact that many existing studies located by the authors focused on how libraries support the research needs of those engaged in one very specific discipline or another. The authors acknowledge that this decision may have contributed to participant confusion. However, the authors remain committed to this decision, and the survey results indicated that most participants were able to respond.

Conclusion

It is clear that creative communities have unique research and information needs and that they do conduct research, even if it does not always conform to the traditional scholarly outputs. Creative communities engage deeply with a range of materials, often reaching outside their own disciplines and far outside the academy. The research processes that creative communities engage in can challenge the structures of academic libraries, and their unique needs provide a valuable opportunity to reconsider how we organize ourselves, provide services, and structure our physical and digital collections.

It is not the authors' intention to create more work for academic librarians who serve creative communities or to argue for an expansion of scope. Rather, the authors hope to validate the labor of academic librarians who have wondered if their experiences were isolated or singular. Collectively examining the needs of creative communities is important because the services and resources that benefit one particular community may be applicable to supporting other communities as well. So often, library users are working across and outside of disciplines, and our conception of academic libraries must continue to develop in ways that will support them.

APPENDIX A. Survey Questions

1. What is your current job title?
2. How long have you been in your current position?
    a. Less than 1 year
    b. 1–3 years
    c. 3–5 years
    d. 5–10 years
    e. More than 10 years
3. What is the size of your institution?
    a. Fewer than 1,000 FTE
    b. Between 1,000 and 3,000 FTE
    c. Between 3,000 and 10,000 FTE
    d. Between 10,000 and 20,000 FTE
    e. More than 20,000 FTE
4. What is the highest degree your institution offers?
    a. Associate
    b. Bachelor
    c. Master
    d. Doctoral
5. Are you a liaison? If yes, which departments or campus units do you serve? For example: visual arts, creative writing, film studies, and so on. Please be as specific as possible.
6. In addition to any departments you serve, what creative communities exist on your campus?
7. Do you see any of these communities using the library? (that is, resources, spaces, services)
8. Do you think that creative communities have unique research needs? If so, describe them. If not, why?
9. How do you currently interact with creative communities on your campus? Check all that apply:
    a. Classroom instruction
    b. 1-on-1 consultations
    c. Drop-in workshops
    d. Departmental/campus events
    e. Reference desk
    f. Resource requests/purchasing
10. What are you providing during these interactions?
    a. Pedagogical support/assistance with assignment development
    b. Information literacy instruction
    c. Purchasing materials
    d. Reference assistance
    e. Copyright/scholarly communication support
    f. Citation management/research data management
    g. Digital scholarship support
    h. Event planning support
    i. Library space
11. Have you done any direct outreach to creative communities on your campus? If so, please describe.

12. What obstacles or challenges do you encounter/have you encountered when working with these groups?
13. Are you interested in participating in a follow-up interview, conducted via phone or Google Hangouts? If so, please leave your name and contact information below.
14. Is there anything else you would like to tell us?

APPENDIX B. List of Listservs for Survey Distribution

uls-l@lists.ala.org
ili-l@lists.ala.org
acrl-arts@lists.ala.org
les-l@lists.ala.org
dance@lists.ala.org
lirt-l@lists.ala.org
rusa-l@lists.ala.org
acrl-ir@lists.ala.org
collib-l@lists.ala.org
les-l@lists.ala.org
Acrl-nw

APPENDIX C. Coding Definitions

Needs and Preferences Codes:

Support for Visual Practice: Nontextual and/or image-based materials. Visual literacy skills. Final research output that is visual in nature.

Research Context: Larger context of someone's research needs. How the final product may not fit into a traditional box (that is, scholarly article or monograph publication).

"Core" Information Literacy Skills: Information Literacy skills: the ACRL *Framework for Information Literacy for Higher Education* or *ACRL Information Literacy Competency Standards for Higher Education*; generally agreed-upon concepts such as synthesis, searching, source evaluation, authority, and the like.

Information Relating to Practice: Information related to the practice of the creative activity. Nonacademic sources. Technical know-how. Accepted norms. Experiential research.

Inspiration: Library resources and spaces as a source of artistic or creative inspiration. Seeking out information as a tool for inspiration.

Interdisciplinarity: Mentions the cross-disciplinary or interdisciplinary nature of creative research. The need to combine resources to create a holistic answer.

Browsing: Idea of "serendipity." Benefits of browsing vs. doing directed searching, often related to the idea that browsing is more difficult in online information environments.

Scholarly Communication: Scholarly communication knowledge needs. Knowing how to work with materials that may be under copyright.

No: No, creative communities do not have unique research needs.

Primary Sources, Archives, and Special Collections: Use of archival or special collections materials, and/or primary sources, across formats.

Timing: Unique research needs require more time and/or preparation. Some creative activities may have unusual or compressed timelines.

Challenges Codes:

Lack of relevance: The library and library resources are perceived to lack relevance to the work of a creative community, or the library is not regarded as being interested in supporting creative work.

Lack of buy-in: Faculty and students do not perceive value in devoting time to library resources and services.

Lack of resources: Limited resources (like financial, personnel, time) whether on the part of the librarian or the creative community.

Copyright and content: Faculty and students face scholarly communication and copyright challenges, including fair use and licensing.

Silos: A lack of connections (such as physical proximity, relationships) between the library and its communities of patrons as well as within the library.

Population needs and preferences: Librarian understanding of, and ability to, deliver resources that meet population's needs and preferences.

Scope of job: The limits imposed by restrictions and/or competing demands on a librarian's time.

Scheduling: The librarian's ability to find time to schedule instruction or events with creative groups.

Project management: This population faces challenges in managing their projects.

No Challenges: No challenges are or were encountered.

APPENDIX D

Write-in answers for the survey question "How do you currently interact with creative communities on your campus? Check all that apply"

- Well integrated with art history; a little with art studio; other disciplines very erratic interactions
- Theater classes meet in library classroom
- Theater students practice in library basement
- Library tours
- Studio visits
- Interlibrary loan requests
- Embedded course support in studio
- Spending time embedded in each of these areas
- Looking for opportunities to network and have serendipitous conversations
- Custom tours of the artist archives
- Occasionally perform with one of the student orchestras
- Attend departmental meetings
- Critiques, graduate committees
- Library pop-up
- Serve on committees together
- Co-taught courses; interview new tenure-track faculty
- Studio hours
- I see members of these communities but I'm not their specific liaison
- Exhibits and performances in the library
- Virtual reference
- Regular book displays and topical exhibits
- Course project critiques
- Orientation; library programs collaborating with/hosting the arts
- Circ desk; departmental meetings; and we offer the arts department 2 small gallery areas in the library to use for student and faculty exhibits
- Serve as judge for juried theatre performances
- Circulation
- Ref hours in their lobbies
- Exhibits, book displays, tours
- Library tours
- Art book club, display space for student art
- Exhibits and performances in the library
- Working with visual literacy course
- Faculty for independent research (credits)

Write-in answers for the survey question "What are you providing during these interactions?"

- Project assistance
- Assist with performance space/exhibits
- Collection development for art
- Introduction with functions-based collections
- There is a new interior design sample
- We wear many hats

- Graduate writing mentor
- School of visual arts regularly
- Fostering communication
- I also taught a how-to-embroider course
- Academic technology support (learning)
- Outreach and student activities, partnering
- Collection maintenance
- Displays

Notes

1. Lucy Campbell, "The Information-Seeking Habits of Architecture Faculty," *College & Research Libraries* 76 (September 2017): 761–73; Rebecca Daniels, "Developing a Research-Led Practice: A Case Study Examining the Information Needs and Behaviours of First Year Undergraduates at the University for the Creative Arts," *Art Libraries Journal* 43 (July 2018): 143–48, https://doi.org/10.1017/alj.2018.21; Cathy Goodwin, "Information-Seeking in the Humanities: Costume Design and Historical Research," *Current Studies in Librarianship* 30 (Fall 2010/Spring 2011): 19–25; Katie Greer, "Connecting Inspiration with Information: Studio Art Students and Information Literacy Instruction," *Communications in Information Literacy* 9 (June 2015): 83–94, https://doi.org/10.15760/comminfolit.2015.9.1.177; Lisa A. Lazar, "Hidden Gems: Creative Artists and Historical Society Libraries and Archives," *Reference Librarian* 54 (October 2013): 263–79, https://doi.org/10.1080/02763877.2013.806237; Patrick Lo and Wilson Chu, "Information for Inspiration: Understanding Information-Seeking Behaviour and Library Usage of Students at the Hong Kong Design Institute," *Australian Academic & Research Libraries* 46 (April 2015): 101–20, https://doi.org/10.1080/00048623.2015.1019604; Stephann Makri and Claire Warwick, "Information for Inspiration: Understanding Architects' Information Seeking and Use Behaviors to Inform Design," *Journal of the American Society for Information Science and Technology* 61 (2010): 1745–70, https://doi.org/10.1002/asi.21338; Ann Medaille, "Creativity and Craft: The Information-seeking Behavior of Theatre Artists," *Journal of Documentation* 66 (April 2010): 327–47, https://doi.org/10.1108/00220411011038430; Stephanie Beene and Shannon Marie Robinson, "When Research Does Not Start with a Question: Teaching with the Framework and Visual Literacy Standards within Art and Architecture Librarianship," *Art Documentation: Journal of the Art Libraries Society of North America* 36 (September 2017): 254–80, https://doi.org/10.1086/694243.

2. Medaille, "Creativity and Craft," 338.

3. Julia Furay, "Performance Review: Online Research Guides for Theater Students," *Reference Services Review* 46 (February 2018): 91–109, https://doi.org/10.1108/RSR-09-2017-0037; Makri and Warwick, "Information for Inspiration"; Francesca Marini, "Archivists, Librarians, and Theatre Research," *Archivaria* 63 (2007): 7–33; Jennifer Mayer, "Serving the Needs of Performing Arts Students: A Case Study," *portal: Libraries and the Academy* 15 (2015): 409–31, https://doi.org/10.1353/pla.2015.0036; Medaille, "Creativity and Craft."

4. Mayer, "Serving the Needs of Performing Arts Students," 417.

5. Marini, "Archivists, Librarians, and Theatre Research"; Michael R. Olsson, "All the World's a Stage: The Information Practices and Sense-Making of Theatre Professionals," *Libri* 60 (January 2010): 241–52, https://doi.org/10.1515/libr.2010.021.

6. Ashley L. Till, "Taking a Stand: Students Use of Archival Resources for Dramatic Performance," *Journal for the Society of North Carolina Archivists* 9 (Summer 2011): 61–65; Goodwin, "Information-Seeking in the Humanities," 19–25.

7. Lazar, "Hidden Gems," 266.

8. Campbell, "The Information-Seeking Habits of Architecture Faculty," 761–73; Joe C. Clark, "Format Preferences of Performing Arts Students," *Journal of Academic Librarianship* 39 (May 2013): 297–307, https://doi.org/10.1016/j.acalib.2013.02.005; Daniels, "Developing a Research-Led Practice," 143–48; Goodwin, "Information-Seeking in the Humanities"; Lo and Chu, "Information for Inspiration."

9. Goodwin, "Information-Seeking in the Humanities," 21.

10. Scott Bennett, "Campus Cultures Fostering Information Literacy," *portal: Libraries and the Academy* 7 (April 2007): 148, https://doi.org/10.1353/pla.2007.0013.

11. William Badke, "Why Information Literacy Is Invisible," *Comminfolit* 4 (2011): 137, https://doi.org/10.15760/comminfolit.2011.4.2.92.

12. Badke, "Why Information Literacy Is Invisible"; Barbara Fister, "The Warp and Weft of Information Literacy: Changing Contexts, Enduring Challenges," *Journal of Information Literacy* 11 (June 2017): 68, https://doi.

org/10.11645/11.1.2183.

13. Claire McGuinness, "What Faculty Think: Exploring the Barriers to Information Literacy Development in Undergraduate Education," *Journal of Academic Librarianship* 32 (November 2006): 578, https://doi.org/10.1016/j.acalib.2006.06.002.

14. Nicole Pagowsky and Erica DeFrain, "Ice Baby: Are Librarian Stereotypes Freezing Us Out of Instruction?" *In the Library with the Lead Pipe* (2014), www.inthelibrarywiththeleadpipe.org/2014/ice-ice-baby-2/.

15. Ellen I. Shupe, Stephanie K. Wambaugh, and Reed J. Bramble, "Role-Related Stress Experienced by Academic Librarians," *Journal of Academic Librarianship* 41 (May 2015): 267, https://doi.org/10.1016/j.acalib.2015.03.016.

16. Charles I. Guarria and Zhonghong Wang, "The Economic Crisis and Its Effect on Libraries," *New Library World* 112 (May 17, 2011): 212, https://doi.org/10.1108/03074801111136248; Anne Woodsworth, *Librarianship in Times of Crisis* (Bingley, UK: Emerald Group Publishing, 2011); Christopher Stewart, "Half Empty or Half Full? Staffing Trends in Academic Libraries at U.S. Research Universities, 2000–2008," *Journal of Academic Librarianship* 36 (2010): 394–400, https://doi.org/10.1016/j.acalib.2010.06.003.

17. Rina Vecchiola, "Using ARLIS/NA 'Information Competencies for Students in Design Disciplines' in Course Integrated Information Literacy Instruction at Washington University in St. Louis," *Art Documentation: Journal of the Art Libraries Society of North America* (2015), https://doi.org/d10.1086/adx.30.1.27949570; Sara J. Beutter Manus, "Librarian in the Classroom: An Embedded Approach to Music Information Literacy for First-Year Undergraduates," *Notes* 66 (2009): 249–61; Laurel Bliss and Barbara Rockenbach, "Persuading Architecture Faculty That Library Instruction Is Essential: A Yale Case Study," *Art Documentation: Journal of the Art Libraries Society of North America* (2015), https://doi.org/10.1086/adx.21.2.27949203; Denise Hattwig et al., "Visual Literacy Standards in Higher Education: New Opportunities for Libraries and Student Learning," *portal: Libraries and the Academy* 13 (2013): 61–89, https://doi.org/10.1353/pla.2013.0008.

18. Leo Appleton, Gustavo Grandal Montero, and Abigail Jones, "Creative Approaches to Information Literacy for Creative Arts Students," *Communications in Information Literacy* 11 (2017): 160; Furay, "Performance Review," 91–109.

19. Kasia Leousis, "Outreach to Artists: Supporting the Development of a Research Culture for Master of Fine Arts Students," *Art Documentation: Journal of the Art Libraries Society of North America* 32 (2013): 135, https://doi.org/10.1086/669994.

20. Furay, "Performance Review"; Makri and Warwick, "Information for Inspiration"; Marini, "Archivists, Librarians, and Theatre Research"; Mayer, "Serving the Needs of Performing Arts Students: A Case Study"; Medaille, "Creativity and Craft."

21. Kristina M. Keogh and Stephen A. Patton, "Embedded Art Librarianship: Project Partnerships from Concept to Production," *Art Documentation: Journal of the Art Libraries Society of North America* 35 (2016): 144–63, https://doi.org/10.1086/685982.

22. Kathleen A. Abromeit and Victoria Vaughan, "Info Lit and the Diva: Integrating Information Literacy into the Oberlin Conservatory of Music Opera Theater Department," *Notes* 60 (March 2004): 632–52, https://doi.org/10.1353/not.2004.0001.

23. Beene and Robinson, "When Research Does Not Start with a Question," 254–80; Sarah Carter, Heather Koopmans, and Alice Whiteside, "Crossing the Studio Art Threshold: Information Literacy and Creative Populations," *Communications in Information Literacy* 12 (January 2018): 36–55; Erin Conor, "Engaging Students in Disciplinary Practices: Music Information Literacy and the ACRL Framework for Information Literacy in Higher Education," *Notes* 73 (August 2016): 9–21, https://doi.org/10.1353/not.2016.0087; Erin Conor, "Reframing the Framework: Situated Information Literacy in the Music Classroom," *Fontes Artis Musicae* 64 (December 2017): 346–54; Ellen Hampton Filgo and Megan Martinsen, "Reframing Pinterest: Information Literacy for Interior Design Students," *Internet Reference Services Quarterly* 22 (July 2017): 107–21, https://doi.org/10.1080/10875301.2017.1373721; Kyra Folk-Farber, "Engaging Undergraduates in Copyright and Fair Use Fundamentals," *College & Undergraduate Libraries* 23 (October 2016): 460–66, https://doi.org/10.1080/10691316.2016.1245020; Larissa Garcia and Jessica Labatte, "Threshold Concepts as Metaphors for the Creative Process: Adapting the Framework for Information Literacy to Studio Art Classes," *Art Documentation* 34 (January 2015): 235–48; Larissa Garcia and Ashley Peterson, "Who Invited the Librarian? Studio Critiques as a Site of Information Literacy Education," *Art Libraries Journal* 42 (April 2017): 73–79, https://doi.org/10.1017/alj.2017.6; Greer, "Connecting Inspiration with Information," 83–94; Stephanie Grimm and Amanda Meeks, "Break the Stereotype! Critical Visual Literacy in Art and Design Librarianship," *Art Documentation: Journal of the Art Libraries Society of North America* 36 (September 2017): 173–90, https://doi.org/10.1086/694238; Lijuan Xu and Nestor Gil, "Librarians as Co-Teachers and Curators: Integrating Information Literacy in a Studio Art Course at a Liberal Arts College," *Art Documentation: Bulletin of the Art Libraries Society of North America* 36 (March 2017): 122–36; Elsa Loftis and Jennifer Martinez Wormser, "Developing Online Information Literacy Instruction for the Undergraduate Art Student: A Collab-

orative Approach in the Context of the Framework for Information Literacy," *Art Documentation: Bulletin of the Art Libraries Society of North America* 35 (September 2016): 241–61; Amanda Meeks, "Learning to Look Critically: Teaching and Learning Visual Literacy in Art and Design Librarianship," *Art Libraries Journal* 42 (April 2017): 89–94, https://doi.org/10.1017/alj.2017.9; Alexander Watkins, "Teaching Inclusive Authorities: Indigenous Ways of Knowing and the Framework for Information Literacy in Native Art," *Disciplinary Applications of Information Literacy Threshold Concepts* (2017), 13–24.

24. Amanda Meeks et al., "CREATE: Adapting the Framework to Studio Art Disciplines," *College and Research Libraries News* 78 (November 2017): 554–59, https://doi.org/10.5860/crln.78.10.554; Garcia and Labatte, "Threshold Concepts as Metaphors for the Creative Process"; Adapting the Framework for Information Literacy to Studio Art Classes"; Meeks, "Learning to Look Critically"; Beene and Robinson, "When Research Does Not Start with a Question"; Carter, Koopmans, and Whiteside, "Crossing the Studio Art Threshold."

25. Carter, Koopmans, and Whiteside, "Crossing the Studio Art Threshold."

26. Watkins, "Teaching Inclusive Authorities," 14.

27. Graham Gibbs, *Analyzing Qualitative Data* (London, UK: SAGE Publications, Ltd, 2007), https://doi.org/10.4135/9781849208574.

28. Beene and Robinson, "When Research Does Not Start with a Question"; Bliss and Rockenbach, "Persuading Architecture Faculty That Library Instruction Is Essential"; Hattwig et al., "Visual Literacy Standards in Higher Education"; Manus, "Librarian in the Classroom"; Meeks, "Learning to Look Critically"; Vecchiola, "Using ARLIS/NA 'Information Competencies for Students in Design Disciplines' in Course Integrated Information Literacy Instruction at Washington University in St. Louis."

29. Judith Schwartz, "Visual Literacy: Academic Libraries Address 21st Century Challenges," *Reference Services Review* 46 (October 2018): 485, https://doi.org/10.1108/RSR-04-2018-0048.

30. Leousis, "Outreach to Artists"; Garcia and Labatte, "Threshold Concepts as Metaphors for the Creative Process"; Grimm and Meeks, "Break the Stereotype!"; Greer, "Connecting Inspiration with Information"; Filgo and Martinsen, "Reframing Pinterest"; Garcia and Peterson, "Who Invited the Librarian?";Meeks, "Learning to Look Critically"; Xu and Gil, "Librarians as Co-Teachers and Curators," 122–36.

31. Carter, Koopmans, and Whiteside, "Crossing the Studio Art Threshold," 38.

32. Xu and Gil, "Librarians as Co-Teachers and Curators"; Filgo and Martinsen, "Reframing Pinterest: Information Literacy for Interior Design Students."

33. Charles I. Guarria and Zhonghong Wang, "The Economic Crisis and Its Effect on Libraries," *New Library World* 112 (2011): 199, https://doi.org/10.1108/03074801111136248.

Native American Student Experiences of the Academic Library

Rosalind Bucy

Native Americans are underrepresented in higher education; and, while considerable research examines Native student persistence, the role of academic libraries in their experiences has received little attention. This study proposes to investigate Native American undergraduate students' library experiences, needs, and perceptions. Qualitative interviews explored Native student perspectives on library services, space, and culture. Findings suggest that core library services are important to Native students, that visible representation of Native Americans contributes to a sense of belonging, and that Native student identity has varied significance for library use. This study has implications for librarians seeking to improve services for Native students.

Introduction

Any discussion of Native American[1] engagement in higher education must acknowledge the brutal history of cultural genocide perpetrated by the United States government in the name of educating or "civilizing" Native Americans.[2] Generations of Native children were separated from their families with the goal of forced assimilation. The impacts of the boarding school era—which lasted late into the twentieth century—are still felt in the educational disparities facing Native American students today. Furthermore, the Morrill Act of 1862 established land grant universities through the seizure and sale of Native land.[3] Today, Native students at these institutions often attend class on the unceded land of their ancestors.

The University of Nevada, Reno is a land-grant university located on the western edge of the Great Basin on the traditional lands of the Wašiw (Washoe), Numu (Northern Paiute), Newe (Western Shoshone), and Nuwu (Southern Paiute) peoples. Today, 2.7 percent of the population of the county in which the university resides identifies as American Indian or Alaska Native (AI/AN).[4] However, only 0.7 percent of students enrolled at the university in the fall of 2018 identified as AI/AN.[5] Although a minority of the student body, these students have received increased attention with new programs focused on Indigenous students and studies. Launched in 2017 by the university's Center for Diversity & Inclusion, the Indigenous Research Institute for Student Empowerment seeks to engage Indigenous students in research and encourage them

*Rosalind Bucy is Research & Instruction Librarian at University of Nevada, Reno Libraries, email: rbucy@unr.edu. *I would like to acknowledge the students who participated in this study. Their openness and candor were humbling and enlightening and I am deeply thankful for the opportunity to interview them. I would also like to acknowledge the Institute for Research Design in Librarianship (IRDL) as well as Nina Exner, without whose support this study would neither have commenced nor concluded.* *©2022 Rosalind Bucy, Attribution-NonCommercial (https://creativecommons.org/licenses/by-nc/4.0/) CC BY-NC.*

to pursue graduate education.[6] The university has also introduced a Paiute language class and an Indigenous Studies minor. Such programs stand to impact Native American students on campus while increasing the need for library services for Native students.

The UNR Libraries consist of the main campus library, The Mathewson-IGT Knowledge Center (The Knowledge Center), and three subject libraries: The Jon Bilbao Basque Library, The DeLaMare Science and Engineering Library, and the Savitt Medical Library. The Knowledge Center is centrally located on campus and provides individual and group study space, computers and computer labs, and research and multimedia support, in addition to physical and digital collections. The Knowledge Center is also home to Special Collections & University Archives. Although open to the public, the UNR Libraries primarily serve university students, faculty, and staff. University librarians have supported Indigenous students and programs through targeted collection development, tailored information literacy sessions, and special events such as an open house for Indigenous students featuring Native American special collections. This qualitative study aims to explore Native American students' library experiences, needs, and perceptions to improve library services to Native students.

Literature Review

Native American Students in Higher Education

Native Americans have long been underrepresented in higher education. While Native American enrollment in colleges and universities doubled between 1976 and 2006, the percentage of Native Americans in higher education remains the lowest among racial/ethnic groups.[7] Among first-time degree-seeking students attending a public four-year institution full-time, the percentage of Native Americans who graduate within six years is lower than that of any other racial/ethnic group (39% among AI/AN students compared to 40% among Black students, 54% among Hispanic students, 64% among White students, and 74% among Asian students).[8] Several studies have examined Native American student persistence in higher education.[9] These studies consistently identify family support as a major factor in Native American student persistence along with institutional support, faculty and staff support, and connection with culture. While both family and culture were found to have conflicting impacts on student persistence, the desire to "give back" to their communities is a major reason Native American students pursue higher education.[10]

The ability of Native American students to navigate cultural factors while on campus impacts their sense of belonging, particularly at predominantly White institutions. Feelings of not belonging can lead students to drop out or step out before completing their degrees.[11] McAfee developed the concept of "stepping out" to describe Native Americans' experiences attending and, in many cases, leaving college due to the personal, cultural, and academic dimensions that can "pull students away from higher education as well as draw them back."[12] Native American student narratives describe how students grapple with identity and belonging in higher education.[13] In their interviews with 24 Native American students, Tachine et al. identified factors contributing to students' sense of belonging in their first year.[14] Their findings highlight the importance of cultural centers and programming in supporting students' feelings of belonging on campus. Cultural centers and programming can help combat what Gusa calls White Institutional Presence, "the White normative messages and practices that are exchanged within the academic milieu."[15] For example, the expectation that students go to college to find themselves and gain independence from their families is a distinctly White

middle-class value that contradicts many Native students' need for cultural connection and desire to give back to their communities.[16]

To support Native students, several scholars have argued that institutions of higher education need to adopt culturally responsive education practices that further the goals of Native American sovereignty, self-determination, and nation building.[17] Building on Critical Race Theory, Brayboy proposed a Tribal Critical Race Theory (TribalCrit), which outlines central tenets of a framework to address Native Americans' complex relationship to the United States government and society.[18] Based on the primary tenet that "colonization is endemic to society," TribalCrit articulates eight additional tenets addressing issues such as imperialism, White supremacy, sovereignty, assimilation, liminality, cultural knowledge, and tradition.[19] As such, TribalCrit can provide a useful lens for understanding and addressing issues facing Native American students in higher education.

Native American Student Experiences in the Academic Library

Academic library collections often lack Indigenous perspectives and include culturally inappropriate materials.[20] In discussions with students, researchers have found that Indigenous students notice the dearth of Indigenous materials in their libraries.[21] Aase also found that, while browsing library collections, Native American students encounter problematic and even racist terminology and organization. Notably, Native students identified these problems while their non-Native peers did not.[22] These library collection failures can compound the already harmful effects of researchers routinely viewing Indigenous peoples as subjects of research rather than as researchers themselves.[23] Loyer argues that such experiences are traumatic for Indigenous students conducting research and that teaching self-care is fundamental to Indigenous information literacy.[24]

While Indigenous students note the lack of culturally relevant library collections, their Indigenous identity is not always significant to their library use.[25] In a focus group with Indigenous students about their library needs, students did not mention their Indigenous identity until prompted; even then, they only asked about the library's Indigenous collections.[26] Meanwhile, Neurohr and Bailey found that, although all Native students interviewed for their study identified aspects of the library related to their Native identity, some students distinguished between their individual and cultural identity when describing their use of the library.[27] That underrepresented students' intersectional identities have varied salience in different campus spaces is echoed in other research.[28]

Indigenous students value functional library spaces and services.[29] Nevertheless, some students have expressed feelings of alienation, fear, and uncertainty when using the library, feelings that extend to their interactions with library staff as well as their use of the library space.[30] The physical library space is itself a means of validating student identity, and Indigenous students appreciate seeing their culture visibly represented in library spaces.[31] These students have described the presence of displays and exhibits featuring Indigenous culture as a powerful antidote to the erasure of Indigenous peoples.

Although the body of existing research begins to elucidate Native American student experiences in higher education, research into their library experiences remains sparse. The Association of College & Research Libraries' *Diversity Standards* states that "libraries have to open their arms to all perspectives and experiences."[32] Yet little research exists on Native American students' experiences of academic libraries. To support Native American students,

academic librarians need to understand the experiences and perspectives of these students in their own right.[33] While the Native American population is diverse, and defining a singular Native student experience ought not to be attempted, discerning individual experiences can shed light on the collective experiences of the group. This study proposes to explore the questions: What are Native American undergraduate students' experiences with the library? What are Native American undergraduate students' needs with respect to the library? And how do Native American undergraduate students perceive the library?

Methodology

Interviews were conducted with Native American undergraduate students in the fall of 2018. The interview method was chosen for its capacity to draw out participants' stories, allowing students to speak for themselves and providing person-to-person interaction.[34] The study was approved through the University Institutional Review Board with exempt status. Prior to commencing the study, the interview questions were tested with two Native American graduate students, resulting in minor changes. In the end, 16 interview questions focused on students' library experiences, needs, and perceptions, including library services, space, and culture (see appendix A). Two interview questions probed students' experiences and perceptions of the campus as a whole to better understand how their library experiences fit within the larger institutional context and how well the library is meeting their needs. One question that addressed library services was structured as a card sort activity. Participants were given 13 cards with different library services printed on them and invited to sort the cards into the following categories: very important, somewhat important, not important, and does not apply to me.

Participants consisted of seven self-identifying Native American undergraduates. They came from a variety of majors, including music, political science, accounting, engineering, community health sciences, and art. All students were upper-division undergraduates and most were nontraditional, including six commuter students, five transfer students, two student parents, and two students with full-time jobs. Most students were members of local tribes; however, to protect the participants' identity, tribal affiliation is not included in this article.

At the time of the study, 124 AI/AN undergraduate students were enrolled at the university. Participants were recruited through flyers posted around campus, communications with the Native American Student Organization, and word of mouth. Recruiting participants proved difficult, and after three months of effort it was determined that seven participants was sufficient for the qualitative study.[35] Recruitment information directed prospective participants to a short screening questionnaire. In addition to collecting student contact information, the screening questionnaire ensured a purposive sample of Native American undergraduates who have some experience using the library. A limitation of this study is that participants self-selected, and students with negative feelings toward the library may not have participated. Also, by recruiting students through the Native American Student Organization, study participants may have been more engaged on campus than their Native peers.

Interviews were scheduled according to student availability and took place in the library group study rooms. The group study rooms were used due to their privacy and ease of booking. Interviews were digitally recorded. As a thank-you for their participation, participants received a $20 gift card, which was deemed a suitable compensation for their time without being coercive.

Transcripts were generated using Temi, a secure, automated transcription service, and cleaned up by the researcher.[36] NVivo, a qualitative data analysis software, was used to code the transcripts.[37] The researcher developed a codebook through an iterative process that involved inductively applying descriptive codes to all transcripts before identifying and describing a defined set of codes, including 16 codes and 13 subcodes (see appendix B). While most codes were developed inductively, the definition of one code, TribalPerspectives, was informed by the theoretical frame of TribalCrit to accurately describe issues facing Native students such as colonization and assimilation.[38] The final coded transcripts were subsequently analyzed for emerging themes. To ensure validity, a member check was conducted in which summary results were shared with each participant.[39] Participants were given their identifying student number and invited to provide corrections, clarifications, and feedback.

Findings

Students' experiences of the academic library in this study were shaped by their wider experiences as Native students on a predominantly White campus, which impacted their sense of belonging. Additionally, students' library use was often constrained by their nontraditional backgrounds, which presented competing responsibilities as well as limited time and financial resources. Nevertheless, students valued core library services such as access to technology and focused study space. While students primarily relied on the library for their functional academic needs, Native students also perceived cultural value in the special collections and archives. Such appreciation for culturally relevant collections extended to the library's exhibits and displays, which students frequently saw as increasing the visibility of Native Americans on campus. The following themes emerged from student interviews and are described using the students' own words to elucidate Native students' library experiences, needs, and perceptions at UNR.

Native students' identity impacts their sense of belonging on campus and in the library.

All students in this study discussed belonging on campus, and many felt a sense of belonging in spaces where their identity—their student or Native identity—was reflected. Student 4 said, "We're all students here so I'm not really quite sure what would differentiate a Native American student's needs versus just any other ethnicity or group? I guess I don't understand… from the library's perspective." Student 3 felt "very comfortable" in the library, saying, "I guess when you're here you kind of feel like you can relate to people… it's people trying to learn." Student 1 felt, "The whole campus is welcoming… the students make it welcome." In spaces where their student identity was most prominent, these students felt comfortable.

For some[40] students, however, campus did not feel welcoming to Native Americans. A couple students distinguished between "White space" and "Native space." Student 2 said, "It's not very welcome anywhere… you're in a White space." Students described community demographics as well as colonization when discussing the campus' Whiteness. Some students emphasized the small size of the Native American student community on campus, which made it hard for them to connect with other Native students. Student 5 said, "Native students are already such a low population on campus." Student 6 echoed this, saying, "I… hardly ever see any Native people because, the few Native people that I do know here… our schedules are all different." These students described being isolated from their Native peers.

Some students spoke directly of colonization when describing their experiences on campus. A couple students brought up a local boarding school for Native Americans that was in operation as recently as 1980.[41] As Student 5 stated, "My grandparents… went to the boarding school." These students emphasized the lasting effects of forced assimilation on their communities. Student 2 described "walking in two different worlds," explaining, "It's not like a normal student. Normal students can come here and be like, 'Oh, yeah, I'm part of the U.S. government and that's it,' and you don't have to deal with the trauma, you don't have to deal with the rebuilding of nations." For these students, the weight of colonization was something they carried with them as they pursued their educations.

Many students mentioned the importance of campus supports for Native American students, specifically the Center for Diversity & Inclusion (The Center). These students found a sense of belonging at The Center that was missing elsewhere on campus. Student 2 said, "It feels like home, a little bit. A little taste of home." Student 3 said, "Once I kinda started hanging around with people I could relate to at The Center… something changed inside me." While The Center was a supportive space for these students, Student 5 felt it wasn't enough: "We have The Center but it's really not a Native space and there's other campuses where… they have a whole hall or somewhere for Native students to hang out."

Native students can face additional challenges due to their nontraditional backgrounds.

Six of the seven students interviewed were nontraditional students. They were transfer students and commuter students, students who worked full-time and students who had young children. Many described challenges associated with being a nontraditional student on a traditional university campus. The transfer students described a difficult transition to the university. Some struggled to "get back in that mindset" after taking time off from school. Most students lived off-campus and some had long commutes. Student 7 said, "I commute every day and [that] takes up most of my time." A couple students also worked full-time jobs. Student 4 described working full-time and attending school: "I have a lot of stuff to do and not a lot of time because, you know, I'm at work from 7:30 to 4:00 and then in class, so it leaves me a couple hours every night to try to get my studying done." Student 6, reflecting on a particularly trying period, said, "It was just really hard to do school and work full-time." These students were fitting academics into their full schedules as best they could.

Two students also had young children and found campus largely unsupportive of student-parents. Student 5 said, "There's nothing on campus for parents." They encountered difficulties planning their schedules around childcare dropoff and pickup, feeling that bringing their children to campus was unwelcome. Student 5 said, "A lot of other students don't have kids, so they don't understand that some days I got to bring my kids with me to the library." Student 6 wanted "a place where I could take [my son] without people looking at me like, *oh my gosh*." They thought the library should provide "a family room… a place where I could bring my son and let him play and stuff without being disruptive to other people." Student 6 also underscored the need for a "nursing station," describing the difficulty of finding a place to pump in the library—"towards the end of the hall… because I didn't want to do it in the bathroom." Such intersecting identities often complicated these Native students' educational pursuits. As Student 5 said, "It's just kind of hard being a commuter student, a parent student, and a broke student."

Native students use the library for quiet, focused study.

All students described study space as important to them, with five out of seven describing it as very important. Most students expressed a need for quiet, focused study. The library provided the space and the atmosphere that these students preferred to "get things done." As Student 1 said, "Libraries are where I like to think." Student 3 wanted a place to "just dig in deep and study," elaborating, "I'm not really a study person, but when I do have to study, I come [to the library]." Student 4 found it motivating to be surrounded by other people studying: "It's completely quiet and that is amazing because… everyone's just focused and so I'm able to study better." For several students, the library's designated quiet floor was their preferred study space, though others liked a variety of noise levels. Student 7 said, "I can't study… when there's a lot of noise, but also can't study when it's too quiet, so I need a good in-between. [The library] offers all of that."

All students described a preferred study space, and most identified a study spot in the library. They used words such as "my little spot" to identify their study space and could often describe it in detail. Student 3 liked "the fifth floor, next to the windows, facing the outside." Windows were an important feature to some students. These students avoided dark, confined spaces, which they described variously as "a box," "the office," or "a dark, stuffy… library." Other features of students' ideal study spots included "a comfy chair," "multiple outlets," "wifi," "printing," and "space." Ample space was especially important for Student 4, who wanted "to spread out my books and have my laptop out and all my papers."

Several students learned over time that they needed the kind of distraction-free study environment the library provided. As Student 6 said, "When I was younger I would try to study at home more, but now looking back that wasn't probably the best because I would just get distracted." Most students shared that they were easily distracted at home. When trying to study at home, they instead found themselves engaged in other activities, such as "cleaning," "laundry," "video games," or "sleep." While most students relied on the campus library for focused study, some also studied at the public library or, as Student 5 said, "Anywhere that there's not gonna be anyone bothering me," including "my car." Students described other spaces on campus that were not ideal for studying. Student 6 said, "The few Native people that I do know… they go to The Center and I can't study there because it's just too loud." These students were aware of what worked for them, and what worked was studying at the library.

Native students rely on the library to access key resources.

All students valued core library services, such as access to computers, databases, and printers. Among the seven students in this study, six identified computers along with printers, copiers, and scanners as very important to them, while five identified the library website and databases as very important. A few students described library computers as integral to their coursework. Student 7 expressed needing access to a library computer for "all the courses I've taken here," adding, "I think it's very important, especially for the ones who don't have access to computers at home." While a few students described using their own laptops, a couple students acknowledged that not all students have personal laptops. Student 3 said, "Coming from where I came from… [a] laptop is almost a privilege." Student 4 echoed this comment, saying, "Native Americans, you know, a lot of people don't usually have laptops." For this reason, the library's lendable technology was regarded as important by five of seven students.

Most students described relying heavily on the library's printers, copiers, and scanners for their coursework. However, some students were frustrated with the cost of printing. Furthermore, most students described experiencing financial hardship. As Student 1 said, "I mean, we're already paying so much for all of these things. Why nick us?… Why get us for something that we could use to eat?" Student 5 explained that the cost of printing at the library is "part of why I don't come [to the library]."

Most students felt that the library website and databases were important for their coursework. Student 7 said, "There's a lot of good articles on there that you can't really find on the [internet]." A few students appreciated having full-text access "right then" to online resources through the library website. Student 1 explained that, for this generation, "Everything wants to be online." Despite feeling that the library website and databases were important, a few students described needing "more direction" on how to use them. Student 3 wanted to know "what to do, where to click." Student 5 said, "You really have to know where to go in there because it's like you click on the wrong thing and… it's something different."

Although they acknowledged a need for more training on the library website and databases, five of the seven students ranked library instruction as only somewhat important in the card sort question. Two students felt that it was not important or that it did not apply to them. Only a few students recalled ever having a library instruction session and a couple students referred to their new student orientation as their only introduction to the library. Student 1 summarized the orientation experience as, "This is the library… and you can come in and get help." On the other hand, Student 7 described a library session in "one of my first classes" and said that "it helped a lot." A couple students had received library instruction in "upper division" and "actual research classes" and found these sessions helpful.

Native students value archives and special collections, even if they've never used them.

Even though most of the students interviewed had never used the special collections and university archives and many had only a vague idea of what they contained, all students nevertheless valued special collections and archives. Among the seven students in the study, six identified these unique collections as very important to them, with one student identifying them as somewhat important. Many students ascribed cultural importance to special collections and archives. Student 4 had "never utilized it, but I think it's important," explaining, "From a Native American perspective… I didn't know that [our tribe is] here so I've been meaning to get up [to the archives] and see." Student 1 said, "The history of this school ties in with a lot of people and… when we did our Powwow the archives had pictures of us having the Powwow here so many years ago." Student 2 commented that the special collections and archives "is pretty cool… they opened up the special collections for the Native American stuff and there's just so much."

While most students felt that special collections and archives were important, many also wanted to know more about them. Student 1 said, "I don't know where it's at and I don't know how to get there," while Student 7 said, "We don't even know what that is… Is it something where students could just walk in?" It was unclear to these students what these collections were and how to access them. Student 3 urged the special collections and archives to "[make] it easier to access, in a way, especially for Native students because… I came in here not knowing much of my history or anything."

Native students value visible representations of Native Americans in the library.

Most students were concerned about representation of Native Americans on campus, including in the library. For many, the lack of "awareness of the local tribes" was troubling. As Student 5 said, "A lot of Natives on campus feel like we're overlooked in the fact that this is our Native land… many of us have grown up here and it's where our families are from and it's not acknowledged on campus." They felt "left out" or treated as a "topic of the day." When the library did display Native American people and culture, students noticed and often appreciated the visibility.

Most students noted the permanent and rotating exhibits from the library's special collections and archives, particularly exhibits with a "Native theme." A couple students highlighted the importance of exhibits that reflect "Natives in the community" and "the people of this area." Student 3 said, "Seeing your own stuff… you can relate" and described "a sense of pride" about such exhibits. On the other hand, Student 6 felt that some of the representations of Native Americans in the library were problematic. "I don't like that picture," the student said, commenting on a prominent photograph depicting a Native American woman in "White clothes" that was displayed as part of a special exhibit, adding, "Why wouldn't they put a picture of her in Native clothing?" The lack of context left some students feeling unsettled. Student 7 wanted to know "why the library chose to post those" images. While students appreciated library exhibits featuring Native Americans, most wanted "more information" or "story" to help them and others make meaning of the exhibits.

Just as students noticed exhibits featuring Native Americans, they also noticed the absence of Native Americans in temporary book displays. A few students observed that the library "didn't do anything for Native American Heritage Month." For this month especially, Student 1 wanted to see a display of "all books Native." They wanted to "take a break and read something… written by Native people." A couple students wanted to see "more diversified" displays with "more Native people." "They're never anybody that looks like me," Student 6 said. The library's failure to include Native Americans in routine book displays left some Native students feeling excluded.

Discussion

Findings from this study provide insight into Native American undergraduate students' library experiences, needs, and perceptions at one university. The results have local implications for professional practice, but they may nevertheless be informative for academic librarians and library staff working with Native American students at other institutions.

Experiences

Native students in this study experienced the library in part through their Native identity. While not all students spoke explicitly of colonization, consideration of Native students' experiences benefits from reflecting on the tenets of TribalCrit, which recognizes that "colonization is endemic to society" and therefore central to Native American experiences.[42] It further states that government policies toward Native Americans are "rooted in" White supremacy and that assimilation is an "inevitable"—and once explicit—outcome of formal education in the United States.[43] Native students are therefore navigating a space that is colonized and their experience of campus as a "White space" can extend to the library.

Native students' nontraditional student backgrounds also shaped their campus and library experiences. Most Native students in this study were transfer students, student parents, commuter students, or students with full-time jobs. These identities impacted whether and how Native students used the campus library, a finding that is supported by research showing a shifting hierarchy of students' social identities in different campus spaces.[44] Furthermore, as transfer students, many Native students did not receive a library instruction session in the traditional first-year composition course, which left them to learn about the library either through transfer student orientation or upper division classes, if at all.

Needs

Native students in this study described their needs primarily as students, a finding that echoes previous research.[45] Having a quiet space for focused study was particularly important, and many students felt that the campus library was the best place for that. Students also relied on the library to access key resources such as printers, computers, and databases. This reinforces the established importance of functional library resources to Indigenous students.[46] Notably, while they valued the library's information resources and recognized a need for further training in library research, these Native students did not view library instruction as especially important to them.

Perceptions

Recognition of Native American culture through library exhibits, displays, and collections was important to Native students in this study. Other research has shown that students' perceived sense of belonging can be negatively impacted when their culture is not validated on campus.[47] Visible representations of Native Americans in library exhibits and displays and, in turn, in the library's collections are therefore important and can provide positive cultural recognition.[48] Significantly, *how* Native Americans were represented was just as important to students in this study as *whether* they were represented. Native students also perceived cultural value in the archives and special collections. This was true even if they had no experience with archives and special collections. While some research has explored Native students' perceptions of special collections and Indigenous scholars' reliance on archives, this study uncovers the potential significance of such cultural collections to Native undergraduate students.[49]

Implications

Professional Practice

The results of this study have implications for academic libraries. Librarians and library staff should be aware that students' identities affect their experience of campus and the library. For instance, Native students are often dealing with colonization in ways that impact their library experiences. Library professionals should also consider how well their services and spaces meet the needs of nontraditional students. Outreach to and support for these groups will benefit Native students as well. Librarians and library staff should not underestimate the importance of fundamental library services, including access to library databases, computers, printers, and both individual and group study space. Library professionals should pay particular attention to visible representations of Native Americans and provide appropriate, inclusive collections and contextualized exhibits and displays. Finally, librarians and library staff should partner with their archives and special collections departments to promote rel-

evant cultural collections to Native students in accordance with professional best practices for cultural materials.[50]

Local Practice

At the UNR Libraries, findings from this study have inspired, renewed, and reinforced efforts to serve Native American students. Study findings were presented to relevant library working groups, including the Outreach Committee, the Equity, Diversity & Inclusion (EDI) Committee, and Special Collections & University Archives. Subsequently, the Outreach Committee curated a display of Native and Indigenous books for Native American Heritage Month. The EDI Committee drafted a land acknowledgment statement for the library. The library administration revisited providing a lactation room in the library and plans to develop a suitable space are underway. Special Collections & University Archives has continued work to align itself with the Society of American Archivists' Protocols for Native American Archival Materials, identifying tribal affiliations and culturally sensitive materials in the entirety of their collections.

Further Research

These findings suggest areas for further research. The results of this study indicate a limited role of library instruction in Native students' library experiences. Future studies could explore the information literacy needs of Native students. The perceived value of archives and special collections for Native students calls for further investigation as well, including into the use of culturally relevant materials for class assignments. Finally, while there is a growing body of research into nontraditional students' library experiences, the results of this study suggest that the topic warrants further exploration, perhaps especially with regard to transfer students and student parents.

