Evidence Based Library and Information Practice

Testing a Warmth-Based Instruction Intervention for Reducing Library Anxiety in First-Year Undergraduate Students

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Parks, C. (2019). Testing a Warmth-Based Instruction Intervention for Reducing Library Anxiety in First-Year Undergraduate Students. *Evidence Based Library and Information Practice*, *14*(2), 70–84. https://doi.org/10.18438/eblip29548

Résumé de l'article

Objective – This study aimed to test the efficacy of a warmth-based library instruction intervention in reducing rates of library anxiety in first-year undergraduate students. "Warmth" is a concept that is commonly discussed within literature on library anxiety, but to date no studies have explicitly tested the application of a warmth-based instruction intervention. First-year students are ideal targets for this intervention because they are the most likely to experience library anxiety.

Methods – A quasi-experiment was conducted examining library anxiety rates in first-year undergraduate students at a public research university in the U.S. South. A one-shot warmth-based instruction session focusing on the emotional dimensions of library use was compared to a standard one-shot instruction session. Library anxiety was measured using a modified version of Bostick's Library Anxiety Scale as a pretest and posttest.

Results – Results indicated that both warmth-based and standard library instruction were associated with a decrease in participants' library anxiety rates without significant differences between the types of instruction. However, warmth-based instruction was correlated with greater reductions in areas of library anxiety related to interactions with library workers. Though library anxiety rates decreased significantly after experiencing library instruction, participants exhibited low levels of library anxiety before their library instruction session occurred.
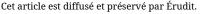
Conclusion – Though warmth-based instruction did not have a significantly different impact than standard library instruction on general library anxiety, the intervention tested in this study suggests strategies that could be used to increase student comfort with library workers. This study also demonstrates a successful method to include emotional factors such as library anxiety in academic libraries' regular assessment programs. Focusing assessment on students' skills and knowledge alone risks ignoring an important aspect of student engagement and missing opportunities for academic libraries to connect with students. Assessment of emotional components of library instruction initiatives is especially crucial to ensure and demonstrate that libraries are using their resources effectively to maximize student success.

Evidence Based Library and Information Practice

Research Article

Testing a Warmth-Based Instruction Intervention for Reducing Library Anxiety in First-Year Undergraduate Students

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Abstract

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Conclusion – Though warmth-based instruction did not have a significantly different impact than standard library instruction on general library anxiety, the intervention tested in this study suggests strategies that could be used to increase student comfort with library workers. This study also demonstrates a successful method to include emotional factors such as library anxiety in academic libraries' regular assessment programs. Focusing assessment on students' skills and knowledge alone risks ignoring an important aspect of student engagement and missing opportunities for academic libraries to connect with students. Assessment of emotional components of library instruction initiatives is especially crucial to ensure and demonstrate that libraries are using their resources effectively to maximize student success.

Introduction

Library anxiety is a demonstrated phenomenon that presents real barriers to academic success in higher education (Mellon, 1986). Students with library anxiety feel nervous or uncomfortable engaging with library resources, including simple acts such as entering the library building, and are therefore less likely to do so. This lack of engagement can be detrimental to student success, as the use of library resources has been tied to increased academic success and retention rates (Gaha, Hinnefeld, & Pellegrino, 2018; Soria, Fransen, & Nackerud, 2017). The negative effects of library anxiety may be particularly acute for students early in their academic careers, for example first-years and sophomores have the highest reported levels of library anxiety (Jiao, Onwuegbuzie, & Lichtenstein, 1996; Mech & Brooks, 1997).

Studies show that interventions by librarians such as library instruction sessions can decrease library anxiety. The literature also demonstrates that it is critical to target interventions towards the most vulnerable students, like first-years, in order to maximize the impact of the intervention (Brown, Weigart, Johnson, & Dance, 2004; Chiman, Nwajei, & Akpom, 2015; Muszkiewicz, 2017; Onwuegbuzie, Jiao, & Bostick, 2004; Van Scoyoc, 2003). This study further tests these findings by conducting a quasi-experiment

comparing two different types of library instruction, with the purpose of determining whether warmth-based instruction is more effective than standard library instruction, for lowering rates of library anxiety among first-year students at a public research university in the South.