Conclusion

Based upon the findings of this qualitative study, Native American undergraduate students' library experiences, perceptions, and needs are shaped by their identities as students, as Native Americans, and, in many cases, as nontraditional students. Academic libraries provide essential support to Native students through core services. However, by acknowledging the multidimensional nature of students' identities, libraries can begin to improve experiences for Native American students at their institutions. Attention to cultural displays and collections will resonate with many Native students, while providing core library services such as access to technology and study space will support their fundamental academic needs. Finally, by recognizing many Native students' nontraditional experiences, libraries can focus on outreach to these students.

APPENDIX A. Semistructured Interview Guide

Opening

Thank you for being here today. To begin, I'd like to get to know you a bit.

1. Tell me a little about yourself.
   Follow-up: Where are you from? How did you end up coming to University of Nevada, Reno? What's your major? What do you want to do after you graduate?

Library Experiences & Perceptions

Thank you for sharing. Let's talk now about libraries.

1. Tell me about your experience using libraries. It could be any library, at any time of life.
2. Tell me about the students who use the main campus library, or who you *think* use the library.
   Follow-up: What are they like? How would you describe them?
3. Think back to the last time you used the library. Describe what happened.
   Follow-up: Where did you go? What time of day was it? What did you do? Who did you talk to? How long did you stay? Did you accomplish what you set out to accomplish?
4. Imagine you are talking to a prospective student who is touring the campus. What would you tell the student about the main campus library?
   Follow-up: Would your response be different if the prospective student were also Native? How?

Needs & Services

Thank you for your responses. Let's talk now about library services.

1. Do you use the library for working on class assignments? If yes, can you tell me what you use it for? If no, why not?

In the next question, I'm going to give you different cards to sort. These cards have different library services written on them. Sort the cards into different piles based on the importance of each service to you for helping you succeed in your classes. As you sort them, talk aloud about what you're thinking.

2. Categories: very important, somewhat important, not important, and does not apply to me.
   Services:
   - Printers/copiers/scanners
   - Study space (for example, tables, study desks)
   - Group study rooms
   - Computers
   - Specialized software (for example, Photoshop, iMovie, R)
   - Library website/databases
   - Physical collections (for example, books, magazines, DVDs)
   - Lendable technology (for example, laptops, cameras)
   - Course reserves (for example, course readings held at the library services desk for your class)
   - Drop-in research help
   - One-on-one consultation with a subject librarian
   - Library instruction (for example, class visit to the library or librarian visit to your class)

- Special Collections & University Archives

[Photograph results of card sort.]

3. Tell me more about how you use the services that are important to you (for example, services in the *very* and *somewhat important* categories).
   Follow-up: Is there anything *not* on these cards that is important to you?
4. Think back to a recent research assignment you've had—it could be a paper, a presentation, or some other assignment that required you to do research. Walk me step-by-step through your process for completing the assignment.
5. What was the biggest challenge you encountered?
   Follow-up: Did you ask anyone for help? If yes, who? If no, why not?

Space & Culture

Thank you for your responses. We're now at the last section of the interview. Let's talk now about how the library could be better.

1. What advice would you give to the main campus library to make it better at supporting your needs?
2. What is your favorite place to study? Why?
   Follow-up: What do you like about studying there?
3. What kinds of spaces on campus feel most welcoming to you?
   Follow-up: What makes them welcoming?
4. What advice would you give to the library to make it a more comfortable or welcoming place for you and other Native students?
5. Finally, what word comes to mind when you think of the main campus library?

Closing

Thank you very much for your responses.

1. Is there anything else you'd like to share?

APPENDIX B. Codebook

Code	Subcode	Description
Belonging		Use this code for discussions of belonging on campus. This can include fitting in, transitioning to school, homesickness, diversity, and feelings (e.g., welcomed or judged).
Community Engagement		Use this code for discussions of engagement with the Native American community. This can include "giving back" as well as participating in cultural events and organizations.
Coursework		Use this code for discussions of student coursework. This can include studying, accessing course materials, and completing assignments. Examples of assignments may include research and writing.
FinancialBurden		Use this code for discussions of students' financial hardship. This can include necessary costs such as parking, printing, and food as well as access to resources for school, such as a laptop or financial aid.
FocusedStudy		Use this code for discussions of students' focused study. This can include the need for quiet, uninterrupted concentration and freedom from distractions. For discussions of students' preferred study environment, use the code StudySpot. For discussions of student work being done, use the code Coursework.
IndigenousStudies		Use this code for discussions of teaching, learning, and research about Indigenous peoples. This can include Indigenous library collections and research resources as well as courses of study.
LibraryExhibits		Use this code for discussions of library exhibits and displays. This can include temporary book displays and themed exhibits as well as permanent installations.
LibraryExperiences		Use this code for discussions of students' library experiences. This can include previous library use, use of public libraries, or campus branch libraries. This can also include affective dimensions of library experience, such as positive or negative service experiences.
LibraryServices		Use this code for discussions of library resources. This can include support services, hours, outreach, and other amenities such as food and coffee.
use subcode only:	Computers	Use this code for discussions of computer needs and use. This can include library computers, personal computers, or other public computers.
use subcode only:	Consultation	Use this code for discussions of one-on-one consultations with subject librarians. This does not include drop-in research help.

use subcode only:	CourseReserves	Use this code for discussions of library course reserves. This can include any print or electronic course materials that are held for a class at the library.
use subcode only:	DropInHelp	Use this code for discussions of drop-in research help. This can include walk-ups to the research help desk or chat. This does not include one-on-one consultations with a subject librarian.
use subcode only:	GroupStudy	Use this code for discussions of library group study spaces. This can include group study rooms or whiteboard nooks. This does not include group projects more generally, which fall under the code Coursework.
use subcode only:	LendableTechnology	Use this code for discussions of lendable technology through the library. This includes laptops, cameras, wifi hotspots, etc.
use subcode only:	LibraryDatabases	Use this code for discussions of the library's electronic resources. This can include the library website and catalog as well as databases.
use subcode only:	LibraryInstruction	Use this code for discussions of library instruction. This can include instances when a class comes to the library to visit a librarian as well as when a librarian visits a class.
use subcode only:	PhysicalCollections	Use this code for discussions of the library's physical collections. This can include books, DVDs, magazines, etc. This does not include lendable technology or special collections.
use subcode only:	Printers	Use this code for discussions of printers, copiers, and scanners. This can include library printers as well as other student printers on campus.
use subcode only:	SpecialCollections	Use this code for discussions of special collections and university archives. This can include use of special collections and archives as well as perceptions of special collection and archives.
use subcode only:	SpecialSoftware	Use this code for discussions of specialized software. This can include software in library labs such as SPSS, R, iMovie, etc.
use subcode only:	StudySpace	Use this code for discussions of library study space. This can include spaces in the library for personal study, such as desks, carrels, rooms, and floors. For discussion of an individual's preferred or habitual study environment, use the code StudySpot.
NativeStudents		Use this code for discussions of Native American students. This can include Native American students' needs or experiences. This does not include existing supports for Native American students.
NativeSupport		Use this code for discussions of formal and informal support for Native American students on campus. This can include Native faculty, retention support, as well as The Center for Diversity and Inclusion.

NonTraditional		Use this code for discussions of nontraditional students. This can include transfer students, student parents, and working students.
PostGraduation		Use this code for discussions of students' postgraduation goals and plans. This can include career and graduate school plans.
StudySpot		Use this code for discussions of students' preferred study spot. This can include environmental descriptors.
TribalPerspectives		Use this code for discussions of tribal issues. This can include colonization, sovereignty, nation building, political/racial identity, and assimilation (e.g., boarding schools). This does not include more general discussions of Native American students, Indigenous studies, Native American community engagement, etc.
Visibility		Use this code for discussions of visibility of Native Americans on campus. This can include awareness and representations of Native Americans as well as narratives and counternarratives. Within the library, this can include discussion of Native-themed exhibits and displays (which also use the code LibraryExhibits).

Notes

1. The term "Native American" is used throughout this article to refer to those connected to the pre-colonial inhabitants of what is now the continental United States. The term "Indigenous" in this article refers inclusively to Native Americans as well as to those with ties to the pre-colonial inhabitants of other lands, such as the First Nations peoples of Canada and the Aboriginal peoples of Australia. The term American Indian/Alaska Native (AI/AN) is used only when referring to official demographic information.

2. Ward Churchill, *Kill the Indian, Save the Man: The Genocidal Impact of American Indian Residential Schools* (San Francisco, CA: City Lights, 2004); Bobby Wright and William G. Tierney, "American Indians in Higher Education: A History of Cultural Conflict," *Change* 23, no. 2 (1991): 11–18.

3. Robert Lee and Tristan Ahtone, "Land-Grab Universities," *High Country News* (March 30, 2020), https://www.hcn.org/issues/52.4/indigenous-affairs-education-land-grab-universities.

4. U.S. Census Bureau, "Comparative Demographic Estimates," 2013–2017 American Community Survey 5-Year Estimates (2017), https://data.census.gov/cedsci/table?q=ACSCP5Y2017.CP05&g=0500000US32031&tid=ACSCP5Y2017.CP05.

5. University of Nevada, Reno, "Semester Enrollment Comparisons by Level, Gender or Ethnicity," https://www.unr.edu/ia/enrollment [accessed 11 December 2018].

6. Nicole Shearer, "Empowering Indigenous Student Voice through Research: IRISE," *Nevada Today* (April 10, 2019), https://www.unr.edu/nevada-today/news/2019/irise.

7. Jill Fleury DeVoe, Kristen E. Darling-Churchill, and Thomas D. Snyder, "Status and Trends in the Education of American Indians and Alaska Natives: 2008" (US Department of Education, September 30, 2008), https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2008084.

8. Cristobal de Brey et al., "Status and Trends in the Education of Racial and Ethnic Groups 2018" (US Department of Education, February 20, 2019), https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2019038.

9. Dennis R. Falk and Larry P. Aitken, "Promoting Retention among American Indian College Students," *Journal of American Indian Education* 23, no. 2 (1984): 24–31; Raphael M. Guillory and Mimi Wolverton, "It's about Family: Native American Student Persistence in Higher Education," *Journal of Higher Education* 79, no. 1 (2008): 58–87, https://doi.org/10.1080/00221546.2008.11772086; Aaron P. Jackson, Steven A. Smith, and Curtis L. Hill, "Academic Persistence among Native American College Students," *Journal of College Student Development* 44, no. 4 (August 2003): 548–65; James A. Larimore and George S. McClellan, "Native American Student Retention in

U.S. Postsecondary Education," *New Directions for Student Services* 2005, no. 109 (Spring 2005): 17–32, https://doi.org/10.1002/ss.150; Jameson D. Lopez, "Factors Influencing American Indian and Alaska Native Postsecondary Persistence: AI/AN Millennium Falcon Persistence Model," *Research in Higher Education* 59, no. 6 (September 1, 2018): 792–811, https://doi.org/10.1007/s11162-017-9487-6; Richard Mosholder and Christopher Goslin, "Native American College Student Persistence," *Journal of College Student Retention: Research, Theory & Practice* 15, no. 3 (November 1, 2013): 305–27, https://doi.org/10.2190/CS.15.3.a.

10. Jackson, Smith, and Hill, "Academic Persistence among Native American College Students"; Lopez, "Factors Influencing American Indian and Alaska Native Postsecondary Persistence"; Virginia Drywater-Whitekiller, "Cultural Resilience: Voices of Native American Students in College Retention," *Canadian Journal of Native Studies* 30, no. 1 (2010): 1–19.

11. Bryan McKinley Jones Brayboy, Jessica A. Solyom, and Angelina E. Castagno, "Indigenous Peoples in Higher Education," *Journal of American Indian Education* 54, no. 1 (2015): 154–86.

12. Mary Elizabeth McAfee, "From Their Voices: American Indians in Higher Education and the Phenomenon of Stepping Out" (PhD, Colorado State University, 1997), https://search.proquest.com/pqdtglobal/docview/304334046/abstract/3A322AEE66594DC9PQ/1.

13. *I Am Where I Come from: Native American College Students and Graduates Tell Their Life Stories*, eds. Andrew Garrod, Robert Kilkenny, and Melanie Benson Taylor (Ithaca, NY: Cornell University Press, 2017); Shelly C. Lowe, "This Is Who I Am: Experiences of Native American Students," *New Directions for Student Services* 2005, no. 109 (2005): 33–40, https://doi.org/10.1002/ss.151.

14. Amanda R. Tachine, Nolan L. Cabrera, and Eliza Yellow Bird, "Home Away from Home: Native American Students' Sense of Belonging during Their First Year in College," *Journal of Higher Education* 88, no. 5 (September 3, 2017): 785–807, https://doi.org/10.1080/00221546.2016.1257322.

15. Diane Lynn Gusa, "White Institutional Presence: The Impact of Whiteness on Campus Climate," *Harvard Educational Review* 80, no. 4 (Winter 2010): 471.

16. William G. Tierney, *Official Encouragement, Institutional Discouragement: Minorities in Academe: The Native American Experience*, Interpretive Perspectives on Education and Policy (Norwood, NJ: Ablex Publishing Corporation, 1992).

17. Bryan McKinley Jones Brayboy et al., "Sovereignty and Education: An Overview of the Unique Nature of Indigenous Education," *Journal of American Indian Education* 54, no. 1 (2015): 1–9; Brayboy, Solyom, and Castagno, "Indigenous Peoples in Higher Education"; Robert G. Martin, "Serving American Indian Students in Tribal Colleges: Lessons for Mainstream Colleges," *New Directions for Student Services* 2005, no. 109 (2005): 79–86, https://doi.org/10.1002/ss.156; Michelle Pidgeon, "More than a Checklist: Meaningful Indigenous Inclusion in Higher Education," *Social Inclusion* 4, no. 1 (February 23, 2016): 77, https://doi.org/10.17645/si.v4i1.436.

18. *Critical Race Theory: The Cutting Edge*, 2nd ed., eds. Richard Delgado and Jean Stefancic (Philadelphia, PA: Temple University Press, 2000); Bryan Mckinley Jones Brayboy, "Toward a Tribal Critical Race Theory in Education," *Urban Review* 37, no. 5 (December 2005): 425–46, https://doi.org/10.1007/s11256-005-0018-y.

19. Brayboy, "Toward a Tribal Critical Race Theory in Education," 429–30.

20. David L. Alexander, "American Indian Studies, Multiculturalism, and the Academic Library," *College & Research Libraries* 74, no. 1 (January 1, 2013): 60–68, https://doi.org/10.5860/crl-311; Danielle Cooper, "When Research Is Relational: Supporting the Research Practices of Indigenous Studies Scholars" (April 11, 2019), https://sr.ithaka.org/publications/supporting-the-research-practices-of-indigenous-studies-scholars/; Deborah A. Lee, "Aboriginal Students in Canada: A Case Study of Their Academic Information Needs and Library Use," *Journal of Library Administration* 33, no. 3/4 (September 1, 2001): 259–92, https://doi.org/10.1300/J111v33n03_07; Jan Novak and Gail Robinson, "'You Tell Us': Indigenous Students Talk to a Tertiary Library," *Australian Academic & Research Libraries* 29, no. 1 (January 1998): 13–22, https://doi.org/10.1080/00048623.1998.10755034.

21. Lee, "Aboriginal Students in Canada"; Novak and Robinson, "You Tell Us."

22. Lara Aase, "There Is No View from Nowhere: User Experience Research at the Center of Southwest Studies Library," *Collection Management* 42, no. 3/4 (October 2, 2017): 139–58, https://doi.org/10.1080/01462679.2017.1328324.

23. Linda Tuhiwai Smith, *Decolonizing Methodologies: Research and Indigenous Peoples*, 2nd ed. (London, UK: Zed Books, 2012).

24. Jessie Loyer, "Indigenous Information Literacy: Nêhiyaw Kinship Enabling Self-Care in Research," in *The Politics of Theory and the Practice of Critical Librarianship*, eds. Karen P. Nicholson and Maura Seale (Sacramento, CA: Litwin Books & Library Juice Press, 2018), 12.

25. Joanna Hare and Wendy Abbott, "Library Support for Indigenous University Students: Moving from the Periphery to the Mainstream," *Evidence Based Library and Information Practice* 10, no. 4 (December 13, 2015): 80–94, https://doi.org/10.18438/B86W3Q; Karen A. Neurohr and Lucy E. Bailey, "Using Photo-Elicitation with

Native American Students to Explore Perceptions of the Physical Library," *Evidence Based Library and Information Practice* 11, no. 2 (June 20, 2016): 56, https://doi.org/10.18438/B8D629.

26. Hare and Abbott, "Library Support for Indigenous University Students," 88.

27. Neurohr and Bailey, "Using Photo-Elicitation with Native American Students to Explore Perceptions of the Physical Library," 65.

28. Eleni Oikonomidoy et al., "Exploring the Campus Experiences of Underrepresented Low-Income College Students through Emotion Mapping," *Higher Education Research & Development* (May 18, 2020), 1–14, https://doi.org/10.1080/07294360.2020.1765318.

29. Hare and Abbott, "Library Support for Indigenous University Students"; Lee, "Aboriginal Students in Canada"; Neurohr and Bailey, "Using Photo-Elicitation with Native American Students to Explore Perceptions of the Physical Library."

30. Lee, "Aboriginal Students in Canada"; Neurohr and Bailey, "Using Photo-Elicitation with Native American Students to Explore Perceptions of the Physical Library"; Novak and Robinson, "You Tell Us."

31. Cooper, "When Research Is Relational"; Neurohr and Bailey, "Using Photo-Elicitation with Native American Students to Explore Perceptions of the Physical Library"; Novak and Robinson, "You Tell Us."

32. "Diversity Standards: Cultural Competency for Academic Libraries (2012)," *Association of College & Research Libraries (ACRL)* (May 4, 2012), www.ala.org/acrl/standards/diversity.

33. Amanda L. Folk, "Reframing Information Literacy as Academic Cultural Capital: A Critical and Equity-Based Foundation for Practice, Assessment, and Scholarship," *College & Research Libraries* 80, no. 5 (2019): 667, https://doi.org/10.5860/crl.80.5.658.

34. Lee, "Aboriginal Students in Canada."

35. Greg Guest, Arwen Bunce, and Laura Johnson, "How Many Interviews Are Enough? An Experiment with Data Saturation and Variability," *Field Methods* 18, no. 1 (February 1, 2006): 59–82, https://doi.org/10.1177/1525822X05279903; John W. Creswell and Cheryl N. Poth, *Qualitative Inquiry & Research Design: Choosing among Five Approaches*, 4th ed. (Thousand Oaks, CA: SAGE, 2018).

36. "Temi: Audio to Text Automatic Transcription Service & App," *Temi*, https://www.temi.com/ [accessed 29 January 2021].

37. QSR International, "NVivo: Qualitative Data Analysis Software," *NVivo*, https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home [accessed 29 January 2021].

38. Brayboy, "Toward a Tribal Critical Race Theory in Education."

39. Lisa Given, "Member Check," in *The SAGE Encyclopedia of Qualitative Research Methods* (Thousand Oaks, CA: SAGE Publications, Inc., 2008), https://doi.org/10.4135/9781412963909.

40. Wherever the reported data was obtained from the card sort question or could otherwise be quantified objectively, the raw number is used. Elsewhere in the findings, semiquantified wording such as "most," "few," and "some" is used as it provides an indication of the prevalence of themes among participants while acknowledging the inherently interpretive nature of qualitative analysis.

41. "The Stewart Indian School," https://stewartindianschool.com/ [accessed 29 January 2021].

42. Brayboy, "Toward a Tribal Critical Race Theory in Education," 429.

43. Brayboy, "Toward a Tribal Critical Race Theory in Education," 436–37.

44. Oikonomidoy et al., "Exploring the Campus Experiences of Underrepresented Low-Income College Students through Emotion Mapping," 11.

45. Hare and Abbott, "Library Support for Indigenous University Students."

46. Hare and Abbott, "Library Support for Indigenous University Students"; Neurohr and Bailey, "Using Photo-Elicitation with Native American Students to Explore Perceptions of the Physical Library."

47. Gusa, "White Institutional Presence"; Tachine, Cabrera, and Bird, "Home Away from Home."

48. Novak and Robinson, "You Tell Us."

49. Aase, "There Is No View from Nowhere"; Cooper, "When Research Is Relational."

50. See "Protocols for Native American Archival Materials" (2007), http://www2.nau.edu/libnap-p/protocols.html.

Data Literacy Practices of Students Conducting Undergraduate Research

Theresa Burress

Undergraduate research is considered to be a high-impact practice; however, research into the data literacy of students conducting undergraduate research is lacking. In addition, institutionwide assessments of data practices are challenging because of varied disciplinary approaches to data. This study investigates the data practices of undergraduate students who submitted research posters to a student research symposium in 2019 and found that students engage in a variety of data practices during undergraduate research regardless of their research method and approach for obtaining and working with data. This study identifies potential areas for data-related library instruction in support of undergraduate research.

Undergraduate research is widely considered to be a high-impact practice that increases the interest and engagement of students.[1] As such, many colleges and universities are working to expand access to undergraduate research opportunities. When students first engage in original research, they cross the threshold from being knowledge consumers to becoming knowledge creators. Information and data literacy are integral to the research experience, and students often disseminate their findings at institutionwide symposia by presenting research posters with data visualizations that represent an array of data practices.

Data literacy is a multifaceted set of skills that involve understanding and using data effectively.[2] Prado and Marzal's broad framework of data-related competencies situates data literacy in the context of information literacy instruction in all types of libraries. Many data literacy competencies require knowledge practices akin to those outlined in the Association of College and Research Libraries' *Framework for Information Literacy*.[3] Thus, integrating information and data literacy throughout the curriculum provides essential preparation for undergraduate students who are increasingly likely to conduct original research.

While broad assessments of undergraduate research have been conducted across higher education,[4] and discipline-specific assessments have been done within the classroom,[5] no empirical studies have explored the data practices of students who have disseminated undergraduate research at campuswide symposia. This may be because institutionwide assessments of undergraduate research are challenging, in part due to the varied disciplinary approaches to data and research. Faculty may recommend or require that students use specific research methodologies, datasets, or data analysis tools. The structure and extent of the project may

*Theresa Burress is an Associate Librarian and Assistant Director of the Research & Instruction Department at the University of South Florida; email: tburress@usf.edu. ©2022 Theresa Burress, Attribution-NonCommercial (https://creativecommons.org/licenses/by-nc/4.0/) CC BY-NC.

also vary depending upon whether the research is conducted as part of a course, directed individual study, a thesis, or part of a research assistantship.

This study uses a data literacy framework adapted for a college campus[6] and further refined for undergraduate curricula[7] to investigate the data literacy of students who submitted research posters to a campuswide research symposium in 2019. The findings offer insights into the data practices of students who are conducting undergraduate research and will inform the development of academic programming and tools to improve and assess the data literacy of undergraduate researchers.

Literature Review

Undergraduate research is a practice through which undergraduate students conduct a research inquiry or investigation that results in "an original intellectual or creative contribution" to a discipline.[8] While undergraduate research programs have operated at colleges and universities for decades, undergraduate research was identified as one of 10 high-impact practices in 2008 by George Kuh, who led research that identified specific activities (such as undergraduate research, service learning, and internships) as being particularly beneficial in improving the retention and success of undergraduate students from many different backgrounds.[9]

Undergraduate research has been assessed using a variety of approaches at different scales. National surveys have been used to measure student-reported gains resulting from their participation in undergraduate research, and the results indicate that students who report higher benefits of the experience tend to be more likely to pursue subsequent research opportunities via advanced degree programs.[10] Other studies have used the narrow scope of a single course, such as a study by Bracher, Cantrell, and Wilkie, that used a poster presentation assignment to assess learning outcomes such as critical inquiry and dissemination of findings.[11] Fewer studies have taken an institutionwide approach. One study with a university-wide scope investigated perceptions of undergraduate students involved in research across a variety of settings (such as course projects, honor theses, and independent study) and found that the undergraduate research experience significantly improved student perceptions of their understanding of the research process, confidence in taking initiative, and presentation skills.[12] Another universitywide study surveyed freshman and sophomore students with early research experiences in STEM and non-STEM disciplines and found few major differences in the learning gains reported by STEM and non-STEM students.[13] As student research becomes more prevalent in the undergraduate curriculum, Kezar and Holcomb assert that more direct measures to assess student learning at the institutional level are needed.[14]

Undergraduate research programs represent a key area of engagement by academic librarians, who aim to advance institutional priorities by building deep collaborations[15] on issues ranging from research to teaching and learning.[16] The Council on Undergraduate Research recognizes the need for adequate library resources and suggests that "support for information-literacy training and development of research skills should be built into the curriculum" to ensure the success of undergraduate research programs;[17] however, the role of librarians as engaged collaborators in instruction, programming, and assessment is not explicitly defined. The *Framework for Information Literacy*[18] articulates the central role of information literacy throughout the research process, and research done by Hensley, Shreeves, and Davis-Kahl shows that libraries at a range of higher education organizations support formal undergraduate research programs with dedicated space, collections, and instruction-related activities.[19]

Research related to the data literacy of students who are conducting research in an undergraduate setting is lacking. Hensley surveyed librarians to better understand the role of library instruction in formal undergraduate research programs and found that nearly 93 percent of respondents provide specialized instruction.[20] She found that the most frequent information literacy topic taught is traditional database searching and techniques (13%); 5 percent of respondents indicated that they taught searching for statistical information, but all other data-related topics (such as numeric and geospatial data, data visualization techniques, and developing data management plans) were mentioned by 1 percent or fewer respondents. Hensley includes data management among several information literacy topics that undergraduate researchers "may be ready to delve into, albeit at a beginner's level."

Academic librarians working in the area of data literacy often focus on aspects of research data management, as in the Data Information Literacy Project.[21] In the initial needs assessment for that project, Carlson et al. proposed a set of competencies around the term "data information literacy," or DIL, which merges the idea of "researcher-as-producer" of data products with the idea of "researcher-as-consumer" of data products.[22] These DIL competencies were created for the specialized context of training new researchers and graduate students in e-research, primarily within the sciences. In looking toward future work, Carlson wrote that introducing DIL to undergraduate students could be useful but acknowledged that tailoring such programs for undergraduate settings would be challenging because most undergraduates do not produce datasets. However, he suggested that undergraduate research programs could serve as points of entry for DIL and proposed a number of opportunities for future research, in particular investigating the "contextual aspects of data skills" and exploring "students' relationships to the data they are generating or working with."[23]

As the need for data literacy instruction in the undergraduate curriculum increases, as documented in a case study by Battista, Boss, and McCartin,[24] so has its relevance and interest to academic librarians. In the final chapter of her 2021 monograph, Julia Bauder addresses in depth how the principles of the *Framework for Information Literacy* can further inform data literacy pedagogy.[25] Bauder states, "In many ways, thinking critically about data involves the same questions as thinking critically about texts," and goes on to map several key questions about data to the six frames that comprise the *Framework*. Burress, Mann, and Neville first investigated the data literacy of undergraduate students within the structure of a faculty learning community, adapting and customizing data literacy competencies for a midsized college campus that primarily serves undergraduate students.[26] Rather than using DIL for this project, they used a definition of data literacy that situates the concept along a continuum with information literacy. Prado and Marzal defined data literacy as "the component of information literacy that enables individuals to access, interpret, critically assess, manage, handle, and ethically use data."[27] The associated competencies are meant to be flexible and adaptable by librarians who wish to integrate data literacy into their information literacy instruction. While Prado and Marzal acknowledge the interdependence between data and statistical literacy, they propose that data literacy is the "umbrella concept" that includes statistical literacy rather than the reverse.[28] Burress, Mann, Montgomery, and Walton built on this work with a study that investigated data literacy teaching in the undergraduate classroom at two institutions. They found that faculty across disciplines largely agreed that most data literacy competencies are relevant in the undergraduate classroom.[29]

The current investigation complements and builds on previous studies by examining the

data practices and perceptions of students who have conducted undergraduate research in a variety of disciplines.

Methodology

This study investigates data practices of students who presented research posters at a campus-wide symposium held at a midsized branch campus of a public research university in 2019. The author's research objectives were to identify the range of data practices that students use while conducting undergraduate research and determine to what extent these practices align with student perceptions and faculty priorities. This study is guided by the following hypotheses:

H1. Students who design an experiment and/or collect original data engage in more data practices than students who use external or compiled datasets.

H2. Students who use quantitative data analysis techniques engage in more data practices than students who use other techniques to analyze data.

H3. The use of data practices, such as obtaining data, evaluating data, analyzing data, creating visualizations, citing data, cleaning/converting data, and creating metadata, are documented on undergraduate research posters.

H4. Selected data literacy competencies deemed relevant for the undergraduate curriculum by faculty in an earlier study, including obtaining data, evaluating data, analyzing data, creating visualizations, citing data, cleaning/converting data, are also relevant from an undergraduate researcher perspective.

Participants and Procedures

At the time of the data collection, the university was a separately accredited master's-level institution serving approximately 4,500 students with 28 undergraduate and 18 graduate programs in Colleges of Arts and Sciences, Business, and Education. For 15 years, the campus Annual Student Research Symposium has been organized by the Office of Research to provide students with a forum to present their original research in a "public demonstration of competence."[30] The author worked with a librarian colleague and Office of Research staff to design the survey and coordinate data collection, including survey responses, symposium application, and research poster files. The research methodology was reviewed and deemed exempt by the university's Institutional Review Board.

In all, 154 research posters were submitted to the 2019 University Student Research Symposium. Research posters represented individual and coauthored projects conducted as part of courses, directed individual study, honors theses, and campus research lab work. Some research posters included faculty coauthors. The symposium is open to all students at this campus; however, the College of Education organizes a separate symposium to accommodate the schedules of working teachers. Therefore, this dataset represents research undertaken by students in the College of Arts and Sciences and the College of Business.

Research participants were recruited from the overall group of symposium participants. Most respondents completed the survey on site during the event, and the remaining respondents completed the survey online upon receiving an electronic survey link distributed via email during the week after the symposium. Survey data was collected from 74 symposium participants using Qualtrics survey software; survey responses were matched to symposium application data and electronic poster files via applicant names and poster titles. Survey responses that were not able to be matched to a poster were discarded. In addition, 10 graduate student

survey responses and associated poster submissions were removed from the dataset to focus this research strictly on the undergraduate experience. The total number of participants for this study included 63 undergraduate students and 58 corresponding digital research posters.

Measurement Instruments

The survey was developed collaboratively by the author, another librarian, and Office of Research partners. The first section of the survey asked for information regarding participants' major area of study, motivations, and preparation for their research project, including research methods coursework and previous involvement in other high-impact practices. The second section of the survey asked about the participants' engagement with specific data practices. The third section of the survey asked about the students' perception of the challenges they faced during the project, how they may have used library resources, and their perception of their improvement with regard to data-related skills.

This paper focuses primarily on the survey data taken from the second section of the survey regarding engagement with specific data practices. Column 1 of table 1 outlines selected data literacy competencies that are likely to be used during undergraduate research. Column 2 includes the exact language used in the survey to ask whether respondents engaged in specific data practices while working on their research.

Data Collection Analysis

The author collected the poster data by closely reviewing the electronic poster files and documenting proxy evidence of the following data practices: characteristics of data sources (such as collection of new/original data, finding and using an external dataset, compilation of a dataset from multiple sources), evidence of quantitative data analysis as defined by Leavy,[31] number and type of data visualizations, and whether the data source was cited appropriately if published data were used. The poster review also explored whether proxy evidence of dataset evaluation, dataset cleaning/converting, and creation of metadata could be discerned. The survey results were then compared with the proxy evidence to determine whether the student reports agreed with the evidence collected from the posters.

For some variables, evidence from the research posters was explicitly documented. For others, the author proposes poster characteristics that may be used as a proxy. Column 3 of table 1 describes the direct or proxy characteristic used to identify the presence or absence of each data practice.

TABLE 1
Data Literacy Competencies and Related Practices: Reported & Proxy Evidence

Selected Competencies[32]	Survey asked: "While working on my research, I: (check all that apply)"	Proxy Evidence of Data Practices
Find, select, access, or create datasets to test a hypothesis or answer a research question	Collected new data	Poster reports new data
	Found and used an existing dataset	Poster reports the use of an existing data source
	Compiled a dataset from multiple existing data sources	Poster describes compilation of multiple existing data sources
	None (i.e., used no data)	None (i.e., used no data)

TABLE 1 (CONTINUED)
Data Literacy Competencies and Related Practices: Reported & Proxy Evidence

Selected Competencies[32]	Survey asked: "While working on my research, I: (check all that apply)"	Proxy Evidence of Data Practices
Interpret and critically evaluate data & their sources	Evaluated the quality of the dataset	Poster displayed data from one or more external sources (i.e., existing, compiled data source)
Analyze data	Analyzed my data	Text or visualizations describe quantitative or qualitative data analysis method
Ethically collect/use/cite data	Cited and/or obtained permission to use my data sources	If poster describes existing or compiled data sources, source(s) are cited
Communicate data effectively to different audiences in part by using visualizations	Created graphs, charts, illustrations, figures, etc.	At least one or more original data visualization(s) are used
Clean/process/convert data	Cleaned and/or converted my data to a different format	Poster describes the use of a data analysis tool or software (e.g., Excel, JMP, etc.)
Create metadata to meet data publication requirements	Created codes or tags to describe data (i.e., metadata)	Poster describes the creation of metadata, codes, or tags for data

Study Limitations

Because the author was the only researcher involved in devising the codes and generating the resulting data, it should be acknowledged that other researchers may have made different choices with regard to the coding scheme as well as the resulting categorization of data. It was challenging to identify appropriate proxy evidence that demonstrated each data competency and associated practice. For example, in classifying data source types that were displayed on each poster, the broadest possible conception of the term "data" was used to accommodate unstructured, or textual, data[33] as well as structured, numerical data. Historical and literary primary source material was classified as a compiled dataset. While students and practicing researchers in many disciplines often think only of numerical data as "data," the broader conception of data used in this investigation is meant to better accommodate the various types of qualitative and unstructured data that researchers in the social sciences and humanities may collect and analyze.

In the Interpret and Critically Evaluate Data category, the attempt to identify feasible proxy evidence was unsuccessful. The presumption that students evaluated datasets if they used external or compiled datasets as proposed in table 1 was found to be inadequate. Close review of the posters showed that all students submitting posters for one specific course used the same external, unpublished dataset provided by their instructor; thus, these students used an external dataset but did not make an evaluative judgment about the data source.

Finally, the attempt to identify feasible proxy evidence for the Create Metadata category was unsuccessful. The research posters did not contain explicit documentation of this data practice. Teaching faculty often use a scaffolding approach to major research assignments,

which may require student reports about data source evaluation, selection, and the creation of metadata. Coordination with faculty advisors to collect this type of supplemental data has the potential to improve this study design.

Findings

Characteristics of Participants and Posters

The data analyzed for this study includes: (1) 63 survey responses from undergraduate students, and (2) 58 corresponding digital poster files with associated application data. All 63 research participants were undergraduate students over the age of 18. Most students (55; 87.3%) were first-time presenters at the Student Research Symposium. However, more than a third of the first-time presenters (20; 36.3%) reported that they had previously conducted undergraduate research. Tables 2 and 3 provide characteristics of research participants and posters, respectively. As shown in Table 2, the expected year of graduation varied for this group of student researchers. Most students (54; 85.7%) reported completing at least one research-related course prior to their research project, on average completing two such courses.

Table 3 shows that a majority (45; 73.0%) of the posters were completed as part of a course requirement. More than half of the posters (36; 57.1%) had at least two authors. While the students' major field of study was aligned with the discipline of their research poster in most cases, a substantial minority of student researchers (13; 20.6%) conducted research in a discipline different from their reported major.

TABLE 2
Characteristics of Undergraduate Student Researchers

Expected Year of Graduation	2019	40 (63.5%)
	2020	20 (31.7%)
	2021	3 (04.8%)
Research-related Course(s) Completed	At least one statistics course	54 (85.7%)
	At least one methods course	38 (60.3%)
	None	9 (14.3%)
Major Field of Study	Natural or Health Sciences	36 (57.1%)
	Social Sciences	26 (41.3%)
	Humanities	1 (01.6%)

TABLE 3
Research Poster Characteristics

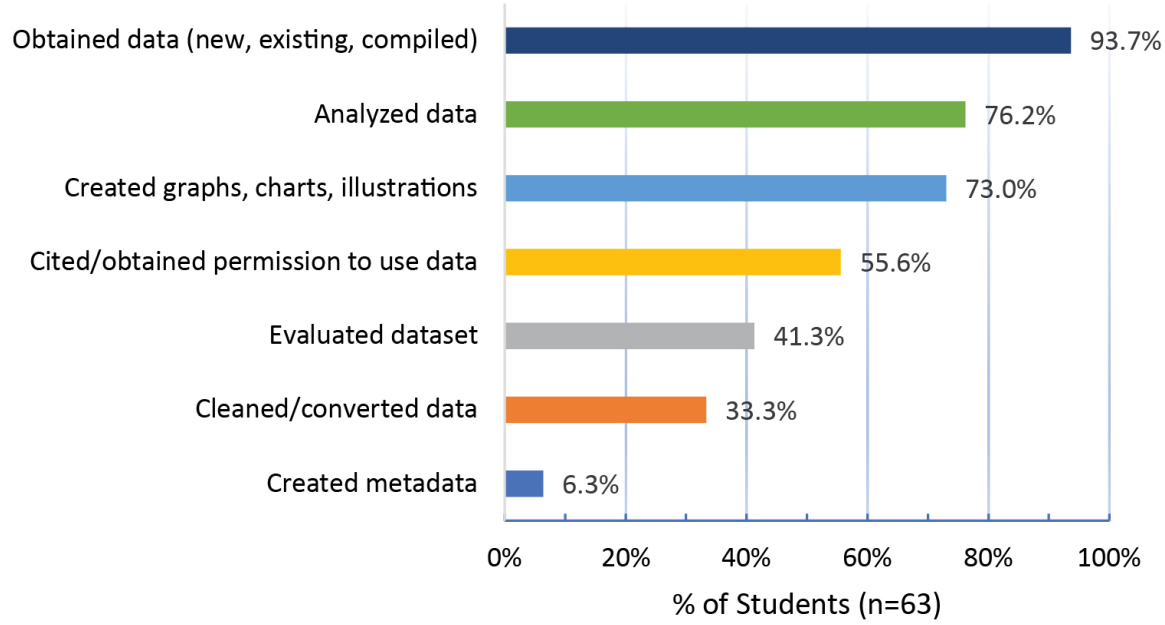
Research Project Setting	Course	45 (73.0%)
	Directed Individual Study	9 (14.3%)
	Honors Thesis	4 (06.3%)
	Lab Research Assistant	5 (07.9%)
Author(s)	One author	27 (44.4%)
	Two or more co-authors	36 (57.1%)
	At least one faculty co-author	9 (14.3%)
Discipline/Field of Project	Natural and/or Health Sciences	36 (57.1%)
	Social Sciences	26 (41.3%)
	Humanities	1 (01.6%)

Student Engagement in Data Practices

Survey Results

All but one participant (62; 98.4%) reported doing at least one data practice during the course of their research project; overall, students engaged in an average of four data practices, with two students reporting engagement with all nine data practices. Figure 1 shows the most frequently reported data practices, including obtaining data (59; 93.7%), analyzing data (48; 76.2%), and creating data visualizations (46; 73%). A majority of students also reported citing or obtaining permission to use data (35; 55.6%).

FIGURE 1
Student Survey Data Summarizing Percentages of Student Engagement in Data Practices



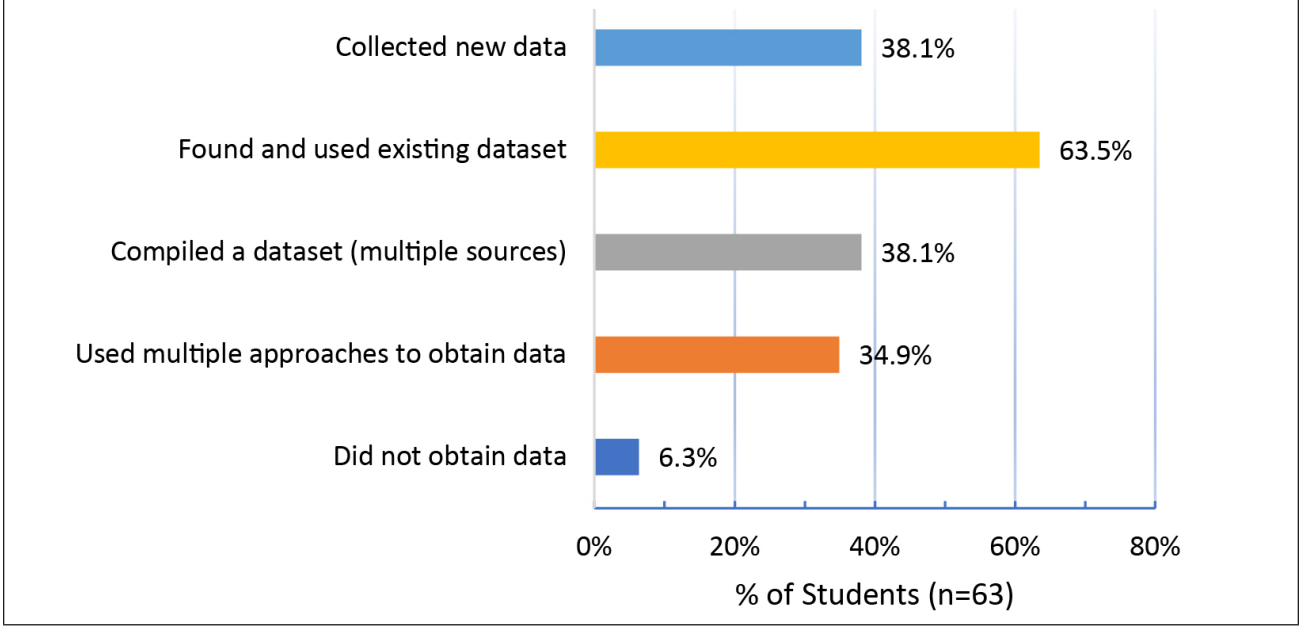
Most respondents (59; 93.7%) reported obtaining data using at least one approach (see figure 2). More than a third of students reported using at least two approaches to obtain data.

Content Analysis of Data Presented on Research Posters

Careful examination of the research posters indicated that students used a variety of research methods for their projects. The most frequently described methods included descriptive studies (30; 47.6%), historical or literacy analysis of primary source material (11; 17.5%), surveys (7; 11.1%), and computer models (6; 9.5%). Other students developed experimental methods, conducted qualitative or geospatial analysis, or built engineering prototypes. One poster described a review and synthesis of existing research.

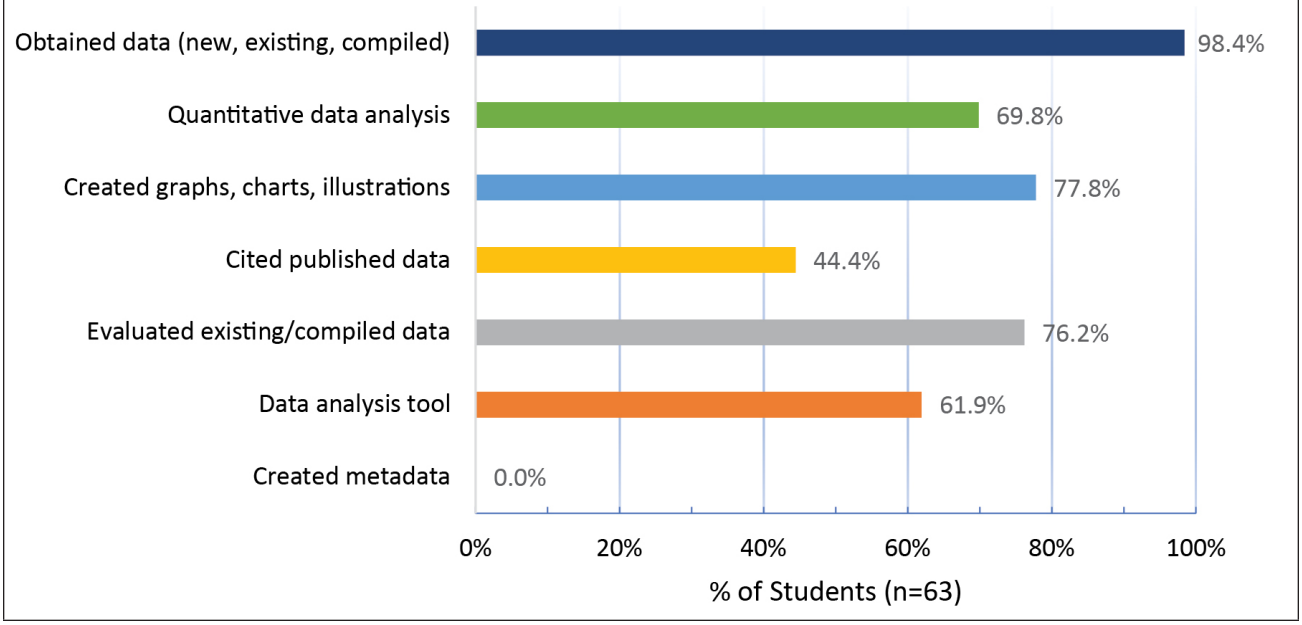
Figure 3 shows the percentage frequency of proxy evidence for each data practice, the most prevalent being obtaining data (62; 98.4%) and creating data visualizations. Forty-nine students (77.8%) displayed at least one data visualization (such as table, graph, map, or timeline) on their posters; on average, four data visualizations were displayed on each poster. Proxy evidence showed that students used external data sources and therefore were likely to have evaluated those data sources (48; 76.2%). Proxy evidence of the use of quantitative data analysis techniques (44; 69.8%) was also prevalent. A majority of student posters (39; 61.9%)

FIGURE 2
Student Survey Data Summarizing the Breakdown of Student Approaches to Obtaining Data



documented the use of a data analysis tool such as Excel, JMP, photometer, or Arduino, which indicates that these students likely spent time cleaning or converting data to a specific format for the purpose of analysis. Percentage of proxy evidence reflecting appropriate data citation practices was calculated only on posters where external and/or compiled data sources were used (n = 36). Of this group, fewer than half of the students explicitly cited their data sources (16; 44%). Although a small percentage of students reported that they "created codes or tags

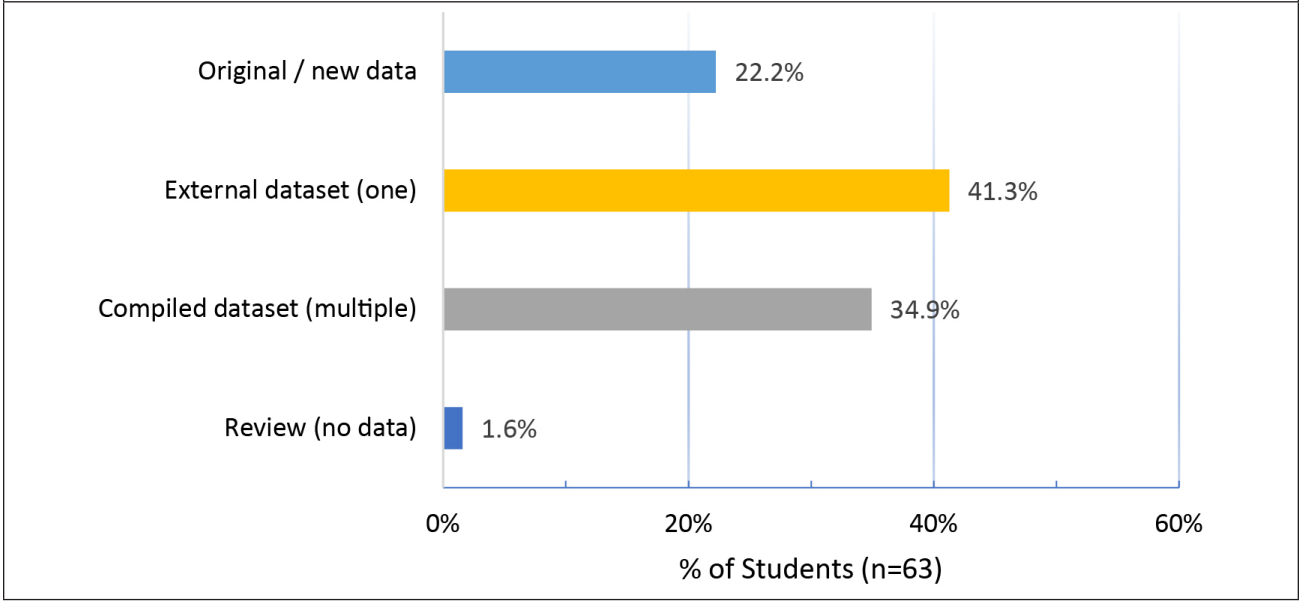
FIGURE 3
Proxy Evidence Gathered from Documentation Reflected on Each Research Poster Showing Percentage of Student Use of Each Data Practice



to describe data (i.e., metadata)," review of the posters did not present any corresponding evidence.

The data sources displayed on each poster were categorized as follows: 1) Original data (that is, collected and presented new data) (14; 22.2%); 2) External dataset from one source (26; 41.3%); 3) Compiled dataset from multiple external sources (22; 34.9%); or 4) Literature review only (that is, no data) (1; 1.6%) (see figure 4). Each poster was categorized with only one data source type; therefore, these percentages differ from the survey responses shown in figure 2, in which students were permitted to select multiple ways of obtaining data.

FIGURE 4
Proxy Evidence Gathered from Documentation Reflected on Each Research Poster Showing the Breakdown of the Primary Approach to Obtaining Data



H1. Students who design an experiment and/or collect original data engage in more data practices than students who use external or compiled datasets.

A t-test was used to compare the average total of data practices reported by students whose posters reflected the use of original data with the average total of data practices reported by students whose posters reflected external or compiled datasets (see table 4). The average number of data practices was calculated using the survey results. The data corresponding to the two groups tested, that of the primary data source (that is, original, external, compiled), was calculated independently using the proxy evidence collected from the posters associated

TABLE 4
Comparison of Average Total Data Practices by Students Collecting Original Data vs. Other Research Methods

	Group 1 Original Data Collection	Group 2 Other Research Methods
Mean Data Practices (of 9)	5.143	4.000
Std. Dev.	1.992	1.951
N (# of students)	14	49

with each student (see figure 4). The t-statistic was 1.924528, which was in the 95 percent critical value accepted range (p = .0356). This confirms the hypothesis that students collecting original data engaged in a significantly higher average number of data practices (5.143, n = 14) than students using external or compiled datasets (4.000, n = 49).

H2. Students who use quantitative data analysis techniques engage in more data practices than students who use other techniques to analyze data.

A t-test was used to compare the average total of data practices reported by students whose posters reflected the use of quantitative data analysis techniques with the average total of data practices reported by students whose posters reflected qualitative or other analysis techniques (see table 5). As in the previous hypothesis, the average number of data practices was calculated using the survey results. The data corresponding to the two groups tested, that of the data analysis technique (that is, quantitative, other), was calculated independently using the proxy evidence collected from the posters associated with each student (see figure 3). The t-statistic was 0.62886, which was not in the 95 percent critical value accepted range (p = .531791). This does not support the hypothesis that students conducting quantitative data analysis engaged in a significantly higher average number of data practices (4.364, n = 44) than students using other analysis techniques (4.000, n = 19).

TABLE 5
Comparison of Average Total Data Practices by Quantitative Data Analysis vs. Other Analysis Techniques

	Group 1 Quantitative Data Analysis	Group 2 Other Techniques
Mean Data Practices (of 9)	4.364	4.000
Std. Dev.	1.810	2.176
N (# of students)	44	19

Discussion

H1 and H2. Student Researcher Engagement with Data Practices

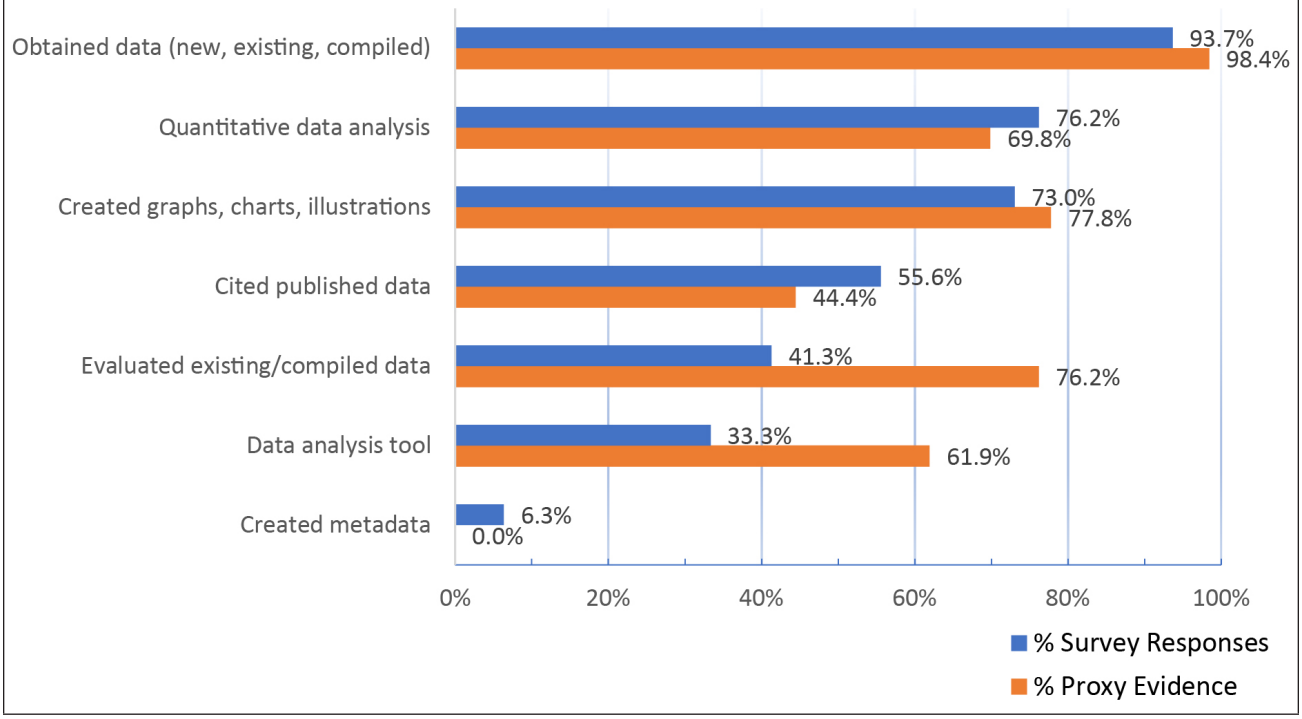
Statistical analysis of the survey results supports the author's hypothesis H1 that students who design an experiment and/or collect original data are likely to report more data practices than students who use external or compiled datasets (see table 4). This finding lends credence to the idea that the creation of an original dataset could be considered a threshold concept that leads to transformative learning with regard to data literacy. Analysis of the hypothesis H2, that students who conduct quantitative data analysis engage with more data practices than students who use other data analysis techniques, was not supported by the data. The lack of a statistically significant result undermines the idea that numerical data analysis is more valid than other data analysis techniques in the practice and development of data literacy skills. This finding aligns with Stanford et al., who found similar gains reported by STEM and non-STEM students after completing early undergraduate research experiences,[34] despite the tendency for research in STEM disciplines to rely more heavily on quantitative data analysis techniques. Further analysis with regard to STEM vs. non-STEM projects, perhaps by sampling a larger population that includes a representative percentage of humanities projects, could

further support both of these assertions.

H3. Reported Data Practices as Compared with Proxy Evidence of Data Practices

Careful examination of the research posters and associated application data served to complement and enhance the value of the survey data. The author used this data to test the alignment (see figure 5) between students' understanding of their data practices against the evidence of data practices as reflected on the research posters themselves.

FIGURE 5
A compilation of the student reporting (illustrated in figures 1 and 2) together with the proxy evidence (illustrated in figures 3 and 4) for each data practice. Note that the labels for each bar correspond to the proxy evidence categories, which in some cases were defined slightly differently than the data practices as stated in the survey questions.



In general, the alignment between the survey results and the proxy evidence reflected high levels of agreement with regard to obtaining data and creation of data visualizations (that is, < 5% difference for each data practice). Students reported high levels of participation in each practice, and proxy evidence confirmed this. Hensley's survey showed that only 5 percent of respondents who support formal undergraduate research programs taught searching for statistical information, and even fewer taught data visualization techniques,[35] but the increasing need for this type of library instruction is an opportunity for librarian-faculty curricular development, as illustrated in the case study of collaborative instruction of critical data analysis and visualization by Battista, Boss, and McCartin.[36]

Some of the differences in the percentage agreement between the student reports and the proxy evidence with regard to their approach to obtaining data may be attributed to disci-

plinary differences in understanding of data. For example, the proxy evidence reflected only one student who used no data on their poster, whereas four students (6.3%) did not report obtaining data. An examination of these posters confirmed that only one student performed a true review and synthesis of existing research. This student reported that they had previous experience creating a research poster presentation, they worked alone on this project, and the only data practice they used was citing data sources. Two students who did not report obtaining data used historical methods to analyze primary and secondary sources in projects for anthropology and archaeology courses, respectively. These students did not use numerical data, their posters included a bibliography with several source citations, and both students reported doing the data practice of citing data. One of these students also reported creating data visualizations. The fourth student who did not report obtaining data in the survey actually had done so as confirmed via their research poster narrative, "Data was collected by watching and analyzing videos of ravens, robins, and geese hatching from their eggs." This poster included three data visualizations displaying descriptive statistics of their results. The student reported that they had never previously done a research poster presentation, that they worked alone on this project, and they reported two data practices: 1) analyzing data and 2) creating data visualizations. The poster observation data showed this student's data source to be a compiled dataset, with evidence of quantitative data analysis. It is unclear why this student underreported the extent of their data practices, but it is possible that the student's academic experience led them to believe that video data analysis "doesn't count" as data, despite that they likely recorded their observations initially as text and then converted these into the categorical data displayed in the bar graphs on their poster.

For the data analysis category, agreement between the survey results and proxy evidence was also quite high, with a difference of 6.4 percent. It should be noted that the data analysis category was defined slightly differently in the survey vs. the proxy evidence, which may explain the difference in agreement. The survey asked students whether they "analyzed data," whereas the author specified quantitative analysis when assigning the category to the proxy evidence on each poster. The purpose for this decision was to establish two clear groups for purposes of the H2 analysis.

The misalignment in the remaining categories was considerably higher, which may indicate that students have less understanding of the terminology or the data practice, as in the practices of data citation and cleaning/converting data. As stated earlier, citation of data sources was counted only for those posters that presented external, published data (n = 36), and the proxy evidence showed that less than half of that group (44%) formally cited data sources. However, more than half of survey respondents reported citing their data (n = 63; 55.6%), including the lone student who conducted a review of existing literature and did not present data. This misalignment with the proxy evidence, particularly with regard to citing data sources, may indicate that students don't necessarily discern the differences between "information" and "data" citation as specifically as research faculty or other types of library patrons. Again, Hensley's survey of library instruction for undergraduate research showed that citation management tools were taught by 8.8 percent of respondents.[37] Expanding the scope of this library instruction to include data citation has the potential to benefit students who are new to using data for original research.

The final category reflecting considerable misalignment was that of cleaning/converting data. The proxy evidence reflected that more than 60 percent of students used data analysis

tools, which generally necessitate some cleaning, organizing, and converting data into a specific format for any given analysis tool (such as Excel, JMP, or Tableau). However, only a third of students reported that they had cleaned or converted data.

Analysis of the data show that proxy evidence from the research posters did not fully align with student reports across all data practices. However, student reports of engagement with data practices, together with proxy evidence regarding three data practices (that is, obtaining data, analyzing data, creating visualizations), supports the assertion that data literacy is an integral component of undergraduate research.

Other factors may complicate the alignment between student reports and proxy evidence on the posters themselves and raise new questions for investigation, including the following:

- Did solo researchers engage in more data practices than those who worked collaboratively?
- In projects with faculty co-authors, did the student researchers lack the opportunity to evaluate data, as in the case of students who were provided specific datasets?
- Would the submission of supplemental data files confirm the presence/absence of metadata?

H4. Data Literacy Competencies for Undergraduate Research

The findings from this mixed methods study support the validity and relevance of the undergraduate data literacy competencies established through prior research that collected and analyzed the perspectives of faculty who teach undergraduate courses at two institutions.[38] Through semistructured interviews, this earlier research found that more than 70 percent of faculty agreed that these competencies are relevant for undergraduate education: finding, selecting, accessing, creating datasets; interpreting and evaluating data; communicating data with visualizations; data processing (in this study termed cleaning/converting data); and ethically using/citing data.

The current findings show agreement from the student perspective. More than 70 percent of students reported engaging with the following data practices: finding or creating datasets, analyzing data, and communicating data effectively by creating visualizations. More than half of students reported citing or obtaining permission to use data. While fewer students reported evaluating data, the extensive use of external data sources indicates that the ability to evaluate data sources is an important competency for undergraduate researchers. More than 60 percent of students documented the use of data analysis tools on their posters, which supports the assertion that cleaning and converting data into specific formats is also a data practice used by undergraduate students. This finding in particular supports Carlson's suggestion that undergraduate research could be a point of entry for selected DIL competencies,[39] and Hensley's separate proposal that the "beginner's level" of data-related instruction could be appropriate for library instruction to support undergraduate research programs.[40]

The earlier research on faculty perspectives showed that only 18 percent of faculty saw metadata as an undergraduate activity;[41] this study supports that finding as creating metadata was a data practice reported by only 6.3 percent of respondents (n = 4). A detailed examination of those posters found that two of the four students completed computer modeling projects for biostatistics courses. These students reported engaging in six and all nine data practices, respectively. The third student's poster described a compiled, historical dataset, with visualizations of historical artifacts. The last student's poster reflected a descriptive study in biology that

also used a compiled dataset. For all four students, the author was unable to verify whether the students created metadata based solely on the research posters themselves. The author asserts that the creation of metadata may be applicable for some undergraduate researchers in certain disciplinary circumstances, rather than being widely applicable across disciplines.

Implications for Academic Librarians

For librarians who are responding to institutional needs for integrating data-related topics into their information literacy instruction, this study identifies specific areas of engagement where librarians have expertise. Undergraduate researchers are actively searching for data, evaluating data, and cleaning and/or converting data into formats suitable for creating visualizations. These students are attempting to cite data but don't necessarily have an understanding of how citing data may differ from citing publications.

Data literacy and the practices investigated in this study are embedded throughout the *Framework*. For example, finding and conducting preliminary evaluation of external data sources requires Searching as Strategic Exploration[42] and a recognition that Authority is Constructed and Contextual.[43] Citing external data sources ethically requires an understanding that Information Has Value.[44] Whether a student creates original datasets via the collection or new data or compiles a dataset using multiple external sources, the subsequent analysis, interpretation, and visualization of that data in support of a particular interpretation is an information creation process.[45] Taken together, the data practices investigated in this study are conducted in the broader context of undergraduate research, through which students engage in the knowledge practices described as part of the Research as Inquiry[46] frame.

For a full discussion of the connections between data and information literacy, see Bauder's in-depth treatment of the topic.[47] Bauder argues that data literacy is a natural fit with the *Framework*, in some cases even more so than traditional textual literacy, and highlights ways that Information Creation as a Process and other frames can be incorporated into data literacy instruction.

Conclusion

This study analyzed undergraduate researchers' data practices, triangulating survey results with a detailed examination of the research posters, and found that most students engage in data practices such as obtaining or creating datasets, analyzing data using a variety of techniques and tools, and communicating data through the creation of data visualizations. While disciplines that use experimental design and original data collection may require a broader range of data literacy competencies, a substantial number of data practices are used in undergraduate research across disciplines.

Effective data literacy instruction in support of undergraduate research, whether it is course-based or a formal program, has the potential to become a primary way to improve the data literacy of graduating students, thereby preparing them to join today's data-driven workforce. The language of the *Framework* provides a flexible toolkit that positions academic librarians to play a pivotal role, whether by developing curriculum in partnership with faculty or by developing co-curricular programming in partnership with Offices of Research or other symposia organizers.

To that end, this study lays the groundwork for additional research. The author intends to analyze the survey data with regard to the data-related challenges students experienced

during the course of their research and the ways in which they used library resources. Further analysis may clarify whether library interventions such as self-guided online tutorials, videos, and other instruction would be beneficial in areas such as data cleaning, processing, citation, and data ethics and integrity.

A future study will further explore and identify suitable proxy evidence from undergraduate research work products including posters and other supplemental files such as audio or video presentations, supplemental data files, and the like. Further investigation in this area could inform the development of assessment tools that would be feasible for institutionwide assessments of data literacy.

Acknowledgments

The author wishes to acknowledge librarian and Associate Dean Kaya van Beynen, who has been a wonderful colleague and mentor for this project. Kaya assisted in the survey design and data collection and provided valuable feedback on early drafts of this manuscript. Thanks to John Johnson, Director of the USF St. Petersburg campus Office of Research, and staff member Meghan Abbott, for their assistance with collecting survey data at the 2019 USF St. Petersburg Student Research Symposium and for modifying the symposium application to accommodate these research questions. Thanks also to statistician and instructor Radford "R.J." Janssens, who provided valuable recommendations with regard to the statistical analysis. Finally, thanks to the faculty who were involved in the faculty learning community that began the conversation about data literacy, which led to development of the competencies tested in this research project.

Notes

1. Roger S. Rowlett, Linda Blockus, and Susan Larson, "Characteristics of Excellence in Undergraduate Research (COEUR)," in *Characteristics of Excellence in Undergraduate Research*, ed. Nancy Hensel (Washington, DC: Council of Undergraduate Research, 2012), 2–19.

2. Javier Calzada Prado and Miguel Ángel Marzal, "Incorporating Data Literacy into Information Literacy Programs: Core Competencies and Contents," *Libri* 63, no. 2 (2013): 123–34, https://doi.org/10.1515/libri-2013-0010.

3. Association of College and Research Libraries (ACRL), *Framework for Information Literacy for Higher Education* (Chicago, IL: Association of College and Research Libraries, 2016), www.ala.org/acrl/sites/ala.org.acrl/files/content/issues/infolit/Framework_ILHE.pdf.

4. David Lopatto, "Adapting to Change: Studying Undergraduate Research in the Current Education Environment," *Scholarship and Practice of Undergraduate Research* 1, no. 1 (2017): 5–10, https://doi.org/10.18833/spur/1/1/7.

5. Lee Bracher, Jane Cantrell, and Kay Wilkie, "The Process of Poster Presentation: A Valuable Learning Experience," *Medical Teacher* 20, no. 6 (1998): 552–57, https://doi.org/10.1080/01421599880274.

6. Theresa Burress, Emily Mann, and Tina Neville, "Exploring Data Literacy via a Librarian-Faculty Learning Community: A Case Study," *Journal of Academic Librarianship* 46, no. 1 (2020): 102076, https://doi.org/10.1016/j.acalib.2019.102076.

7. Theresa Burress et al., "Data Literacy in Undergraduate Education: Faculty Perspectives and Pedagogical Approaches," in *Data Literacy in Academic Libraries: Teaching Critical Thinking with Numbers*, ed. Julia Bauder (Chicago, IL: American Library Association, 2021), 1–22.

8. Rowlett, Blockus, and Larson, "Characteristics of Excellence in Undergraduate Research (COEUR)."

9. George D. Kuh, *High-Impact Educational Practices: What They Are, Who Has Access to Them, and Why They Matter, Leap* (Washington, DC: Association of American Colleges and Universities, 2008), https://doi.org/10.1017/CBO9781107415324.004.

10. Lopatto, "Adapting to Change."

11. Bracher, Cantrell, and Wilkie, "The Process of Poster Presentation."

12. Sharyn J. Potter et al., "Intellectual Growth for Undergraduate Students: Evaluation Results from an Undergraduate Research Conference," *Journal of College Teaching & Learning* 7, no. 2 (2010): 25–34, https://doi.

org/10.19030/tlc.v7i2.86.

13. Jennifer S. Stanford et al., "Early Undergraduate Research Experiences Lead to Similar Learning Gains for STEM and Non-STEM Undergraduates," *Studies in Higher Education* 42, no. 1 (2017): 115–29, https://doi.org/10.1080/03075079.2015.1035248.

14. Adrianna Kezar and Elizabeth Holcombe, "Support for High-Impact Practices: A New Tool for Administrators," *Liberal Education* 103, no. 1 (2017): 34–39.

15. Lynn Silipigni Connaway et al., *Academic Library Impact: Improving Practice and Essential Areas to Research* (Chicago, IL: Association of College and Research Libraries, 2017), http://www.ala.org/acrl/sites/ala.org.acrl/files/content/publications/whitepapers/academiclib.pdf.

16. Rita Vine, "Realigning Liaison with University Priorities," *College & Research Libraries News* 79, no. 8 (2018): 420–23, 458.

17. Rowlett, Blockus, and Larson, "Characteristics of Excellence in Undergraduate Research (COEUR)."

18. ACRL, *Framework for Information Literacy for Higher Education*.

19. Merinda Kaye Hensley, Sarah L. Shreeves, and Stephanie Davis-Kahl, "A Survey of Library Support for Formal Undergraduate Research Programs," *College & Research Libraries* 75, no. 4 (2014): 422–41, https://doi.org/10.5860/crl.75.4.422.

20. Merinda Kaye Hensley, "A Survey of Instructional Support for Undergraduate Research Programs," *portal: Libraries & the Academy* 15, no. 4 (2015): 719–46, https://doi.org/10.5860/crl.76.7.975.

21. *Data Information Literacy: Librarians, Data, and the Education of a New Generation of Researchers*, eds. Jake Carlson and Lisa R. Johnston (West Lafayette, IN: Purdue University Press, 2015), http://www.datainfolit.org/dilguide/.

22. Jake Carlson et al., "Determine Data Information Literacy Needs: A Study of Students and Research Faculty," in *Data Information Literacy: Librarians, Data, and the Education of a New Generation of Researchers*, eds. Jake Carlson and Lisa R. Johnston (West Lafayette, IN: Purdue University Press, 2015), 11–33.

23. Jake Carlson, "Future Directions for Data Information Literacy," in *Data Information Literacy: Librarians, Data, and the Education of a New Generation of Researchers*, eds. Jake Carlson and Lisa R. Johnston (West Lafayette, IN: Purdue University Press, 2015), 247–60; Yasmeen Shorish, "Data Information Literacy and Undergraduates: A Critical Competency," *College and Undergraduate Libraries* 22, no. 1 (2015): 97–106, https://doi.org/10.1080/10691316.2015.1001246.

24. Andrew Battista, Katherine Boss, and Marybeth McCartin, "Data Literacy in Media Studies: Strategies for Collaborative Teaching of Critical Data Analysis and Visualization," *Journal of Interactive Technology and Pedagogy* 18 (2020), https://jitp.commons.gc.cuny.edu/data-literacy-in-media-studies-strategies-for-collaborative-teaching-of-critical-data-analysis-and-visualization/.

25. *Data Literacy in Academic Libraries: Teaching Critical Thinking with Numbers*, ed. Julia Bauder (Chicago, IL: American Library Association, 2021).

26. Burress, Mann, and Neville, "Exploring Data Literacy via a Librarian-Faculty Learning Community."

27. Prado and Marzal, "Incorporating Data Literacy into Information Literacy Programs."

28. Burress, Mann, and Neville, "Exploring Data Literacy via a Librarian-Faculty Learning Community."

29. Burress et al., "Data Literacy in Undergraduate Education."

30. George D. Kuh and Ken O'Donnell, "High-Impact Practices: Eight Key Elements and Examples," in *Ensuring Quality & Taking High-Impact Practices to Scale* (Washington, DC: Association of American Colleges & Universities, 2013).

31. Patricia Leavy, *Research Design: Quantitative, Qualitative, Mixed Methods, Arts-Based, and Community-Based Participatory Research Approaches* (New York, NY: Guilford Publications, 2017), http://ebookcentral.proquest.com/lib/usf/detail.action?docID=4832778.

32. Burress et al., "Data Literacy in Undergraduate Education"; Burress, Mann, and Neville, "Exploring Data Literacy via a Librarian-Faculty Learning Community."

33. Paige Morgan, "This Talk Doesn't Have a Name," *Paige Morgan Blog* (2017), http://blog.paigemorgan.net/articles/17/this-talk.html.

34. Stanford et al., "Early Undergraduate Research Experiences Lead to Similar Learning Gains for STEM and Non-STEM Undergraduates."

35. Hensley, "A Survey of Instructional Support for Undergraduate Research Programs."

36. Battista, Boss, and McCartin, "Data Literacy in Media Studies: Strategies for Collaborative Teaching of Critical Data Analysis and Visualization."

37. Hensley, "A Survey of Instructional Support for Undergraduate Research Programs."

38. Burress et al., "Data Literacy in Undergraduate Education."

39. Carlson, "Future Directions for Data Information Literacy."

40. Hensley, "A Survey of Instructional Support for Undergraduate Research Programs."
41. Burress et al., "Data Literacy in Undergraduate Education."
42. ACRL, *Framework for Information Literacy for Higher Education*, 22.
43. ACRL, *Framework for Information Literacy for Higher Education*, 12.
44. ACRL, *Framework for Information Literacy for Higher Education*, 16.
45. ACRL, *Framework for Information Literacy for Higher Education*, 14; Battista, Boss, and McCartin, "Data Literacy in Media Studies."
46. ACRL, *Framework for Information Literacy for Higher Education*, 18.
47. Bauder, *Data Literacy in Academic Libraries.*

Impact of Undergraduate Students' Library Use on Their Learning beyond GPA: Mixed-Methods Approach

Jung Mi Scoulas and Sandra L. De Groote

The research aims to identify the primary reason for students' library use, to explore how they characterize academic success, and to further examine the impact of library usage on student learning outcomes beyond GPA, through a mixed-methods approach. By surveying and interviewing 27 undergraduate students during 2019–2020, the findings revealed that almost every participant strongly believed that their use of library space was positively associated with their GPA, independent of how often they would use the library. While many participants defined academic success as getting a good grade, some identified academic success as developing application skills and obtaining new knowledge.

Introduction

University of Illinois Chicago (UIC) library conducted a biannual online survey for undergraduate and graduate students in 2016 and 2018 to better understand users' needs and examine how the academic library contributes to students' academic success. One of the key findings from the 2018 survey was the negative correlation between student library visits and their GPA, although students' use of library resources (such as journal articles and databases) was positively associated with their GPA.[1] This finding is contrary to the earlier studies indicating that students' library visits were positively associated with students' academic success.[2] However, given that correlation does not guarantee causation, it is not easy to clearly explain this negative relationship. As such, the current study aims to identify the primary reasons for students' library use (in person and online) and to examine whether academic-related activities such as studying in the library, using library resources, and attending library instruction have an impact on students' learning beyond GPA, through a mixed-methods approach. A unique contribution of the study is a design comparing groups of students in three ranges of GPA. Additionally, the authors aim to further explore how students perceive their experience in the library and how students perceive their own learning through a qualitative approach. The findings from the current research project provide qualitative evidence about how students

*Jung Mi Scoulas is Assistant Professor and Assessment Coordinator in the University Library at the University of Illinois Chicago; email: jscoul2@uic.edu. Sandra L. De Groote is Professor and Head of Assessment and Scholarly Communications in the University Library at the University of Illinois Chicago; email: sgroote@uic.edu. ©2022 Jung Mi Scoulas and Sandra L. De Groote, Attribution-NonCommercial (https://creativecommons.org/licenses/by-nc/4.0/) CC BY-NC.

see their library use (library space, website, and instruction) affecting their learning beyond what is measured through students' GPAs.

Literature Review

Academic libraries' endeavors to demonstrate the library's value for students' academic success and learning have yielded fruitful literature in recent years. Many academic libraries used students' Grade Point Average (GPA) as an outcome variable to show how libraries contributed to student academic success and their learning, which generated a relevant and consistent finding: students' library use (such as library instruction, database use, and checkouts) is positively associated with their GPA.[3] Part of the research exploring these relationships was spearheaded through the efforts of the Association of College and Research Libraries' (ACRL) Value of Academic Libraries Initiative[4] and ACRL's whitepaper: *Academic Library Impact: Improving Practice and Essential Areas to Research.*[5] One of the six priority areas outlined in the whitepaper focused on student learning and success, which provided guidance on "Quantify the library impact on student success." In more recent years, the literature pertaining to academic libraries' contributions to academic success (GPA) are steadily increasing such as Ula Gaha, Suzanne Hinnefeld, and Catherine Pellegrino's study examining the correlations between library instruction and GPA;[6] Tiffany LeMaistre, Qingmin Shi, and Sandip Thanki's investigation of the relationship between library online resource use and GPA;[7] and Francesca Marineo and Qingmin Shi's examination of the relationships between library use sessions and GPA.[8]

Given that GPA has been widely used in various fields as a quantifiable indicator of student academic success and learning (for instance, in Psychology, Educational Psychology, and Library and Information Sciences), it is very important to have empirical evidence demonstrating that academic libraries have a positive impact on students' academic success using GPA. However, the notion of academic success can vary subjectively by individual, and academic success is influenced by various factors.[9] In a recent meta-analysis study, M. Brooke Robertshaw and Andrew Asher found many studies where the statistical analysis and interpretations were not compelling, and libraries contribution to students' academic success in fact had very little impact.[10] Additionally, in the trends section of the 2018 ACRL Academic Library Trends and Statistics Survey, the findings revealed that 45 percent of respondents from doctoral institutions did not have any outcome metrics to track students' success.[11] Only 11 percent tracked and assessed "student retention rate," followed by 9 percent that used GPA as a student outcome. The vast majority of respondents from doctoral institutions (83%) reported that they do not know the correlations between students' library use and their retention and graduation rate.

In an effort to help academic libraries that do not have the expertise to measure library value or want to compare the impact of their library programs with other libraries, the ACRL launched Project Outcome for Academic Libraries in April 2019.[12] This is a free online toolkit providing standardized surveys for assessing and analyzing learning outcomes so academic libraries can apply their results to make changes for improvement or use the data for benchmarking with other libraries across the nation. In the survey, there are four key outcomes that measure the library programs and services (such as library instruction, space, digital, and special collections) in the areas of knowledge, confidence, application, and awareness. As of April 2020, 476 academic and research libraries have created surveys, and more than 40,000 responses were collected.[13]

Despite this effort, there are still gaps and issues in the practices of assessing the value of academic libraries. A quantitative approach to measure the relationships between library use and student academic success may not fully capture the impact of the library on students' success and learning. To address this issue, in a recent study, Jennifer Mayer, Rachel Dineen, Angela Rockwell, and Jayne Blodgett stated that they were mindful of the concerns reflected by nonpersuasive findings from previous studies due to minimal statistical impact raised by other researchers.[14] So they designed and conducted a research project using both the quantitative and qualitative approach: to examine the impact of library resources and services on student success (persistence and GPA) in the aggregate level through a quantitative approach and to explore how students define academic success and their perceptions of the library's role at the individual level through a qualitative approach. The findings from the quantitative data indicated that students' use of resources and services, with the exception of research consultations, were statistically and positively associated with their persistence. Students' use of resources and services were found to have a minimal positive effect on students' GPA. The findings from qualitative data revealed that students perceived success as "made their best possible effort," "gained knowledge or learned something new regardless of their assigned grade," and "applying knowledge to real-life."[15] The qualitative findings further uncovered that students perceived the library as "a place to focus, study, to meet friends, to get away and to get things done," suggesting that "library provides an important physical environment to enable them to achieve their fullest potential in academic ability." The current study aims to measure the library values on the student's academic success by adopting the Project outcome model to examine the impact of library usage on student learning beyond GPA (quantitative approach) and by exploring how they characterize academic success (qualitative approach).

Methodology

The purpose of this research is to examine students' primary reasons for using the library and to measure whether students' library use has an impact on students' outcomes (GPA, knowledge, competence, awareness, and belonging). In addition, this research explores how students perceive their use of the library, either in person or online, impacting their learning. To achieve these goals, the current study employs a mixed-methods approach: the quantitative method (survey) and the qualitative method (interview)—more specifically, the embedded design. The embedded design is a mixed-methods design using both quantitative and qualitative data; one type of dataset supports and plays a supplementary role in a research study based primarily on the other dataset.[16] In this research project, the embedded design with a one-phase approach is used; quantitative data (survey) as a secondary data type is embedded within a qualitative design (interviews). The authors collected quantitative data as a supplementary data and primarily used qualitative data to understand in depth how students' library experiences have an impact on their academic success through their narratives. Given that this research project is more weighted in the qualitative methods design, the study's qualitative approach does not make a claim of generalizability, but rather seeks deeper understanding of the complexity of student perspectives. This research study was approved by the Institutional Review Board (IRB) at the Institution (Research protocol # 2019-0538).

Measures

Three instruments were used in this research project: a recruitment survey, a pre-interview

survey, and interview protocols. All of the instruments were developed by the authors adapting a locally developed student survey by the University Library[17] and Project Outcome model.[18] All of the instruments were reviewed by the University Library's Assessment Coordinator Advisory Committee to ensure the questions measured as intended and to enhance the clarity of the questions.

- Recruitment Survey: The recruitment survey consisted of six questions: screening questions to determine if students were eligible to participate in the survey, questions related to frequency of library in-person visits and online library usage, the student's GPA, and contact information for follow-up for participating in the interviews (see appendix A). Online library usage was defined as students accessing library resources and services through the library website.
- Pre-interview Survey: The pre-interview survey consisted of 22 questions including the following: primary reasons for using the university library, frequency of using the physical and online library, desired learning outcomes (knowledge, confidence, application, attitude) related to library space use, library instruction participation, library website use, students' attitude toward the library, and demographic questions such as ethnicity, age, and gender (see appendix B). Learning outcomes for space, website, and library instruction were adapted from the Project Outcome Model.[19]
- Interview Protocol: The interview protocol consisted of 10 interview questions including the following: student's overall experience and perceptions on library use, interaction with library staff, participation and perceptions of library instruction, challenges using the library, areas for library improvement, and the impact of library use on the student's academic success (see appendix C).

Data Collection

Recruitment procedures. Recruitment flyers were distributed at the UIC Library and the Honors College. Flyers were also distributed through social media (Facebook, Twitter, and Instagram) and library news and were displayed in the Richard J. Daley Library building (June 12, 2019~March 23, 2020). Students who were interested in participating in an interview were asked to complete the recruitment survey (see appendix A). Any undergraduate students who reported never using the physical library and never using the online library were directed to exit the survey. Once a demographic was filled (for example, students with a high GPA who only used the library online), additional subjects from the demographic were not contacted for interviews.

Screening procedures. The authors used purposive sampling, determining which elements should be included in the sample.[20] Based on the respondents' criteria, the frequency of library use, and their GPA, the authors carefully selected the eligible participants including balancing the representation from racial/ethnic groups. Students were selected based on their reported GPA and frequency of library use (in person and online) and were contacted individually asking if they were still interested in participating. Given the specific criteria required in the sample, the process of recruiting procedures as well as the interviews were conducted between July 2019 and February 2020. During this period, a total of 170 students completed a recruitment survey. Among them, 39 cases were deleted because of blank responses in either eligibility questions or contact information. A total of 27 participants were selected based on the criteria of each category (low, medium, and high GPA) and frequency

of library use (in person and online). There was representation of students in each category. Once all participants were recruited, the recruitment information was deleted.

Interview procedures and sample size. Interviews were conducted by the first author in the university library. The in-person interviews began by completing a print survey (see appendix B) for 5–10 minutes, followed by an interview that spanned less than an hour (see appendix C). Prior to each interview, participants were asked to sign an informed consent form. At the end of the interview, students were asked to verify their GPA by logging into their student account on the university's system. At the completion of the interview, participants received $25 for their participation.

As the interviews went on, the authors determined the sample size for this mixed-method study by using two factors: external factor and data saturation. In the process of recruiting the participants, COVID-19 occurred, and it remained uncertain when interviewing students in person would be able to resume. The external factor is a potential threat that alters the consistency of the qualitative research (interview format and students' library experience before and during COVID). To follow the evidence-based guidance, the authors used data saturation. Saturation is widely acceptable in qualitative research for determining sample size. Guided by the definition of saturation, "the point in coding when you find that no new codes occur in the data"[21] and "additional data do not lead to any new emergent themes,"[22] the first author discovered the repetitive responses at the interviews after 20 interviews and when reviewing and coding procedures, both authors learned that no new codes emerged and recurrence of the similar responses after the 23rd interview. External factor (COVID) and reaching a point where there are no further new codes and themes emerging were critical factors at which the authors decided to stop interviewing and analyze the data that had already been collected. As such, a total of 27 participants were selected for this mixed-methods study. This sample size is within the scope of published qualitative studies.

Data Analysis

Quantitative data from survey questions were stored directly in the web-based online survey, Qualtrics. Descriptive statistics were directly analyzed in Qualtrics: frequency, mean, and crosstabs. Qualitative data from interviews were audiorecorded during the interviews and transcribed by a transcribing company. All 27 transcripts were imported into ATLAS.ti (version 9) and were analyzed using content analysis to better understand students' motivations of using the library and examine their perspectives of the impact of library on their academic success. Content analysis was extensively used for qualitative research.[23] More specifically, summative content analysis was used when "keywords are derived from interest of researchers or review of literature."[24] The first author initiated the coding and went over the coding with the second author. After agreement with the coding, the authors split half of the transcripts and coded the interviews separately. The codes were reviewed by the authors as a whole and were merged. This procedure was repeated until the authors had agreement on the final codes and themes. Finally, quantitative data was exported into Excel, and their library experiences and the impact of their library use on their learning were simultaneously examined with their interview responses.

Limitations

Students were self-selected to participate in interviews. Thus, it is possible that their perspec-

tives differ from students who did not choose to engage in conversation with a librarian. For example, it is possible that participants' perspectives on the library were more positive than students overall, or that they were more confident than students on average. The study's qualitative approach does not make a claim of generalizability; rather, it seeks deeper understanding of the complexity of student perspectives. In particular, comparing students in different GPA ranges is a unique contribution.

Results

Quantitative Findings

As shown in table 1, more than 66 percent of respondents were either sophomore (33.3%) or junior (33.3%), followed by freshman (22.2%) and senior (11.1%). All the students were between the ages of 18 and 25 years. In all, 70 percent of the respondents were female. About 60 percent of respondents were from Liberal Arts and Sciences, and the remaining respondents were from Business Administration (11.1%), Education, Engineering, and Nursing (7.4% each), and Applied Health Science and Architecture, Design and Arts (3.7% each). Fully 40 percent were Asian/Pacific Islander, followed by Black or African American (22.2%), White (18.5%), Hispanic or Latino (14.8%), and International (3.7%).

TABLE 1
Students' Demographic Information (n=27)

	n	%
Gender		
Female	19	70.4%
Male	8	29.6%
Class Status		
Freshman	6	22.2%
Sophomore	9	33.3%
Junior	9	33.3%
Senior	3	11.1%
Race/Ethnicity		
White	5	18.5%
Hispanic or Latino	4	14.8%
Asian/Pacific Islander	11	40.7%
Black or African-American	6	22.2%
International	1	3.7%
College		
Applied health sciences	1	3.7%
Architecture, Design & Arts	1	3.7%
Liberal arts & Sciences	16	59.3%
Business Administration	3	11.1%
Engineering	2	7.4%
Education	2	7.4%
Nursing	2	7.4%

The vast majority of students owned a computer at home (92.3%) and had an internet access at home (95.2%). Nearly three quarters (72%) of respondents had their own study space at home. More than four out of five (81%) respondents lived off campus, with most of these students living less than 10 miles from the university campus (81%).

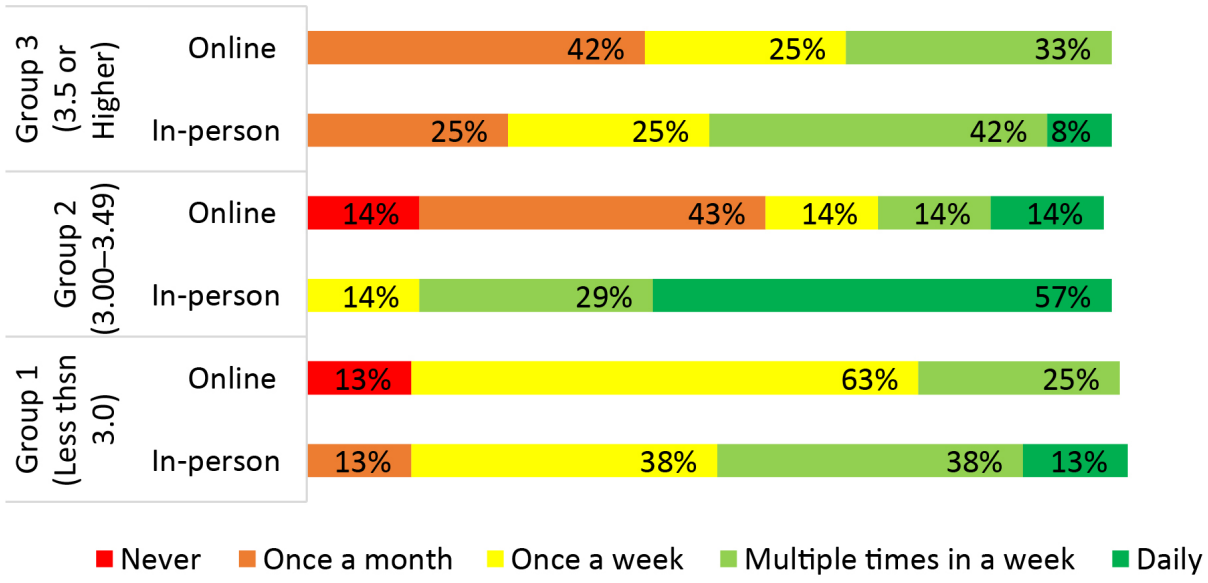
Students' Primary Reasons for Using the Library. Students were asked their primary reasons for coming to the library. The top three reasons students reported were: studying alone (24.7%), working on assignments (19.8%) that required using computers or printers to complete the assignments, or preparing for exams (17.3%). More than half of students responded that the top reason for using the online library was for "accessing library e-books and journals etc. to help me complete assignments" (57.7%).

For those who reported coming to the physical library, about half of students chose a large, enclosed study room on the first floor (51.9%). The remaining students indicated they selected space on other floors (floors 2 to 4) within the library. Students were further asked what specific space they use the most. About 60 percent of students reported using

"quiet study space" (59.3%), followed by collaborative study space (25.9%), and "computer areas" (14.8%). None of the students selected "group study room" as a response. Students reported that on average, they stayed in the library between 1.5 hours to 2 hours (25.9%), while some students stayed in the library more than 3 hours (18.5%) a day. The majority of students reported using the library website for less than 30 minutes (73.1%) a day.

Students' Library Visits (In Person and Online) by GPA. Students were grouped by their GPA: Group 1 with less than 3.0, Group 2 between 3.0 and 3.49, and Group 3 with 3.5 or higher. The percentages of students' in-person library visits and online visits were compared by GPA group. As shown in figure 1, the results indicated that Group 2 (GPA between 3.0 and 3.49) most frequently visited the library in person. However, Group 3 (GPA 3.5 or higher) was the primary reporter of using the online library most frequently. Some users of Group 1 and Group 2 reported "Never" using the online library.