Assessment of library instruction is particularly important for institutions that devote considerable resources to library instruction for first-year students, such as the university under consideration in this study. Assessment of information literacy skills is common and is often used to justify large first-year instruction initiatives, but assessment of first-year students' emotional responses to the library is equally important, yet often neglected (Cook, 2014; Gilbert, 2009; Lowe, Booth, Stone & Tagge, 2015; Luetkenhaus, Hvizdak, Johnson & Schiller, 2017; Shao & Purpur, 2016). Ideally, library instruction for first-year students provides not only a base of information literacy skills to build on, but also an understanding of the library as a resource that they can return to for help throughout their academic careers. As librarians cannot work with every single class or individual student, it becomes the students' responsibility to seek out help when needed; feelings of library anxiety make it less likely that they will do so. Therefore, understanding the emotional impact of library instruction for first-year students is a

necessary component of assessment, to ensure that library instruction resources are being used effectively.

Literature Review

Constance Mellon coined the term "library anxiety" in her 1986 article titled "Library Anxiety: A Grounded Theory and its Development," naming what many academic librarians had noticed for years in their interactions with students. Mellon found that students commonly expressed feelings of fear and anxiety about using the library in general, rather than frustration with specific aspects of library use or deficits in certain skills. This anxiety often stemmed from a sense of perceived inadequacy, or feelings that everyone but them already possessed the skills and knowledge necessary to use the library to conduct research, and that library workers would judge them for asking questions. Mellon (1986, p. 163) noted that students became so anxious that they were "unable to approach the problem logically or effectively," preventing the students from seeking help. Sharon Bostick (1992) developed the Library Anxiety Scale to measure library anxiety in college students. Although other scales have been created, such as the AQAK (Anwar, Al-Qallaf, Al-Kandari, & Al-Ansari, 2011) and an information anxiety scale (Blundell & Lambert, 2014), Bostick's Library Anxiety Scale remains the basis for most assessments of library anxiety today.

Many studies on this subject have focused on understanding factors that contribute to students' experiences of library anxiety, such as gender, past academic experiences, race, and socioeconomic status, though no consensus has emerged around any predictor. Jiao & Onwuegbuzie (1999) studied library anxiety in graduate students and found that students with lower self-perceptions of competence exhibited the highest rates of library anxiety, while Jiao, Onwuegbuzie, & Lichtenstein (1996) demonstrated that first- and second-year undergraduates, men, and those who infrequently used the library had higher rates of library anxiety (though Bostick's 1992 dissertation showed no differences in library anxiety between genders and Blundell and Lambert's 2014 study indicated that female students experience higher rates of library anxiety). Sinnasamy and Abdul Karim (2015) demonstrated that communication anxiety and English language anxiety influence library anxiety. Blundell and Lambert (2014) examined the relationship between information anxiety, race, gender, and prior library experience, whereas Wildemuth (2017) noted that male students who spoke English as a second language experienced the highest rates of library anxiety.

Other studies have concentrated on how to mitigate the effects of library anxiety, regardless of who experiences the highest levels of such anxiety. Mellon (1986) focused on the importance of "warmth" in interactions between library workers and students as a way to decrease library anxiety. Fiske, Cuddy, and Glick (2006, p. 77) noted that warmth, or traits related to perceived intent, such as "friendliness, helpfulness, sincerity, trustworthiness, and morality", is the first dimension of personality on which humans judge one another. This finding suggests that warmth is crucial for interactions with first-year students, particularly because the interaction may be the student's first experience with an academic library. Other researchers have tested various methods of incorporating warmth into library services and interactions (though the impact of librarian personality on students' library anxiety has not been tested) and one of the most common venues for intervention is new student orientation, due to the high percentage of incoming students that can be reached through orientation events. Orientation activities described in the literature include traditional information sessions (Brown, Weingart, Johnson, & Dance, 2006), distribution of "library survival guides" (DiPrince, Wilson, Karafit, Bryant, & Springer, 2016), and fun, casual, non-skills focused activities (Muszkiewicz, 2017).

Each of these studies demonstrated decreased levels of students' library anxiety after participating in the orientation activity.