FIGURE 1
Students Library Visits (In person vs. Online) by GPA (N = 27)

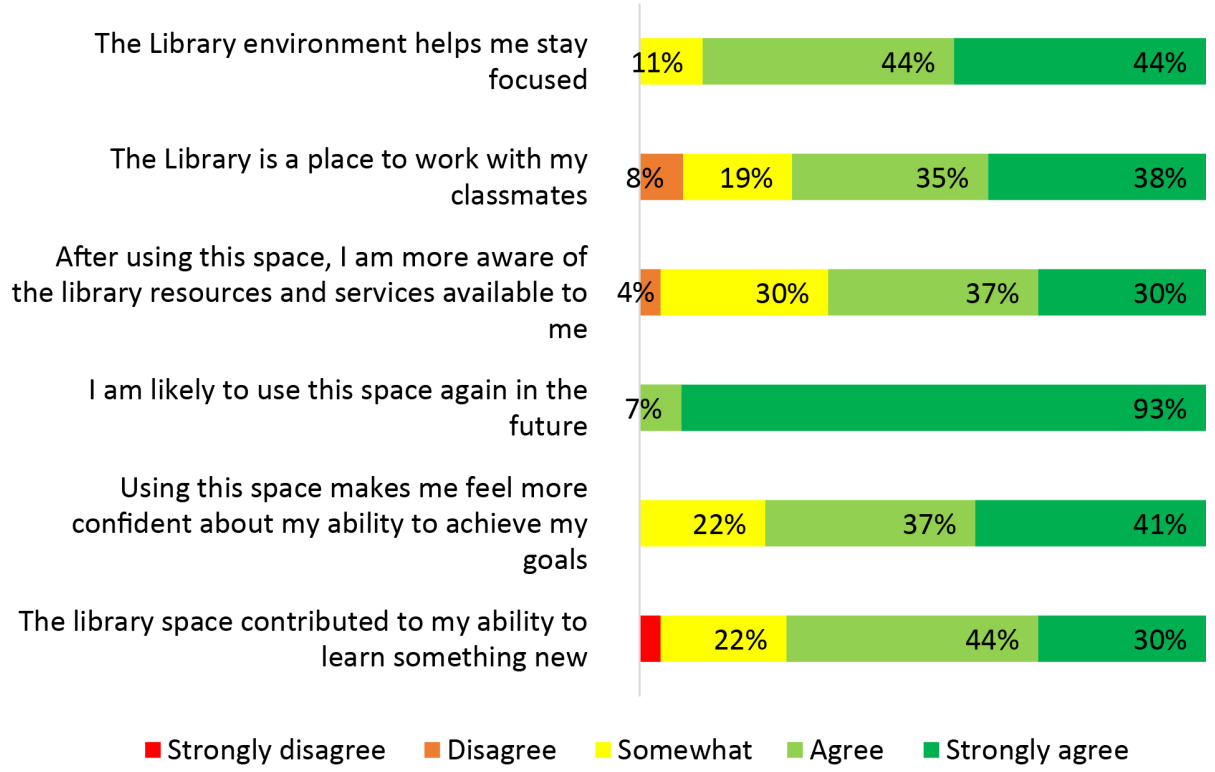


Note: Some columns may not total 100% due to rounding

Learning Outcomes of Spaces, Website, Instruction. Students were asked to respond with the level of agreement in the learning outcomes questions related to library space, library website, and library instruction. As shown in figure 2, the majority of students (92%–100%) rated "somewhat," "agree," "strongly agree" in the learning outcomes of using library spaces. Two students responded "disagree" in the "The library is a place to work with my classmates." Only one student replied "strongly disagree" in the outcome question of "the library space contributed to my ability to learn something new." All the students responded "agree" and "strongly agree" to their likelihood of using the library space again.

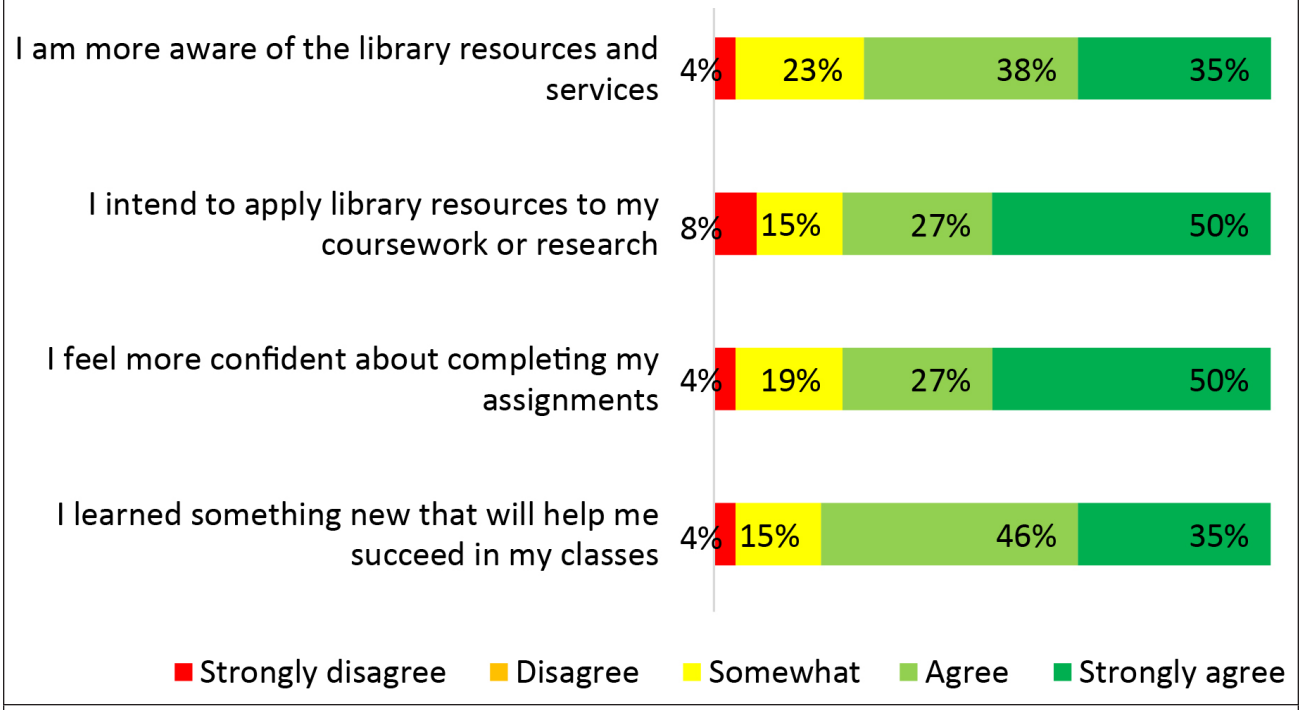
With respect to the results of learning outcomes questions related to library website, for most questions the respondents rated "somewhat," "agree," or "strongly agree." One student rated "strongly disagree" in the learning outcomes (knowledge, confidence, and awareness), whereas two students rated "strongly disagree" in the area of application of library website: "I intend to apply library resources to my coursework or research."

FIGURE 2
Learning Outcomes for Library Space (N = 27)



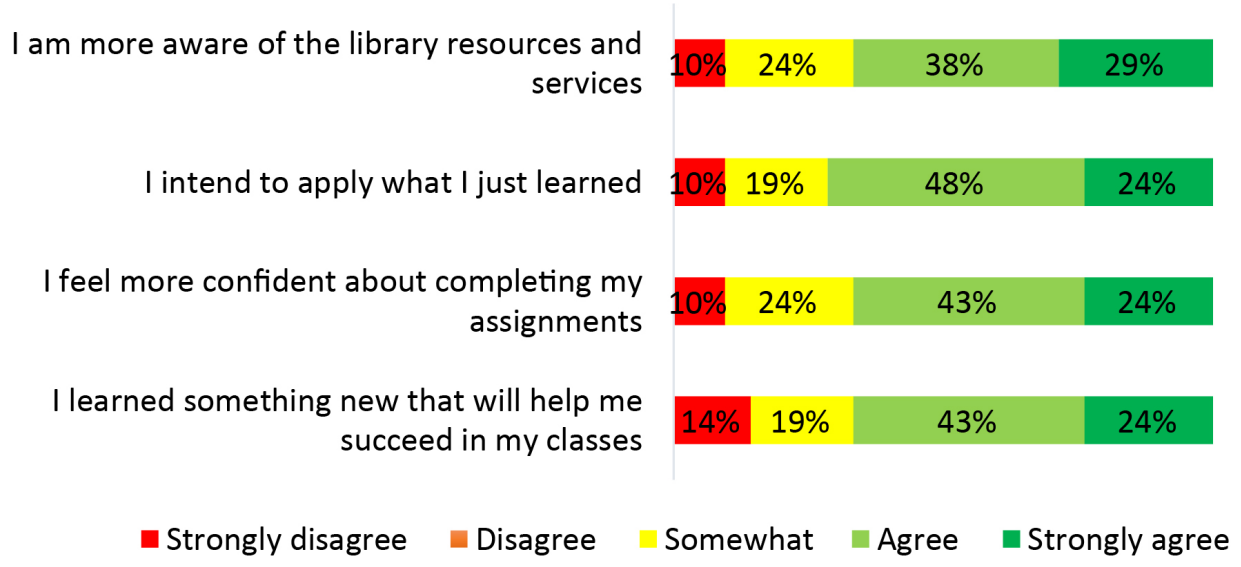
Note: Some columns may not total 100% due to rounding

FIGURE 3
Learning Outcomes for Library Website (n = 26)*



*Note. One participant never used the library website before. Some columns may not total 100% due to rounding

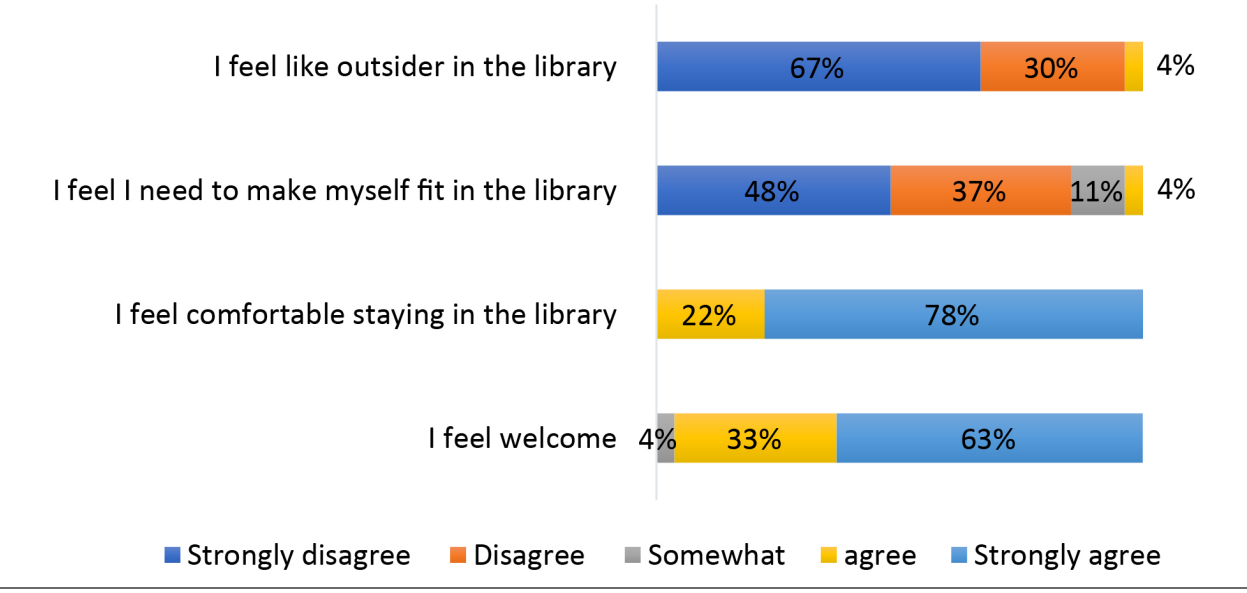
FIGURE 4
Learning Outcomes for Library Instruction (n = 21)*



*Note. 6 out of 27 participants never attended any library instruction session. Some columns may not total 100% due to rounding

Six out of 27 participants had never attended a library instruction session. As such, a total of 21 participants responded to the learning outcomes for library instruction. The results of learning outcomes questions relevant to library instruction were similar to those of library space and library website where, for most questions, the respondents rated "somewhat," "agree," or "strongly agree." Two students rated "strongly disagree" in the learning outcomes (confidence, awareness, and application), whereas three students rated "strongly disagree" in the area of knowledge: "I learned something new that will help me success in my classes."

FIGURE 5
Students' Attitudes toward the Library



Some columns may not total 100% due to rounding.

Students' Attitude toward the Library. Students were asked to rate their level of agreement in their perceptions of how they feel about the library. Overall, most respondents answered "agree" and "strongly agree" in the areas of "I feel comfortable staying in the library" and "I feel welcome," whereas one respondent rated "agree" in the areas of "I feel I need to make myself fit in the library" and "I feel like an outsider in the library."

Qualitative Findings

The participants were further interviewed about what motivated them to study in the library and how they perceived the impact of library use on their learning and academic success. Four major themes emerged from the qualitative analysis of the interviews: 1) students' motivations for studying in the library; 2) students' perceptions of library resources use; 3) students' perceptions of the relationship between library use and their GPA; and 4) students' perceptions of their academic success and goals. To support themes derived from the interviews, direct quotes from participants were used. To protect the confidentiality of participants, broad demographic information is provided. Each theme is addressed below.

Theme 1: Students' motivations for studying in the library. This theme refers to participants expressing their motivations to study in the library rather than other places. Many participants said their primary reason to use the library is to focus and avoid any distraction, get things done, and increase productivity. This pattern emerged regardless of gender and their GPAs. Another primary reason to study in the library was that observing others studying motivated them to study in the library and to not feel lonely. That is, studying in the library allowed them to see others' study behavior in the library, which motivated them to study harder and use the library. One female student who maintained a perfect GPA score commented:

> *"…when I'm like really stressed to study it's like nice like if I'm at the library and there's like other people studying, too because then it makes you feel like you're not alone. Because like you feel like sometimes when you're studying so much that you're just so, I don't know like sometimes I get like sad because this is all I've been doing for like I don't know, like I haven't done anything like for me recently and I'm just studying, studying. And then you see like other people and it's like okay I'm not alone, there's like other people also in the same position." (Female, Junior, Math, 4.0 GPA)*

Her motivation to use the library, by observing others studying hard, was to ensure that she would not be studying hard all alone and would remain motivated to continue studying by herself. Another student shared similar reasons for using the library: getting work done and becoming motivated to study in the library by observing others doing the same.

> *"Honestly I feel like when I come to library, I feel like studying and I feel like I can do something. I know it's kind of a personal reason maybe some people come for fun or some people come for a specific other reason, but whenever I'm doing something in library I feel like I have done something. I feel like I know, in myself I've accomplished something but I feel good about myself when I'm studying in the library and I see everyone studying and everyone is focused towards the similar goal, that is to succeed and all, so that's what I like." (Male, Sophomore, Engineering, 3.3 GPA)*

Theme 2: Students' perceptions of library resources use. Students' perceptions of library resources use refers to how and why students used the library resources and how they found out about those resources. While not all participants used the library resources (journals, databases, or books), many participants reported that they primarily relied on the journals or databases to write a paper for their assignments. The use of these resources is often related to the courses they are taking. When participants, primarily in their freshman year, were taking English, history, or anthropology classes, they were required to use databases or journals to write a paper. In contrast, students in the STEM fields such as engineering, computer science, and math did not have a writing assignment and instead were required to take exams or quizzes. These students were less likely to report using library resources. For example, a female sophomore student who majored in nursing commented:

> *"I didn't really use the library website last semester because last semester I was taking Bio, Bio Lab, Anatomy, and Lifespan and Development which was like a nursing or a pre-nursing specific course. So I was taking those classes and those, oh I was taking Psych 242 as well. Those classes I didn't, it wasn't really required to write papers or even in Psych there was like a few small writing assignments but nothing that I ever had to use the library resources for." (Female, Sophomore, Nursing, 3.7 GPA)*

Only some participants reported using books; some students used books for their assignments, whereas the others used books for fun or entertainment. While many of the participants reported that they learned about the library resources primarily through library instruction workshops embedded in English freshman classes, some participants found out through the freshman orientation or a professor. A couple of participants mentioned their siblings, who were enrolled at the same institution, told them how to find library resources.

Theme 3: Students' perceptions of the relationship between library use and their GPA. Almost every participant strongly believed that their use of library space was positively associated with their GPA, independent of how often they would use the library. More specifically, they saw the quiet library space as a positive environment that helped them focus, reduce distractions, and get work done or that motivated them to study harder by seeing others studying hard, which in turn resulted in their higher GPA. For instance, a male junior student explained how his use of the library has an impact on his GPA:

> *"Yes definitely. So like I said it does, in a way the library kind of influences my mindset on the things they need to do. So just helping me stay focused and providing a space where I can be focused and not be distracted definitely helps my grades. Because if I wasn't focused at all, then I wouldn't be able to study and then I wouldn't be able to do all of these things. So the library does help a lot in my academic success." (Male, Junior, Biology, 3.1 GPA)*

Other students provided further explanations on the relationships between frequency of library use and their GPA.

> *"Like when I'm, the semesters when my GPA was down, it was when I wasn't really utilizing the library when I would study at home or like because I'd get distracted or I*

wouldn't even study at all. So definitely the more time I spend here, the more productive I am and the more I get done, the more I learn, the more I retain through studying so definitely like this is definitely a good place. It's not distracting at all, at least for me, I learn more, I get more done, and I study more at the library. So the semesters I've done well have been, usually been because I've been studying at the library." (Male, Sophomore, Engineering, 2.6 GPA)

While most participants primarily focused on the library space use and their GPA, one student commented how the library resources have an impact on her GPA. A female junior student noted:

"Yeah, the space definitely because like you study with like your peers or you study with people that are older and you see that how they're working hard makes you get motivated. The library like website it does help in like research faster instead of going to Google and seeing if like I could use it or if it's reliable. Because I know most of the article or all of the articles are reliable. And usually with my papers, you need like a work cited, and it's already there, like work cited, abstract, it's click and great." (Female, Junior, Integrated Health Science, 2.5 GPA)

Interestingly, a female sophomore student interpreted library use is a mediation of her learning skills and GPA and elaborated:

"For me it's not about my GPA because I feel like my GPA is reflected by my learning skills so I guess in a chain it starts by me going to the library and then the library being a good place to improve my learning skills, and then my learning skills helping me improve my GPA. So I see it like that. I never see it skipping over that learning skills aspect." (Female, Sophomore, Undeclared, 3.3 GPA)

As shown above, most of the participants who expressed the positive impact of their library use on academic success reported a GPA lower than 3.3. This finding suggests that the frequency of library use does not always correlate with the students' academic grades and, more importantly, students perceive their library use as having a positive impact on their grades.

Theme 4: Students' perceptions of their academic success and goals. Students shared their perceptions of their academic success and goals. While many participants defined academic success as getting a good grade such as a 4.0 GPA, some remarked that, in addition to getting a high GPA, academic success means developing application skills. For example, a male junior student who majored in biology commented:

"That means two things for me—a high GPA and it also means that I actually learn the things that I am taught and that I could apply it to my everyday life, or at least I could apply it to the things that I need to do after college. Those are my two things on academic success. I feel like it's useless to just memorize everything and then forget them after. I like applying what I've learned. I know I wouldn't be able to apply it in every situation, but as long as let's say my physics class, I see a lot of things here in the real world and

I'm just, now I know kind of the mechanisms behind it and it's just, it's interesting to know." (Male, Junior, Biology, 3.1 GPA)

Similarly, others also commented: "learning something new that you can apply to your everyday life," "understanding what you're studying and in the future applying it," "caring about what you're doing and what you're learning and actually attempting to learn outside of that class," and "learning about things that are [exciting] or interesting."

Some participants characterized academic success as the accomplishment of the learning process and obtaining subject knowledge. Examples include "getting work done," "working hard and getting the results you want," "feeling confident in the subjects that you are studying and being able to retain it," being able to discuss it with others," "try my best and understand the materials." Only one participant defined academic success as developing interpersonal skills: for example, "being well-rounded and having good soft skills, knowing how to talk to people."

Participants also expressed their academic goals. Many students reported their primary goal is to graduate, while others reported it was going to medical school or getting an occupation. Some participants commented that increasing their GPA was their academic goal.

Discussion and Future Directions

This paper employed a mixed-methods approach: 1) to measure library use and its impact on student learning outcomes and GPA using quantitative data and 2) to explore in depth how students' perceptions of their library use (in person and online) impacts their GPA using qualitative data.

A key finding from the quantitative data demonstrated that students with a GPA between 3.0 and 3.49 most frequently visited the library in person. However, those with a GPA 3.5 or higher primarily reported using the online library most frequently. Some users with a GPA lower than 3.0 and those with a GPA between 3.0 and 3.5 reported "Never" using the online library. This finding replicates the previous quantitative study conducted by the authors, indicating that students' online use was positively associated with their GPA, whereas physical library use was negatively associated with their GPA.[25]

Regarding how the respondents perceived the impact of library space, the library website, and instruction on their learning outcomes, the authors discovered that library space has significantly contributed to students' productivity and confidence (see figure 1). Additionally, all the respondents reported that they will return to use the space again. With respect to learning outcomes of library instruction, 90 percent of the respondents reported that library instruction impacted on their confidence, awareness, and application, whereas three students rated "strongly disagree" in the area of knowledge: "I learned something new that [helped] me succeed in my classes." During the interviews, the respondents provided further explanations on their responses. For example, one respondent who selected "strongly agree" further elaborated that "a couple of my assignments like they required like you can't just look up a Google site…before going into the classes I knew that UIC had access to the databases, but I wasn't too sure how to access them. So the library instruction course was helpful in showing how to access those databases" (Male, Sophomore, Engineering, 2.6 GPA). On the other hand, one student further explained why he selected "strongly disagree," stating, "Because I already know that they got resources and everything. I might learn something new for my class, like if it's not assigned, but I don't think you can learn anything new" (Male, Senior, Marketing, 3.1 GPA).

Another key finding from this study was that there is a gap between students' actual library use and recorded GPA (quantitative data) and students' perceptions of their library use and their GPA (qualitative data). That is, it appeared that their actual frequency of library use was not associated with their reported GPA, whereas most of the students perceived that their use of the library positively influenced their GPA. It is possible that, when examining the impact of library use on students' GPA, mostly an accumulated GPA is used to measure the correlations between library use and GPA. Given that GPA reflects the accumulation scores of academic years, using an accumulated GPA may not fully uncover how students' use of the library relates to their GPA per semester. Instead, this study attempted to measure the frequency of library use per semester and their GPA from the beginning of the semester to the current academic year. For example, a male sophomore who had a 2.6 GPA explained that, when he did not use the library, his GPA went down; however, his GPA went up after more frequent use of the library. His 2.6 GPA was an accumulated score since freshman year. However, his comment implies that his GPA was lower when he did not use the library and it is possible that his GPA was higher when he used the library more. While we cannot confirm whether this speculation is accurate, this finding may explain the argument raised by Robertshaw and Asher that previous studies measuring library impact on students' academic success were not statistically convincing.[26] This is also supported by a recent study conducted by Mayer et al. indicating that library services were found to minimally impact final GPAs.[27] Nonetheless, comparing students in different GPA ranges is a unique contribution to the current literature.

Qualitative findings revealed that students' perceptions of academic success are not only about getting a higher GPA but also developing applicable skills, accomplishing the learning process, and obtaining subject knowledge. This finding is supported by the previous study indicating that undergraduate students perceived their academic success as applying new knowledge to circumstances in real life and gaining new knowledge.[28] This finding has implications for future research. When examining the library's impact on students' success, GPA alone is not sufficient. Instead, incorporating outcome variables such as knowledge (obtaining something new) and applications (applying new knowledge into practices) into measuring impact on academic success will provide a more comprehensive picture of how students' library use has impacted their academic success. Measuring learning outcomes (knowledge and applications) are already included in the Project Outcome Model,[29] and this finding provides evidence highlighting the importance of measuring learning outcomes in addition to GPA to have a comprehensive view of library impact and value.

Nonetheless, it is still not clear how students perceive their own academic success. Do they consider that they are academically successful? Because an individual's perception of their own success is subjective and varies by individual. For example, a student who majors in Nursing and earned 3.0 GPA may consider herself or himself successful, while a student who studies English with the same GPA may not perceive himself or herself as successful. A potential research question for the future is this: is library use more highly related to their own perception of being successful?

Given that previous studies have predominantly focused on using the GPA as an outcome variable, this study questioned previous findings and attempted to examine students' academic success with their own perspectives through a mixed-methods approach by using both quantitative and qualitative datasets. The findings from the current study will prompt other researchers who are interested in demonstrating the library value from a different angle beyond the GPA.

The authors plan to include the questions "how do you define academic success" and "whether students perceive themselves as successful, and how and why" in future student surveys that target the institution's entire population. As discussed earlier, examining the correlations between students' library use and their GPA does not always generate the significant outcomes academic libraries would like to see. Connecting students' library use with the academic success that they value and defining their success in terms such as improving grades, completing courses, or obtaining applicable skills will more accurately and directly reflect the library's value. If academic libraries cannot demonstrate their role in students' academic success to various stakeholders, budgets for maintaining collections, hiring librarians, and providing services could suffer. The current research project is an example of an institution conducting ongoing assessment. This is beneficial for other academic libraries in understanding the potential impact of the academic library on student success and in learning how an academic library can implement ongoing assessment to measure the library's impact on students' learning and academic success. This exploratory study with a mixed-methods approach provides evidence of student perceptions not previously captured in the literature. It has potential to shape ongoing and future research in this area.

Conclusion

Through both quantitative and qualitative data, the current study provided better mechanisms to understand the process of how library has an impact on their learning outcomes as well as GPA. By looking at both sets of data, the authors found that the frequency of library use does not always correlate with the students' academic grades; more importantly, students perceive their library use as having a positive impact on their grades. It is plausible that GPA is an accumulated outcome based on several academic years, while frequency of library use is measuring activity during a certain time period, resulting in nonexistent relationships between library use and GPA or minimal evidence of impact on grades, such as has been seen in previous studies. Future research is needed to further examine this issue. Additionally, students considered achieving a higher GPA, developing applicable skills, accomplishing the learning process, and obtaining subject knowledge was academic success. These findings provide critical implications for what outcome variables are important when assessing the library values on students' academic success. While some students voiced that getting a higher GPA was an indicator of academic success, others articulated that applying new knowledge into practice and obtaining knowledge were the characteristics of academic success. To holistically measure the library value on their academic success, future research should consider including these outcome variables in addition to GPA.

Acknowledgments

The authors thank the University of Illinois Chicago Library Research Fund and their colleague Paula Dempsey for her review and feedback on this article.

APPENDIX A. Recruitment Survey

University of Illinois Chicago (UIC) Library research team invites UIC undergraduate students to join our research study. This study aims to examine students' primary reasons for using the university library and measure whether students' library use has an impact on their learning outcomes. To volunteer to participate in this study, please complete the screening survey below. Your responses to the survey questions below will be kept confidential and will be used to select participants for this study. Your response to this survey will be retained until subject recruitment has been completed. Once recruitment is complete, your responses to this survey will be destroyed. If you are selected to participate, a member of the research team will contact you for an interview. You will receive $25 for your participation in the interview.

1. During the last semester, did you do any of the following at the UIC Library? Select all that apply.
   - □ Visited the UIC Library in person
   - □ Used the online UIC Library
   - □ None of above—Skip to end of survey: Thank you for your interest in our research study.
2. Are you a UIC undergraduate student?
   - □ Yes
   - □ No—Skip to end of survey: Thank you for your interest in our research study.
3. How often did you visit the UIC Library in person last semester?
   - □ Never
   - □ Once a month
   - □ Once a week
   - □ Multiple times in a week
   - □ Daily
4. How often did you use the online library last semester?
   - □ Never
   - □ Once a month
   - □ Once a week
   - □ Multiple times in a week
   - □ Daily
5. What was your GPA last semester?
   - □ Less than 3.0
   - □ 3.0–3.5
   - □ Greater than 3.5

Please provide your name and contact information. If you are selected to participate, you will receive $25 for your time at the end of the interview.

Name:

UIC email:

Phone number:

APPENDIX B. Pre-Interview Survey Questions

(In-person visit) I usually come to the library for_____

Please select only THREE primary reasons to use the library.

- □ studying alone
- □ studying with friends
- □ working on assignments
- □ using print library material to work on an assignment
- □ using online library material to work on an assignment
- □ working on group projects with my classmates
- □ checking out books/returning books
- □ looking for materials
- □ attending workshops/sessions hosted by the UIC Library
- □ using computers or printers for assignments or preparing for exams
- □ using computers or printers for non–course-related purposes
- □ asking reference questions to librarians
- □ attending UIC Library instruction sessions taught by a librarian (such as how to find resources)
- □ spending time with my friends
- □ spending time between classes
- □ stopping by the cafe
- □ using restrooms/drinking water
- □ passing through to go to other buildings
- □ others_____

(Online use) I use the library for_____. (Please select one)

- □ accessing library e-books, journals etc. to help me complete assignments
- □ accessing library e-books, journals, etc. to help me study
- □ accessing library e-books, journals, etc. to help expand my knowledge outside of course assignments
- □ requesting library materials (books, journals) from other libraries
- □ using "chat with a librarian"
- □ other _____

(In-person visit) When you come to the library, which space do you use the most? (Please select one)

- □ First floor (circle reading room)
- □ First floor (IDEA commons)
- □ Second floor
- □ Third floor
- □ Fourth floor

(In-person visit) When you come to the library, which space do you use the most? (Please select one)

- □ Quiet study space
- □ Collaborative study space

- □ Group study room
- □ Computer area

(In-person visit) On average, how long do you usually stay in the library? (Please select one)

- □ less than 30 minutes
- □ 30 minutes–less than 1 hour
- □ 1 hour–less than 1.5 hours
- □ 1.5–less than 2 hours
- □ 2 hours–less than 2.5 hours
- □ 2.5 hours–less than 3 hours
- □ more than 3 hours

(Online use) On average, how long do you usually spend time on the library website?

- □ _____minutes

Learning Outcomes

Do you agree or disagree with the following statement?

1. Strongly disagree, 2. Disagree, 3. Somewhat, 4. Agree, 5. Strongly agree

(In-person visit: Library space)

- □ The library space contributed to my ability to learn something new
- □ Using this space makes me feel more confident about my ability to achieve my goals
- □ I am likely to use this space again in the future
- □ After using this space, I am more aware of the library resources and services available to me
- □ The library is a place to work with my classmates
- □ The library environment helps me stay focused

(In-person: Library instruction)

After attending the library instruction and/or asking reference questions to library,

- □ I learned something new that will help me succeed in my classes
- □ I feel more confident about completing my assignments
- □ I intend to apply what I just learned
- □ I am more aware of the library's resources and services

(In-person visit: Students' attitude toward the library)

- □ I feel welcome
- □ I feel comfortable staying in the library
- □ I feel I need to make myself fit in the library
- □ I feel like an outsider in the library

(In-person visit: Competency)

- □ I get what I need at the library
- □ I easily get lost in the library

(Online use: Library website)

- □ I learned something new that will help me succeed in my classes
- □ I feel more confident about completing my assignments
- □ I intend to apply library resources to my coursework or research
- □ I am more aware of the library's resources and services

What is your age?
- □ 18–25 years old
- □ 26–35 years old
- □ 36–45 years old
- □ 46–55 years old
- □ 56 years or older

What is your gender?
- □ Female
- □ Male
- □ Other (specify)

What college are you in?
- □ Engineering
- □ Liberal Arts & Sciences
- □ College of Medicine
- □ Pharmacy
- □ Education
- □ Nursing
- □ Applied Health Sciences
- □ Business Administration
- □ Dentistry
- □ Social Work
- □ Architecture, Design & Arts
- □ Urban Planning & Public Affairs
- □ Graduate College
- □ School of Public Health

Please specify your ethnicity
- □ White
- □ Black or African-American
- □ Asian/Pacific Islander
- □ Hispanic or Latino
- □ International
- □ Other

Do you have a computer at home?
- □ Yes
- □ No

Do you have internet access at home?
- □ Yes
- □ No

Do you live on the campus?
- □ Yes
- □ No

How far do you live from [University Name] campus?

- □ Less than 1 mile
- □ 1–5 miles
- □ 6–10 miles
- □ 11–15 miles
- □ 16–20 miles
- □ 21 miles or further

Do you have your own study space at your house?

- □ Yes
- □ No

Are you currently working in the UIC library?

- □ Yes
- □ No

What is your GPA? [ ]

APPENDIX C. Interview Protocol

Thank you for agreeing to participate in the interview. I am going to ask questions about your library experiences.

1. You completed the survey and indicated that you use the library for_____.
   - Can you tell me more about why you visit or use the library?
   - Do you have any other reasons you visit or use the library?
2. What motivates you to attend library instruction sessions?
   - What did you like most about the library instruction?
   - What content of the library instruction helped you increase grades or enhance your research project?
3. Tell me your experience with library staff.
   - How is your overall experience with library staff?
4. Tell me how you use the library space.
   - Why do you use the library space?
   - What types of work do you do in the library? (for instance: assignment? group project? research project? preparing for exams or others?)
   - How is your overall experience using the library spaces?
5. Tell me what you think of the library environment.
6. Tell me what you think of the library resources.
   - What types of library materials do you usually rely on?
7. What does the library mean to you?
   - What did you like most about the library?
8. Do you have any challenges when using the library? If yes, can you tell me more about it?
9. Tell me about your experiences with the library and how that impacted your grades, coursework or research.
   - What could the library do to help you succeed in your classes?
10. We talked about several topics today. Are there any comments?

Notes

1. Jung Mi Scoulas and Sandra L. De Groote, "The Library's Impact on University Students' Academic Success and Learning," *Evidence Based Library and Information Practice* 14, no. 3 (2019): 2–27, https://doi.org/10.18438/eblip29547.

2. Karen Brown and Kara J. Malenfant, "Academic Library Impact on Student Learning and Success: Findings from Assessment in Action Team Projects," in *Shaping the Campus Conversation on Student Learning and Experience: Activating the Results of Assessment in Action*, eds. Karen E. Brown et al. (Chicago, IL: Association of College & Research Libraries, 2018), 105–32; Lisa Massengale, Pattie Piotrowski, and Devin Savage, "Identifying and Articulating Library Connections to Student Success," *College & Research Libraries* 77, no. 2 (2016): 227–35, https://doi.org/10.5860/crl.77.2.227

3. Scoulas and De Groote, "The Library's Impact on University Students' Academic Success and Learning."

4. Deeann Allison, "Measuring the Academic Impact of Libraries," *portal: Libraries and the Academy* 15, no. 1 (2015): 29–40, https://doi.org/10.1353/pla.2015.0001; Tiffany LeMaistre, Qingmin Shi, and Sandip Thanki, "Connecting Library Use to Student Success," *portal: Libraries and the Academy* 18, no.1 (2018): 117–40, https://doi.org/10.1353/pla.2018.0006; Krista M. Soria, Jan Fransen, and Shane Nackerud, "Beyond Books: The Extended Academic Benefits of Library Use for First-Year College Students," *College & Research Libraries* 78, no. 1 (2017): 8–22, https://doi.org/10.5860/crl.v78i1.16564; Francesca Marineo and Qingmin Shi, "Supporting Student Success

in the First-Year Experience: Library Instruction in the Learning Management System," *Journal of Library & Information Services in Distance Learning* 13, no. 1/2 (2019): 40–55, https://doi.org/10.1080/1533290x.2018.1499235.

5. Association of College & Research Libraries (ACRL), "Academic Library Impact: Improving Practice and Essential Areas to Research," prepared by Lynn Silipigni Connaway, William Harvey, Vanessa Kitzie, and Stephanie Mikitish of OCLC Research (Chicago, IL: ACRL, 2017), www.ala.org/acrl/sites/ala.org.acrl/files/content/publications/whitepapers/academiclib.pdf.

6. Ula Gaha, Suzanne Hinnefeld, and Catherine Pellegrino, "The Academic Library's Contribution to Student Success: Library Instruction and GPA," *College & Research Libraries* 79, no. 6 (2018): 737–46, https://doi.org/10.5860/crl.79.6.737.

7. LeMaistre, Shi, and Thanki, "Connecting Library Use to Student Success."

8. Marineo and Shi, "Supporting Student Success in the First-Year Experience."

9. Travis T. York, Charles Gibson, and Susan Rankin, "Defining and Measuring Academic Success," *Practical Assessment, Research & Evaluation* 20, no. 5 (Mar. 2015): 1–3.

10. M. Brooke Robertshaw and Andrew Asher, "Unethical Numbers? A Meta-Analysis of Library Learning Analytics Studies," *Library Trends* 68, no. 1 (2019): 76–101, https://doi.org/10.1353/lib.2019.0031

11. "ACRL Benchmark," https://www.ala.org/acrl/proftools/benchmark/.

12. American Library Association (ALA), "Project Outcome for Academic Libraries: A Year in the Field," American Library Association (June 3, 2020), www.ala.org/news/member-news/2020/06/project-outcome-academic-libraries-year-field.

13. Sara Goek, "Project Outcome for Academic Libraries" (Chicago, IL: American Library Association, June 2020), https://acrl.projectoutcome.org.

14. Jennifer Mayer et al., "Undergraduate Student Success and Library Use: A Multimethod Approach," *College & Research Libraries* 81, no. 3 (2020): 378–98, https://doi.org/10.5860/crl.81.3.378.

15. Mayer et al., "Undergraduate Student Success and Library Use."

16. John W. Creswell and Cheryl N. Poth, *Qualitative Inquiry & Research Design: Choosing Among Five Approaches*, 4th ed. (Thousand Oaks, CA: Sage, 2018).

17. Beyza Aksu Dunya and Sandra L. De Groote, "Revision of an Academic Library User Experience Survey," *Performance Measurement and Metrics* 20, no. 1 (2019): 48–59, https://doi.org/10.1108/PMM-10-2018-0026.

18. ALA, "Project Outcome for Academic Libraries."

19. ALA, "Project Outcome for Academic Libraries."

20. Paula J. Lavrakas, *Encyclopedia of Survey Research Methods* (Thousand Oaks, CA: Sage, 2008), https://doi.org/10.4135/9781412963947.

21. Cathy Urquhart, *Grounded Theory for Qualitative Research: A Practical Guide* (Thousand Oaks, CA: Sage, 2013).

22. Lisa M. Given, *100 Questions (and Answers) about Qualitative Research* (Thousand Oaks, CA: Sage, 2016).

23. Hsiu-Fang Hsieh and Sarah E. Shannon, "Three Approaches to Qualitative Content Analysis," *Qualitative Health Research* 15, no. 9 (2016): 1277–88.

24. Hsieh and Shannon, "Three Approaches to Qualitative Content Analysis."

25. Scoulas and De Groote, "The Library's Impact on University Students' Academic Success and Learning."

26. Robertshaw and Asher, "Unethical Numbers?"

27. Mayer et al., "Undergraduate Student Success and Library Use."

28. Mayer et al., "Undergraduate Student Success and Library Use."

29. ALA, "Project Outcome for Academic Libraries."

Developing Data Services Skills in Academic Libraries

Justin Fuhr

Research data services are increasingly offered by academic libraries. As a result, librarians may need to upskill to provide data services and build capacity. This study measures the current level of data services skills of academic librarians and explores preferred methods of continuing education. An online survey was circulated asking respondents to self-assess data skills in four categories. The results capture a baseline of self-assessed data skills and show statistical significance between the percentage of time a librarian provides data services and higher levels of technical skill sets. The findings support the hiring of data librarians in academic libraries offering data services and providing training for librarians who provide any level of data services.

Introduction

Library and information studies (LIS) has long emphasized continuing education as the field moves quickly and regularly adopts new services. Librarians may need to acquire new skills to offer newly adopted services to their users. Professional development is especially relevant in new areas of academic librarianship where librarians may not already have the skill sets required to adequately provide services.

One new area of academic librarianship is research data services, or simply, data services. Tenopir et al. define data services as "services that address the full data lifecycle, including the data management plan, digital curation (selection, preservation, maintenance, and archiving), and metadata creation and conversion."[1] An academic librarian requires a varied skill set to provide data services, which may include data mining, metadata knowledge, technical details of repository hardware and software, programming and software expertise, legal and policy knowledge, library instruction, and research consultations, among others.

Increasingly, digital research data are produced in research postsecondary institutions. As more and more digital data are produced, it is important to manage and organize data, so it remains accessible in the future. Studies have shown there has been growth of data services in academic libraries during the past decade.[2] Tenopir et al. recognize some institutions hired specialized data librarians to provide library data services; however, other librarians have found themselves reassigned to this role, with variable amounts of time spent providing data services. In these cases, it is sensible to provide librarians with training to enhance existing skill sets.

---

*Justin Fuhr is a Liaison Librarian in the Elizabeth Dafoe Library at the University of Manitoba; email: Justin.Fuhr@umanitoba.ca ©2022 Justin Fuhr, Attribution-NonCommercial (https://creativecommons.org/licenses/by-nc/4.0/) CC BY-NC.

Using an online survey of academic librarians, this study measures the current level of data services skills of academic librarians. Additionally, this paper explores the preferred method of professional education in support of academic librarians providing data services.

Literature Review

Data Services as an Emerging Area of Academic Librarianship

Managing research data has come to the forefront of academic library services as more research data are created digitally and postsecondary institutions adopt and are receptive to new ideas and trends like the open science movement. Academic librarians have positioned themselves to offer these services at the same time as data services are adopted by many postsecondary institutions. Researchers have described how academic librarians are integral to providing research data services.[3] Pryor and Donnelly recognized early the role librarians could play in data services.[4] They describe the 2008 Research Data Management Forum where attendees envisioned four data-related roles: data librarians alongside data creators, data scientists, and data managers.

LIS researchers make a convincing case for academic librarians to provide research data services, and many academic libraries have demonstrated that librarians can confidently provide data services.[5] There is a recognition that academic librarians, who have long provided services to find and access research outputs, are a natural fit to manage inputs such as data.

As research data services picked up momentum in academic libraries, Tenopir, Birch, and Allard's seminal Association of College and Research Libraries' (ACRL) survey was published.[6] The survey invited library directors of ACRL institutions to respond and provide a baseline of what data services were offered in the early 2010s and what services would be offered in the future. While a very small number of institutions were offering data services at the time, the authors found a quarter to a third planned to do so in the near future. Tenopir et al. also found the majority (71.1%) of data services providers were subject-area liaison librarians, compared to dedicated data librarians (5.8%).

Just a year later, Tenopir, Sandusky, Allard, and Birch published results of a survey sent to librarians working at Association of Research Libraries (ARL) member libraries.[7] While they found almost 75 percent of libraries do not offer data services, the majority of survey participants responded that they believe they have the skill set to support such services moving forward.

The growing prevalence of academic library data services is shown in large empirical studies and institutional analyses, undertaken to determine the extent of academic library data services in the early 2010s,[8] and in a follow-up analysis in Tenopir, Sandusky, Allard, and Birch, using the same data from the study undertaken by Tenopir et al. in 2012.[9] In their 2014 survey, Tenopir et al. found close to 83 percent of North American academic libraries plan to offer data services by 2016. However, only 31 of 99 libraries offered data services training to library staff.

Subsequent studies have shown continued research data services offered in academic libraries.[10] In particular, the 2019 ACRL white paper by Tenopir et al. finds data services growing and acts as a follow-up study to the 2012 study by Tenopir, Birch, and Allard. The authors find 44.1 percent of respondent libraries are not providing any research data services. This is down from 60 percent of libraries not providing any data services in 2012, meaning a considerably higher percentage of libraries are offering these services when compared with the previous survey. Tenopir et al. divide data services into two categories: informational and consultative services (such as consulting with faculty about data management plans)

and technical and hands-on services (such as managing data repositories). Like the results from their 2012 survey, in 2019 libraries more commonly offer informational and consultative data services compared to technical and hands-on services. The same conclusion is found in Cox et al.[11] The study analyzed data from two international surveys and found technical data services are lacking in comparison to consultative services. This is important to keep in mind as we explore training required for academic librarians to provide data services.

Challenges in Providing Data Services

With research data services becoming more common, there remain significant challenges to overcome. As with any newly emerged service, it is inevitable that there is a period of transition. Authors have noted lack of skill and confidence;[12] financial limitations such as equipment costs;[13] inadequate staffing;[14] and little to no institutional support.[15]

Among these challenges, ensuring that academic librarians are trained and possess an appropriate skill set is a particularly significant challenge. Research has been undertaken to determine what competencies are needed to provide full, mature academic library data services. With actionable competencies, training can be provided to bridge skill gaps that exist. Federer has completed work to develop data services competencies, which aids librarians who wish to develop their skill set in this area.[16] Along with a list of competencies, Federer found two clusters of survey participants emerging: *subject specialists* (specializing in a specific subject and focusing on a smaller number of tasks) and *data generalists* (range of tasks that work broadly across disciplines).

At the Arizona State University Library, as they implemented robust research data services, the library created an internal Research Services Working Group to develop their own data management competencies for library staff. In addition to the competencies, Harp and Ogborn describe a supportive work environment conducive to educating their library staff as instrumental in successfully delivering their research data services to their users.[17]

Federer et al. reviewed the Medical Library Association's Data Services Competency framework, which prepares librarians to provide data services.[18] The competency framework includes five performance indicators: applies principles of data literacy; establishes and advances data services; supports research data best practices across the data lifecycle; applies knowledge of research methods, research ethics and rigor, and open science practices; and provides training and consultation for data-related topics.

Another perspective to consider, in addition to assessing librarians' data services skills, is evaluating the researcher's skills and ensuring that best practices are followed. This can be especially challenging when providing data services, as a researcher's willingness, openness, and skillfulness will determine how effective services are, no matter how skilled the data librarian. Borghi et al. provide a succinct overview of evaluating researcher expectations and ease of use of managing data.[19] Additionally, Borghi et al. provide easy-to-use materials so researchers can embed proper data management practices throughout the research lifecycle.

Bridging the Research Data Services Skill Gap

Useful solutions emerge from the literature to bridge research data services skill gaps. Attebury suggests "activities that include the characteristics identified by participants as contributing to meaningful or transformational activities. These include sustained and interactive activities with opportunities for reflection."[20] However, given the time and cost investment in such learn-

ing activities, these may be restrictive. Practical approaches also need to be considered, which take into consideration time and financial cost. Training formats predominantly delivered at two stages of a librarian's career, pre- and postgraduation, are reviewed below: 1) LIS graduate school programs (pregraduation) and 2) workshops, courses, and conferences (postgraduation).