Library instruction has also been commonly used to decrease library anxiety. Mellon (1986) pointed to library instruction as a way to project warmth and minimize library anxiety and that recommendation has been echoed by others (Chimah, Nwajei, & Akpom, 2015; Collins, Mellon, & Young, 1987; Naveed, 2017; Wildemuth, 2017). Studies such as those by Van Scoyoc (2003) and Fleming-May, Mays, and Radom (2015) demonstrated that library instruction was correlated with decreased library anxiety, though Van Scoyoc focused on one-shot skills-based instruction sessions while Fleming-May, Mays, and Radom explored the impact of a three workshop series for at-risk students. Similarly, Kracker (2002) found that presentations on Kuhlthau's Information Search Process model (Kuhlthau, 1993) correlated with a decrease in research anxiety among their participants. These studies demonstrate that library instruction can have an impact on students' library anxiety, but no study has specifically explored the implementation of warmth in instruction sessions, even though the importance of warmth is widely recognized.

First-year students are often the targets of library instruction initiatives. Jiao, Onwuegbuzie, and Lichtenstein (1996) and Mech and Brooks (1997) demonstrated that first-year students exhibited the highest rates of library anxiety, and students new to higher education naturally lack some of the skills and knowledge necessary to utilize academic libraries. Library instruction has been shown to increase first-year students' information literacy skills, whether the instruction takes the form of a one-shot session (Gilbert, 2009; Luetkenhaus, Hvizdak, Johnson & Schiller, 2017), a for-credit course (Cook, 2014), or general interactions with librarians (Lowe, Booth, Stone & Tagge, 2015). Van Scoyoc (2003) found that instruction reduced first-year students' library anxiety rates, but that study is over fifteen years old (as are

other important library anxiety studies), and first-year students have changed significantly as today's students have come of age regularly using new and powerful information tools. These changes do not eliminate first-year students' library anxiety and information literacy challenges, but they indicate that libraries' approaches to addressing these issues need to be updated.

Aims

The aims of this study are to:

- Test the efficacy of explicitly warmth-based instruction on reducing first-year students' library anxiety
- Update previous studies such as Van Scoyoc's (2003) that examine the impact of library instruction sessions on first-year students' library anxiety

Methods

This study used a quasi-experimental method to compare the effects of standard library instruction (the control) to warmth-based library instruction (the intervention) on library anxiety in first-year students as measured by pretest and posttest results. As in a fully randomized experiment, a researcher using quasi-experimental methods "manipulate[s] presumed causes to discover their effects, but the researcher does *not* assign units to conditions randomly. Quasi-experiments are necessary because it is not always possible to randomize" (Lewis-Beck, Bryman, & Futing Liao, 2004, p. 888). Quasi-experiments are often used in educational settings because these settings often do not allow for true randomization. The quasi-experimental method was ideal for this study because it allowed for an intervention to be tested on a population that could not be randomized, due to the practical infeasibility of breaking up pre-determined classes to create truly randomized testing groups.

A modified version of Bostick's (1992) Library Anxiety Scale was developed for use as the pretest and posttest. Modifications were necessary to shorten the original 43-question scale to one that could be administered in a shorter time period and to update some of the more dated items. Bostick's (1992) modified Library Anxiety Scale was more suitable to the purposes of this study than newer adaptations, such as the AQAK (Anwar, Al-Qallaf, Al-Kandari, & Al-Ansari, 2011), which were too specific to a particular time and place to be useful. A 24-question version of the modified Library Anxiety Scale was piloted with a group of approximately 60 first-year students, and factor analysis was used to eliminate an additional 6 items for a total of 18 items on the final scale. See Appendix A for the full instrument and Appendix B for the factor analysis table.

Sections of the "EDHE 105: Freshman Year Experience course", which is intended to help first-time, first-year students adjust to college, were targeted for this study due to their consistent first-year student population and history of cooperation with the library. New transfer students were not included in this study. Eight instructors teaching a total of 12 sections and 262 enrolled students were recruited to participate in the study. Sections were assigned to the control (standard instruction) or intervention (warmth-based instruction) group. If an instructor taught more than one section, half of their sections were assigned to the control group and half were assigned to the intervention group to minimize instructor influence on the results. All participating sections were pre-scheduled for a library instruction session and all sessions were taught by the same librarian instructor. Pretests were administered by the "EDHE 105" instructor approximately one week before each section's library instruction session, roughly early September through early October 2018. Each student participant was randomly assigned a unique identifier, which was destroyed before

analysis, to allow direct comparison between the pretests and posttests.

The "EDHE 105" sections in the control group participated in a standard library instruction session, in which a librarian instructor introduced basic information literacy skills by guiding students through an online worksheet to learn about the library website, discovery service, and online catalog, culminating in finding a book in the stacks. No emphasis was placed on the emotional dimensions of using the library or any anxiety the students may have been experiencing. The "EDHE 105" sections in the intervention group participated in a warmth-based library instruction session, which emphasized the emotional dimensions of library use rather than any specific skills, and was intended to make students feel comfortable working with library workers and using library resources. Activities for the warmth-based session were drawn from the instructor's own experiences observing what makes students feel comfortable in the classroom and in the library. Activities were also pulled from the literature, such as sharing information about library anxiety (Kracker, 2002), incorporating elements of active learning that require students to leave the library classroom (Brown, Weingart, Johnson, & Dance, 2006; Muszkiewicz, 2017), and Mellon's (1986) and Fiske, Cuddy, and Glick's (2006) discussions of what "warmth" looks like in personal interactions.

The warmth-based instruction session used the same online worksheet as the standard session, as seen in Appendix C. It began with a think-pair-share activity about how the university library differs from students' high school libraries; this was intended to connect students with one another and to help them think critically about what an academic library is, while acknowledging the anxiety that may arise from the transition to using one. This activity was followed by a brief discussion of what library anxiety is, accompanied by reassurance from the librarian instructor that if students are experiencing library anxiety, they are not alone

and that library workers are there to help. The session then proceeded to cover similar information literacy skills content as the standard session, with the librarian instructor sharing their personal experiences with library anxiety throughout the remainder of the session to normalize library anxiety and to model ways to deal with it. Posttests were administered approximately one week after each section's library instruction session, roughly mid-September through mid-October 2018.

Data Analysis

After the pretests and posttests were collected and the data was entered, all incomplete responses and responses from participants who did not take both the pretest and posttest were removed. There was a total of 161 complete responses, 76 in the control group and 85 in the intervention group (as noted by Onwuegbuzie, Jiao, and Bostick (2004, p. 101) a minimum of 64 participants per group is necessary for a quasi-experiment). One hundred and twelve participants self-identified as female and 49 self-identified as male.

After reverse-coding items 7, 8, 9, 11, 12, and 13 and calculating each participant's mean and total scores on pretests and posttests, paired t-tests were conducted using R software to compare the following results:

1. Overall pretest and posttest means
2. Item-level pretest and posttest scores
3. Overall pretest and posttest means broken out by intervention
4. Item-level pretest and posttest scores broken out by intervention

Results

Regardless of whether or not participants experienced the standard instruction (control) or warmth-based instruction (intervention), overall mean scores on the posttest were significantly lower than those on the pretest, with a medium-large effect size, indicating a reduction in library anxiety levels (Table 1). At the item-level, Item One ("I'm embarrassed that I don't know how to use the library") displayed a particularly significant change from pretest to posttest, as did Item Five ("The librarians don't have time to help me because they're always busy doing something else").

Table 1
Pretest and Posttest Mean Scores for Control and Intervention Groups Combined [a]

Item	Pretest Mean Score	Posttest Mean Score	t-value	p-value	r-value
Overall total scores	2.39	2.13	$t(160) = 7.12$	$p < 0.05$	0.49
Item 1 scores	2.29	1.71	$t(160) = 6.41$	$p < 0.05$	0.45
Item 3 scores	2.14	1.70	$t(160) = 5.12$	$p < 0.05$	0.38
Item 5 scores	2.25	1.83	$t(160) = 4.73$	$p < 0.05$	0.41
Item 8 scores	2.26	1.94	$t(160) = 4.63$	$p < 0.05$	0.34
Item 9 scores	2.15	1.86	$t(160) = 4.25$	$p < 0.05$	0.32
Item 11 scores	2.41	2.04	$t(160) = 4.44$	$p < 0.05$	0.33
Item 15 scores	2.30	1.92	$t(160) = 5.38$	$p < 0.05$	0.37
Item 18 scores	2.78	2.35	$t(160) = 4.64$	$p < 0.05$	0.34