LIS Graduate School Programs

Some researchers suggest reforming LIS graduate school programs to provide additional opportunities for research data services training. Lyon suggests two ways LIS programs can do this: 1) define core competencies for research data services to add to the current curriculum; and 2) analyze LIS program applicants for background in STEM fields.[21] Lyon echoes this sentiment in later work in addition to suggesting embedding students in a lab.[22] This is repeated in Lyon and Brenner, who suggest immersive experiences and practicums for graduate students interested in research services.[23]

In addition to her work in developing data services competencies, Federer suggests MLIS graduate students should be afforded the opportunity to take relevant data-related courses throughout their programs.[24] "Library schools and professional organizations should…stay up to date on trends," Federer states, "in this rapidly evolving field to ensure that their curricula and continuing education programs are suitable to prepare information professionals to take on new data librarian roles."[25] Heidorn also recommends data services training should take place in LIS graduate programs. He lists the University of Illinois, University of North Carolina, and the University of Arizona among the postsecondary institutions that offer this training.[26]

Ma, Stahl, and Knotts' excellent scoping review of an updated curriculum for the current health information professional includes data management among the nine roles that health sciences librarians engage in.[27]

Though data-related courses are not offered at every ALA-accredited institution, librarians involved with the Research Data Management Librarian Academy created a document listing 163 data-related courses available throughout North American, Asia Pacific, and European postsecondary institutions offering LIS graduate programs.[28]

Workshops, Courses, and Conferences

Workshops can be useful to have a group of library workers receive a large amount of training in a relatively short period of time. However, one drawback for workshops is that a short period of time does not lend itself to learning in-depth and complex topics. One example of a data-focused workshop is a 2008 full-day workshop offered by Michael Witt (Purdue University) and Melissa Cragin (University of Illinois at Urbana-Champaign) on institutional data repositories.[29] Southall and Scutt describe a two-part workshop offered for library staff at the University of Oxford.[30] The workshop is intended to train library staff in the general principles of contemporary data services.

Jake Carlson (University of Michigan) and Lisa Johnston (University of Minnesota) launched the Data Information Literacy (DIL) initiative in 2011.[31] The initiative's goal was to develop data competencies for graduate students. At the 2015 Research Data Access and Preservation (RDAP) Summit, the DIL team shared ideas on how to educate all ranges of users (undergraduate and graduate students; faculty), rather than focusing solely on graduate students, in data literacy. Initiatives such as DIL could be modified for an audience of library staff to improve their data literacy and to provide data services in their libraries.

In 2016, a course was developed at the University of California, Berkeley Libraries to train their library staff in not only general data principles, but putting them in context into different subject areas and delivered by subject liaison librarians.[32] The authors conclude the course was very successful, suggesting that other academic libraries would do well to offer something similar, depending on data services capacity, finances, and time.

Read et al. describe a pilot program for training medical librarians in data services to implement these services in their libraries.[33] Educational modules were provided to participating librarians and were given the option to train in providing data interviews, teaching an introductory research data management session, and instructional strategies for data classes. Overall, the pilot was successful and provides a model for other librarians looking to implement services in their library.

Federer and Qin review a 1.5-day workshop offered by the National Library of Medicine (NLM) in 2019 entitled "Developing the Librarian Workforce for Data Science and Open Science."[34] Fifteen librarians and faculty attended, with a variety of expertise in both subjects, with the goal of developing training for a library workforce in both data services and open science.

In addition to the NLM workshop, the NLM, with support from the National Network of Libraries of Medicine Training Office, offers the online course, "Research Data Management on Demand," consisting of four standalone classes.[35] There is also the Research Data Management Librarian Academy (RDLMA), a collaboration among Elsevier, Harvard Medical School, Harvard Library, Simmons University, Boston University, Brown University, Massachusetts College of Pharmacy and Health Sciences University, Northeastern University, and Tufts University.[36] Finally, Library Carpentry (https://librarycarpentry.github.io/) is another important training initiative focused on educating librarians in data skills, specifically technical skills, presented in a bootcamp format.

Conferences are also an important mode of training in data services. Examples focused on data services includes the Research Data Access & Preservation (RDAP) Summit, the International Association for Social Science Information Service & Technology (IASSIST) Conference, and Qualitative and Quantitative Methods in Libraries (QQML).

Though competency frameworks and training initiatives for data services are coming into view as data services matures, the literature does not include self-assessment of current data services skills on which to benchmark the success or failure of current and future training opportunities.

Aims

This paper measures the current level of self-described data services skills of academic librarians. Taking academic librarians' current levels of skill, this paper then explores the preferred method of professional education to support academic librarians providing data services.

The results of this research study will be of interest to academic librarians providing data services, academic library administrators, institutions increasing their data services capacity, and graduate students considering data librarianship as a potential career path.

Methods

For this study, library data services are defined as library services to manage researcher data, whether that is informational or technical in nature.[37] The study is directed toward, but not limited to, academic librarians providing data services. This study was open internationally to

respondents, but respondents came from one of four geographic regions: Canada, the United States, the United Kingdom, and Australia.

Data Collection and Analysis

A 22-question survey was developed and administered in LibWizard, the survey module of LibApps software. The survey, including a full list of surveyed skills, is available in appendix A. Survey questions were developed in consultation with research data management librarians and a review of the literature to identify key competencies, discussed in further detail below. A survey was chosen as the data collection tool, as the researcher wanted to reach as many respondents as possible using standardized questions. The survey is intended to be a census, by surveying a large population of academic librarians from Canada, the United States, and abroad.

The survey consists of Likert-scale, multiple-choice, and short-answer questions, in three sections. The first section of the survey collected demographic information. Multiple-choice and short-answer questions were used to collect information, such as what type of library the respondents work for, their location, current job title, and what percentage of time is spent doing data-related work. In the second section, Likert-scale questions were used to measure the respondent's self-assessment of specific data services competencies. Lisa Federer's article[38] was consulted to develop a portion of the competencies and develop the four top-level categories: general data services, programming languages and software, library instruction, and soft skills. Within each of the four top-level categories are associated skills, such as data mining and data curation in the general data services category, and oral communication and management and leadership within soft skills.

In the third and final section, Likert-scale questions were also used to measure how important different professional development initiatives were to respondents. Examples include self-directed learning, mentorships, workshops, webinars, and conferences. Short-answer questions were used to gather additional information about the respondent's self-assessment of data skills and professional development initiatives.

The study has been approved by the University of Manitoba's Research Ethics Board. After completing the survey, respondents were invited to enter a draw for a $50 (CDN) Amazon gift certificate by submitting their email address.

The author identified potential avenues for survey invitations and decided listservs would reach the most potential respondents. The survey was circulated on listservs as identified by the author as key listservs in the subject area (DataLibs, CANLIB-Data, Code4Lib, CdnLIS-L, univers@IFLA, ScholComm [ALA], Research Metrics list [ALA], dss-rdm_dg, MEDLIB-L, CANMEDLIB) and social media (Twitter, LinkedIn) over a period of two months beginning February 20, 2020. The survey data was analyzed using regression analysis in R. A model was run for each of the four skill set categories, with the following variables: geographic regions (Canada, United States, United Kingdom, and Australia), percentage of time spent providing data services, time spent in their current role, and time spent in the LIS field.

Results

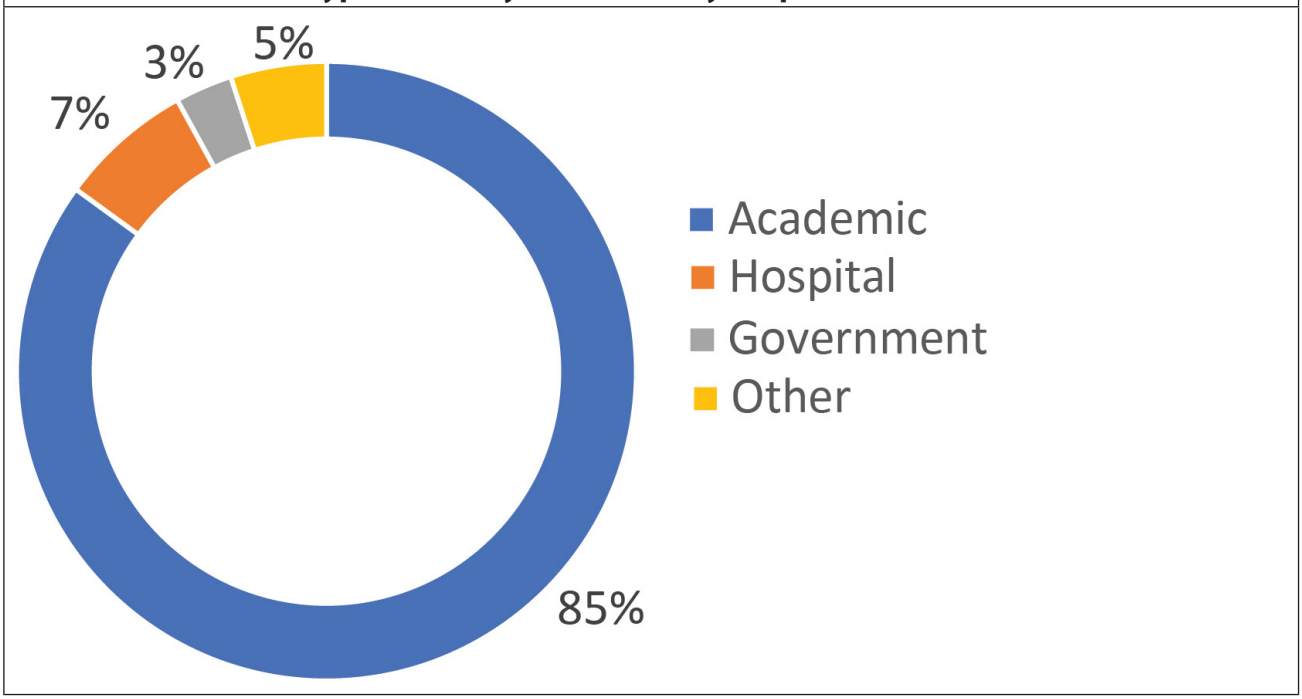
Respondent Demographics

In total, 120 respondents participated in the survey. Not all respondents filled out every question on the survey. As the survey was circulated over listservs and social media, the response rate is unknown.

On average, the respondents (n = 120) reported that they have five years of experience in their current role. The mean years of experience for respondents (n = 120) in the information studies field is 12. Respondents (n = 106) are from one of four geographic regions: 47.5 percent of respondents are from the United States, 33.3 percent are from Canada, 5 percent are from the United Kingdom, and 2.5 percent are from Australia. Fourteen (11.7%) respondents have an unknown country of origin.

Out of 120 respondents, 85 percent work at an academic library, 7 percent work at a hospital library, 3 percent work at a government library, with the remaining 5 percent of respondents working at scientific research organizations, technology companies, and specialized libraries.

FIGURE 1
Type of Library Where Survey Respondents Work



There is a large range of job titles for survey respondents. A sample of the respondent job titles includes: Data Services Librarian, Research/Education Librarian, Research Services Librarian, Software Developer and Librarian, Scholarly Communication Librarian, Data Curation Librarian, Health Sciences Librarian, Engineering Librarian, Research Repository Advisor, Web Librarian, among many others.

In terms of the amount of time an academic librarian spends providing library data services (n = 117), 52 percent spend between 0 and 24 percent of their time providing data services, 9 percent spend between 25 and 49 percent, 18 percent spend between 50 and 74 percent, and 21 percent spend between 75 and 100 percent.

Skill Sets

The survey had respondents rank 25 skill sets organized into four top-level categories: general data services, programming languages and software, library instruction, and soft skills. Each skill set has a corresponding Likert scale, ranging from: no level of competence (0), low level of competence (1), average level of competence (2), moderately high level of confidence (3),

and high level of confidence (4) (coded from 0 to 4 for data analysis). Respondents could also answer "not applicable (n/a)" for any skill set.

Many of the stronger skill sets came from the soft skills and library instruction categories, while many of the weaker skill sets came from the general data services and programming languages and software categories. The full listing of mean scores for individual skill sets is available in appendix B.

TABLE 1
Mean Score of Strongest Skill Sets (n = 120)

Skill Set	Category	Mean Score (n = 120)
Written communication	Soft Skills	3.53
One-on-one session	Library Instruction	3.43
Working well with others	Soft Skills	3.4
Interpersonal customer service	Soft Skills	3.37
Library instructional sessions	Library Instruction	3.31
Oral communication	Soft Skills	3.29
In-class instructional sessions	Library Instruction	3.24
Project management	Soft Skills	2.78

As mentioned above, Tenopir et al. divide data services into two groups: technical and informational/consultative services.[39] Throughout the 2010s, more academic libraries were offering informational/consultative services compared to technical.[40] Librarians may have higher skill in informational and consultative services since these services are more frequently offered by academic libraries and these services are more aligned with traditional library services such as library instruction. This survey's library instruction category is second only to the soft skills category in terms of average self-assessed scores (see appendix B).

TABLE 2
Mean Score of Weakest Skill Sets (n = 120)

Skill Set	Category	Mean Score (n = 120)
Programming languages (JavaScript, R, Python, C++, etc.)	Programming Languages and Software	0.76
GIS software (e.g. ArcGIS)	Programming Languages and Software	0.77
Data mining	General Data Services Skills	0.94
Statistical software (e.g. SAS, SPSS, RStudio)	Programming Languages and Software	1.02
Text editors (e.g. Jupyter)	Programming Languages and Software	1.05
Data analysis software (e.g. OpenRefine)	Programming Languages and Software	1.15
Web development and maintenance	Programming Languages and Software	1.58
Markup language (e.g. HTML, XML)	Programming Languages and Software	1.78

Percentage of Time Correlates to Technical Data Services Skill

TABLE 3
Mean Score of Four Main Skill Set Categories, by Time Spent Providing Library Data Services

Time Spent Providing Library Data Services (Percent)	n (total n = 117)	General Data Services Skills	Programming Languages and Software	Library Instruction	Soft Skills
0–24	61	0.89	0.60	2.06	2.44
25–49	11	1.94	1.63	2.11	2.5
50–74	21	1.88	1.08	2.89	3.17
75–100	24	2.22	1.5	2.72	3.44

When respondents (n = 117) are divided into four groups by how much time they spend providing library data services, again there are stronger skills across all groups in library instruction and soft skills compared to the technical categories of general data services skills and programming languages and software. However, there is a substantial increase in the self-assessed score for general data services skills in the group spending the most time providing data services (75–100 percent of time spent providing library data services) compared to the other three groups.

TABLE 4
***P*-Values for Percentage of Time Spent Providing Data Services and Self-Assessed Score of the Four Skill Set Categories**

Skill Set Category	*P*-value	Estimate
General Data Services	0.0000551	0.05617
Programming Languages and Software	0.00000532	0.08182
Library Instruction	0.2578	–0.01598
Soft Skills	0.8439	–0.002174

During data analysis, it was found the variable of percentage of time spent providing data services is statistically significant in regression models for the two technical skill sets: 1) general data services and 2) programming languages and software categories. The more time a librarian spends providing data services, the higher their self-assessed score is likely to be for the two technical skill set categories.

TABLE 5
Mean Score of Four Main Skill Set Categories, by Geographic Region

Geographic Region	n (Total n = 106)	General Data Services Skills	Programming Languages and Software	Library Instruction	Soft Skills
Canada	40	1.73	1.14	2.82	3.02
United States	57	1.81	1.25	2.88	3.18
United Kingdom	6	1.79	0.29	2.58	3.36
Australia	3	2.67	1.21	3.39	3.83

Geographic Regions

When the respondents are divided into the four geographic regions (n = 106), once again there is higher skill in library instruction and soft skills compared to general data services and programming languages and software.

Canadian librarians rank similar to the United States; however, the United States has higher average ratings overall between the two countries (average of 5.42% comparatively across the four categories).

Looking at specific skill sets, the United States has significantly higher scores in data analysis software (1.36) and data visualization (2.04), when compared to Canada (0.83 and 1.59, respectively). Academic librarians from the United States have significantly higher (> 5% higher of total score) skill sets in data mining (1.02), programming languages (0.93), text editors (1.19), and project management (2.79), when compared to Canada (data mining (0.79), programming languages (0.68), text editors (0.88), and project management (2.55).

It is difficult to conclude much from the other two geographic region, the United Kingdom and Australia, due to small sample sizes. After regression analysis of the data, no statistical significance was found between being from any of the four geographic regions and skill levels in any of the categories.

Early-Career Librarians and Experienced Librarians

Comparison between early-career academic librarians (≤ 5 years) and the three other groups of experienced academic librarians (> 5 years) sees early-career librarians with the lowest mean score in library instruction and soft skills, and the second lowest mean score in general data services and programming languages and software.

TABLE 6
Mean Score of Four Main Skill Set Categories, by Years of Experience

Years of Experience in the Library Field	n (Total n = 120)	General Data Services Skills	Programming Languages and Software	Library Instruction	Soft Skills
0–5	37	1.71	1.15	2.52	2.91
6–10	26	2.25	1.42	3.16	3.39
11–19	28	1.74	3.48	3.5	3.64
20–35	29	1.58	1.06	2.77	3.3

Comparison of specific skill sets found experienced academic librarians have higher averages in every skill set except data curation, programming languages, statistical software, GIS software, data analysis software, and text editors, where early-career librarians have higher average scores. Early-career librarians with higher scores in specific technical skill sets could be attributed to people in other disciplines being hired for academic librarian positions due to demand for technical skill sets in emerging areas. Analysis of participants with advanced degrees (such as MA, MS, PhD) without an MLIS shows early-career academic library workers with a much higher percentage. Six out of 37 (16.22%) of early-career academic library workers who filled out the survey have advanced degrees without a MLIS, compared to seven out of 83 (8.43%) for experienced librarians. This indicates people working at academic libraries from other disciplines, possibly due to new demands for skills.

Data analysis found no statistical significance between the number of years spent in the LIS field and skill level in any category.

TABLE 7
Mean Score of Importance of Professional Development Initiatives (N = 120)
(0 = Not Important; 4 = Very Important)

Professional Development Initiative	Mean Score
Learning by doing (trial and error)	3.38
Self-directed learning	3.33
Workshop or bootcamp	3.19
Communities of Practice	3.04
Mentorship with peer (library staff)	3.02
Online courses	2.98
Attending conferences	2.83
Mentorship with researcher or other faculty (non-library staff)	2.69
Webinar	2.60
Courses during LIS graduate school	2.56
Job shadowing	2.11
Fellowship (e.g. early or mid-career fellowship)	2.1

TABLE 8
Mean Score of Importance of Professional Development Initiatives, by Time Spent Providing Library Data Services

Time Spent Providing Library Data Services (Percent)	n (Total n = 117)	Most Important (Mean Score in Parentheses)	Least Important (Mean Score in Parentheses)
0–24	61	Mentorship with peer (library staff) (3.33)	Fellowship (e.g. early or mid-career fellowship) (2)
		Mentorship with researcher or other faculty (non-library staff) (3.33)	Courses during LIS graduate school (2)
		Workshop or bootcamp (3.33)	
25–49	11	Self-directed learning (4)	Fellowship (e.g. early or mid-career fellowship) (2)
		Learning by doing (trial and error) (4)	Job shadowing (2)
			Courses during LIS graduate school (2)
50–74	21	Attending conferences (3.67)	Fellowship (e.g. early or mid-career fellowship) (1.67)
		Online courses (3.67)	Job shadowing (1.67)
		Workshop or bootcamp (3.67)	
75–100	24	Workshop or bootcamp (3.67)	Webinar (2.33)
		Learning by doing (trial and error) (3.67)	
		Communities of Practice (3.67)	

Professional Development Initiatives

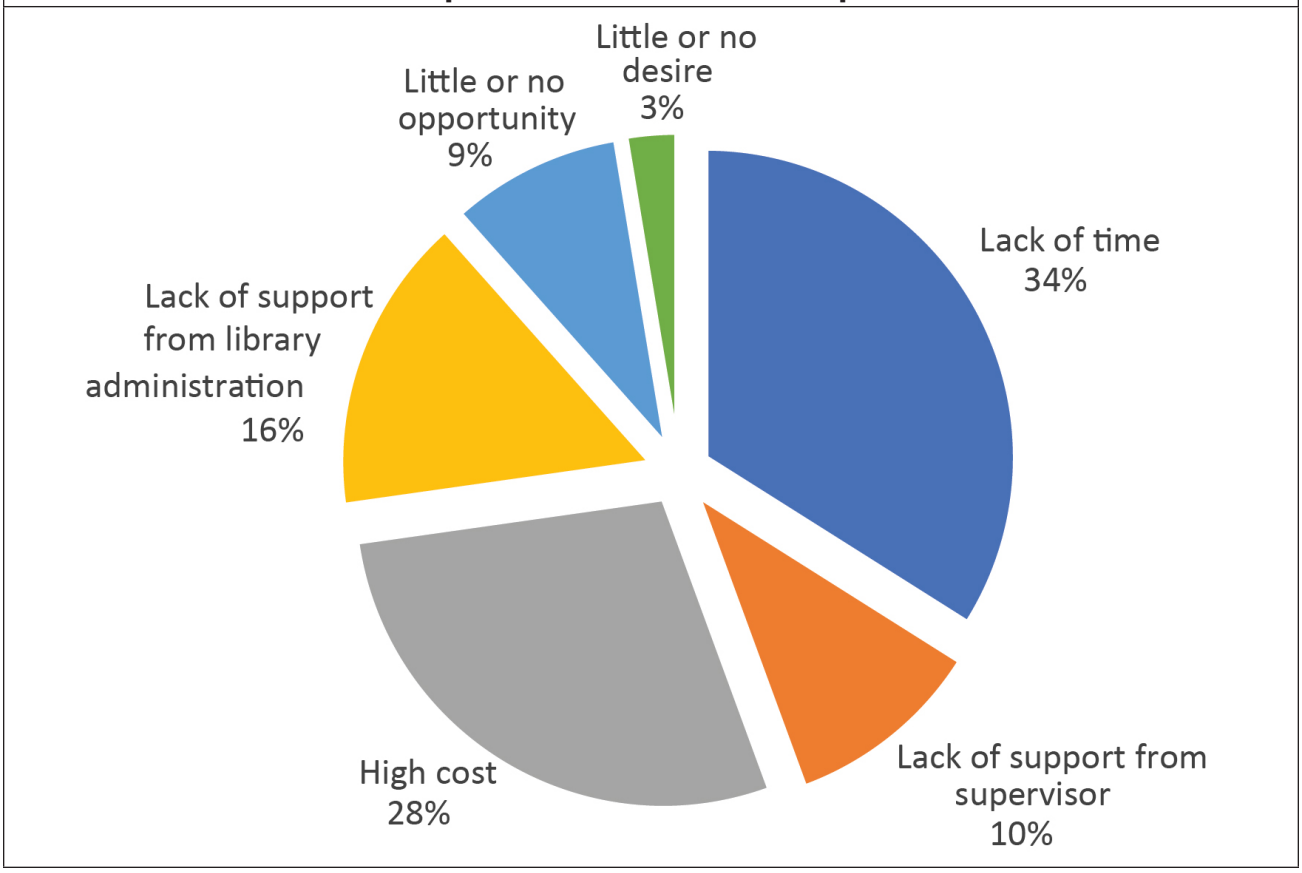
Respondents ranked 12 professional development initiatives according to how important they felt they were in data services training. Each initiative had a corresponding Likert-scale question ranging from: not important, low importance, average importance, moderate importance, and very important (coded 0 to 4 in data analysis). Respondents could also answer "not applicable (n/a)" for any initiative.

The two highest-rated professional development initiatives are independent: "learning by doing (trial and error)" and "self-directed learning." While there is little cost to both of these independent learning initiatives, there is considerable investment in time and a need for support from supervisors. Indeed, both are noted by respondents as impediments to their professional development. Though researchers suggest one possible solution for bridging the data services skills gap is taking courses during LIS graduate school, it ranks 10th

TABLE 9
Impediments to Professional Development Initiatives (Respondents Could Select Multiple Answers)

Impediment	Responses (n = 118)
Lack of time	91
High cost	76
Lack of support from library administration	42
Lack of support from supervisor	28
Little or no opportunity	24
Little or no desire	7

FIGURE 2
Impediments to Professional Development Initiatives (n=118, respondents could select multiple answers)



out of the 12 initiatives as being important for respondents.[41] One possible reason for the relative unimportance is due to not taking data services–related courses during the respondent's time in graduate school or not having the opportunity due to these courses not being offered until recently.

Respondents indicated impediments to their professional development, including lack of time, high cost, and lack of support from library administration and their supervisor.

Qualitative Comments on Professional Development

Respondents also expanded on impediments to their professional development with text-based responses. The responses include challenges such as lack of support from their institution and library administration, lack of direction, and lack of defined roles.

Lack of Support from Institution and Library Administration

Librarians may encounter a lack of support for data initiatives and training from their library administration or their institution. Participants identify needing affirmation and backing from administration to be successful in this newly emerged area:

"Institutional indifference until having an open data policy is linked to some larger strategic initiative like the Research Excellence Framework [available at https://www.ref.ac.uk/]. Then there is a flurry of activity to 'evidence' good practice."

"My library administration is so utterly lacking in vision that I can't implement most of what I take the time to learn. My current manager would be happy if I did what I did 20 years ago (which of course is not what my liaison departments want)."

"Where I still feel lacking is in taking the initiative to lead work at my institution. I lean heavily on leadership in my libraries, which tends to only really turn their attention to support of data services when the topic has caught their attention in other channels that library deans, etc. tend to follow."

Lack of Direction

A major impediment to library data services is a lack of defined direction for librarians. Data services is an emerging area of academic librarianship, and as such, has not had time to mature into fully-defined, standardized library services across all academic libraries. Participants note the difficulties in not only providing data services, but how to upskill effectively:

"It's hard to identify 'training wheels' projects—real world projects where I can *start* to apply new skills I'm developing. The path from novice to expert is basically a big map with 'here be dragons' and no more details."

"For data services, so many librarians and information professionals are participating in disparate but related 'data things' that the typical librarian does not see a 'compass' to point the direction."

Lack of Defined Roles

One theme throughout the literature and among participant responses is a lack of defined roles for providing data services. Here again, since data services is still emerging, participants identify how challenging it is to know which services to provide and which skills to train:
"The challenge is that data librarians are not all doing the same thing and so there is no one key skill set."

Some data services may be offered by nonlibrary departments across campus because of the diverse range of services available and a lack of defined role for data librarians. There are additional challenges when data services are provided by nonlibrarians. This can include a loss of control or autonomy, diverse locations to receive services (such as the Office of Research Services or supercomputing centers), and challenges in creating partnerships and collaborations. As one participant notes:

"It's difficult to know for sure what is the task for us (librarians) versus Data Scientist and even Data [steward]… What is for us to learn (what is for Librarians) and what is to let to others…?"

Overall, the responses show support, clear direction, and defined roles are needed for academic librarians who provide data services. It is clear from the survey data that practitioners rely on financially feasible but time-intensive options like self-directed learning but should also be provided with alternative opportunities like workshops, conferences, and mentorship with library staff.

Discussion

Dedicated Data Librarians

It is encouraging to see academic librarians who are providing data services consistently have higher data services skills. This corresponds to the claim from Tenopir et al. that "growth in current performance of [research data services (RDS)] by librarians can be expected to follow growth in current availability of RDS by libraries."[42] As more data services are offered, and offered at a higher capacity, librarians providing these services become more skilled and adept.

Why are dedicated data librarians skilled in providing technical data services? Two reasons immediately jump out. First, if an academic library has a vacancy for a position where the successful candidate will be spending 75 to 100 percent of their time performing data services, it is likely the successful candidate will have previous technical data services experience. One example would be hiring developers, other IT staff, or otherwise people from other disciplines than librarianship, who already have significant technical skill sets. The survey data trends this way for newly hired librarians, as reported in the results section above. The survey data shows 16.22 percent of early-career respondents have a graduate degree without an MLIS. However, this assumes a higher percentage of data librarians have recently been hired, which is more likely since data services is an emerging area of academic librarianship. Another example could be a data librarian who spent time, whether that was the majority of their time or otherwise, previously providing data services. Librarians with previous data services are more likely to be successful candidates for data librarian vacancies.

Second, dedicated data librarians, due to their specialized role, are more likely to have more opportunities (like financial, time) to spend on training to bridge specific skill gaps. Additionally, data librarians may have more familiarity and confidence with technical data services due to more time spent providing the services, including time devoted to working with data tools common in technical data services. There may also be an expectation to improve your data skills in a dedicated data librarian position.

The more a librarian practices data services, the more skilled and confident they will be. This shows the value for academic libraries to hire dedicated data librarians, when those libraries are currently offering, or planning to offer, data services. These are positions where data librarians perform data services between 75 and 100 percent of their time. Dedicated data

librarians not only provide data-related informational and consultative support; they also actively develop and promote data services initiatives in their library systems, consisting of services supporting all stages of the data lifecycle, from creation to discovery, to preservation and destruction.

There are numerous benefits to having a dedicated data librarian. Dedicated data librarians have higher technical skills, whether due to having a variety of technical experience or taking additional training. Academic libraries will increase their capacity to provide a higher level of data services to their users. Dedicated data librarians have the time to devote to concentrating solely on data services, to provide users with current services and for planning and coordinating new service offerings. This is important since, as Tenopir et al. found, academic libraries are looking to increase their data services capacity beyond informational and consultative data services.[43] Dedicated data librarians can increase current services to develop increased services for the future, depending on user need and demand, library and institutional priorities, financial considerations, among other considerations.

Academic libraries have capacity to provide data services, including technical services. Since dedicated data librarians have higher data services skill sets, academic libraries are encouraged to create and retain these positions. Dedicated data librarians can focus on developing data services initiatives and programs, and they have a higher capacity to do so when compared to librarians who have other duties and support other roles.

Data Services Training Initiatives

Overall, academic librarians have average to moderate self-assessed scores across technical data services skill sets, and moderately high to high scores across library instruction and soft skills. While hiring dedicated data librarians can help, it is clear academic librarians need training opportunities in data services, especially technical skill sets, to bridge skill gaps. Responses to the question of whether respondents felt proficient before they started in their current role resulted in answers such as "I never feel fully proficient, there's always more to learn and you never know what's going to be thrown at you," and, even more bluntly, "I do not feel proficient in data librarianship."

The importance of professional development should not be understated. While there are high average scores for traditional academic librarian skills such as library instruction (2.86) and soft skills (3.18), technical skills in general data services (1.83) and programming languages and software (1.18) are low. Since technical skills are low, librarians need training to bridge this skill gap. It should be noted that, depending on the specific data services offered, librarians may not need these skills. Individuals, library administration, and their institution will need to decide which skills their library staff need training in, based on current and future data services offered by their academic library.

Data services skills are overall similar across different geographic regions, which for this study includes Canada, the United States, the United Kingdom, and Australia. This indicates that, where there is a need for more training, similar initiatives can be provided in these regions. Based on the survey data, independent learning, such as self-directed learning, should be emphasized, followed by workshops and bootcamps, communities of practice, and mentorship by other library staff. One issue with workshops and bootcamps is the short length of time provided to learn complex topics. Ideally, workshops and bootcamps should be combined with additional training. For example, Brown, Wolski, and Richardson describe

a successful multipronged approach with training a new data librarian using formal skills training (background reading and an eight-week long online course), having a mentor and coach, and a supportive network of experts to draw upon when needed.[44]

While there is an emphasis in the literature on increasing data services training in LIS graduate school curriculums, during data analysis, there was no statistical significance found between years of experience and data services skills. The demographic most likely to have taken data-related grad school courses, early-career librarians, had lower average scores in every skill set except several specific technical skills: data curation, programming languages, statistical/GIS/data analysis software, and text editors. This could indicate lack of experience since they are still early in their career, or not receiving any or enough training, and/or relevant training, throughout their graduate program. There was also little recognition by respondents of the value of taking data-related courses during grad school. This indicates the relative insignificance of these courses by respondents.

This does not mean graduate programs should scrap all current and future data-related courses. However, graduate programs training future information professionals should assess their data-related course offerings. This could mean offering more data-related courses or shifting course content to different types of library data services. As well, different educational formats should be considered. For example, if an LIS program already offers data-related courses, they could offer work placements with data librarians. This could provide a different mode of training compared to for-credit courses, and students may find they also receive one of the most highly rated types of training: mentorship by other library staff.

Academic libraries should provide their staff with the specific skills they need to offer data services at a consistent level. For some academic libraries, this will be informational and consultative services, or technical, and for others, a mixture of both. Training initiatives should be provided that give staff the skills to be confident in providing data services.

Range of Data Services

It is clear not all data librarians do the same thing. Expanding on one quotation from above:

> "[t]he challenge is that data librarians are not all doing the same thing and so there is no one key skill set. I've always thought of data librarians fitting into three different categories: (1) Acquisition librarians who focus on procuring, ingesting, and support access to data collections; (2) Analytical data librarians—the unicorns who do have program and analysis skills often gained from other jobs. They seem to focus on teaching and training basic skills to meet short term needs of researchers; and (3) Curation librarians who focus on end products like research output data, sharing, preservation etc. I don't think one person can effectively do all three at a high level."

One only needs to view the survey respondent job titles to see the large range of different data services roles: Data Librarian, Research Services Librarian, Software Developer and Librarian, Data Curation Librarian, Research Data Management Analyst, STEM and Research Data Outreach Librarian, and so on. This is also seen in the differing scores of the various skill sets for data librarians. The survey data shows librarians are involved in different areas—and provide different levels—of data services. Federer aptly notes data librarians provide an array

of diverse services, including data management, curation, preservation, visualization, and more. "[D]ata librarianship," Federer writes, "may not be a single role but rather one that allows professionals to focus on areas related to their own interests or their users' needs."[45]

Data librarians should focus their training on those data services an academic library currently provides, and will provide in the future, to increase and diversify their skill set in those areas. While one librarian who supports faculty and researcher data preservation may need training using preservation software, another librarian may need training in consultative data services, such as hosting library information sessions using institutional and data repositories.

Academic librarians looking for positions providing data services should be mindful of what skills a particular data librarian position requires. As well, bear in mind academic libraries may hire outside the profession. Based on the survey data and summarized above, there is a higher percentage of early-career librarians without an MLIS compared to librarians with six or more years of experience. While this could be explained by getting a MLIS while working as an academic librarian, it remains that academic libraries are filling at least some data-related positions outside the profession. Why is this the case? Academic librarians may not have the required skills for such a position. Academic librarians should keep this in mind when looking at their long-term career goals and what training they take in data-related skill sets.

Conclusion

Data librarianship is an emerging field in academic librarianship, one that comprises a wide range of services and different levels of expertise among practitioners. This study determined areas of strength and weakness of academic librarians providing data services. As well, the study demonstrated the importance of different training opportunities for academic librarians.

Statistically significant data shows that academic librarians providing data services have higher scores in technical skill sets. Evidence is provided of the benefit for dedicated data librarians in academic libraries currently offering, or planning to offer, technical data services. It is this author's recommendation that academic libraries hire dedicated data librarians.

Academic librarians providing data services should be given the opportunity to take a mixture of learning opportunities and training initiatives, depending on their specific areas of expertise and what is available to them. As data services is an increasingly common academic library service, training needs to be provided to those academic librarians who are providing this service. Data librarians are diverse; there is no one-size-fits-all model for the role data librarians play. The same is true for data services training initiatives; academic librarians should explore what data services their institution is currently offering or planning to offer and participate in training appropriate to their expertise.

Academic librarians have shown the value they provide to faculty, researchers, and students with data services. Data services is emerging as a significant area for academic libraries. We must ensure that our library data services practitioners are receiving appropriate training to bridge any skill gaps to continue to provide high-level library services to our users.

Limitations

Limitations to this research include small sample sizes of two geographic regions in this study (United Kingdom, Australia), and the small number of regions surveyed overall (4). The survey was self-selecting, so there may be self-selecting bias. Also, survey participants were only

presented with predefined skills to measure their competency in data services, as well as an English-language-only survey. The potential pool of survey participants was limited to the reach of listserv invitations and social media posts.

Future Research

Future research could include a follow-up survey to update the skill set baseline of academic librarians, providing data services now or in the future. Future researchers could also track skill set assessment after training opportunities are provided to library staff. Future studies could also expand the scope of geographic regions, including those with small sample sizes in this study (United Kingdom, Australia) and increase the sample size for the survey overall. Thought should be given to updating the measured skill sets that consider future data services. Adjusting the skill set categories based upon current uptake of library data services could provide more accurate data.

One aspect not addressed in this study is the development and provision of data services. This study focuses on training in data services currently offered and those offered in the future in participants' libraries. However, drivers such as the unique data needs of a library's users could be explored to assess how libraries and librarians develop their suite of data services and how librarians respond in terms of upskilling to provide these services.

Acknowledgments

I acknowledge the generous financial support received from the Canadian Association of Research Libraries (CARL), through CARL's Research in Librarianship grant. I also acknowledge data analysis support, generously provided by Razvan Romanescu and Depeng Jiang at the George & Fay Yee Centre for Healthcare Innovation (CHI).

I am indebted to the University of Manitoba Libraries' GIS and data viz librarian, Meg Miller, who translated CHI's data analysis. Thank you to my colleague Nicole Askin, who provided helpful feedback on a draft of this article. Finally, thanks to all my wonderful colleagues at the University of Manitoba Libraries who provided unconditional support and advice, without whom this research may not have been completed. As one singer-songwriter eloquently puts it, *brought on by a simple twist of fate*.

Funding

This research was financially supported by the Canadian Association of Research Libraries, through their very generous Research in Librarianship grant program.

APPENDIX A. Survey

Survey available here: https://libguides.lib.umanitoba.ca/ld.php?content_id=35814630

Developing Skills for Data Services in Academic Libraries

This consent form, a copy of which will be available for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

You are being asked to participate in a research study. Please take your time to review this consent form and discuss any questions you may have. Please ask the study staff to explain any words or information that you do not clearly understand.

The study's goal is to collect and analyze data related to professional development initiatives to train current and future data services librarians. The purpose of this study is to evaluate whether additional skills training is needed to provide data services in Canadian academic libraries. Further, this study will evaluate which professional development initiatives are preferred by academic library practitioners.The first part of the questionnaire situates the participant in their library's context. The second part of the questionnaire analyzes what skills are needed to perform data services in libraries. The third part of the questionnaire analyzes what professional development initiatives would best train data services librarians.

Your feedback will be collected through an online questionnaire which will ask you a series of questions and should take about 10-20 minutes to complete. Your participating is important to us and will help to produce evidence to inform implementation of new library services in academic libraries.

Your participation in this online questionnaire is completely voluntary. Risks are no greater than everyday life. You are not required to provide any personal information such as your name, address or telephone number, and you don't have to answer any questions you don't want to. Survey responses are anonymous. The survey system will not record your e-mail address or IP address. The information you share will be kept confidential and will be securely stored on a secure hard drive and shared only with the investigator. Data will be retained for one year after the completion of the study, at which point it will be destroyed, approximately December 2021.

If you wish to be entered into a draw for a $50 (CAD) Amazon gift certificate at the conclusion of the questionnaire, you will be directed to an external, separate online form to enter your name and email. Your personal information will not be in any way connected to your questionnaire responses as this information is stored separately from survey responses. Your email address will be securely stored on a secure hard drive and after the draw for the gift certificate, email address data will be destroyed no later than July 2020.

Survey results will be available no later than December 2020 at the following https://libguides.lib.umanitoba.ca/fuhr/surveyresults. Anonymized results of this research, which could include summary statistics and direct quotations, may be shared at conferences or in journal publications. Direct quotations will be attributed as a “study participant.”

Clicking “Begin” indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

The University of Manitoba may look at your research records to see that the research is being done in a safe and proper way.

This research has been approved by the Joint Faculty Research Ethics Board. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Coordinator at 204-474-7122 or humanethics@umanitoba.ca. A copy of this consent form which you can download or print for your reference is available at: https://bit.ly/DataServicesConsentForm

Notice Regarding Collection, Use, and Disclosure of Personal Information by the University
Your personal information is being collected under the authority of The University of Manitoba Act. The information you provide will be used by the University for the purpose of this study, as outlined above. If you choose to participate in the draw, your email address will be used to determine your eligibility for the draw, and for communication in the event that you win one of the prizes. Your personal information will not be used or disclosed for other purposes, unless permitted by The Freedom of Information and Protection of Privacy Act (FIPPA). If you have any questions about the collection of your personal information, contact the Access & Privacy Office (tel. 204-474-9462), 233 Elizabeth Dafoe Library, University of Manitoba, Winnipeg, MB, R3T 2N2.

Last updated February 10, 2020

Begin

Developing Skills for Data Services in Academic Libraries

Part 1: Background Information

1. What type of library do you work for?

- ◯ Academic
- ◯ Hospital
- ◯ Law
- ◯ Public
- ◯ Other (please specify)

2. Is your library affiliated with a post-secondary institution?

- ◯ Yes
- ◯ No

3. In which province/territory is your library located? If outside Canada, please indicate by selecting "Other".

Make a selection ▾

4. What is your current job title?

5. In your position, what percentage of your time is spent doing data-related work?

min 0 max 100

6. How long have you been employed in your current role? (in years, round to nearest number)

min 0

7. How long have you been employed in the information studies field? (in years, round to nearest number)

min 0

8. What degrees do you possess?

- ☐ MLIS/MLS/other ALA-accredited Master's degree
- ☐ M.A./M.Sc. in other subject
- ☐ Ph.D.
- ☐ Other (please specify)

Back Next Page: 1 of 3

Developing Skills for Data Services in Academic Libraries

Part 2: Self-Assessment of Data Services Skill Sets

Please rank each data services skill from "no level of competence" to "high level of competence" according to your current level of expertise.

Feel free to leave any answer blank or select "n/a" for any skills that do not apply to your position.

---

9. **General Data Services Skills**

	No level of competence	Low level of competence	Average level of competence	Moderately high level of competence	High level of competence	n/a
Data mining	☐	☐	☐	☐	☐	☐
Data use and analysis	☐	☐	☐	☐	☐	☐
Data curation and preservation	☐	☐	☐	☐	☐	☐
Data visualization and/or informatics	☐	☐	☐	☐	☐	☐
Data depositing and/or work with repositories	☐	☐	☐	☐	☐	☐
Policy and advisory skills (e.g. interpreting the upcoming Tri-Agency Research Data Management Policy For Consultation)	☐	☐	☐	☐	☐	☐

---

10. **Programming Languages and Software**

	No level of competence	Low level of competence	Average level of competence	Moderately high level of competence	High level of competence	n/a
Programming languages (JavaScript, R, Python, C++, etc.)	☐	☐	☐	☐	☐	☐
Markup languages (HTML, XML)	☐	☐	☐	☐	☐	☐
Web development and maintenance	☐	☐	☐	☐	☐	☐
Statistical software (e.g. SAS, SPSS, RStudio)	☐	☐	☐	☐	☐	☐
GIS software (e.g. ArcGIS)	☐	☐	☐	☐	☐	☐
Data visualization software (e.g. Tableau)	☐	☐	☐	☐	☐	☐
Data analysis software (e.g. OpenRefine)	☐	☐	☐	☐	☐	☐
Text editors (e.g. Jupyter)	☐	☐	☐	☐	☐	☐

11. **Library Instruction**

	No level of competence	Low level of competence	Average level of competence	Moderately high level of competence	High level of competence	n/a
Library instructional sessions	☐	☐	☐	☐	☐	☐
In-class instructional sessions	☐	☐	☐	☐	☐	☐
One-on-one sessions	☐	☐	☐	☐	☐	☐
Development of online instruction tutorials or modules	☐	☐	☐	☐	☐	☐
Knowledge of blended and online learning theory	☐	☐	☐	☐	☐	☐
Experience with learning management systems	☐	☐	☐	☐	☐	☐

12. **Soft Skills**

	No level of competence	Low level of competence	Average level of competence	Moderately high level of competence	High level of competence	n/a
Oral communication	☐	☐	☐	☐	☐	☐
Written communication	☐	☐	☐	☐	☐	☐
Management and leadership	☐	☐	☐	☐	☐	☐
Interpersonal customer service	☐	☐	☐	☐	☐	☐
Working well with others	☐	☐	☐	☐	☐	☐
Project management	☐	☐	☐	☐	☐	☐

13. Taken as a whole, do you feel proficient in the skills you need to adequately perform your assigned responsibilities in your current role? Why or why not?

Some skills and personal attributes adapted from:
Federer, L. (2019). Defining data librarianship: A survey of competencies, skills, and training. *Journal of the Medical Library Association, 106*(3), 294-303. doi: 10.5195/jmla.2018.306

Back Next Page: 2 of 3

Developing Skills for Data Services in Academic Libraries

Part 3: Professional Development Initiatives

The following section lists various professional development initiatives intended to provide training in data services. Please rank each initiative between “1” (Not important) to “5” (Very Important) according to how you feel of each initiative's importance to educate librarians in offering data services.

Feel free to leave answers blank or select “n/a” for any initiatives you feel do not apply to your work in data services.

14. Professional Development Initiatives **(1 = not important; 5 = very important)**

	1	2	3	4	5	n/a
Self-directed learning	☐	☐	☐	☐	☐	☐
Mentorship with peer (library staff)	☐	☐	☐	☐	☐	☐
Mentorship with researcher or other faculty (non-library staff)	☐	☐	☐	☐	☐	☐
Fellowship (e.g. early or mid-career fellowship)	☐	☐	☐	☐	☐	☐
Job shadowing	☐	☐	☐	☐	☐	☐
Webinar	☐	☐	☐	☐	☐	☐
Attending conferences	☐	☐	☐	☐	☐	☐
Online courses	☐	☐	☐	☐	☐	☐
Workshop or bootcamp	☐	☐	☐	☐	☐	☐
Courses during LIS graduate school	☐	☐	☐	☐	☐	☐
Learning by doing (trial and error)	☐	☐	☐	☐	☐	☐
Communities of Practice	☐	☐	☐	☐	☐	☐

15. Did you feel proficient at your current position before starting? If not, what professional development initiatives did you complete, if any?

16. Please list any other professional development initiatives you feel apply to your work in data services.

17. Please select any of the following impediments that would inhibit you from pursuing professional development initiatives.

- ☐ Lack of support from supervisor
- ☐ Lack of support from library administration
- ☐ Lack of time
- ☐ Little or no desire
- ☐ High cost
- ☐ Little or no opportunity
- ☐ Other (please specify)

18. Any final comments?

Back Submit Page: 3 of 3

Developing Skills for Data Services in Academic Libraries

Thank you for participating. If you wish to be entered into a draw for a $50 (CAD) Amazon gift certificate, please click here and you will be taken to an external site where you can enter your name and email.

Your personal information will not be linked to your survey responses.

APPENDIX B. Mean Scores for All Categories

Data mining	0.94
Data use and analysis	1.95
Data curation and preservation	1.98
Data visualization and/or informatics	1.86
Data depositing and/or work with repositories	2.07
Policy and advisory skills (such as interpreting the upcoming Tri-Agency Research Data Management Policy for Consultation)	2.12
MEAN FOR GENERAL DATA SERVICES SKILLS	**1.83**
Programming languages (JavaScript, R, Python, C++, and others)	0.76
Markup languages (HTML XML)	1.78
Web development and maintenance	1.58
Statistical software (such as SAS, SPSS, RStudio)	1.02
GIS software (such as ArcGIS)	0.77
Data visualization software (such as Tableau)	1.25
Data analysis software (such as OpenRefine)	1.15
Text editors (such as Jupyter)	1.05
MEAN FOR PROGRAMMING LANGUAGES AND SOFTWARE	**1.18**
Library instructional sessions	3.31
In-class instructional sessions	3.24
One-on-one sessions	3.43
Development of online instruction tutorials or modules	2.62
Knowledge of blended and online learning theory	2.24
Experience with learning management systems	2.29
MEAN FOR LIBRARY INSTRUCTION	**2.86**
Oral communication	3.29
Written communication	3.53
Management and leadership	2.67
Interpersonal customer service	3.37
Working well with others	3.40
Project management	2.78
MEAN FOR SOFT SKILLS	**3.18**

Notes

1. Carol Tenopir et al., "Academic Librarians and Research Data Services: Preparation and Attitudes," *IFLA Journal* 39, no. 1 (2013): 70, doi10.1177/0340035212473089.

2. Carol Tenopir et al., "Research Data Services in Academic Libraries: Where Are We Today?" Choice White Paper, no. 5 (2019), https://www.choice360.org/research/research-data-services-in-academic-libraries-where-are-we-today/.

3. Tony Hey and Jessie Hey, "e-Science and its Implications for the Library Community," *Library Hi Tech* 24, no. 4 (2006): 515–28, https://doi.org/10.1108/07378830610715383; Elizabeth Lyon, "Open Science at Web-Scale: Optimising Participation and Predictive Potential," Joint Information Systems Committee (JISC) (November 6,

2009), www.jisc.ac.uk/media/documents/publications/research/2009/open-science-report-6nov09-final-sentojisc.pdf.

4. Graham Pryor and Martin Donnelly, "Skilling Up to Do Data: Whose Role, Whose Responsibility, Whose Career?" *International Journal of Digital Curation* 4, no. 2 (October 15, 2009): 158–70, https://doi.org/10.2218/ijdc.v4i2.105.

5. Mark P. Newton, C.C. Miller, and Marianne Stowell Bracke, "Librarian Roles in Institutional Repository Data Set Collecting: Outcomes of a Research Library Task Force," *Collection Management* 36, no. 1 (2011): 53–67, https://doi.org/10.1080/01462679.2011.530546; Sheila Corrall, Mary Anne Keenan, and Waseem Afzal, "Bibliometrics and Research Data Management Services: Emerging Trends in Library Support for Research," *Library Trends* 61, no. 3 (2013): 636–74, https://doi.org/10.1353/lib.2013.0005; Sheila Corrall, "Roles and Responsibilities: Libraries, Librarians and Data," in *Managing Research Data*, ed. Graham Pryor (London, UK: Facet, 2012), 105–33; Liz Lyon, "The Informatics Transform: Re-Engineering Libraries for the Data Decade," *International Journal of Digital Curation* 7, no. 1 (March 11, 2012): 126–38, https://doi.org/10.2218/ijdc.v7i1.220; Lisa Federer, "Research Data Management in the Age of Big Data: Roles and Opportunities for Librarians," *Information Services & Use* 36, no. 1/2 (2016), 35–43, https://doi.org/10.3233/ISU-160797.

6. Carol Tenopir, Ben Birch, and Suzie Allard, "Academic Libraries and Research Data Services: Current Practices and Plans for the Future," Association of College & Research Libraries (2012): 1–55, www.ala.org/acrl/sites/ala.org.acrl/files/content/publications/whitepapers/Tenopir_Birch_Allard.pdf.

7. Tenopir et al., "Academic Librarians and Research Data Services: Preparation and Attitudes."

8. Corrall, Kennan, and Afzal, "Bibliometrics and Research Data Management Services"; Andrew M. Cox and Stephen Pinfield, "Research Data Management and Libraries: Current Activities and Future Priorities," *Journal of Librarianship and Information Science* 46, no. 4 (December 2014): 299–316, https://doi.org/10.1177/0961000613492542.

9. Carol Tenopir et al., "Research Data Management Services in Academic Research Libraries and Perceptions of Librarians," *Library & Information Science Research* 36, no. 2 (April 2014): 84–90, https://doi.org/10.1016/j.lisr.2013.11.003.

10. Tenopir et al., "Research Data Services in Academic Libraries: Where Are We Today?"; Andrew M. Cox et al., "Developments in Research Data Management in Academic Libraries: Towards an Understanding of Research Data Service Maturity," *Journal of the Association for Information Science and Technology* 68, no. 9 (September 2017): 2182–2200, https://doi.org/10.1002/asi.23781; Alexandra Cooper et al., "Institutional Research Data Management Services Capacity Survey: Executive Summary," Portage Network, Research Intelligence Expert Group (January 2020), https://portagenetwork.ca/wp-content/uploads/2020/02/RIEGSurvey_execsummary_2020_02_12_EN.pdf.

11. Andrew M. Cox et al., "Progress in Research Data Services," *International Journal of Digital Curation* 14, no. 1 (2019): 126–35, https://doi.org/10.2218/ijdc.v14i1.595.

12. Tenopir et al., "Academic Librarians and Research Data Services: Preparation and Attitudes"; Tenopir et al., "Research Data Management Services in Academic Research Libraries and Perceptions of Librarians"; Corrall, Kennan, and Afzal, "Bibliometrics and Research Data Management Services"; Bethany Latham, "Research Data Management: Defining Roles, Prioritizing Services, and Enumerating Challenges," *Journal of Academic Librarianship* 43, no. 3 (May 2017): 263–65, https://doi.org/10.1016/j.acalib.2017.04.004.

13. Andrew Creamer et al., "An Assessment of Needed Competencies to Promote the Data Curation and Management Librarianship of Health Sciences and Science and Technology Librarians in New England," *Journal of EScience Librarianship* 1, no. 1 (2012): 18–26, https://doi.org/10.7191/jeslib.2012.1006; Andrew M. Cox et al., "Maturing Research Data Services and the Transformation of Academic Libraries," *Journal of Documentation* 75, no. 6 (2019): 1432–62, https://doi.org/10.1108/JD-12-2018-0211.

14. Cox et al., "Maturing Research Data Services and the Transformation of Academic Libraries"; Tenopir et al., "Research Data Services in Academic Libraries: Preparation and Attitudes."

15. Creamer et al., "An Assessment of Needed Competencies to Promote the Data Curation and Management Librarianship of Health Sciences and Science and Technology Librarians in New England."

16. Lisa Federer, "Defining Data Librarianship: A Survey of Competencies, Skills, and Training," *Journal of the Medical Library Association* 106, no. 3 (2018): 294–303, https://doi.org/10.5195/JMLA.2018.306.

17. Matthew R. Harp and Matt Ogborn, "Collaborating Externally and Training Internally to Support Research Data Services," *Journal of eScience Librarianship* 8, no. 2 (2019): e1165, https://doi.org/10.7191/jeslib.2019.1165.

18. Lisa Federer et al., "The Medical Library Association Data Services Competency: A Framework for Data Science and Open Science Skills Development," *Journal of the Medical Library Association* 108, no. 2 (2020): 304–09, https://doi.org/10.5195/jmla.2020.909.

19. John A. Borghi et al., "Support Your Data: A Research Data Management Guide for Researchers," *Research Ideas and Outcomes* 4 (2018): e26439, https://doi.org/10.3897/rio.4.e26439.

20. Ramirose Ilene Attebury, "Professional Development: A Qualitative Study of High Impact Characteristics

Affecting Meaningful and Transformational Learning," *Journal of Academic Librarianship* 43, no. 3 (May 2017): 240, https://doi.org/10.1016/j.acalib.2017.02.015.

21. Liz Lyon, "The Informatics Transform: Re-Engineering Libraries for the Data Decade," *International Journal of Digital Curation* 7, no. 1 (2012): 126–38, https://doi.org/10.2218/ijdc.v7i1.220.

22. Liz Lyon, "Librarians in the Lab: Toward Radically Re-Engineering Data Curation Services at the Research Coalface," *New Review of Academic Librarianship* 22, no. 4 (October 2016): 391–409, https://doi.org/10.1080/13614533.2016.1159969.

23. Liz Lyon and Aaron Brenner, "Bridging the Data Talent Gap: Positioning The iSchool as an Agent for Change," *International Journal of Digital Curation* 10, no. 1 (2015): 111–22, https://doi.org/10.2218/ijdc.v10i1.349.

24. Federer, "Defining Data Librarianship."

25. Federer, "Defining Data Librarianship," 301.

26. P. Bryan Heidorn, "The Emerging Role of Libraries in Data Curation and E-Science," *Journal of Library Administration* 51, no. 7/8 (October 2011): 662–72, https://doi.org/10.1080/01930826.2011.601269.

27. Jinxuan Ma, Lynne Stahl, and Erica Knotts, "Emerging Roles of Health Information Professionals for Library and Information Science Curriculum Development: A Scoping Review," *Journal of the Medical Library Association* 106, no. 4 (2018), https://doi.org/10.5195/JMLA.2018.354.

28. "Training," Research Data Management Librarian Academy, updated January 31, 2020, https://github.com/RDMLA/rdmla.github.io/blob/master/survey-documents/Training.xlsx.

29. Michael Witt and Melissa Cragin, "Introduction to Institutional Data Repositories Workshop," *Libraries Research Publications*, paper 83 (2008), http://docs.lib.purdue.edu/lib_research/83.

30. John Southall and Catherine Scutt, "Training for Research Data Management at the Bodleian Libraries: National Contexts and Local Implementation for Researchers and Librarians," *New Review of Academic Librarianship* 23, no. 2/3 (July 3, 2017): 303–22, https://doi.org/10.1080/13614533.2017.1318766.

31. Jake Carlson et al., "Developing Data Literacy Programs: Working with Faculty, Graduate Students and Undergraduates," *Bulletin* 41, no. 6 (August/September 2015): 14–17, https://deepblue.lib.umich.edu/bitstream/handle/2027.42/113148/bult1720410608.pdf?sequence=1&isAllowed=y.

32. Jamie Wittenberg, Anna Sackmann, and Rick Jaffe, "Situating Expertise in Practice: Domain-Based Data Management Training for Liaison Librarians," *Journal of Academic Librarianship* 44, no. 3 (May 2018): 323–29, https://doi.org/10.1016/j.acalib.2018.04.004.

33. Kevin B. Read et al., "A Model for Initiating Research Data Management Services at Academic Libraries," *Journal of the Medical Library Association* 107, no. 3 (2019): 432–41, https://doi.org/10.5195/jmla.2019.545.

34. Lisa M. Federer and Jian Qin, "Beyond the Data Management Plan: Expanding Roles for Librarians in Data Science and Open Science," *Proceedings of the Association for Information Science and Technology* 56 (October 2019): 529–31, https://doi.org/10.1002/pra2.82.

35. "Research Data Management Training: On Demand," National Network of Libraries of Medicine, updated 2021, https://nnlm.gov/rdm-on-demand.

36. "Research Data Management Librarian Academy: Exploring and Providing Research Data Management Training for Librarians," Research Data Management Librarian Academy, updated 2021, https://rdmla.github.io/.

37. Tenopir, Birch, and Allard, "Academic Libraries and Research Data Services."

38. Federer, "Defining Data Librarianship."

39. Tenopir, Birch, and Allard, "Academic Libraries and Research Data Services."

40. Tenopir et al., "Research Data Services in Academic Libraries: Preparation and Attitudes."

41. Heidorn, "The Emerging Role of Libraries in Data Curation and E-Science"; Lyon, "The Informatics Transform"; Lyon and Brenner, "Bridging the Data Talent Gap"; Federer, "Defining Data Librarianship."

42. Tenopir et al., "Research Data Management Services in Academic Research Libraries and Perceptions of Librarians," 88.

43. Tenopir et al., "Research Data Services in Academic Libraries: Preparation and Attitudes."

44. Rebecca A. Brown, Malcolm Wolski, and Joanna Richardson, "Developing New Skills for Research Support Librarians," *Australian Library Journal* 64, no. 3 (2015): 224–34, https://doi.org/10.1080/00049670.2015.1041215.

45. Federer, "Defining Data Librarianship," 299.

Dissonance between Perceptions and Use of Virtual Reference Methods

Tara Mawhinney and Sandy Hervieux

This multimethod study investigates differences in question complexity and type between live chat, email, and texting by comparing findings from user interviews and virtual reference transcripts, with the goal of better understanding how different delivery methods can meet user needs in the context of an academic library. Findings reveal dissonance between perceptions and use of chat and email. Interviews suggest users consider chat to be for basic queries whereas transcripts coded using the READ Scale, a well-known reference assessment tool, show question complexity to be highest in chat. Our analysis also found statistically significant differences in the presence of reference interviews and instruction for chat, email, and texting. Rebranding chat more explicitly for intermediate and advanced queries may succeed in attracting users who consider chat only for basic queries, thus narrowing the gap between user perceptions and actual use.

Introduction

This research study compares users' perceptions of different virtual reference methods with how they actually use them in the context of a research-intensive academic library. In the current climate, with COVID-19 rendering virtual reference a necessity in many libraries, understanding and meeting user needs is more important than ever. We investigated differences in question type and complexity between virtual reference methods with the goals of better understanding how they can meet different user needs and of identifying best practices for staffing and promotion. The current study is part of a larger research project, investigating preferences and differences among virtual reference methods. In Phase One, the first author analyzed user preferences and factors that account for them from among different virtual reference methods. She conducted interviews with users and reported findings in a previous publication.[1] The current study (Phase Two) is a continuation of the first and investigates differences among chat, email, and texting using two methods: through users' perspectives as collected during interviews conducted in Phase One and through content analysis of virtual reference transcripts. In short, in this phase, we examined user perceptions of the differences among chat, email, and texting in a library context using data from the in-person interviews, not yet reported in the

Tara Mawhinney is Liaison Librarian at McGill University; email: tara.mawhinney@mcgill.ca. Sandy Hervieux is Liaison Librarian for Political Science, Philosophy and the School of Religious Studies at McGill University; email: sandy.hervieux@mcgill.ca. *©2022 Tara Mawhinney and Sandy Hervieux, Attribution-NonCommercial (https://creativecommons.org/licenses/by-nc/4.0/) CC BY-NC.*

first study. We then compared these findings with what transcript analysis showed to be the differences in question type, question complexity, and the presence of reference interviews and instruction among chat, email, and texting. The current study is unique in its approach of comparing user perceptions with actual use and aims to narrow the gap between them by improving the promotion and delivery of virtual reference services. The findings will be most applicable to university library settings that offer similar virtual reference services.

Literature Review

In the early literature on virtual reference, there was a perception that chat was not for "real" reference questions,[2] that in-person reference was more suitable than virtual reference for research questions, especially when instruction was required,[3] and that virtual reference comprised fewer research-related queries than in-person reference.[4] More recently, the idea that virtual reference is less suitable for and generates fewer complex queries than in-person reference has largely been disproven, with several studies showing virtual reference queries to be generally more advanced than in-person ones.[5] Of the predominant types of questions asked, research has found that directional questions account for the largest category for face-to-face reference, while reference questions account for the largest category in email and chat.[6] Research conducted at an institution employing proactive chat (the type of chat that opens automatically as a pop-up window on library webpages inviting users to ask a question) shows the difference in question complexity between in-person and virtual reference queries to be even more marked.[7]

Whereas research shows clear differences in question complexity between virtual and in-person queries, distinctions among chat, email, and texting draw less conclusive findings. While research conducted on users' perceptions of texting[8] and content analysis of texting transcripts[9] show this method to be for basic and quick-answer type queries, it seems less clear which generates more complex queries from among chat and email. There is a perception that chat is fit for basic inquiries and not suitable for research-type questions. Dempsey addresses the debate in the literature by asking: "Is chat a mode of reference service that is suited to answer subject research questions, and to what extent do patrons expect this kind of service?" She claims that further research is needed to better understand the expectations of the scope of chat reference, especially in terms of more advanced questions such as those involving subject research.[10]

Similarly, Chow and Croxton note that chat is perceived to be for factual and directional rather than for reference questions.[11] However, their research shows nuance, pointing to demographic differences in perceptions of virtual reference methods, with undergraduate students ranking chat and email equally suitable for reference and research questions, while faculty, university staff, and graduate students prefer email for such queries.[12] In contrast, Ward's research suggests that both undergraduate and graduate students perceive chat to be for all kinds of questions, including research-related ones.[13]

The idea that chat is unsuitable for delivering reference originates not only from our users but also from librarians ourselves. In comparing email and chat, Kern notes: "Research assistance is highest for chat, even though we do not consider this an effective use of chat. How do we respond to this demand?"[14] Similarly, Greenberg and Bar-Ilan's research shows that librarians do not view chat to be conducive to research questions and find in-person reference to be better for users, although they acknowledge that it depends on users and their individual needs.[15]

How do we make sense of this dichotomy if, in fact, chat contains questions that are more advanced and more of a kind that are generally regarded as research or subject-related than other methods? These perceptions affect both how we deliver and advertise virtual reference services. For example, knowing that certain virtual reference methods result in more complex questions may lead to staffing these methods differently from others and/or more explicitly training staff to consider the method when responding to users. If certain methods are more conducive to complex questions than others, libraries may also choose to advertise certain methods more prominently or have them present in different locations on the library website. On the one hand, chat favors reference-type interactions because the technology allows us to engage in reference practices that match well with what we traditionally do at the reference desk by engaging in reference interviews and providing instruction. Yet, in the minds of some (both users and librarians), it is not a medium that is fit for this purpose. Further research is needed to better understand the differences among chat, email, and texting, in terms of the questions asked, their complexity, and what the role of reference interviews and instruction play in each.

First, it is important to consider if user and librarian perceptions are well founded. In this regard, studies suggest two contradictory sets of results. The first set suggests that these perceptions may be accurate, with two relatively small-scale studies reporting chat interactions to be less complex than email. Greenberg and Bar-Ilan analyzed 116 chat and 213 email interactions from an academic library in Israel and found more email than chat to be in-depth questions (52% of email compared to 21% of chat interactions), leading the authors to conclude that email is preferable for research questions.[16] Similarly, Lee's study comparing 47 chat and 47 email transactions from Murdoch University in Australia concluded that chat may not be suitable for delivering reference services, especially for answering queries involving instruction, despite that chat and email had equal numbers of research and reference questions. His reasoning was that chat interactions lacked many of the aspects needed for a successful reference interaction.[17] Although Lee does not specify exactly what aspects he is referring to, some of them likely originate from the time in which he was writing about chat in the early 2000s. For example, he mentions that 34 percent of chat interactions were not successful due to connectivity issues. Technology-related problems within chat have been vastly reduced since the time his article was published. Another aspect that Lee might be referring to is his uncertainty about whether or not users wanted librarians to conduct a reference interview in the context of chat, speculating that they might find this practice too intrusive. More recent research, however, suggests that reference interviews play an important role in virtual reference, as discussed in detail below. One final aspect he refers to is his concern that users might find chat to be impersonal. Although valid, this issue may have dissipated over time with the increased use of many forms of instant messaging in our daily lives such as texting, instant messaging on social media sites like Facebook and other platforms. Furthermore, librarians have found ways to overcome concerns over the impersonal nature of this method by using techniques such as "syntactic mirroring" where librarians mirror users' level of formality to help users to feel more at ease during virtual reference interactions.[18]

In contrast, a second set of research studies, consisting primarily of larger-scale ones, reports chat interactions to be more complex than email. Gerlich and Berard examined data from 14 institutions, comparing reference question complexity across various methods (chat, email, telephone, and in person) using the READ (Reference Effort Assessment Data) Scale,

a well-known assessment tool developed by one of the study's authors. The tool uses a six-point scale to compare question-level complexity, from level 1 being little to no skill or effort required to level 6 being where staff provide in-depth research assistance to users, requiring a great deal of effort, expertise, and time. They determined that there were more advanced questions in chat than email, with 67 percent of chat compared with 42 percent of email being READ 3 and above.[19] Likewise, Fennewald's study comparing 751 email and 405 chat transactions reported that reference questions, the most advanced category in his classification, accounted for 72 percent of chat and 60 percent of email questions.[20] Moreover, Kern's study, at the University of Illinois Urbana-Champaign analyzing 1,109 chat, email, telephone, and in-person queries, found 30 percent of chat compared to 24 percent of email questions to be research assistance, the category generally considered to be the most complex.[21] The first author's previous research comparing the differences in question level and type for 390 transcripts from McGill University found similar results, with intermediate-level questions accounting for 59 percent of chat and 51 percent of email.[22] Similarly, Ward and Phetteplace's study of chat, email, in-person, and phone questions found chat to be dominant in terms of question difficulty, having become increasingly complex and lengthy over time.[23] Given the debate in the literature, the issue of the complexity and types of questions generated in email and chat warrants further consideration.

The READ Scale

The READ Scale has been widely employed in academic libraries for analyzing virtual reference transactions.[24] For analyzing question complexity, it provides enhanced granularity over categorizations such as basic, intermediate, and advanced used in other studies.[25] Gerlich and Berard report that the majority of staff in the 14 libraries from their study found it added value to their reference statistics and recommend its usage.[26] Previous literature has interpreted the READ Scale differently but researchers often consider READ 3 and above questions to be complex.[27] Ward and Phetteplace suggest that READ 3 level questions should be answered by staff with specific reference training, presumably librarians.[28] Similarly, research recommends that part-time and student workers only answer READ 1 and 2 level questions and refer higher level ones to librarians.[29] Meanwhile, some research recommends that staff answering READ 3 questions have reference knowledge and skills but suggests that only READ 4 and above questions require librarian expertise.[30]

Studies using the READ Scale report varying degrees of complexity for chat interactions and draw different staffing conclusions based on their findings. Several studies report sizable numbers of READ 3 and above chats, accounting for percentages ranging from 28[31] to 60[32] to 81 percent[33] of all questions received via this method. Despite recommendations outlined above of having librarians respond to READ 3 and above questions, some studies recommend having well-trained students or paraprofessionals staff chat services.[34] It is clear that question complexity varies greatly in virtual reference, even when measuring using a common method of assessment such as the READ Scale, and that libraries' subsequent staffing decisions also show wide variation.

Reference Interviews and Instruction

It is important to consider the frequency and the means by which two regular practices with reference services in general, reference interviews and instruction, occur within different

methods of virtual reference. Previous research has investigated how they fit into the virtual reference landscape, with some perspectives having changed over time and others currently being debated in the literature. Conducting a reference interview is a hallmark of reference librarianship and is an important practice in delivering assistance to users,[35] as it is understood that a user's initial question may or may not reflect their true information need. Although researchers initially expressed ambivalence about reference interviews within virtual reference due to communication challenges,[36] more recent research has solidified their importance, with evidence showing them to be a best practice within virtual reference.[37] Despite research showing that query clarification considerably improves accuracy of responses,[38] Logan, Barrett, and Pagotto report that users are less satisfied when staff ask them clarifying questions. The researchers speculate that, although users want to be understood, they find it frustrating to explain themselves quickly and clearly within chat. Despite users' ambivalence toward reference interviews, the researchers recommend that staff members conduct them to best understand users' needs.[39]

Similarly, instruction is foundational within reference services, especially in the academic library context. Perspectives on its role have also changed, with early research questioning its place within virtual reference.[40] However, more recent literature demonstrates chat to be a suitable venue for instruction,[41] with librarians delivering it and users being receptive to it.[42] Dempsey reviewed several studies and claimed that chat transcripts on average include instruction 50%–86% of the time,[43] while other research finds that it could take place even more frequently than it does.[44]

Contribution to the Literature

Given the current context of many physical libraries being closed due to COVID-19, virtual reference has become an essential service and, in many cases, the only one that our users can access. As a result, understanding the nuances of virtual reference methods is more important than ever. Whereas several studies outlined in the literature review examine the different types and/or complexity of questions in one or two virtual reference methods, studies comparing three or more methods are rare.[45] Furthermore, few virtual reference studies combine multiple methods of analysis, such as transcript analysis and surveys,[46] and none combine interview findings and transcript analysis. The current study contributes to the literature by:

- Examining users' perceptions of what virtual reference methods are for and comparing these perceptions with findings from analysis of virtual reference transcripts;
- Analyzing question complexity as measured using the READ Scale, which has not yet been done to compare three methods of virtual reference.

Research Questions

The purpose of this multimethod study is to consider what differences exist between virtual reference methods and compare what these methods of virtual reference are for, both from a user perspective and through an analysis of virtual reference transcripts. We ask the following research questions:

- Research Question 1: What do virtual reference users perceive chat, email, and texting to be for in terms of the level of complexity and categories of questions asked?
- Research Question 2: Is there a statistically significant relationship between virtual reference delivery method and the level of complexity of questions asked, as measured

using the READ Scale?
- Research Question 3: Is there a statistically significant relationship between virtual reference delivery method and categories of questions asked? If so, what are the most prominent categories for each method?
- Research Question 4: Does the presence of reference interviews and instruction differ across virtual reference methods? If so, are the associations between the variables statistically significant?

Institutional Context

McGill University Library makes a very good case study for investigating different methods of virtual reference because it is part of a research-intensive university and has a long track record offering a variety of virtual reference services. McGill University is a publicly funded institution in Montreal, Canada, with an enrollment of 40,000 students.[47] McGill Library employs a nonconsortial model of virtual reference with 14 years of service history (chat and email), provided primarily by liaison librarians and supplementing the service with two or three graduate student workers from the library and information studies program each year, beginning in 2016. The library implemented texting in summer 2016. In August 2019, McGill Library moved from QuestionPoint to LibChat when the latter bought out the former. The library saw marked increases in virtual reference use in the first years of service and has seen steady use since, with more recent years hovering around 6,000 interactions per year. In 2018, 2,570 emails, 3,035 chats, and 195 text messages were received. In 2019, users sent 2,734 emails, 2,953 chats, and 198 text messages. In 2020, due to COVID-19 and the closure of physical reference services, there was a substantial increase in the use of all virtual reference methods, with the library receiving 3,342 emails, 4,769 chats, and 341 text messages. The virtual reference services are marketed through the library's social media accounts. They are also advertised by a banner on the library website. When liaison librarians visit classes or provide instruction sessions, they encourage students to use the virtual reference services. Chat, email, and texting are marketed equally. Librarians may encourage students to email them directly for discipline-specific inquiries, but students may elect to use virtual reference to receive an immediate response. More information about users' preferred methods of communication with the library can be found in a previously published study.[48]

Although the library does not have a mandate specific to virtual reference, part of the library's mission is to facilitate excellence in teaching, learning, and research and to be client-focused, responding to student and faculty needs.[49] We value our role in learning, encouraging instruction within virtual reference, and have developed best practices for instruction that are part of the professional development of virtual reference staff. The services are open to anyone, although policies on the website encourage questions from the general public to be related to the university or the library. There are no specific policies for the kinds of questions users can ask by chat, email, and texting.

Methods

This multimethod study uses two forms of data collection to analyze how library users perceive different methods of virtual reference and how they employ them. To answer Research Question 1, we investigated a user point of view by conducting interviews with users on their perceptions of virtual reference methods and the differences between them in terms of ques-

tion complexity and question categories. We examined interview transcripts using grounded theory and subsequently compared the interview findings with statistical analysis of virtual reference transcripts. To answer Research Questions 2–4, we used methods similar to those used in previous research studies of seeking out expert assistance to conduct statistical analysis on virtual reference transcripts.[50] We sought to determine if there were statistically significant associations between virtual reference delivery methods and several variables including the following: question level complexity, question category, and the presence of reference interviews and instruction. The Chi-square test of independence was conducted, as well as Cramer's V to determine the strength of associations. The study does not compare how users define complexity with how complexity is measured using the READ Scale. Rather, it compares users' perceptions of different virtual reference methods' suitability for complex questions with the level of complexity of virtual reference transcripts, as coded using the READ Scale.

User Interviews

We recognized that perceptions and actual use of virtual reference services could be quite different. If there were differences in users' perceptions and what transcripts show that users are actually asking via these methods, we wanted to examine them and consider what the implications might be for staffing, training, and promotion. For the interview portion of the research study, the first author obtained McGill University's Research Ethics Board I Certificate of Ethical Acceptability of Research Involving Humans in fall 2018 and conducted interviews with 14 virtual reference users in winter 2019. Five undergraduate students, six graduate students, two faculty members, and one alumnus participated in the interview portion of the study (see appendix for a description of participants). As mentioned earlier, she analyzed these interviews and, in a previous publication,[51] reported on participants' preferences from among different virtual reference methods. These methods consisted of chat, email to the general library, email to the liaison librarian, and texting. In the current study, the first author used NVivo software to analyze the same set of interviews, coding participants' perceptions of these methods and of the differences between them. Participants were recruited through online and other methods, namely posters across campus, solicitation by email from a list of names gathered during library orientation, and solicitation from library staff during their email, text, and chat interactions. Library users were eligible to participate if they had used one or more virtual reference methods before. Interviews were conducted until the first author reached saturation, that is when very few new insights emerged from the interviews. The earlier publication on user preferences outlines the recruitment methods, study sample, and interview protocol in greater detail.[52]

Interview Questions

The first author focused on responses to select interview questions reported in the first publication, as follows:

- Tell me about the last time you used chat, email to the general library, email to your liaison librarian, and/or texting. (Probes: Did you find that it was successful or unsuccessful? How did the chosen method impact the interaction?)
- What factors do you consider when choosing from among virtual reference methods? (Probes: Does the type of question influence your choice of method? Does the device you are using influence your choice of method?)

- From among the methods you have not used, which, if any, would you be interested in trying? What about this or these methods interests you?
- Tell me about your expectations of the different virtual reference methods offered by the library. (Probes: Do you have different expectations in terms of level of expertise of staff, formality, response time, hours of service, and so on?)

In the current study, she also analyzed participants' responses to the following questions not reported in the earlier publication:

- Would the level of difficulty and/or the type of question matter to you in determining which method to use?
- What kinds of questions would you consider asking using each of the methods that interest you?
- Describe how these methods of communicating with the library are different from each other. (Probes: How do they compare to each other? In terms of convenience? Speed?)

Coding

Using NVivo, the first author coded and analyzed the interviews in light of the questions related to participants' perceptions, as well as past and anticipated uses of virtual reference methods. She used grounded theory to identify themes in the interviews. This method was appropriate because it allowed the codes to emerge from participants' own words,[53] and it allowed her to discover patterns within the data.

Transcript Analysis

For the transcript analysis portion of the research study, McGill University's Research Ethics board informed us that this type of research did not require ethics approval. Both researchers participated in coding virtual reference transcripts drawn from a two-year timespan, carrying out the coding in NVivo and then exporting the data to Excel for statistical analysis. The study drew on two years of chat, email, and texting transcripts from January 1, 2018 to December 31, 2019. There were 201 texting transcripts from QuestionPoint and 49 transcripts from LibChat during the two-year period. This lower number of texting transcripts as compared to those provided above in our annual statistics is due to several factors. QuestionPoint treated each texting response as a new transaction instead of threading them together. For coding purposes, we grouped the responses and counted them as a single transcript. We also removed incomplete transactions and practice questions used for training purposes.

Using methods similar to those in previous studies,[54] we extracted a random sample of email and chat transcripts from the same time period to match the number of texting transcripts. Only emails received through the virtual reference platform were evaluated. Emails sent to librarians directly were not evaluated. In total, we analyzed 750 transcripts (250 transcripts from each method) for level of complexity, question category, and the presence of a reference interview and instruction.

We employed the READ Scale to measure question complexity since using a commonly recognized mode of assessment allows the findings from the current study to be more easily interpreted in light of findings from other studies. To code the transactions, we drew on the READ Scale classification outlined by Gerlich and Berard,[55] Maloney and Kemp's overview of the READ Scale and other classification schemes used to measure question complexity,[56]

and examples of questions for the different READ Scale ratings from previous literature.[57] We coded not only the user's initial question but the whole interaction, since, in keeping with the goal of the READ Scale "to reflect the effort expanded, knowledge required, and even the teachable moment that occurs during the transaction,"[58] these factors influenced how the interactions were coded. For example, we coded requests for known items as READ 2 if the staff member simply replied by providing a link to the catalogue record. However, we coded the same request as READ 3 if the staff member determined that the user was located off campus and explained how to set up a remote connection for accessing resources.

To facilitate ease of analysis, we coded each transcript with a single question category and READ score; if users asked multiple questions, we chose the question that was the most complex. If there were multiple questions that were each a READ 2 level, we coded the transaction as READ 3 since the global time and effort involved was greater than a single READ 2 question.

Our classification scheme was informed by categories used in previous virtual reference research.[59] However, like Stieve and Wallace, we primarily used grounded theory to establish the classification scheme based on the types of questions users asked since it allowed us to discover patterns from within our dataset and did not restrict possibilities of the categories that would emerge.[60] We used the constant comparison method, a feature of grounded theory, where data are coded and recoded as new themes emerge, to ensure that themes were applied consistently.[61]

We coded all transactions for the presence of a reference interview and instruction. We defined the reference interview as instances when staff members asked one or more probing questions to help them better understand the user's information need. Our definition for instruction was any instance where the staff member guided a user step by step, explained how a service or resource functioned (such as providing instructions for accessing an ebook), or engaged in troubleshooting. We included as instruction those instances where a staff member pointed to a source of information and provided some explanation but not when a staff member simply pointed to a webpage or the catalogue for information.

We coded the questions independently. To enhance intercoder reliability, we generated a codebook and applied it consistently to all transcripts. Using methods similar to Greenberg and Bar-Ilan,[62] both authors coded a random sample of 10 percent of the email, chat, and texting transcripts. In comparing our coding, the match rate was 84 percent; after discussion, we reached 100 percent consensus. The first author coded the remaining transcripts.

We conducted transcript analysis within NVivo by importing Excel spreadsheets into the software. One advantage of coding in NVivo was the ease with which we could create and modify question categories. NVivo also allowed us to easily cross-analyze different codes to determine, for example, the percentages of different question categories that contained instruction. There were two major drawbacks to using NVivo for transcript analysis, mostly pertaining to how well NVivo and Excel function together. Once we imported the Excel spreadsheets into NVivo, it was not possible to modify them; so, if an incomplete transaction was inadvertently included in a spreadsheet, it could not be removed. Therefore, it was necessary to keep detailed records about how many transcripts were actually coded in each spreadsheet. Also, although it was possible to export the coded transcripts back out of NVivo to run statistical analysis in Excel, we needed to seek the expertise of NVivo staff to do so because the procedure was not straightforward.

Findings and Discussion

Findings suggest dissonance between users' perceptions of virtual reference methods and how they actually use them. Study participants considered live chat to be for basic questions, but transcripts revealed chat to be used for intermediate and advanced questions, perhaps due to its conduciveness to the reference interview and to instruction, both of whose presence was more prevalent in chat than in other methods. We address each of the research questions below, outlining findings from user interviews first, followed by findings from the transcript analysis.

Perceptions of Virtual Reference Methods

To answer Research Question 1, the first author conducted interviews with 14 users whose demographic details are outlined in the appendix. In the current publication, we report findings related to participants' perceptions of the level of complexity and types of questions suitable for chat, email to the general library, email to liaison librarians, and texting. Findings from interviews with study participants reinforce perceptions outlined in the literature review that users believe chat to be suitable primarily for basic questions. The first author identified the following themes in the interviews: 1) participants perceive chat and texting to be for basic questions and email to be for more complex ones; 2) participants perceive email to their liaison librarian as the best method for asking research questions; and 3) participants value the back-and-forth nature of chat for facilitating their own understanding. We discuss each of these themes below.

Chat and Texting for Basic Questions and Email for Complex Ones

In terms of different virtual reference methods, many participants perceived chat and texting to be very similar to one another and very different from email. Participants generally felt that chat and texting were for basic questions and email for more advanced ones. For example, as Blue, an undergraduate student, explained: "If it's a higher level of complexity, I would probably either choose in person, phone, email, and then chat would be last… Email is more the default go to for specialized information… I don't expect too much to come out of [chat] just because I wouldn't type out a long, lengthy question that requires a lot of resources. It doesn't make sense to me." He expressed that engaging in a chat for something complex would be too time-consuming, a sentiment shared by other participants in the study.

Participants mentioned a variety of reasons why they perceived email, rather than chat or texting, to be for advanced questions. As Priya, an international undergraduate student, stated: "Email is when there is a lot of information and I want to be precise about what I am talking. If it is of high importance I use email and when there are a lot of attachments involved." As another undergraduate student explained, emails would be for more complex questions because the method would give her more time to compose her message, it would permit her and the librarian to engage in a dialogue over a longer period of time, and she would receive a more thoughtful and complete answer from the librarian than she would by chat.

Participants did not perceive chat or texting to be for seeking assistance with advanced and/or research-related questions. As Ashley, an undergraduate student, stated categorically, "It would be a very bad idea to talk about research on chat or texting." Rather than being for reference/research questions, participants felt that chat would be more useful for library systems questions, such as those pertaining to library accounts and fines. Participants also felt that chat would be more appropriate than other methods for asking questions about specific books.

Several participants expressed an aversion to texting within a library context. They were clear that, if they were to use texting at all, it would be for basic questions. According to Michael, a faculty member: "I could imagine, say, I want to ask, 'Is the library open right now?' Quick text." They perceived texting to be primarily for hours and directional information.

Email to the Liaison Librarian for Research-Related Questions

During the interviews, we discovered an important nuance pertaining to email. Participants frequently expressed that the library's general email would be for more general questions and email to their liaison librarian for more research-related ones. For example, as Amy said of the liaison librarian: "They're an expert in the resources in that field. I mean to book a table, sure, I'd email the general one. But if I'm really interested in this specific aspect of cognitive science and looking for some more primary sources on it or something, then I would definitely email the liaison one instead." Many participants, and especially faculty, explained that they would reserve their reference and research-related questions for asking their liaison librarian by email because they valued their expertise.

Prevalence of the Reference Interview and Instruction in Chat

Despite participants considering chat to be for basic questions, they nevertheless deemed this method as being very conducive to reference interviews and instruction. During the interviews, no participants explicitly mentioned the reference interview, since that terminology would likely be unfamiliar to most people outside of library and information studies. Nevertheless, their repeated mentions of the back-and-forth, or conversational, nature of chat were very similar to what takes place in a reference interview. Those whose first language was not English often remarked that they preferred to use methods, such as chat, where they could easily and quickly clear up any misunderstandings related to explaining their own information need. As reported in the previous study on user preferences, the conversational nature of chat was a main factor for study participants in their choice of virtual reference methods, often leading them to prefer this method over others.[63]

Similar to the reference interview, participants felt that, among the different virtual reference methods, chat's conversational aspect rendered it particularly conducive to instruction. As Daniel, an alumnus, stated: "Chat is more of a conversation… If the librarian is telling me okay do this or do this, you know I can follow the instructions and see it right away… When you talk with the librarian, that's when you realize oh I was doing this wrong or I was in the wrong place and I was looking somewhere else. And then you learn. It makes it easier for the next time." Participants felt that the back-and-forth nature of the interaction facilitated their own understanding. Some participants mentioned features of the chat interface that particularly helped them learn, such as the links a librarian would send that they could follow during the interaction. Despite participants finding that chat facilitated the reference interview and instruction, they did not perceive that these features might enhance chat's ability to support complex questions.

Question Complexity Highest in Chat

Findings from the current study show a marked disconnect between perceptions, as revealed in the interviews, and actual use of virtual reference methods, as determined through content analysis of virtual reference transcripts. In response to *Research Question 2: Is there a statisti-*

cally significant relationship between virtual reference delivery method and the level of complexity of questions asked, as measured using the READ Scale? and in contrast with participants' views that chat was unfit for advanced and research-related questions, findings reveal a statistically significant relationship between delivery method and READ Scale rating, with the association between the two variables being of moderate strength ($X^2 = 252.30$, $P < .001$, $V = .41$). In fact, question complexity was highest in chat transcripts. See Table 1 for an outline of the strength of association, listed by effect size, for all the variables that we analyzed in the study. The statistical consultant prepared Table 1 and we created the other tables and figures in consultation with her.

TABLE 1
Variable Association by Effect Size (N = 750)

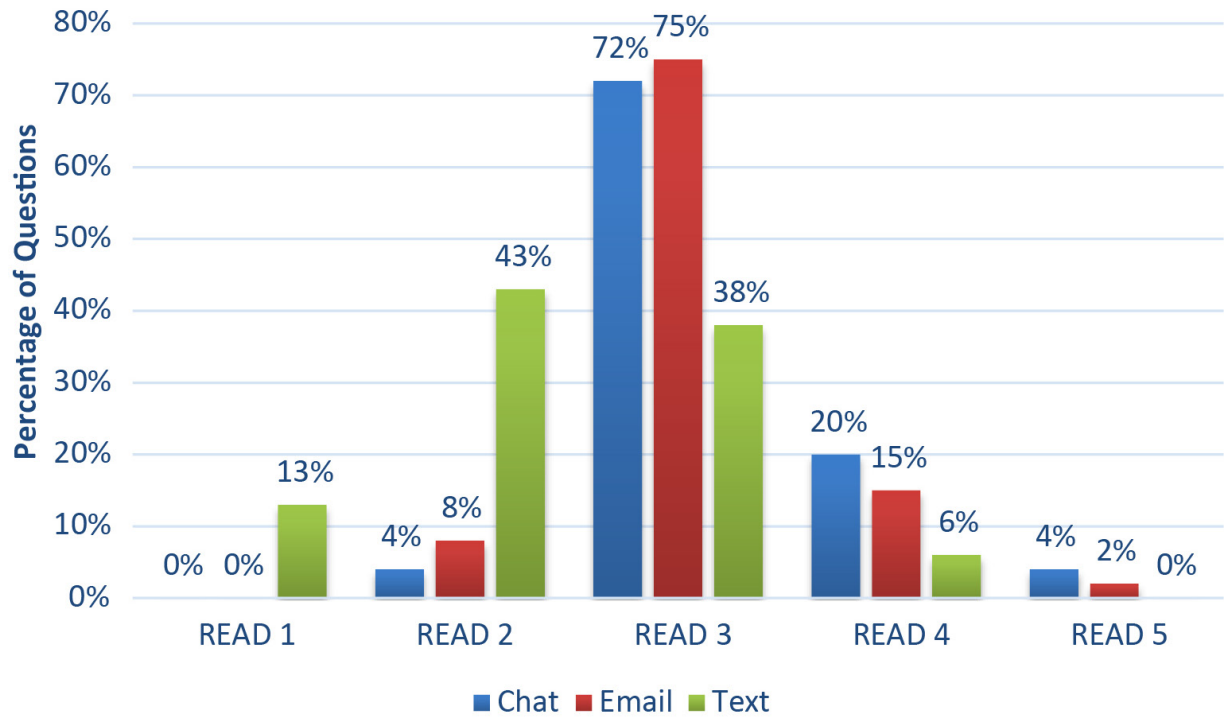
Variable 1	Variable 2	df*	X^2**	Cramer's *V*
Delivery Method	Reference Interview	2	140.55	.43
Delivery Method	READ Scale	8	252.30	.41
Delivery Method	Question Category	18	177.40	.34
Delivery Method	Instruction	2	32.97	.21

Notes:
*Degree of Freedom
**Significance level $p < .001$

The perception of chat being for basic questions and not for the more advanced ones contrasts sharply with the transcript analysis findings. Chat interactions were slightly more complex than email and much more complex than texting ones, with READ 4 and above level ratings accounting for 24 percent of chats, 17 percent of emails, and only 6 percent of texts (see Figure 1 for frequencies of READ Scale ratings for chat, email, and texting). There were no questions in the study coded at READ 6. Study participants' perceptions of texting and chat being for questions of similar levels of complexity were not borne out by the statistical analysis of the transcripts. Chat and email were much closer to one another in their READ Scale distribution (being predominantly READ 3 and above), with chat outranking email in terms of the percentage of questions ranked as READ 3 and above. Texting, on the other hand, was quite different, being mostly READ 1 and 2 level questions. It is possible that chat interactions could become lengthier and more detailed because of their synchronous and conversational nature, thus resulting in these questions requiring more time and effort to answer than other methods that did not so easily facilitate this type of interaction.

The data from the current study demonstrates that chat and email generate mainly READ 3 and above questions. Given that research discussed in the literature review suggests that READ 3 and above questions are well suited for professional librarians to answer, our service model of having primarily this employee group deliver chat and email aligns well with the level of questions that we currently receive. Since the majority of texting questions are READ 2 and below, we could easily staff the texting service with library assistants and/or students, rather than librarians. The questions asked via texting are in line with what these staff groups are trained for and can be expected to answer.