[a] Only items that displayed a medium or medium-large effect size were included in the table

Table 2
Pretest and Posttest Mean Scores Broken Out by Control and Intervention [a]

Item	Pretest Mean Score	Posttest Mean Score	*t*-value	*p*-value	*r*-value
Control total scores	2.38	2.09	$t(75) = 4.80$	$p < 0.05$	0.48
Intervention total scores	2.39	2.16	$t(84) = 5.37$	$p < 0.05$	0.51
Item 9 control scores	2.14	1.89	$t(75) = 2.35$	$p > 0.05$	0.26
Item 9 intervention scores	2.15	1.82	$t(84) = 3.69$	$p < 0.05$	0.37
Item 11 control scores	2.36	2.09	$t(75) = 1.92$	$p > 0.05$	0.22
Item 11 intervention scores	2.25	1.84	$t(84) = 4.73$	$p < 0.05$	0.46
Item 18 control scores	2.71	2.49	$t(75) = 1.71$	$p > 0.05$	0.19
Item 18 intervention scores	2.84	2.22	$t(84) = 4.79$	$p < 0.05$	0.46

[a] Only items that displayed a medium or medium-large effect size in the intervention group but not the control group were included in the table.

Though both the intervention group and the control group demonstrated reductions in library anxiety scores from the pretest to the posttest, the intervention group had a slightly larger effect size than the control group (Table 2). The intervention had an impact on several specific items on the scale; Items 9, 11, and 18 (see Appendix A for the full instrument). All of these items had larger effect sizes in the intervention group, and almost all asked about participants' comfort with library workers. The intervention had a particularly strong effect on Item 11 ("People who work at the circulation desk are helpful)." Other item-level effect sizes were essentially the same between the intervention and control groups.

Discussion

The results of previous studies that demonstrated a correlation between library instruction and reduced library anxiety rates for first-year students were supported by this study, as posttest scores dropped for most participants regardless of the specific library instruction session they experienced. However, results of this study indicate that the warmth-based instruction advocated for by Mellon (1986) may not be as crucial as Mellon argued it was; in other words, any purposefully-designed library instruction may be as effective in reducing levels of library anxiety as specifically warmth-based instruction. Warmth-based instruction did correlate with decreases in library anxiety scores on items related to interactions with library workers that were not seen with the standard instruction alone, indicating that such instruction may be useful in achieving specific goals around increasing student comfort with library workers and willingness to ask for help.

It is important to note, however, that the warmth-based instruction session did not differ dramatically from the standard instruction session. Both were based on the same online worksheet; the warmth-based instruction simply took a different approach to guiding students through the worksheet and added an activity and some discussion about library anxiety. Developing basic library and information literacy skills, such as using the library's online discovery service or finding books in the stacks, is important for reducing library anxiety, but there may be a way to design a more wholly warmth-based session that does not include a significant information literacy component and that leads to a more significant reduction in library anxiety when compared with standard instruction.

The reduction in library anxiety rates associated with library instruction, though important, is

not the only result worth discussing. Participants demonstrated low overall rates of library anxiety in the pretest scores, with scores less than three defined as "low", indicating that perhaps this group of first-year students is entering the university without significant library anxiety to contend with. However, the low levels of initial library anxiety could be a result of the early stage in students' university careers, because participants took the pretest when they had only been at the university for a few weeks. As Kelly (2017, p. 167) noted, this result may be a manifestation of the Dunning-Kruger effect, in which students overestimate their ability to complete tasks because "first-year students' lack of experience with academic research skills also [makes] them unable to accurately assess their own competence in that domain". This result indicates that it is important for library instructors to recognize that students may come into library sessions lacking context for library skills and with an unrealistic assessment of their own competence, and that library instructors may need to provide that context for students. However, despite the low levels of library anxiety initially displayed, scores still decreased significantly after participating in library instruction, suggesting that library instruction may still have an effect.