FIGURE 1
READ Scale by Delivery Method



Reference/Research Questions Most Frequent in Chat

Similar to the way in which the interview findings contrasted with the transcript analysis in terms of READ Scale ratings by delivery method, the interviews also contrasted with the transcript analysis in terms of question categories by delivery method. Many interview participants were resounding in their opinion that chat was not for reference and research questions. Yet, in response to *Research Question 3* (*Is there a statistically significant relationship between virtual reference delivery method and categories of questions asked? If so, what are the prominent categories for each method?*), our analysis shows that reference/research questions accounted for the largest category of questions received via chat. Nearly one in four (24%) chat questions were in

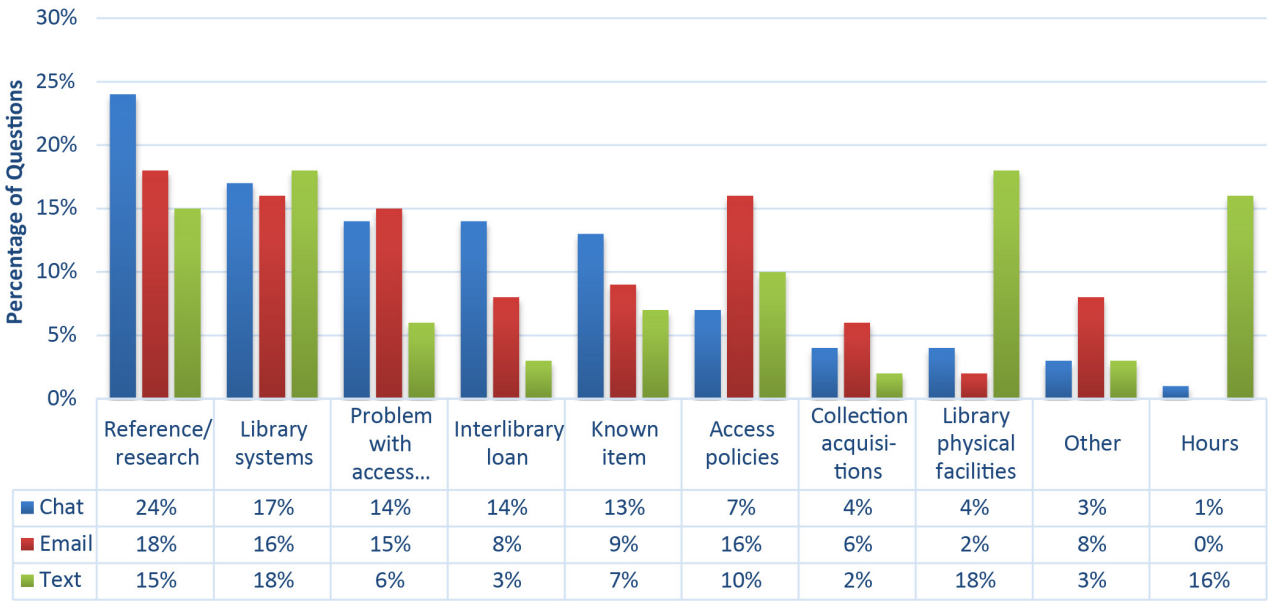
TABLE 2
Question Categories

Question Categories	Example
Access policies	I'm an alumnus. How can I access online articles?
Collections acquisitions	I would like the library to buy this book.
Hours	What time does the law library close today?
Interlibrary loan	How do I obtain this article? It's not available at McGill
Known item	Does the library have this article?
Library physical facilities	How do I print a document?
Library systems	My books are overdue. Help!
Other	How do I apply to McGill University?
Problem with access to e-resources	I can't open this article.
Reference/research	How do I find information on my topic?

that category, compared to 18 percent of email questions and 15 percent of texting questions. See Table 2 for the list of question categories and a sample question for each and Figure 2 for percentages of questions for each question category by delivery method. The Chi square test indicated that certain categories of questions were asked more often than others depending on the delivery method and that there was a statistically significant relationship of moderate strength between delivery method and question category ($X^2 = 117.40$, $p < .001$, $V = .34$).

Although there were marked differences between user perceptions and virtual reference transcripts in terms of the use of chat for reference/research questions, perceptions and transcripts showed closer alignment in terms of other prominent question categories asked via chat. Besides reference/research questions, the most popular question categories in chat were library systems, problem with access to e-resources, interlibrary loans, and known items (see Figure 2). Both interviews and transcripts showed these types of questions to be suitable for and prevalent in chat. Interlibrary loan (ILL) questions were particularly important in chat in comparison with other delivery methods. It is possible that systems such as ILL require some explanation, and the back-and-forth nature of chat facilitates this type of interaction.

FIGURE 2
Question Category by Delivery Method



	Reference/ research	Library systems	Problem with access...	Interlibrary loan	Known item	Access policies	Collection acquisi-tions	Library physical facilities	Other	Hours
Chat	24%	17%	14%	14%	13%	7%	4%	4%	3%	1%
Email	18%	16%	15%	8%	9%	16%	6%	2%	8%	0%
Text	15%	18%	6%	3%	7%	10%	2%	18%	3%	16%

Access policies and "Other" questions figured prominently in email as compared to other methods. Anecdotally, we have observed that users who are not part of the McGill community often ask these categories of questions. A high proportion of questions in the "Other" category pertained to matters that did not relate to the library but rather to other aspects of the university. Perhaps outside users are less familiar with or less comfortable using live chat and texting to make inquiries about the library's policies and services and are also unfamiliar with the methods for contacting other units on campus. However, these are speculations and it is beyond the scope of the current study to determine the types of questions asked by specific user groups.

Email and chat saw high percentages of questions pertaining to problems with access to e-resources while texting did not, presumably because questions like these normally arise when users are consulting the library's catalogue, an activity that they may not be so readily able or willing to do while on their cell phones. Hours and library physical facilities questions, such as how to print or directional information, appeared much more frequently in texting than in other methods. It is possible that these types of questions happen more readily when users are on the go and do not necessarily have easy access to information on the library's webpages as they generally would have when they are on a laptop or desktop computer. The prominent question categories received via texting align with users' perceptions that texting is well suited to hours and directional-type questions.

Similar to the READ Scale ratings by delivery method, the findings pertaining to question category by delivery method suggest that different methods could be staffed by different categories of employees. Based on the data, we can conclude that texting, where questions predominantly concern hours, library physical facilities, and library systems, could be adequately staffed by library assistants and/or students rather than librarians. The questions asked via this method are in line with what these staff groups are trained in and can be expected to answer. In comparison, chat and email are largely reference/research, problems with access to e-resources, and interlibrary loan questions, suggesting that our service model of primarily staffing the services with professional librarians is in line with the types of questions we receive. The current findings concur with previous research suggesting that chat and email should be staffed by librarians due to the prevalence of reference questions received via these methods.[64]

Reference Interviews and Instruction Most Frequent in Chat

In response to *Research Question 4* (*Does the presence of reference interviews and instruction differ across virtual reference methods? If so, are the associations between the variables statistically significant?*), our analysis shows that there are differences. We found statistically significant associations between the frequency of reference interviews and the delivery method and between the frequency of instruction and the delivery method. Both reference interviews and instruction were most prevalent in chat transcripts.

Our analysis showed there was a moderate strength of association between the presence of a reference interview and the delivery method ($X^2 = 140.55$, $p < .001$, $V = .43$). Reference interviews occurred much more frequently in chat than in email and texting (see Figure 3 for a breakdown of the percentage of questions with reference interviews by delivery method). These results align with those from the interviews where, although participants did not mention the reference interview per se, they most often discussed the back-and-forth nature of an interaction in the context of chat. Chat is possibly more conducive to conducting reference interviews than other methods because of its conversational nature,[65] which is facilitated by its technological advantages, namely its synchronicity. However, chat's synchronous nature does not appear to solely explain the high frequency of reference interviews in chat in comparison with email and texting. If synchronicity increases the frequency of reference interviews in chat, it does not appear to do so for texting, which is also relatively, although not wholly, synchronous. Other factors may be at play. Chat's level of personalness and informality[66] may also increase the frequency of reference interviews in comparison with other methods. The higher percentage of reference interviews in chat mirrors findings from Lee's study that

question negotiation in the form of a reference interview occurs more frequently in chat than in email.[67] Nevertheless, the reference interview, a hallmark of librarianship, is happening less than half the time in chat and much less frequently in email and texting. Although not every interaction requires a reference interview, their overall low rates, especially in email and texting, suggest that efforts should be made to increase their adoption.

Similar to the reference interview, our analysis showed instruction to be much more prevalent in chat than in email or texting. There was a statistically significant association between the presence of instruction and the delivery method, although its strength was low ($X^2 = 32.97$, $p < .001$, $V = .21$). Figure 4 illustrates the percentages of questions with instruction for

FIGURE 3
Presence of a Reference Interview by Delivery Method

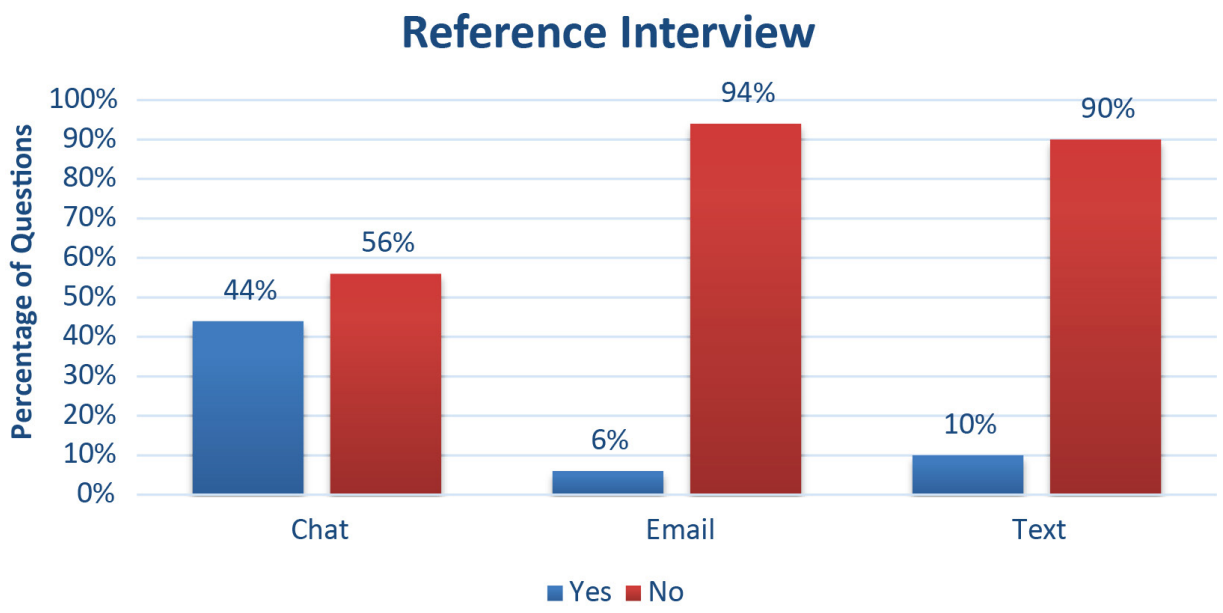
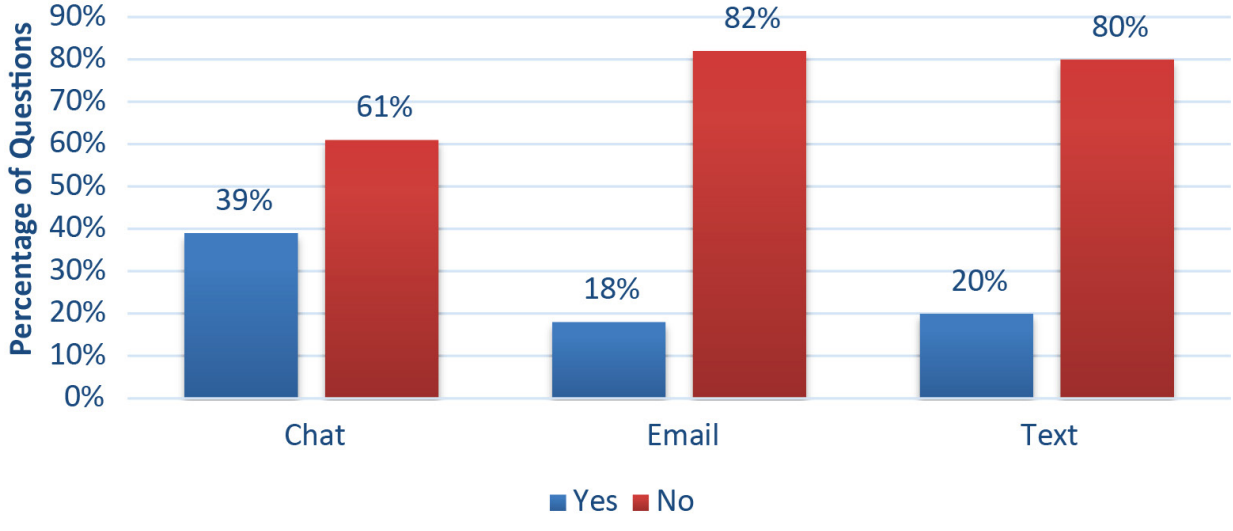


FIGURE 4
Presence of Instruction by Delivery Method



chat, email, and texting. The higher frequency of instruction in chat mirrors findings from the interviews where participants who discussed instruction and learning were most likely to do so in the context of chat. Similar to the reference interview, reasons for the higher prevalence of instruction in chat could be a function of the synchronous nature of the technology, which more readily facilitates a conversation in comparison with email and texting. Although instruction occurs most frequently in chat, it is only taking place less than half the time and much less frequently in email and texting. Given our context as an academic library and in light of the library's mission discussed earlier, efforts should be made to boost rates of instruction, perhaps through enhanced training on recognizing and responding to "teachable moments."

Limitations and Future Research

In light of the findings, some limitations should be considered, several of which present opportunities for future research. During the interviews, many participants differentiated between email to the general library and email to their liaison librarian, expressing that they valued and made use of the latter, especially for research-related queries. In the current study, we did not conduct transcript analysis of interactions conducted by email with liaison librarians. Emails to liaison librarians, like those to service accounts, are not part of the library's virtual reference software and, as a result, were not amenable to inclusion in this research study. At our institution, anecdotal evidence suggests that emailing liaison librarians directly is an activity that is taking place more and more frequently and for increasingly complex questions. Similarly, Gerlich and Berard suggest that questions answered off-desk require more effort and skill than those answered at physical reference desks and that users actively seek out specific individuals for their reference expertise.[68] Although there is some recent literature investigating the role of in-person consultations or appointments,[69] there is little mention of email to subject or liaison librarians in the literature. It is quite likely that emails to liaisons rank higher on the READ Scale than those sent to the general library email account, but further research would be needed to substantiate this claim. Future research is warranted into investigating the types and level of difficulty of questions asked to liaisons, the extent of these activities, and best practices for delivering these services.

It bears mentioning that the current study does report on virtual reference methods delivered at only one institution, which limits its applicability in other settings. McGill University is research-intensive and, even at the undergraduate level, is strongly committed to exposing students to leading research and offering undergraduates opportunities to engage in research.[70] Virtual reference questions are likely impacted by this environment. Virtual reference interactions in the context of a public library or a four-year college setting would likely be different. As mentioned in the literature review, institutional setups and policy decisions also influence the types of questions received in virtual reference. In this context, it is important to recognize that there is no one-size-fits-all solution with regard to staffing decisions for virtual reference and that it is useful to examine the nature of one's own virtual reference questions within one's local context when making staffing decisions.

In the current study, we compared users' perceptions of question complexity with the complexity of virtual reference transcripts when categorized using the READ Scale. It is important to acknowledge the possibility that how users measure complexity differs from how it was measured using the READ Scale. In the current study, we did not analyze how complex users considered their own (or others') actual questions to be. Instead, we examined their

perceptions of different virtual reference methods in terms of question complexity. Further research could investigate this topic by examining how complex users consider their own questions to be, perhaps by having participants categorize actual virtual reference transcripts.

As discussed earlier, during the course of the two-year period from which the virtual reference transcripts were drawn, the library transitioned from QuestionPoint to LibChat software. As a result, certain aspects about how we handled virtual reference questions changed. For example, in LibChat, it is possible to transfer a chat to an email, incoming texts are treated more similarly to chats, and it is easier to refer questions to outside service accounts. These changes likely influenced how the library delivers virtual reference services. However, it is unlikely that they affected the findings greatly since we controlled for the change in software by extracting chats, emails, and texts that were equal in number to each other from QuestionPoint and from LibChat. Doing so ensured that comparisons across delivery methods would be consistent. In the current study, we did not compare transcripts drawn from one software with the other, but this could be an area of future research. It is likely that the ways the various delivery methods are handled in each software affect how users and staff employ them.

While this study was conducted with data collected prior to the COVID-19 pandemic, it is important to note that it has had some important effects on the provision of virtual reference services. Virtual reference became a necessity during the pandemic since most physical library spaces were closed to the public. As a result, staffing had to be reevaluated and increased to respond to a substantially higher demand from users. With frequently changing information regarding library policies during the pandemic, it was more important than ever that the virtual reference software allow for easy referrals of users' questions between library staff members and units who provided virtual reference services and those who did not. Given that not all users may have been aware of the services available to them, there was also a need to enhance the marketing of virtual reference to make it a more visible method of communication with the library. It remains to be seen whether the pandemic will have lasting consequences on virtual reference services, but the authors have already noted an increased use of texting, perhaps due to greater needs for basic library information that were generated by the pandemic situation, such as whether certain library services were open or closed.

Summary and Implications for Practice

In addition to showing that a disconnect exists between the perceived function of virtual reference methods and their actual uses, the current study also shows that librarians can shape the complexity of the questions received by selecting which services to offer. Findings demonstrate a statistically significant association between question category and delivery method, with texting having many hours and library physical facilities questions, chat having reference/research questions, and email having access policies questions. These findings suggest that each method serves distinct functions, thereby reinforcing the notion that they are all useful methods for the library to maintain. Although the level of complexity of questions in chat was negligibly higher than in email, its conversational nature led to a higher use of the reference interview and a greater presence of instruction in the transcripts we analyzed. The types of questions received in each method, as well as differences in their READ Scale ratings, could lead to some evaluation of staffing needs. For example, given that most reference/research questions with a READ 3 level and higher were asked on chat and email, librarians should continue to monitor and offer this service. The texting service, however, could potentially be

offered by students and paraprofessionals. Similarly, chat and email receive high numbers of library account and interlibrary loan questions. Better documentation, improved policies, and smoother workflows for these services could ease the process for users and the librarians who deliver virtual reference services.

Here are some practical implications:

- For a seamless service and to answer multiple types and levels of questions, a virtual reference platform that allows multiple methods (chat, email, text) is advised.
- Given the high READ Scale ratings and the number of reference/research questions in chat and email, provide more training on the reference interview and instruction methods in virtual reference to librarians.
- Ensure that users are aware when their question needs to be transferred to a subject specialist or a service (such as interlibrary loans).
- Advertising of virtual reference services as well as the webpages where they are located could have an impact on the types of questions asked. More promotion is needed to enhance user awareness of chat for reference/research questions, letting users know where and how they can ask their questions.
- Increase the availability of virtual reference methods, especially chat, in locations where users conduct library research, such as in library discovery tools and research databases and in university learning management systems. This presence may help users to better associate library chat with research purposes, thus narrowing the gap between user perceptions and actual use.
- A high number of access policies and problems with e-resources questions were asked by users. More information and easier ways to report problems should be considered.
- The findings from this study could be used to map information literacy gaps in users.

That libraries can influence the level of difficulty and types of questions of their virtual reference interactions by the delivery methods they choose to offer aligns with research showing that, through libraries' policy decisions, they can modify user behavior, increasing the likelihood of complex questions. Changes such as placing a chat box within a university's learning management system,[71] implementing proactive chat,[72] and having librarians staff virtual reference from their offices rather than public service desks[73] can all influence question complexity. Many of these factors are within the library's control, and it is telling that they reveal the extent to which libraries can encourage complex questions within virtual reference. These studies highlight that we can aim high for virtual reference and consider it an essential and perhaps more useful tool for today's researcher than traditional in-person reference. Through virtual reference, librarians have an opportunity to build on services we have long offered in person, using technology to enhance our services. For example, virtual reference allows users to obtain help when and where they need it, facilitates a step-by-step approach for gathering needed information, provides a written transcript for users to consult later, and enables the easy sharing of links and documents by both librarians and users. These features make virtual reference an increasingly useful and important service for today's and tomorrow's users.

Acknowledgments

The authors would like to thank Jen Sweeney for her assistance with the statistical analysis. Our thanks to Chris Byrne, Svetlana Kochkina, and Jen Sweeney for their feedback on the manuscript.

APPENDIX A. Study Participant Data
(as reported in Mawhinney, 2020)

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

Notes

1. Tara Mawhinney, "User Preferences Related to Virtual Reference Services in an Academic Library," *Journal of Academic Librarianship* 46, no. 1 (Jan. 2020): 1–8, https://doi.org/10.1016/j.acalib.2019.102094.

2. Joe Janes, "Live Reference: Too Much, Too Fast?" *School Library Journal* 48, no. 11 (Fall 2002): 12–14.

3. Ian J. Lee, "Do Virtual Reference Librarians Dream of Digital Reference Questions? A Qualitative and Quantitative Analysis of Email and Chat Reference," *Australian Academic & Research Libraries* 35, no. 2 (2004): 95–110, https://doi.org/10.1080/00048623.2004.10755262.

4. Kathleen M. Kern, "What Are They Asking? An Analysis of Questions Asked at In-Person and Virtual Service Points" (paper presented at the ALA Annual Conference, 9th Annual Reference Research Forum, Toronto, Ontario, Jun. 21, 2003), www.ala.org/rusa/sections/rss/rsssection/rsscomm/rssresstat/2003reference.

5. Paula R. Dempsey, "Chat Reference Referral Strategies: Making a Connection, or Dropping the Ball?" *College & Research Libraries* 80, no. 5 (Jul. 2019): 674–93, https://doi.org/10.5860/crl.80.5.674; Joseph Fennewald, "Same Questions, Different Venue: An Analysis of In-person and Online Questions," *Reference Librarian* 46, no. 95/96 (2006): 21–35, https://doi.org/10.1300/J120v46n95_03; Bella Karr Gerlich and G. Lynn Berard, "Testing the Viability of the READ Scale (Reference Effort Assessment Data): Qualitative Statistics for Academic Reference Services," *College & Research Libraries* 71, no. 2 (Mar. 2010): 116–37, https://doi.org/10.5860/0710116; Vera J. Lux and Linda Rich, "Can Student Assistants Effectively Provide Chat Reference Services? Student Transcripts vs.

Librarian Transcripts," *Internet Reference Services Quarterly* 21, no. 3/4 (2016): 115–39, https://doi.org/10.1080/10875301.2016.1248585; Krisellen Maloney and Jan H. Kemp, "Changes in Reference Question Complexity Following the Implementation of a Proactive Chat System: Implications for Practice," *College & Research Libraries* 76, no. 7 (Nov. 2015): 959–74, https://doi.org/10.5860/crl.76.7.959; David Ward and Eric Phetteplace, "Staffing by Design: A Methodology for Staffing Reference," *Public Services Quarterly* 8, no. 3 (2012): 193–207, https://doi.org/10.1080/15228959.2011.621856.

6. Fennewald, "Same Questions, Different Venue," 21–35.

7. Jan H. Kemp, Carolyn L. Ellis, and Krisellen Maloney, "Standing By to Help: Transforming Online Reference with a Proactive Chat System," *Journal of Academic Librarianship* 41, no. 6 (Nov. 2015): 764–70, https://doi.org/10.1016/j.acalib.2015.08.018.

8. Lili Luo and Emily Weak, "Text Reference Service: Teens' Perception and Use," *Library & Information Science Research* 35, no. 1 (Jan. 2013): 14–23, https://doi.org/10.1016/j.lisr.2012.03.002.

9. William Breitbach and Adolfo G. Prieto, "Text Reference Via Google Voice: A Pilot Study," *Library Review* 61, no. 3 (2012): 188–98, https://doi.org/10.1108/00242531211259319; J.B. Hill, Cherie Madarash Hill, and Dayne Sherman, "Text Messaging in an Academic Library: Integrating SMS into Digital Reference," *Reference Librarian* 47, no. 1 (2007): 17–29, https://doi.org/10.1300/J120v47n97_04; Tara Mawhinney and Svetlana Kochkina, "Is the Medium the Message? Examining Transactions Via Text in Comparison with Traditional Virtual Reference Methods," *Journal of Library & Information Services in Distance Learning* 13, no. 1/2 (2019): 56–73, https://doi.org/10.1080/1533290X.2018.1499236.

10. Dempsey, "Chat Reference Referral Strategies," 674–93.

11. Anthony S. Chow and Rebecca A. Croxton, "A Usability Evaluation of Academic Virtual Reference Services," *College & Research Libraries* 75, no. 3 (May 2014): 309–61, https://doi.org/10.5860/crl13-408.

12. Anthony S. Chow and Rebecca A. Croxton, "Information-Seeking Behavior and Reference Medium Preferences," *Reference & User Services Quarterly* 51, no. 3 (Spring 2012): 246–62, https://doi.org/10.5860/rusq.51n3.246.

13. David Ward, "Why Users Choose Chat: A Survey of Behavior and Motivations," *Internet Reference Services Quarterly* 10, no. 1 (2005): 29–46, https://doi.org/10.1300/J136v10n01_03.

14. Kern, "What Are They Asking?"

15. Riki Greenberg and Judit Bar-Ilan, "'Ask a Librarian': Comparing Virtual Reference Services in an Israeli Academic Library," *Library & Information Science Research* 37, no. 2 (Apr. 2015): 139–46, https://doi.org/10.1016/j.lisr.2014.09.005.

16. Greenberg and Bar-Ilan, "Ask a Librarian," 139–46.

17. Lee, "Do Virtual Reference Librarians Dream of Digital Reference Questions?" 95–110.

18. Maria Kingsbury, "How to Smile When They Can't See Your Face: Rhetorical Listening Strategies for IM and SMS Reference," *International Journal of Digital Library Systems* 5, no. 1 (2015): 31–44, https://doi.org/10.4018/IJDLS.2015010104.

19. Gerlich and Berard, "Testing the Viability of the READ Scale," 116–37.

20. Fennewald, "Same Questions, Different Venue," 21–35.

21. Kern, "What Are They Asking?"

22. Mawhinney and Kochkina, "Is the Medium the Message?" 56–73.

23. Ward and Phetteplace, "Staffing by Design," 193–207.

24. Jason Cabaniss, "An Assessment of the University of Washington's Chat Reference Services," *Public Library Quarterly* 34, no. 1 (2015): 85–96, https://doi.org/10.1080/01616846.2015.1000785; Gerlich and Berard, "Testing the Viability of the READ Scale," 116–37; Bella Karr Gerlich and Edward Whatley, "Using the READ Scale for Staffing Strategies: The Georgia College and State University Experience," *Library Leadership & Management* 23, no. 1 (Winter 2009): 26–30; Kemp, Ellis, and Maloney, "Standing By to Help," 764–70; Kelsey Keyes and Ellie Dworak, "Staffing Chat Reference with Undergraduate Student Assistants at an Academic Library: A Standards-Based Assessment," *Journal of Academic Librarianship* 43, no. 6 (Nov. 2017): 469–78, https://doi.org/10.1016/j.acalib.2017.09.001; Maloney and Kemp, "Changes in Reference Question Complexity Following the Implementation of a Proactive Chat System," 959–74; B. Jane Scales, Lipi Turner-Rahman, and Feng Hao, "A Holistic Look at Reference Statistics: Whither Librarians?" *Evidence Based Library and Information Practice* 10, no. 4 (2015): 173–85, https://doi.org/10.18438/B8X01H; Thomas Stieve and Niamh Wallace, "Chatting While You Work: Understanding Chat Reference User Needs Based on Chat Reference Origin," *Reference Services Review* 46, no. 4 (2018): 587–99, https://doi.org/10.1108/RSR-09-2017-0033; Ward and Phetteplace, "Staffing by Design," 193–207; Adrienne Warner et al., "Proactive Chat in Research Databases: Inviting New and Different Questions," *Journal of Academic Librarianship* 46, no. 2 (Mar. 2020): 1–7, https://doi.org/10.1016/j.acalib.2020.102134.

25. Maryvon Côté, Svetlana Kochkina, and Tara Mawhinney, "Do You Want to Chat? Reevaluating Organization of Virtual Reference Service at an Academic Library," *Reference & User Services Quarterly* 56, no. 1 (Fall 2016):

36–46, https://doi.org/10.5860/rusq.56n1; Robin Canuel et al., "Developing and Assessing a Graduate Student Reference Service," *Reference Services Review* 47, no. 4 (2019): 527–43, https://doi.org/10.1108/RSR-06-2019-0041.

26. Gerlich and Berard, "Testing the Viability of the READ Scale," 116–37.

27. Kemp, Ellis, and Maloney, "Standing By to Help," 764–70.

28. Ward and Phetteplace, "Staffing by Design," 193–207.

29. Gerlich and Whatley, "Using the READ Scale for Staffing Strategies," 26–30; Lisa Vassady, Alyssa Archer, and Eric Ackermann, "READ-ing Our Way to Success: Using the READ Scale to Successfully Train Reference Student Assistants in the Referral Model," *Journal of Library Administration* 55, no. 7 (2015): 535–48, https://doi.org/10.1080/01930826.2015.1076309.

30. Kemp, Ellis, and Maloney, "Standing By to Help," 764–70.

31. Cabaniss, "An Assessment of the University of Washington's Chat Reference Services," 85–96.

32. Mariana Lapidus et al., "Measuring the Quality of Reference Services Provided by Paraprofessionals at an Academic Library," *Journal of Academic Librarianship* 46, no. 5 (Sept. 2020), https://doi.org/10.1016/j.acalib.2020.102198.

33. Keyes and Dworak, "Staffing Chat Reference with Undergraduate Student Assistants at an Academic Library," 469–78.

34. Cabaniss, "An Assessment of the University of Washington's Chat Reference Services," 85–96; Keyes and Dworak, "Staffing Chat Reference with Undergraduate Student Assistants at an Academic Library," 469–78; Lapidus et al., "Measuring the Quality of Reference Services Provided by Paraprofessionals at an Academic Library."

35. "Guidelines for Behavioral Performance of Reference and Information Service Providers," Reference and User Services Association, www.ala.org/rusa/resources/guidelines/guidelinesbehavioral [accessed 19 June 2020].

36. Lee, "Do Virtual Reference Librarians Dream of Digital Reference Questions?" 95–110.

37. Dempsey, "Chat Reference Referral Strategies," 674–93; Marie L. Radford et al., "'Are We Getting Warmer?' Query Clarification in Live Chat Virtual Reference," *Reference & User Services Quarterly* 50, no. 3 (Spring 2011): 259–79, https://doi.org/10.5860/rusq.50n3.259.

38. Radford et al., "Are We Getting Warmer?" 259–79.

39. Judith Logan, Kathryn Barrett, and Sabina Pagotto, "Dissatisfaction in Chat Reference Users: A Transcript Analysis Study," *College & Research Libraries* 80, no. 7 (Nov. 2019): 925–44, https://doi.org/10.5860/crl.80.7.925.

40. Lee, "Do Virtual Reference Librarians Dream of Digital Reference Questions?" 95–110.

41. Paula R. Dempsey, "'Are You a Computer?' Opening Exchanges in Virtual Reference Shape the Potential for Teaching," *College & Research Libraries* 77, no. 4 (Jul. 2016): 455–68, https://doi.org/10.5860/crl.77.4.455; Logan, Barrett, and Pagotto, "Dissatisfaction in Chat Reference Users," 925–44.

42. Christina M. Desai and Stephanie J. Graves, "Cyberspace or Face-to-Face: The Teachable Moment and Changing Reference Mediums," *Reference & User Services Quarterly* 47, no. 3 (Spring 2008): 242–55, https://doi.org/10.5860/rusq.47n3.242.

43. Paula R. Dempsey, "Resource Delivery and Teaching in Live Chat Reference: Comparing Two Libraries," *College & Research Libraries* 78, no. 7 (Nov. 2017): 898–919, https://doi.org/10.5860/crl.78.7.898.

44. Sandy Hervieux and Nikki Tummon, "Let's Chat: The Art of Virtual Reference Instruction," *Reference Services Review* 46, no. 4 (2018): 529–42, https://doi.org/10.1108/RSR-07-2018-0060; Keyes and Dworak, "Staffing Chat Reference with Undergraduate Student Assistants at an Academic Library," 469–78.

45. Mawhinney and Kochkina, "Is the Medium the Message?" 56–73.

46. Gerlich and Berard, "Testing the Viability of the READ Scale," 116–37; Kemp, Ellis, and Maloney, "Standing By to Help," 764–70; Logan, Barrett, and Pagotto, "Dissatisfaction in Chat Reference Users," 925–44; Linda Rich and Vera Lux, "Reaching Additional Users with Proactive Chat," *Reference Librarian* 59, no. 1 (2018): 23–34, https://doi.org/10.1080/02763877.2017.1352556.

47. "About McGill: 2019 Factbook," McGill University, https://www.mcgill.ca/about/quickfacts [accessed 19 June 2020].

48. Mawhinney, "User Preferences Related to Virtual Reference Services in an Academic Library," 1–8.

49. "About the Library," McGill Library, https://www.mcgill.ca/library/about [accessed 19 June 2020].

50. Krista Bowers Sharpe and Christina Norton, "Examining Our Past, Considering Our Future: A Study of Email Reference, 2000–2015," *Internet Reference Services Quarterly* 22, no. 4 (2018): 133–65, https://doi.org/10.1080/10875301.2018.1455617; Logan, Barrett, and Pagotto, "Dissatisfaction in Chat Reference Users," 925–44; Warner et al., "Proactive Chat in Research Databases," 1–7.

51. Mawhinney, "User Preferences Related to Virtual Reference Services in an Academic Library," 1–8.

52. Mawhinney, "User Preferences Related to Virtual Reference Services in an Academic Library," 1–8.

53. Lynn Silipigni Connaway, Timothy J. Dickey, and Marie L. Radford, "'If It Is Too Inconvenient, I'm Not Going After It': Convenience as a Critical Factor in Information-Seeking Behaviors," *Library & Information Science*

Research 33, no. 3 (Jul. 2011): 179–90, https://doi.org/10.1016/j.lisr.2010.12.002.

54. Stieve and Wallace, "Chatting While You Work," 587–99; Lee, "Do Virtual Reference Librarians Dream of Digital Reference Questions?" 95–110; Mawhinney and Kochkina, "Is the Medium the Message?" 56–73.

55. Gerlich and Berard, "Testing the Viability of the READ Scale," 116–37.

56. Maloney and Kemp, "Changes in Reference Question Complexity Following the Implementation of a Proactive Chat System," 959–74.

57. Gerlich and Berard, "Testing the Viability of the READ Scale," 116–37; Stieve and Wallace, "Chatting While You Work," 587–99.

58. Gerlich and Berard, "Testing the Viability of the READ Scale," 116–37.

59. Armann-Keown, Cooke, and Matheson, "Digging Deeper into Virtual Reference Transcripts," 656–72; Bowers Sharpe and Norton, "Examining Our Past, Considering Our Future," 133–65; Kern, "What Are They Asking?"; Lee, "Do Virtual Reference Librarians Dream of Digital Reference Questions?" 95–110; Côté, Kochkina, and Mawhinney, "Do You Want to Chat?" 36–46.

60. Stieve and Wallace, "Chatting While You Work," 587–99.

61. Virginia Braun and Victoria Clarke, *Successful Qualitative Research: A Practical Guide for Beginners* (London, UK: SAGE, 2013).

62. Greenberg and Bar-Ilan, "Ask a Librarian," 139–46.

63. Mawhinney, "User Preferences Related to Virtual Reference Services in an Academic Library," 1–8.

64. Fennewald, "Same Questions, Different Venue," 21–35.

65. Mawhinney, "User Preferences Related to Virtual Reference Services in an Academic Library," 1–8.

66. Mawhinney, "User Preferences Related to Virtual Reference Services in an Academic Library," 1–8.

67. Lee, "Do Virtual Reference Librarians Dream of Digital Reference Questions?" 95–110.

68. Gerlich and Berard, "Testing the Viability of the READ Scale," 116–37.

69. Doreen Bradley et al., "Advancing the Reference Narrative: Assessing Student Learning in Research Consultations," *Evidence Based Library and Information Practice* 15, no. 1 (2020): 4–19, https://doi.org/10.18438/eblip29634; Lorie A. Kloda and Alison J. Moore, "Evaluating Reference Consultations in the Academic Library," in *Proceedings of the Library Assessment Conference: Building Effective, Sustainable, Practical Assessment*, eds. Sue Baughman et al. (Washington, DC, 2016), 626–32, https://www.libraryassessment.org/wp-content/uploads/bm~doc/proceedings-2016.pdf; Trina J. Magi and Patricia E. Mardeusz, "Why Some Students Continue to Value Individual, Face-to-Face Research Consultations in a Technology-Rich World," *College & Research Libraries* 74, no. 6 (Nov. 2013): 605–18, https://doi.org/10.5860/crl12-363.

70. "McGill Commitment," McGill University, https://commitment.mcgill.ca [accessed 19 June 2020].

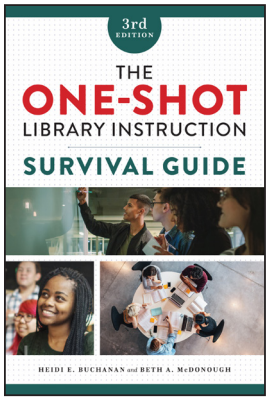
71. Stieve and Wallace, "Chatting While You Work," 587–99.

72. Kemp, Ellis, and Maloney, "Standing By to Help," 764–70; Rich and Lux, "Reaching Additional Users with Proactive Chat," 23–34; Jie Zhang and Nevin Mayer, "Proactive Chat Reference: Getting in the Users' Space," *College & Research Libraries News* 75, no. 4 (Apr. 2014): 202–05, https://doi.org/10.5860/crln.75.4.9107; Warner et al., "Proactive Chat in Research Databases," 1–7.

73. Dempsey, "Resource Delivery and Teaching in Live Chat Reference," 898–919.

Book Reviews

Heidi E. Buchanan and Beth A. McDonough. *The One-Shot Library Instruction Survival Guide*, 3rd ed. Chicago, IL: ALA Editions, 2021. 176p. Paper, $54.99 (ISBN: 978-0-8389-4997-9).



With the third edition of *The One-Shot Library Instruction Survival Guide,* Heidi Buchanan and Beth McDonough, both research and instruction librarians at Western Carolina University, have provided LIS students and early-career librarians with a concise and useful handbook for the creation of successful information literacy instruction sessions. Acknowledging but not engaging in the debate over the value of the "one-shot" instruction section versus credit courses or content embedded in the curriculum, the authors note that the one-shot "remains the reality for most libraries" (2) and recognize that new instruction librarians need guidance in designing what is likely to make up a large percentage of their instructional responsibilities. Originally growing out of an ACRL preconference session on instruction and an online course, the third edition of this text brings together elements of the earlier editions by focusing on active learning strategies and the concepts of the *Framework for Information Literacy for Higher Education*. The authors also address the ways that the COVID-19 pandemic caused rapid changes in the delivery of information literacy instruction that may remain with us postpandemic.

Unlike many books on information literacy instruction and the *Framework,* this volume does not provide a collection of ready-made lesson plans for library instruction, but instead guides new instructors through the steps of creating their own successful one-shot sessions. The book starts by explaining what a one-shot session is. The second chapter describes the process of planning a session, beginning with communication and collaboration with subject faculty. Particularly useful is the concept of an "instruction interview." Modeled on the reference interview, this approach can help librarians determine the needs of the instructor and students for whom their one-shot is being designed.

In addition to an index, a bibliography, and a glossary at the end of the book, each chapter provides references, suggestions for additional reading, and thought exercises alongside highlighted text featuring tips, "lessons learned," and charts mapping out processes and concepts. In addition, "vignettes" told by experienced instruction librarians illustrate the takeaway points of each chapter and suggest activities that instructors might try in their own sessions. The font in the highlighted text, vignettes, charts, and other ancillary materials is significantly smaller than the font used in the main text; when combined with the darker background, some readers may find it difficult to read.

The third chapter of the book addresses the *Framework* directly and makes an excellent case for using it intentionally in the design of one-shot sessions. Each frame is discussed and followed by an example vignette demonstrating how the concept could be taught in a one-shot session. This chapter is followed organically by a chapter about engaging students through active or experiential learning exercises. Some of the activities will be very familiar to instruc-

tion librarians, such as the one-minute paper and mind maps, but the explanations will likely be helpful to LIS students and new librarians. The authors also describe more complicated activities such as the jigsaw and case studies. These could be trickier to implement in a one-shot session but have great potential for student engagement.

The fifth chapter discusses special or difficult teaching situations, and here the authors address the disruption caused by the COVID-19 pandemic. Buchanan and McDonough assert that online instruction is likely here to stay and sketch out the ways that the engagement techniques presented in the fourth chapter could be adapted for online instruction. The authors make broad suggestions for some options, such as online games, that readers would have to research on their own, and unfortunately this is one area where they do not provide as many suggestions for further reading.

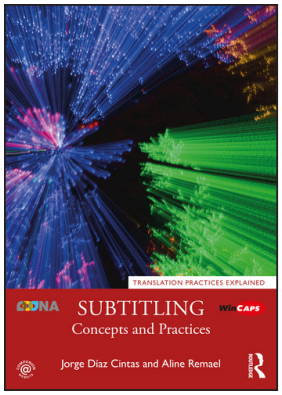
The authors recognize the importance of assessment in gauging student learning and helping new instructors grow and improve, and the sixth chapter is devoted to this topic. The section begins with the techniques used most commonly to assess comprehension in one-shot sessions, from informal observation to more advanced polling techniques. Buchanan and McDonough then move on to talk about performance assessment, which is seen more often outside of one-shot sessions in the evaluated written assignments. The authors acknowledge this fact, but they also suggest that instructors might consider conducting performance assessments of processes. Quizzes and surveys are also discussed as ways to assess comprehension and gather feedback from students to improve teaching. Readers are reminded that assessment data is most useful if it is used to continue conversations with subject faculty and to make revisions on content, delivery, or other aspects of instruction.

The final chapter suggests that instructors reflect on their teaching experiences over a period of time, such as a semester or a year, and think about how those experiences connect to larger personal or institutional teaching and learning goals. The authors discuss what instructors can do when a one-shot is not possible due to time constraints or when it is not well-suited to the subject faculty's goals. The authors finish the book with a few words about going beyond the one-shot session with embedded librarian models and other ways of integrating information literacy instruction throughout the curriculum. The references for this chapter include several useful resources on those topics.

Overall, this slim volume is probably not sufficient by itself to teach a brand-new instruction librarian everything they need to know to lead successful one-shot sessions. Nevertheless, with its practical approach and accessible style, helpful suggestions for further reading, and many examples drawn from the real-world experiences of experienced teaching librarians, it is a very good place to start. This title would be a useful addition to the professional resources collection of an academic library with an instruction program that includes one-shot sessions, and it may also be useful as a textbook in library school courses on instruction.—*Melissa Anderson, Southern Oregon University*

Jorge Díaz Cintas and Aline Remael. *Subtitling: Concepts and Practices.* London, UK: Routledge, 2021. 292p. Paper, $46.95 (ISBN: 9781138940543).

Subtitling: Concepts and Practices provides an approachable praxis for subtitling film and the history and philosophies behind those practices. The intended audience is translators or students creating subtitles for foreign language films. The book was published in conjunction with a companion website that provides additional exercises and access to a subtitling



program. Audiovisual translation and subtitling as a focus of academic study is a relatively recent development, and the authors are careful to date and explain subtitling practices, pointing out where there is relative consensus around a method of subtitling. The core of the text argues that subtitling is ultimately always contextual. The length and formatting of a subtitle for a single scene depends on genre, the semiotics in the scene itself, the language of the source text, and the pace of the dialogue. Throughout the chapters there are clear, concise, and detailed examples of subtitling practice using lines from popular domestic and international films that make the text approachable and relevant. The companion site, accessible with the purchase of the book, provides files for additional questions, examples, and links to additional resources, which are organized chapter by chapter.

The book begins by outlining the relationship between academic linguistic research and film industry practice, the history of subtitling, and by identifying regional norms. Until the mid to late 20th century, subtitling as a topic of academic inquiry was fairly limited, despite the impact translation has had on the reception of film throughout cinematic history. The authors credit part of this lag to very narrow definitions of translation, which originally excluded subtitling for film and intralingual captioning. The style and time spent on subtitles can really vary depending on the type of work being subtitled and who the perceived intended audience is. Subtitling or captioning is received differently in different countries and in some online communities, where participating in creating subtitles or capturing live audience reactions are celebrated parts of that media.

Chapters 3 through 8 discuss the many elements that are considered to make subtitling decisions. Subtitlers need to be mindful to not hinder the viewing experience through poor timing of the subtitled text and ensuring that the volume of text on screen does not obscure the image. The authors point out throughout these chapters that the standard of the production company, subtitling company, and the desired intended audience are often given more weight than trying to make the impossible "perfect" translation. Chapter 9 provides a brief overview of the transition of subtitling programs to cloud-based systems and recent efforts to integrate machine translation and translation memory into workflows.

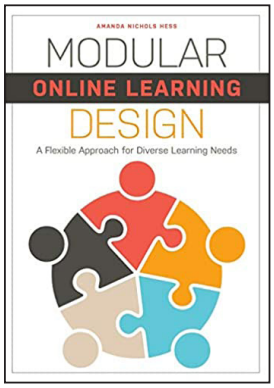
This book is explicitly intended for subtitling for foreign languages, but the text could be a starting point for individuals who are interested in understanding methods of subtitling in general and want to conform to known standards, even if they are providing intralingual subtitles. The evidence provided for coalescing a relative subtitling standard is robust and based primarily in contemporary research. As video on demand content exponentially expands, subtitling and captioning are becoming increasingly standard. Netflix's approach to creating foreign language subtitles is nearly omnipresent throughout the book. Beyond translating, the authors provide evidence that subtitles aligning with their model can aid comprehension because of the way subtitles and captions are becoming increasingly commonplace. Though the field lacks standards for evaluating the quality of subtitled materials, the reader is empowered by research paired with useful examples from contemporary film to make informed judgments of subtitled video. That background knowledge can inform an educator's ability to judge the quality of subtitled video being shared with a group, or to determine whether films in an existing library collection are recommended by language learning websites discussed in the text.