One limitation of this study is the unequal distribution of participants' gender, with 70% of participants self-identifying as female. The cause of this gender imbalance is unclear; more female students than male students enroll in "EDHE 105" classes, but not at the level seen here (59% of the total "EDHE 105" students were female and 41% were male in Fall 2018). Previous studies have shown varying levels of influence of gender on library anxiety rates, with no clear indication that gender plays a role or which gender experiences library anxiety more (Bostick, 1992; Blundell & Lambert, 2014; Jiao, Onwuegbuzie, & Lichtenstein, 1996; Wildemuth, 2017). However, overall rates of library anxiety may be different with a more gender-balanced sample, which may affect the impact of library instruction.

Another limitation of this study is that all participants experienced a library instruction session, so the impact of library instruction could not be compared with individuals who did not participate in a session. Such a comparison would help to determine if the decrease in library anxiety rates was truly due to the library instruction session or if the weeks between when participants completed the pretest and posttest allowed students to become more familiar with the library on their own, decreasing their anxiety without library instruction. Additionally, data on previous library experience or participation in other library instruction sessions was not collected or controlled for, though it is unlikely that participants had experienced other library instruction sessions or had a reason to use university library resources, due to the timing of the "EDHE 105" library instruction sessions early in the participants' first semester at the university.

Areas for Future Research

This study presents multiple areas for future research. The finding that first-year students exhibited low initial levels of library anxiety merits further examination, as this information is key to understanding, targeting, and creating library programming for today's first-year students. To test this finding, researchers could update Jiao, Onwuegbuzie, and Lichtenstein's 1996 study that first indicated that first-year students demonstrated the highest levels of library anxiety. Alternately, first-year students could be surveyed about their library anxiety at multiple points throughout their first year to see if their early feelings of confidence about the library turned out to be a manifestation of the Dunning-Kruger effect and diminished as students gained more context or if they continued unchanged.

The method of intervention itself should also be tested further. Though the warmth-based instruction in this study did not lead to significantly different outcomes than the

standard instruction, this study does not present the only possible method of warmth-based instruction, and other methods should be tested. Such methods could include instruction sessions that do not have a significant information literacy skills component, or less formal instruction settings such as pop-up library events around campus that allow students to interact with the library in a fun, casual setting. Additionally, comparison between orientation events and class-based instruction sessions should be conducted to determine if one broad category of intervention is more effective in reducing rates of library anxiety. If possible, credit-bearing information literacy courses should also be compared, as should the effect of not participating in any formal library instruction.

Conclusion

This study used a quasi-experimental method to investigate the impact of warmth-based library instruction compared to standard instruction on library anxiety levels of first-year undergraduate students. Results indicated that instruction was associated with an overall decrease in library anxiety rates (aligning with prior studies done on this topic), though there was not a significant difference between the warmth-based and standard instruction. However, warmth-based instruction was correlated with gains in specific scale items related to interactions with library workers, indicating that warmth-based interventions may be effective in increasing students' positive perceptions of workers and thus their willingness to ask for help.

"Warmth" has long been described as an important feature of library anxiety interventions but has not been rigorously tested. This study attempted to fill that gap by implementing and assessing warmth in library instruction. Though warmth-based instruction was not found to be significantly more impactful in decreasing general library anxiety, the intervention tested here points to possibilities for intervention strategies targeted at increasing

students' comfort with library workers. It also indicates areas for future research on more wholly warmth-based instruction interventions.

In order to appropriately target and design library instruction, demonstrate the full value of instruction, and ensure that library resources are being used effectively, assessment must address the emotional state in which students utilize information literacy skills and further their knowledge, as well as the content in which they learn. Students bring their entire selves into the classroom, including all of their anxieties, and assessment must take this into account. Failure to do so can result not only in missed opportunities to connect with students, but also in missed ways to show the impact that library instruction has on student success beyond the acquisition of specific skills.