Authors Díaz Cintas and Remael include accessibility and subtitling for people who are D/deaf or hard-of-hearing (SDH) and audio description as a part of the operational definition of "audiovisual translation." The book provides a very helpful overview of the prominence SDH is given globally and specifically mentions corporations that integrate SDH into their programming. However, the book notes that SDH is a very underresearched field and can be excluded from translation studies, impacted by the fact that it has been excluded as a form of translation by some. There are other indicators that SDH is not fully integrated into standard translation practice. For example, SDH often relies on colored text to indicate the speaker, but average subtitles are presented in white or yellow. Occasionally it is necessary to parse through what is a suggestion that may work for SDH and what may not. Library workers considering taking on subtitling may want to look for resources specific to SDH subtitling for greater specificity.

This book may not meet the needs for someone focusing specifically on audiovisual historiographies. Although *Subtitling* frequently refers to the documentary genre, its focus is on films created to entertain audiences. The text suggests that the subtitler is removed from the creation of the audiovisual content and is written as if the end viewer is an average movie-watcher. There is no specific reference to research on providing subtitling for oral histories or archival footage. This may be great reference material for preparing a public screening of archival footage, but it may not be suitable to inform other archival work.

Subtitling: Concepts and Practices is a good starting place for anyone interested in subtitling regardless of their interests in translation or for someone interested in having an informed perspective while evaluating foreign language films, regardless of their prior familiarity with the concepts. It provides detailed examples of best practices and pitfalls using accessibility and comprehension as a baseline of success. Readers will find the writing approachable and backed by linguistic research and walk away with the tools to start subtitling themselves or to understand foreign language film with new depth.—*Elizabeth Davis, Independent Scholar*

Amanda Nichols Hess. *Modular Online Learning Design: A Flexible Approach for Diverse Learning Needs*. Chicago, IL: ALA Editions, 2020. 144p. Paper, $65.99 (ISBN: 978-0838948125).



Modular Online Learning Design presents a modular approach to the design of online learning objects. The term *modular* is typically applied to a product with individually engineered components, such as a house or a smartphone (assembled with Processor X, Screen Y, Camera Z, and so on). Applied to an online class or tutorial, this looks like "constructing broader academic experiences out of smaller learning units" (2). A modular approach lends itself to more easily scaled and modified content. In a pedagogical sense, it also echoes the concept of "chunking" content into smaller, more digestible bites for learners.

However, it should be noted that the text is largely focused on a modular approach toward the design process, rather than the product. If a modular product can be compared to a modular home, think of a modular design process as the construction business, with its various departments for product design, sales, and construction. A modular approach to instructional design models means that the process is not limited to the creation of new content and does not have to proceed in a linear way. Instead, existing online learning objects can be improved by engaging with whatever step of the design process would be most impactful.

Beginners and those seeking to improve or scale their online instruction offerings will find value in this book. I would have found this title immensely helpful in summer 2020, when I, like so many others, stared down the barrel of shifting all of our in-person instruction online. I found the cases, reflective questions, and figures provided in each of the chapters to be particularly helpful. The reflective questions are excellent prompts for key decision-making and would be useful in conversations with stakeholders as well as collaborators. The figures include conceptual models for the chapter content as well as charts and matrices that readers could use when applying the content to their own work.

Chapter 2 contains a succinct summary of various instructional design models, including backward design, the ARCS model, rapid prototyping and spiral design, rubrics for online course quality, and the IDEA and USER models, which are specific to libraries. Chapter 3 encourages the reader to think beyond learning goals to the organizational, professional, program, and institutional context and shares suggestions for soliciting feedback during the design process.

Chapter 6, "Modifying and Adapting Existing Content," is the "must-read" chapter, no matter the reader's experience level. It dives more deeply into the benefits of creating modular content and includes cases that explore how existing content—whether currently online or not—can be remixed into modular online learning objects. Whether there are existing online resources that can be updated and repurposed, or in-person lessons that can be transformed, I find this to be a particularly useful approach. Planning and building online instruction is extremely time-consuming, and any measures that conserve time and mental energy are a bonus. Remixing existing content also frees the designer to focus on updating, modifying, or creating only the most important content; depending on context, that could mean the main object of the lesson, customization for a particular course or assignment, or updating outdated content. In this chapter, Hess also recommends a few excellent Open Educational Resource (OER) collections of reputable content as resources to consider when remixing. One minor quibble is the lack of information about some of the technologies that can assist with remixing, which would have been useful here. That said, this information is readily available with an internet search.

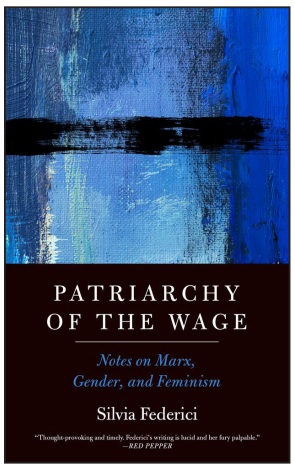
Considering ways to chunk the content and add meaningful, accessible interaction is an important part of the design process, especially when remixing content, and Hess explores these topics as well. Some pedagogical ideas carry across from in-person to online instruction very easily, such as focusing on the student learning outcomes during the lesson, removing extraneous information, providing students with feedback, and building in interactivity. However, some of these recommendations look different online. For instance, in an in-person class, an instructor might show a video and then base an activity on it. In an online environment, students may tune out of a video halfway through. Maybe they do this in person too, but in a quantified online environment it becomes glaring in a way that doesn't necessarily happen in the classroom.

The chapter on assessment largely focuses on employing user experience to assess the online learning objects themselves, rather than the learners' knowledge. Again, the focus remains on the design process; librarians who want more information about incorporating educational assessments into their online learning objects will need to look elsewhere.

Hess's modular approach to instructional design is effective and easy to follow. This slim volume is an excellent introduction and reference for creating online modules, whether

reading front to back or plundering a particular chapter for conceptualizing and improving a specific phase of your design process. Think of this book as a modular framework of design considerations, rather than a how-to guide, and consider pairing with other texts about pedagogy and technology for online learning if you are new to online content creation.—*Lauren deLaubell, SUNY Cortland*

Silvia Federici. *Patriarchy of the Wage: Notes of Marx, Gender, and Feminism*. Oakland, CA: PM Press, 2021. 151p. Paper, $15 (ISBN: 978-1629637990).



Activist and Marxist scholar Silvia Federici is perhaps best known for the Wages for Housework campaign launched in the 1970s, which demanded payment for domestic labor in an attempt to make a critical intervention in the capitalist exploitation of women.[1] Like most of her work, *Patriarchy of the Wage* emphasizes "reproductive labor," labor that does not directly produce profit for the owning class, but instead reproduces and cares for the laborers whose work creates that profit. In this book, Federici analyzes various forms of reproductive labor to generate new understandings of Marxist theory, and new possibilities for socialist organizers. Ultimately, Federici argues that understanding reproductive labor and its gendered nature is necessary for building a strong socialist movement, and an equitable world where everyone can thrive.

Chapters 1 and 2 constitute a defense of the Wages for Housework campaign against critique from other socialist activists. Federici argues that many leftists depict waged laborers as the protagonists of socialist struggle while marginalizing unwaged laborers such as housewives, to the detriment of both women and the socialist movement. These leftists position domestic work as a natural act of love and care that would occur even without the organizing presence of capitalism in workers' lives. Federici argues that this narrative serves the owning class by separating reproductive labor from waged labor, when in fact both are necessary for profit generation. The Wages for Housework campaign demands payment for the "real length of the workday," which extends beyond the time spent directly laboring for a wage into the time spent caring for the bodies, minds, and children of workers (20). In these chapters, Federici connects the patriarchal positioning of women as natural domestic laborers who deserve no wage to low wages in feminized professions, arguing that once women become "used to working for nothing," it is easy for employers to justify low wages in fields like librarianship, nursing, and teaching (15). The central argument here is that true working-class solidarity requires valuing all labor, including reproductive labor.

Federici moves from socialist practice into socialist theory in chapters 3 through 5, arguing that classical Marxism is incomplete without the feminist critique that unpaid reproductive labor is central to capitalist exploitation, and thus an important site of working class struggle. These chapters are very much part of a conversation between Federici and other Marxist theorists and may be of less interest to readers with little grounding in this discourse. However, library workers may find much of value in chapter 4, "Marx, Feminism, and the Construction of the Commons." Federici argues that one of the flaws in Marx's analysis was his belief that industrialization would build the conditions necessary for socialist revolution by increasing productivity and reducing scarcity. Federici incorporates the work of ecofeminists who argue

that while industrial advancement may increase productivity, it also devastates the planet and creates new demands for reproductive labor required to sustain human life in increasingly damaged ecosystems. This chapter calls for a shift away from Marxist communism toward a politics of the commons, focused on building a society modeled on "spaces [such as community gardens] that are self-organized and both require and produce community" (67). While libraries are not named in this chapter (nor are they typically self-organized), I found myself thinking about how they serve as a commons, providing space and labor that supports a variety of productive and reproductive communal activities.

In the final two chapters, Federici discusses the history of two categories of feminized laborers: housewives and sex workers. The central argument of both of these chapters is that as capitalism shifted into heavy industry in the late nineteenth century, workers' bodies required more care so they could handle the physical demands of the labor. Workers also needed to be replaced more often. This led to the development of the family wage and the housewife required to care for a male worker's body, as well as to bear and care for children who would serve as future laborers. This duty to reproduce led many married women to resist sex and created the need for another kind of reproductive laborer: the sex worker, who could serve men's need for sexual pleasure when their wives would not. These are interesting arguments, but I wish these chapters had been longer and contained more supporting evidence for Federici's historical claims. The history of sex workers, the history of housewives, and the complex relationship between the two in the context of patriarchy and capitalism is simply too much to cover in two short chapters. These chapters would also have benefited from more analysis of race and how it intersects with dominant views of housewives and sex workers.

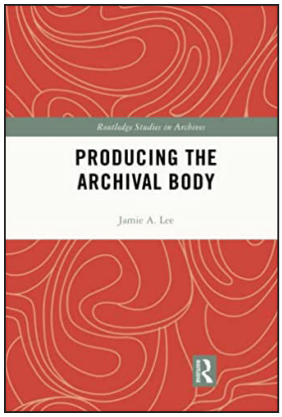
Patriarchy of the Wage offers an important feminist intervention into socialist practice and theory, and I admire Federici's commitment to addressing both at once. This book has much to offer for anyone interested in socialist praxis that accounts for reproductive labor and the environmental toll of capitalism. While some of its arguments are underdeveloped, it is particularly strong when laying out Federici's politics of the commons, pulling in arguments from Marxist and feminist theory, and examples from feminists and socialists struggling in a variety of contexts. Library workers will value this book for contributions to theory about reproductive labor and feminized professions, and for the possibilities it offers in viewing libraries as sites for building a politics of the commons.—*Melissa A. Hubbard, University at Buffalo*

Note

1. Federici frequently uses the word "women" to refer to cisgender women whose bodies are capable of producing children. I believe she does so because this artificial conflation of sex and gender is fundamental to the systems of oppression she is exposing in her work. Capitalism and patriarchy position "women" as a biological category destined to engage in reproductive labor because of the assumed reproductive capacities of our bodies. Federici's arguments in this book would be stronger if she had engaged critically with this use of the word women and its power to reinscribe the gender binary and reinforce patriarchy.

Jamie A. Lee. *Producing the Archival Body*. Oxfordshire, UK: Routledge, 2021. 182p. Hardcover, $160 (ISBN: 978-0367182199).

Jamie A. Lee's *Producing the Archival Body* weaves together many timely conversations held both in the academy and among the broader public. The book is organized into two parts, "Body Parts" and "Assembled Bodies in Action." Each section uses multiple frameworks from somatechnics to queer theory, feminist theory, and archival studies alongside Lee's personal



experiences building the Arizona Queer Archive (AQA). This deep and insightful text will be useful for those with an understanding of archival theory and for those who work within archives as practitioners or scholars and others who seek to challenge standard pedagogical approaches to how archives are constructed.

Lee's introduction asks a range of questions: What does it mean to have a body? What does it mean to be a body? What constitutes a body? Lee applies the language of the body, whether referencing a specific human body or a "body of work," to many things ranging from structure, to container to host, to collection. Throughout the book, Lee urges the reader to think through the ways that archives and bodies are taken for granted.

Bodies encapsulate a multiplicity of meanings, often with simultaneously contradictory values, and are understood differently in different cultures around the world. Not everyone in a society is granted the same permission to have a body or to be a body where autonomy and agency are concerned. For the purpose of her book, Lee centers the body through a "… myriad of definitions, from the human and corporeal to the collected and aggravated corpus of records, memories, histories, or what I consider the archival body" (10). Lee makes her bodily location known through the anecdotes of experiences she shares with her readers. By practicing positionality in this way, Lee enriches the reader's understanding of the ways that archival bodies are produced. The juxtaposition of "archival" and "bodies'' calls attention to the roots of its production, as the origin of the word "archive" denotes an authority over a history. "Body" in this sense denotes the production and maintenance of history itself (57).

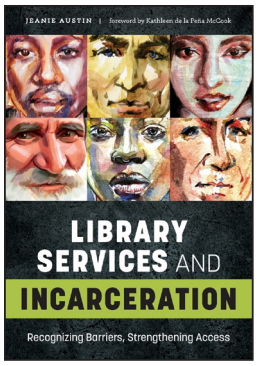
Lee's methodology emerges from her work with the AQA as a repository of queer experiences in Arizona. The AQA does not simply catalog and store archival material. Through Lee's oral history interviews and "storytelling," the AQA presents opportunities for those not represented in mainstream archives to be embodied in a way that moves beyond normative archival standards. She presents eloquent cases of why questioning these standards is important and how heterochrononormative standards in the archival process has rendered certain bodies to the periphery (80).

A major contribution that this work brings to the archival field is the concept that Lee calls *contextual relationality* through which she remedies an important lack in the field, that being "touch." The aesthetic stereotypes of an archive as institutional repositories with towers of bankers boxes and Hollinger boxes filled with documents and records seems to deny any aspect of touch; while handling materials, one must wear a white glove to sift through them. Lee's book on bodies comes to us during the Covid-19 pandemic, when many are sore for touch and where digital boundaries seem to deny this. This isolation abounds as we are restricted to virtual interfaces to protect our communities. A book covering any aspect of bodies would be remiss without covering touch; through Lee's anecdotes about the storytelling methodology and interviews she engages in, she reminds us that touch is still integral to our body's integrity, whether it's giving a hug after an interview or the emotive connections built on touching someone's heart after truly recognizing and acknowledging them (102). The contextual relationality that Lee sets forth as a method in creating the AQA's finding aid is a refreshing take that embodies touch as a cornerstone for this finding medium, where its effectiveness is evident "through a method of storytelling and through relating stories that

offer an interactive exchange … it makes an archival document accessible through imagined and engaged relations" (59). In *Producing the Archival Body*, she queers the archive in this way by introducing methods, forms of relation, and a deconstruction of time that call into question the privileging of certain archival practices over others.

Lee concludes her book with hashtags such as #SayTheirNames, #BlackLivesMatter, #BlackTransLivesMatter, #BlackTransMovement, #MMIW, #MMIWG, #MMIWG2S, and #NoMoreStolenSisters (162). These hashtags follow discussions ranging from police brutality against Black people in the United States and missing and murdered Indigenous women. Coincidentally, at the time of writing this review, the United States is following the case of Gabby Petito, a white woman who disappeared in the Grand Tetons of Wyoming following a dispute with her boyfriend. "Producing the Archival Body" arrives at a time where larger critical conversations are being held around the coverage of different bodies and challenge the roles archivists play not just as managers of history but as creators of history and the bodies it holds. Living in the Covid-19 pandemic and following these conversations and hashtags do not diminish the loss of Petito; rather, they bring up the uneven media coverage of missing people, namely the lack of coverage of missing black, brown, and indigenous women. *Producing the Archival Body* will touch any archivist's heart, as it is a well-crafted love letter to the field on how we can all do better in questioning our daily practices and reconstruct archives toward a liberatory framework. Lee holds true to her claim at the beginning of the introduction where she promises that "at the end of this book, you and I will both be different" (1).—*Jade Levandofsky, University of California, Los Angeles*

Jeanie Austin. *Library Services and Incarceration: Recognizing Barriers, Strengthening Access*. Chicago, IL: ALA Neal-Schuman, 2021. 208p. Paper, $54.99 (ISBN 978-0-8389-4945-0).



The ongoing crisis of mass incarceration and racialized, violent policing in the United States touches more aspects of our daily lives than many realize, and libraries are no exception. Library furniture built by exploited prison labor, book and information censorship, reference by mail requests, police presence in libraries as security, re-entry services for formerly incarcerated community members: these are just a small handful of the ways in which libraries and library workers are integrated into the carceral system in the United States. People experiencing incarceration are often marginalized or entirely omitted from discussions of censorship, both in popular and professional discourse, and library services for incarcerated people rarely make more than a brief appearance in LIS school curricula. There has never been a better time to correct these concerns.

Although prison libraries and librarianship have been discussed and championed within the library profession for nearly a century now, Austin's *Library Services and Incarceration: Recognizing Barriers, Strengthening Access* comes at a time of "deep introspection and critical engagement" [xi] for the LIS field; it charges us to not only rethink prison librarianship and information access, but also larger issues of incarceration in a society that imprisons more people than any other country in the world. The text is not only thorough and highly informative, but powerful and reflective in its abolitionist approach. One of the greatest strengths of the book is its explicit linkage of past and present scholarship, not just in LIS, but in fields like surveillance studies, criminology, gender studies, critical carceral studies, law, and history.

This scholarship also includes, perhaps most importantly, the work and words of currently and formerly incarcerated people. Austin's text, much like their job, is informed by the actual needs and demands of people experiencing incarceration, not just professional or academic literature.

Library Services and Incarceration is structured in three parts: the first half of the book offers a critical and historical overview and analyses of carceral systems and library services for incarcerated people in the United States. The middle section focuses on information services technologies within carceral facilities, including an emphasis on the surveillance and punitive functions these technologies can serve. The second half of the book examines the practical implementation of programs based on the theory and historical analysis in the first half of the text. Austin looks to community groups outside of the library field that have been providing information services and similar support to incarcerated people for decades, and to the informational needs as expressed by currently and formerly incarcerated people themselves.

Austin's text, as you might expect from this synopsis, is information-heavy, but it manages to be so without being dense or difficult to follow. Instead, it's written to be accessible to both long-time LIS professionals as well as those with only a passing knowledge of library services and librarianship. Chapters are broken down into digestible sections, and each includes notes and references at the end. As someone who loves to go through citation lists to find other works to explore, this is perhaps one of my favorite formatting decisions; it encourages readers to seek out further research and connections to community groups. This is critical in the context of informational needs and services for people experiencing incarceration, a severely underresearched subject in LIS.

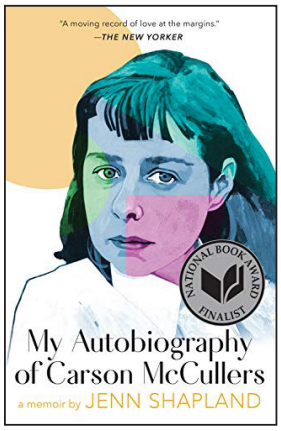
Few library schools offer instruction specifically on prison librarianship, and even fewer have courses entirely about library services in carceral facilities (see the recent paper "Prison Librarianship and LIS Schools: Is There a Career Path?" by Patrick J. Raferty Jr., 2021, for a further study of this). My own introduction to this field was primarily through my program's promotion of the SFPL Reference By Mail for incarcerated patrons internship run by Austin. Several of my classmates participated and were eager to share their experiences with it. *Library Services and Incarceration* gives this reader hope that a critical approach to prison librarianship and advocacy for information services in carceral facilities can become a more integrated and prominent part of LIS programs. Austin's work serves as both a primer for understanding information access and service issues in the US carceral system and as a handbook for thoughtful, community-oriented, and liberatory practices and programs that can and have been implemented. Most importantly, Austin highlights the actual informational needs and issues of currently and formerly incarcerated people in their own words. As Austin demonstrates in their critical survey of LIS literature on these topics, these voices are frequently omitted from the discussion of information access and censorship even though they're the voices we most need to hear.

For anyone familiar with Austin's work, *Library Services and Incarceration* is an excellent compendium and extension of their research. For those in LIS who are new to Austin or to prison librarianship in general, this book is a crucial resource. LIS programs should strongly consider incorporating this text into coursework, even if they don't offer specific courses on prison librarianship. *Library Services and Incarceration* covers censorship, information access, and the informational needs of a frequently overlooked population. LIS professionals and practitioners owe it to themselves, their communities, and their patrons to be informed and

aware of these issues, and I can think of no better text to begin that process than *Library Services and Incarceration*. Austin's writing is powerful in its urgency and its liberatory promise. Their book encourages us to confront biases—both internal and external—and injustices, rather than shaming us for the sins of mass incarceration. As an abolitionist library worker and doctoral student, this book gives me hope for the future of LIS; it also reminds me that there is still so much to do.—*Megan Riley, University of California, Los Angeles*

Jenn Shapland. *My Autobiography of Carson McCullers*. New York, NY: Tin House, 2020. 296p. Paper, $16.95 (ISBN: 978-1-951142-29-2).

In my conversations with students interested in librarianship, I have noted a shared awe regarding archival work and assembly. Archives and archivists' work shimmer with frisson: the tension between the public and the personal, the privilege of accessing someone's most private selves. And it is through the use of archives that hidden lives are made public, celebrated, or obscured. In the hands of a writer or filmmaker (see Todd Haynes's new *The Velvet Underground* or Angelo Madsen Minax's astonishing *North by Current*), there's a collaborative relationship between creator and archivist negotiating with the past to curate and contextualize. There's a call to create, a response, and a responsibility.



Jenn Shapland's *My Autobiography of Carson McCullers* is best described as a piece of braided nonfiction. Brief vignettes about Shapland's life and research are intertwined with descriptions of letters, transcripts, photographs, and novels from the nine archival collections referenced. The narrative traverses time and location, landing the reader in the Ransom Center's reading room and in the bathtub of McCullers's childhood home where Shapland spends a residency soaking, reading, and writing. The intimacy Shapland forges with the McCullers of the archives is deep, earnest, and compassionate.

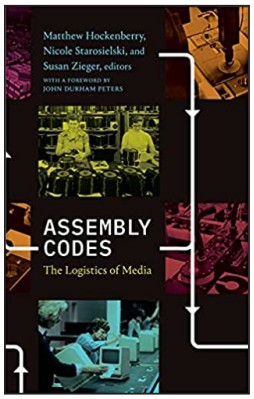
Conversations with librarians are not the focus of Shapland's project, but archives are everywhere, from her own internship at the Ransom Center to her residency at the Carson McCullers Center for Writers and Musicians. The initial connection between Shapland and McCullers is sparked in an archive when Shapland uncovers a transcript of a session between McCullers and her therapist and likely lover, Dr. Mary Mercer. In it, McCullers recounted her boyfriend Reeves asking her at nineteen if she was a lesbian. She denied it, but admitted to intense relationships with women. Recognizing in Carson the queerness that shaped her own identity, Shapland set out to uncover as much as she could about McCullers's love of women. Her McCullers was a lesbian and not, as her biographers have described her, a confused woman in a loving but starcrossed relationship with Reeves, the man she married twice.

Shapland interrogates the erasure of queerness in the archives and in literary biography. Dr. Mercer herself "refused biographers permission to use [McCullers and Mercer's] letters (those that existed). Her censorship was thorough" (40). Shapland recognizes Dr. Mercer's erasure as a love letter to McCullers's privacy, reading between the lines that Mary knew "Carson better than her biographers, better than so many of the people around her" (193). The nature of historical censorship, regardless of intent, is in sharp focus, as are intersecting representations of the writing life, chronic illness, mental health, alcoholism, self-care, and the trauma of being publicly queer when queerness in itself was considered an illness. *My*

Autobiography of Carson McCullers is a masterclass in close reading and discovery. Shapland's experience is so interwoven with her reading of the McCullers archive that it is difficult to read this book as anything other than a mending of the fabric of queer literary heritage.

While I found this book revelatory and intimate as a reader, it holds special significance for knowledge workers who connect to the romantic allure of the role: the keeper of secrets and history, preserving and describing that which cannot be digitized. Archivists will find a deep appreciation for Shapland's descriptions of archival work. One highlight: as a Ransom Center intern, Shapland catalogued McCullers's housedresses and intricately embroidered coats. She recounts how intensely she focused on the details of the clothing, lamenting that, "I measured and photographed each piece from several angles, never very satisfied with my ability to recreate the life I saw and felt in the clothes" (100). The descriptions are loving and tender (this book is very much a love letter) and librarians and archivists are likely to appreciate the care with which Shapland consults her sources. Additionally, the book is a reminder to archivists that collecting and preserving artifacts carries a responsibility to be as contextually honest as possible. This book is a must for university collections with an emphasis on Southern literature, literary archives, and queer history.—*Ashley Roach-Freiman, University of Memphis*

Assembly Codes: The Logistics of Media. Matthew Hockenberry, Nicole Starosielski, and Susan Zieger, eds. Durham, NC: Duke University Press, 2021. 248p. Paper, $26.95 (ISBN: 978-1478010760).



"Logistical media" isn't a common term in the world of libraries and archives; a cursory search for it in the database LISTA returns zero results. *Assembly Codes: The Logistics of Media* persuaded me within about three pages, however, that it should be. In the book's coinage, logistical media are media of "orientation": clocks, inventories, spreadsheets, communications satellites, even postage stamps (3). Tools that enable the creation, arrangement, and distribution of goods and services, "[l]ogistical media are processual; they orient, locate, and organize words, things, people, and data" (96). Examples in information professions abound: linked data, thesauri, RFID tags, and integrated library systems, but also book trucks, couriers, shelving, and signage.

This edited volume's essays explore media as a global commodity whose production and dissemination rely on extensive physical and digital logistics—and global logistics as a system that depends equally upon media for execution. If commodification is the what of capitalism and surplus value the why, logistics is the how: the "organization and coordination of resources to manufacture and distribute" product around the world (1). Logistical media, then, are commodities whose end product is optimization and efficiency. The book's overarching argument is that media and logistics are best understood as co-constitutive. Telegraph wires, to cite one example, required the cross-country distribution of timber for poles. Because that distribution proved logistically feasible, the telegraph achieved prominence as a media form (15). At what cost and for what ends are questions at the core of many contributors' arguments.

Assembly Codes and its editors, Matthew Hockenberry, Nicole Starioleski, and Susan Zieger, are situated within media studies. However, the volume's topically diverse but thematically cohesive contents are broadly accessible and relevant to library, archives, and information workers. Essays range from philosophical to nuts-and-bolts and span analyses

rooted in performance studies, media theory, African Studies, and more. A common anchor throughout is anthropologist Anna Tsing's notion of "supply chain capitalism," which consists of "commodity chains based on subcontracting, outsourcing, and allied arrangements" that emphasize corporate autonomy and perpetual optimization.[1]

The book's three sections respectively conceptualize media as 1) a site of logistical imagination, "new ways of seeing and listening, reading and knowing, thinking and moving" that logistical technologies produce, 2) logistical instruments, and 3) accelerators and optimizers of global supply chains (3). Some chapters explore histories of a specific media form; others outline the importance of theory in providing terminology to critique these systems. Still others document resistance, such as Ebony Coletu's account of Pan-African logistics. All make compelling points about the workings of capitalism, logistics, media, and inequity and how their interrelations shape human and nonhuman existence.

In part I, Stefano Harney and Fred Moten theorize logistics as both outcome and agent of a Western scarcity mindset. Bridging the Atlantic slave trade to the contemporary surveillance capitalism of social media, they situate their critique of Enlightenment-era paradigms through the concept of property. The naming of an item (or person) as property enacts its loss as a shareable resource, and, within this mindset, loss prevention becomes a global driving impulse. Loss prevention, it seems safe to say, frequently drives policy decisions around access in libraries and archives and provides an illuminating lens through which to negotiate a balance between resource preservation and gatekeeping.

This anticolonial critique weaves throughout each section. Liam Cole Young elucidates the colonialist ends of many logistical media forms through an analysis of cod fisheries and settlement around the North Atlantic. Nets, barrels, salt, maps, and compasses made the mass transit of fish possible; new ships of the 1500s "[made] land and sea interoperable" (98). Young locates these entrepreneurial developments alongside the emergence of documentation culture as Europeans pushed across the Americas, spurring the growth of a juridical system based on written charters and treaties that overrode First Nations media such as wampum belts. Young's focus on documentality recalls Kenneth Jones and Tema Okun's articulation of worship of the written word as one of the characteristics of white supremacy,[2] and it resonates amid the disproportionate whiteness of writing-centric fields such as higher education, libraries, and scholarly publishing.

Within a contemporary context, Kay Dickinson highlights the influence of private sector interests on higher education; college is increasingly engineered to "inure the current and would-be worker to the rationalities of the supply chain, including its inevitable and systemic future of insecurity and debt" (173). Academic standards, Dickinson suggests, are largely determined by private industries, which then profit from unpaid internships and fieldwork "opportunities" mediated through curricula. Moreover, academia itself relies on the inexpensive, specialized labor of graduate students and adjunct instructors even as it churns out more graduates than fields can sustain; we see this phenomenon in the casualization of both archival work and librarianship.

Assembly Codes makes a clear case for the incorporation of critical logistics studies into the equity work that many in libraries are already doing. Logistics is at core a set of techniques for removing barriers, such as digging out canals to expedite shipping or clearing forests to build cell phone towers. Its environmental and human costs have pushed us into climate catastrophe and growing inequity. What kind of efficiencies, the book implicitly calls us to ask,

have emerged in libraries—and at whose expense? Subject headings increase discoverability, but taxonomies are inherently reductive. As we eliminate barriers and increase access to resources, what labor demands are we normalizing? What is ICE doing with all that data from LexisNexis and Westlaw? To what extent are libraries themselves logistical media, optimizing the dissemination of information products at huge profits to vendors?

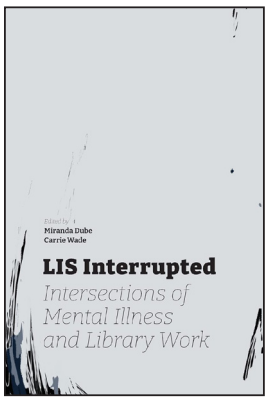
All-encompassing as these dilemmas seem, *Assembly Codes* finds hope for change through its analyses and through analysis as a practice. As Dickinson puts it, engaging the interworkings of logistics, media, and capitalism equips us to "press for a greater awareness of how instead to strike meaningful allegiances with others under the thumb of globally mobile commerce, rather than greasing its wheels through more elite cross-border affinities" (180).—*Lynne Stahl, West Virginia University*

Notes

1. Anna Tsing, "Supply Chains and the Human Condition," *Rethinking Marxism* 21, no. 2 (April 2009): 148, https://doi.org/10.1080/08935690902743088.

2. Kenneth Jones and Tema Okun, *Dismantling Racism: A Workbook for Social Change Groups* (St. Paul, MN: Minnesota Historical Society, Change Work, 2001).

LIS Interrupted: Intersections of Mental Illness and Library Work. Miranda Dube and Carrie Wade, eds. Sacramento, CA: Library Juice Press, 2021. 346p. Paperback, $35.00 (ISBN: 978-1634001083).



LIS Interrupted presents a collection of analyses and personal narratives about mental illness written by library workers. The book is divided into three sections.

The first section, "The Process of Becoming," focuses on graduate students and new professionals entering the field of librarianship. Kaelyn Leonard's "The Space between Neurodiversity and a Degree: Misinterpretations of ADHD in Higher Education" discusses their experience with ADHD while working on their MLS, providing suggestions to other neurodivergent students looking to pursue a graduate degree. A particularly intense statement hit me like a ton of bricks: "When did it become a merit badge to make it through the sleepless nights? Why would the impact on my mental and physical health rank as utterly inconsequential, as long as I could produce the quintessential good work?" (10) Zoë Nissen discusses her experience with an eating disorder while working on a graduate degree and entering the library workforce. Karina Hagelin takes the reader through her personal experiences with assault and mental illness and presents valuable suggestions regarding how libraries can create a culture of what she calls radical vulnerability. Marisol Moreno Ortiz navigates her diagnoses with OCD, generalized anxiety disorder, and depression while working as a new Diversity Scholar in the Diversity Program (DSP) at Oregon State University Libraries. Christy Bailey-Tomecek discusses her experience with generalized anxiety disorder and bipolar disorder and how it has helped her develop a safe space for coworkers who are working with sensitive materials in the archive. She offers steps she took to aid students working on emotionally challenging projects and how her own coping mechanisms helped students experiencing distress. Nina Clements describes the diagnosis of depression and anxiety, navigating disclosure, and creating a more compas-

sionate workplace environment around disclosure, something that is needed in the workplace. Chelsea Tarwater talks about her depression while working as the Youth Services Specialist at Blount County Public Library and working on her MLS while living as a gay woman in a conservative environment. The section wraps up with a strong chapter titled "On Surviving" by Allison Rand, who survived the Boston Marathon bombings in 2013. The author discusses living with PTSD while attending graduate school and her eventual job as a librarian.

The second section, "Critical Perspectives and Narratives," includes chapters with more research-based content. In "Full Disclosure? Issues around Disclosing Mental Illness in an Academic Library Workplace," Alice Bennett examines mental health disclosure in western academic libraries. Carolyn Hansen looks at problematic Library of Congress subject headings regarding mental health, a deeply needed discussion. Michelle Ashley Gohr and Andrew Barber use Marxist philosophy and disability, queer studies, and feminist theories to look at LIS staff with depression and anxiety in terms of systems of oppression and neoliberalism in libraries. While this chapter is particularly dense, it is an essential read for librarians striving to create a healthier environment for their staff. Pamela Andrews and Melissa Freiley examine the use of humor on social media to address librarian stereotypes and how they affect library workers. Sara Harrington explores the expectations of emotional labor from front-facing public library workers and how this has an impact on the mental health of said workers, the intersection of gender and mental illness in the library field, and offers a few steps libraries can adopt to create a safe working environment. Brad Lundy discusses communication disorders and problematic language in the library field and suggests solutions to addressing vague and confusing terminology, including language used in job descriptions. Stacey Astill looks at the effect that the exposure to sensationalized health news has on library staff with anxiety, focusing on UK libraries. Ian Ross Hughes addresses the stress that the interview process can have on candidates with mental illness, with useful suggestions to help the interviewees foster an inclusive interview experience. Stephanie S. Rosen uses her experience with what she calls academic depression. Marie Campbell, Clayton Hume, Max Powers, and Ann Sen share their experiences in a toxic workplace while facing their individual mental illnesses and the coterie they formed in the midst of it all.

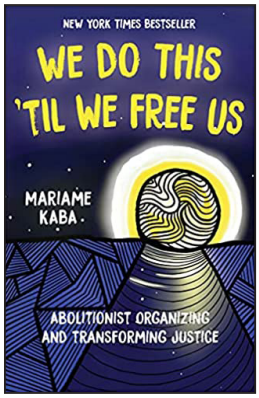
The third section, "The Situated Experience," concentrates on professionals with mental illnesses and how they navigate their work. Chaundria Campos, a Black woman and a veteran, discusses her experience with a typical response regarding workplace resources, "we have resources for that," and how it is not as helpful as people think. Jamine Rizer looks at her mental health journey and how her conditions influenced how much they want to disclose as a library employee, concluding that ultimately "no one has the right to tell you that you must give up your privacy for the sake of capital-R Representation" (254). Evelyn E. Nalepinski discusses the need for librarianship to be a more inclusive realm for neurodivergent employees. John Cohen used his condition to positively guide his role in leadership. Avery Adams aptly describes the brain fog that can come with depression and anxiety and how it affects daily life and work in the library. Jodene R. Peck Pappas' chapter addresses her experience as a cataloguer living with depression and obsessive compulsive personality disorder (OCPD), including background, professional work, and treatment. I'm not afraid to state that, as a metadata librarian with a similar diagnosis, this chapter was extremely relevant to my own thoughts and experiences. In "Librarian vs. The Machine That Goes Beep: Professional Adventures on the Autism Spectrum," Jess Alexander frames the chapter using their fight

with the titular nefarious machine and how their self-awareness helps them in their career, ultimately recognizing that they matter. The book wraps up with "A Critical Conversation about LIS Interrupted with Miranda Dube and Carrie Wade," which presents an informal discussion regarding the creation of this book and their own experiences.

Most of the chapters included a content warning at the beginning and a bibliography. The book as a whole includes a useful index. The authors mention that there are multiple ways the book may be read. For the sake of this review, I read it cover to cover. I don't typically reread many books, but this one is something I will keep on my personal reference shelf. The authors indicate that the audience for *LIS Interrupted* is "library workers, educators, and students in a variety of environments as a text, resource, guide, and place of refuge." This book is needed in the field, and libraries should consider this for their collections.

On a personal note, it took me quite some time to finish reading *LIS Interrupted*, simply because I reread chapters discussing conditions I live with. I discovered that I am not alone. Neither are you.—*Lizzy Walker, Wichita State University Libraries*

Mariame Kaba. *We Do This 'Til We Free Us: Abolitionist Organizing and Transforming Justice*. Chicago, IL: Haymarket Press, 2021. 240p. Paper, $16.95 (ISBN: 164259525X).



"Prisons haven't always existed. They came into being…"
"I don't believe in self-care: I believe in collective care…"
"…hope is a discipline and…we have to practice it every single day."

These three sentiments continuously repeat in my mind, over and over again, since reading Mariame Kaba's *We Do This 'Til We Free Us: Abolitionist Organizing and Transforming Justice*. Filled to the brim with thoughtful, liberating, and radical essays and interviews on the prison industrial complex, prison abolition, and all that lies in between, Kaba manages to create an accessible tome for collective abolition activism while never becoming reductive.

Calls to defund the police and for the abolition of the many layered carceral systems prevalent in the United States reached mainstream ears during the protests of the summer of 2020. Amid national mourning over the unending disregard for black life, Kaba's book came at a time, one could argue, when we need it most. Every instance of police brutality, unjust incarceration, and the myriad traumas that come from the White Supremacy–laden institution of policing and the justice system contributes to the messages we hear repeating on a loop: countless calls for "reforms" that only further bolster the prison industrial complex's pockets with our money. We are told by our politicians that their "thoughts and prayers" are with us and that these issues are but consequences of a "few bad apples." It becomes easy, as someone who wishes for change, to fall into a cycle of petition signing, social media posting, and, eventually, sitting in a sense of demoralization as the powers that be once again show us that they are wholly uninterested in the material change we deeply need.

We Do This 'Til We Free Us is a break in this cycle of demoralization. Kaba gracefully distills the complexity of our justice system to the most clearcut issue: harm. So much of how we view crime and punishment is through the lens of harming the harmer as a form of restitution. However, as Kaba states in her essay "Transforming Punishment: What Is Ac-

countability without Punishment?" "the power dynamics that create the conditions that fuel sexual violence go unaddressed and are even maintained by criminal legal proceedings." More than once, she reminds us that accountability cannot be forced upon those who cause harm to others and that our cycle of submitting people to the "physical, social, and civic death" of imprisonment only feeds our overcrowded prisons.

Kaba continuously reminds us that we can look beyond our "failure of imagination" where it is either "prison or nothing" when speaking to folks about abolition. However, none of this work can be done alone. This idea is at the heart of her abolitionist message, at the heart of redressing harm, at the heart of caring for victims, and at the heart of activism as a whole. And what makes these notions of community-centered activism so powerful is Kaba's ability to move easily between high-level histories to hands-on, feet-on-the-ground organizing, to personal reflections on her own role in the activist community and what she learns from being embedded in activist communities.

In Kaba's interview with Damon Williams and Daniel Kisslinger, she offers a beautiful moment of self-reflection. Kaba addresses her natural instinct to "always remind everybody of everything else and everybody else" and the moment of accountability it took for her to begin placing her name on the things she was creating. Collective action is the only way to change the structures of our society, and a part of collective work is acknowledging the work of others and the work you yourself have created. And not only to receive and share praise but—more importantly—to create transparent dialogue between organizers. These introspective moments Kaba brings to these essays and interviews ultimately make Kaba's book a deeply accessible and usable reference for years to come as we collectively imagine a transformed and more caring world.

The timeliness and timelessness of Kaba's subject fits the needs of librarians and other LIS practitioners and the positions we find ourselves in as stewards of information today. As library workers, we should absorb books like *We Do This 'Til We Free Us* not only because Mariame Kaba herself is pursuing a degree in Library and Information Science. The students, faculty, and multitude of patrons we serve are paying attention to these issues. These issues affect our patrons personally and materially; and, if there is anything we can learn from Kaba, it is that what affects one in a community touches us all. Collective community care work should be at the center of what LIS professionals do. As Kaba says in her writing, there is no single way to perform activist work. The role of those of us in the LIS profession has historically been in flux, but in principle, our work and our impact extend beyond the walls of our institutions. How we work toward freedom in our libraries follows our patrons as they embark into the world we share.—*Shawne West, University of California, Los Angeles*

Sara Ahmed. *Complaint!* Durham, NC: Duke University Press, 2021. 376p. $29.95 (ISBN 978-1-4780-1771-4).

Living, as we are, in this confluence of catastrophes including climate collapse, the global drug poisoning crisis, and the COVID-19 pandemic, experience tells us that the trouble is not with evidence. The trouble is with power. As we hear more and more testimony and analyze increasing amounts of data about the impacts of racial capitalism, imperialism, patriarchy, and connected ideologies, I find the most urgent writing of our time to be the scholarship of power: how it operates, where it accumulates, and why it persists. In *Complaint!* Sara Ahmed offers what she calls a "phenomenology of the institution" (19) by interrogating complaint

structures and procedures in universities. While Ahmed's scope is limited to universities, the mechanisms she interrogates and her conclusions are broadly applicable to other institutions. Based on interviews conducted during a 20-month period "with forty students, academics, researchers, and administrators who had been involved in some way in a formal complaint process, including those who did not take their complaints forward, who started the process only to withdraw from it" (10), Ahmed presents a careful and sophisticated analysis of power and its abuses in universities.

Reading the participants' accounts of making complaints in universities is hard, heavy work. Whether it is personal hauntings and pangs of recognition, or empathy and solidarity with colleagues and friends who have experienced bullying, harassment, and other abuses of power, it is difficult to confront the grim realities of institutional mechanics. Still, understanding how universities work, whom they protect, and whom they aim to harm, can help us navigate and survive. This too, Ahmed argues, is "institutional wisdom" (275). Framing complaints as possible occasions of clarity is one of the many aspects of the book that make it necessary reading for academic workers. So much of what happens in situations of abuse is bound up in disorientation and gaslighting. When complainers are finally in a position where we are able to see the situation clearly enough to complain, how the complaint lands and where the complaint goes can help us get clarity, if not due process.

Complainers learn more about the institution and about those invested in the status quo, those who, as Ahmed writes, "benefit in some way from silence about violence" (217). As a library worker, I found Ahmed's discussion of abuses of power in environments that are often assumed to be progressive and feminist especially familiar and instructive. She writes about how those who reach out for support in confronting abuses of power can and do come up against "paper feminists—those who are feminists on paper but not in practice" (254). Those who understand that advancing their own careers and political agendas require them to keep their distance from complaints and complainers. Those who warn complainers about the dangers of exposing the institution to scrutiny and criticism: *Are you sure you want to do this? Have you thought about what this will do to our reputation?* Ahmed describes how abuses of power can be minimized or overlooked by those whose politics, on paper at least, would suggest an inclination beyond conventional damage control—they are invested in denying the problem: *That person isn't like that. This is a good place to work*. They pathologize the complainer: *She is not a good fit. She doesn't understand our culture*. They treat abuses of power as a difference in opinion: *I don't like to take sides. Why can't you just work it out*? They see the complainer as a destructive killjoy: *She's just being negative. No one else seems to have a problem working with that person*. Experience in academic libraries shows us that complainers—as opposed to bullies and abusers—are seen as unprofessional, uncivil, and noncollegial. As Ahmed has written previously: "When you expose a problem you pose a problem."[1]

On the other hand, complaints can also help us find our people. While Ahmed describes experiences of complainers who are blocked and ignored, she is also clear in her message that complaint can offer "a fresh lens… on collectivity itself" (277). Whether a complaint is pursued or abandoned, becoming a complainer is lonely by design: "The atomization of complaint procedures can be how abuses of power remain unrecognized" (168). Even the spatiality of complaint is isolating. Ahmed describes how memories involving the built en-

vironment loomed large in the accounts shared by the interviewees. "Long corridors, locked doors, windows with blinds that come down" (41) are all used to create containment—an architecture of (institutional) power. Keeping the complainers and their complaints physically and bureaucratically separated from others allows the institution to block us from comparing notes and building solidarity while also controlling the extent of reputational damage. It is especially troubling when these techniques of separation and isolation are framed as something that those in power are doing exclusively for our own good (such as to protect our privacy).

As with academia itself, the culture in academic libraries is prone to ostracizing people who complain or speak up. The inclination to remain neutral, to not take sides, Ahmed tells us, is to side with bullies and abusers. We lose and find people when we make complaints; we gain clarity. We lose paper-feminists; we find co-complainers, collectives, feminist ears. Revisiting the concept of a feminist ear introduced in *Living a Feminist Life*, Ahmed talks about her methodology in *Complaint!* as listening with a feminist ear. Listening to what tends to be tuned out. Listening to what tends to be not heard, diminished, dismissed. Feminist ears remind us that we are not alone. Reading *Complaint!* Ahmed hopes, can also "be a reminder: we are not alone" (277). *Complaint!* recasts complaint as an instigator of camaraderie and also of possibility: "complaints in pointing back can also point forward, to those who come after; who can receive something from you because of what you tried to do, even though you did not get through, even though all you seemed to do was scratch the surface" (299–300).—*Baharak Yousefi, Simon Fraser University*

Note

1. Sara Ahmed, *Living a Feminist Life* (Durham, NC: Duke University Press, 2017), 37.