Acknowledgements

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Appendix A
Modified Library Anxiety Scale Instrument

Pretest[1]

You are being asked to respond to statements concerning your feelings about college or university libraries. Please mark the number which most closely matches your feelings about the statement. The numbers range from:

   1 = Strongly Disagree 2 = Disagree 3 = Undecided 4 = Agree 5 = Strongly Agree

1. I'm embarrassed that I don't know how to use the library.   1   2   3   4   5

2. A lot of the university is confusing to me.   1   2   3   4   5

3. The librarians are unapproachable.   1   2   3   4   5

4. I can't get help in the library at the times I need it.   1   2   3   4   5

5. The librarians don't have time to help me because they're
      always busy doing something else.   1   2   3   4   5

6. I get confused trying to find my way around the library.   1   2   3   4   5

7. I enjoy learning new things about the library.   1   2   3   4   5

8. If I can't find a book on the shelf, the library staff will help me.   1   2   3   4   5

9. I can always ask a librarian if I don't know how to work a
      piece of equipment in the library.   1   2   3   4   5

10. The library never has the materials I need.   1   2   3   4   5

11. The people who work at the circulation desk are helpful.   1   2   3   4   5

12. The library is an important part of my school.   1   2   3   4   5

13. I want to learn to do my own research.   1   2   3   4   5

14. The library does not have good wireless internet.   1   2   3   4   5

15. Librarians don't have time to help me.   1   2   3   4   5

16. The printers are often out of paper.   1   2   3   4   5

17. There are not enough electrical outlets available in the library.   1   2   3   4   5

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[1] The posttest was exactly the same as the pretest without the question about gender identity.

18. I can't find enough space in the library to study.   1   2   3   4   5

What is your gender identity?

    ____ Female
    ____ Male
    ____ Non-binary / third gender
    ____ Prefer not to say
    ____ Prefer to self-describe: _____

Appendix B
Factor Analysis Table

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
I'm embarrassed that I don't know how to use the library				0.473		
A lot of the university is confusing to me.				0.986		
The librarians are unapproachable.		0.753				
I can't get help in the library at the times I need it.		0.654				
The librarians don't have time to help me because they're always busy doing something else.	0.384	0.626			0.300	
I get confused trying to find my way around the library.		0.500		0.309		
I enjoy learning new things about the library.			0.672			
If I can't find a book on the shelf, the library staff will help me.	0.743				0.337	
I can always ask a librarian if I don't know how to work a piece of equipment in the library.	0.792	0.345				
The library never has the materials I need.	0.345		0.361			
The people who work at the circulation desk are helpful.	0.436					
The library is an important part of my school.			0.543			
I want to learn to do my own research.			0.432			
The library does not have good wireless internet.						0.956
Librarians don't have time to help me.		0.377			0.843	
The printers are often out of paper.			-0.544			
There are not enough electrical outlets available in the library.		0.432				
I can't find enough space in the library to study.	-0.403	0.478	0.461			0.463

These items were removed from the final scale because they did not fit in to one of the six identified factors:

- I am unsure about how to begin my research.
- I feel safe in the library.
- The library is a comfortable place to study.
- I don't understand the library's overdue fines.
- The library's rules are too restrictive.
- I don't know what resources are available in the library.

Appendix C
Warmth-Based 50-minute Instruction Session Lesson Plan

Items in **bold** are unique to the warmth-based session.

I. Introduction – name, role, welcome (5 minutes)
II. **Think-Pair-Share and class-wide discussion of how our library is different from your high school library (10 minutes)**
III. **Lead into how differences can cause anxiety (5 minutes)**
   a. **Library anxiety as a demonstrated phenomenon (though not an anxiety disorder)**
   b. **Some people may feel it; some people might not -- both is fine but you are not alone**
   c. **No one expects you to know how to use our resources and no one expects you to be an expert after today**
IV. Online worksheet: tinyurl.com/libraryEDHE105
V. Brief overview of library website (10 minutes)
   a. Demonstrate One Search
      i. Select a few sources to discuss differences between popular and scholarly sources
   b. Give students time to fill in worksheet
VI. Brief overview of library catalog (10 minutes total)
   a. **Library organization/Library of Congress call numbers (5 minutes)**
      i. **Why do we talk about this? Share personal experience with library anxiety and confusion when first using an academic library.**
   b. Give students time to fill in worksheet
VII. Use Catalog to look up book related to major or career (10 minutes)
   a. Leave classroom, find book on shelf, and take a "shelfie"