Student Stress and the Research Consultation: The Effect of the Research Consultation on Project Stress and Overall Stress and Applications for Student Wellness

LuMarie Guth and Bradford Dennis

Academic libraries have conducted studies on the importance of the library research consultation (LRC) regarding student learning and the impact on academic success. While there is a robust literature examining library anxiety, no study has been designed to measure the impact of the library research consultation on stress. Researchers at a mid-sized midwestern Carnegie Research 2 institution analyzed 108 surveys administered before and after the consultation. Findings confirm the LRC improves perceived stress levels at the project and overall level. The overall stress change and project stress levels were lower during the COVID phase of the study.

Introduction

Faculty reported that—two years into the pandemic—students continued to face heightened stress and burnout.[1] Gen Z (born 1997 and later)[2] students are present at all levels of the undergraduate curriculum. According to the American Psychological Association (APA) 2018 Stress in America survey—in its report introducing Gen Z—91 percent of Gen Z respondents claimed to have experienced physical or emotional symptoms due to stress, compared to 74 percent of adults overall. Gen Z adults were also more likely than other generations at similar life stages to report that they have been diagnosed with an anxiety disorder (18 percent of Gen Z) and/or depression (23 percent of Gen Z).[3] Several studies indicate that college student mental health is a contributor to student retention and academic success.[4] Therefore it is in the best interest of the student and the university to address mental wellness. Faculty knowledge of mental health disorders,[5] along with direct expressions of concern and support,[6] can have a positive impact on student mental health and academic success. Likewise, it has been the experience of this study's researchers that students express a sense of relief upon finishing a research consultation with academic librarians. However, is this just anecdotal? Is it possible to demonstrate that librarians leading the research consultation can have a positive impact on student stress reduction? In summer 2019 early results were being filtered out from a campus-wide survey

* *LuMarie Guth is an Associate Professor and Business Librarian at Western Michigan University, email: lumarie.guth@wmich.edu; Bradford Dennis is an Associate Professor and Education and Human Development Librarian at Western Michigan University, email: brad.dennis@wmich.edu.*

and series of listening sessions indicating that students on campus wanted additional mental wellness support. Early discussions centered around building a campus referral system to a "wellness wheel" of services, such as tutoring, recreation, and counseling. The researchers saw an opportunity to investigate their anecdotal experiences to see if the research consultation could serve as an effective option, among others, for triaging academic stress. The library—as an academic service on campus—has a mission to contribute to student success by providing the resources and services they need for their academic research. One such service is the library research consultation, which students can schedule to get individual assistance for their project(s). The consultation differs from the reference interview in that it is pre-scheduled versus conducted at a drop-in point-of-service. Since there is dedicated time allotted for the consultation, there is more flexibility to guide the patron through the research process and to impart information literacy skills. In the consultation, the librarian typically works with the student to develop their topic, determine the best research strategy, conduct initial searches to find sources, and evaluate the sources found for relevancy.

The researchers began their investigation in the fall of 2019 and paused collecting data when the university announced a move to fully remote instruction in March 2020. When it was evident that the pandemic would be long term, the researchers recognized the opportunity to include analysis of pre- and post-COVID data to measure its effect, if any. They conducted a second round of data collection from October 2020 to March 2021 while most classes were online and library research consultations were exclusively offered virtually.

Literature Review

Students and faculty believe the research consultation is helpful in learning library research skills[7] and is an important factor in academic success.[8] However, research linking the consultation with academic success metrics has been mixed. A University of Minnesota study on library use and academic success did not find any significant differences in GPA or retention between those who scheduled a peer research consultation and those who did not.[9] A similar study at University of Wisconsin—Eau Claire found that students who used reference consultations earned marginally higher grade point averages than non-library users.[10] Researchers at the University of Northern Iowa examined the effect of the research consultation on course performance and found that students who had research consultations had higher course grades than those who had not. However, they also found that students seeking consultations were more likely to live on campus and be full-time students, introducing the prospect of sampling bias in analysis of the effect of research consultations on academic success since students who are already more likely to succeed academically may be more likely to seek out a research consultation.[11]

Kuhlthau's ISP model offers an early examination of emotions experienced during the research process. In the origin study at Rutgers, Kuhlthau surveyed and interviewed high school seniors in AP English classes on their research process, and developed a new model for the information search process (ISP) which mapped each stage to a series of emotions.[12] Kuhlthau's ISP model argues that feelings of uncertainty increase after the initial optimism of the topic selection stage as students begin searching for sources. However, as the topic becomes more focused and students gather more pertinent information—as typically happens during the research consultation—feelings of clarity and confidence emerge, followed by relief at the end of the information gathering process, and then final satisfaction or dissatisfaction with the commencement of the

writing of the paper. Further testing of this model on users from a range of libraries found that academic participants showed the largest growth in confidence from the initiation to closure of the search project.[13] An advantage of the research consultation is that it expedites the information gathering process to move students more quickly to clarity and confidence.

Mellon constructed a grounded theory of "library anxiety" drawing on data collected from 6000 students over two years by 20 English professors. Three concepts emerged from these descriptions: 1. students generally feel that their own library-use skills are inadequate while the skills of other students are adequate; 2. the inadequacy is shameful and should be hidden; and 3. the inadequacy would be revealed by asking questions.[14] Bostick developed the Library Anxiety Scale[15] and researchers administered it to 493 students at two US universities; they found that library-anxious students tend to experience negative emotions such as fear, apprehension, and mental disorganization, therefore limiting their ability to use the library effectively.[16] Frustration associated with the search for information resources in libraries or information systems is one of the most prevalent forms of academic anxiety because most students are required to conduct research as a part of their academic program.[17] Researchers at Kent State found that 50 percent of respondents in first-year writing classes were, "mostly sure about how to begin a general search for information," but 48 percent agreed or strongly agreed they were, "unsure about how to begin research;" 63 percent of respondents felt "uncomfortable searching for information," and 67 percent did "not want to learn how to do their own research."[18] These numbers reflect a persistent need to work with students to make them more comfortable and confident in their research. Library anxiety and research performance are inversely related, and library anxiety represents a negative experience for the student.[19] Experiencing a successful search could lead to a reduction in search anxiety.[20]

Recent studies have shown that course instructors can play a role in recognizing and supporting students with mental health disorders by referring them to resources on campus.[21] As instructors, librarians can help minimize the effect of research anxiety, or "library anxiety."[22] Kracker developed and administered a Research Process Survey based on Kuhlthau's ISP model along with a standard anxiety test to a writing course at the University of Tennessee—Knoxville. The study found a significant decrease in anxiety about the research paper assignment in the test group after a 30-minute presentation on the ISP model, compared to the control. This finding indicates that instruction on the research process and on the expected emotions of that process, can mitigate negative emotions.[23] Students are less anxious when they know what they are experiencing is normal.

Student perceive the research consultation as a learning experience that extends beyond information literacy in the classroom.[24] Students undergoing the research consultation view the librarian as a teacher, and agree that the consultation helps improve their skills in conducting a literature search. A particular benefit of the consultation is modelling how to address the natural challenges of the research process.[25] The research consultation is an important service because it occurs at a point of need. Students often seek out the research consultation after already attempting research and meeting with challenges,[26] and frequently cite time savings as a benefit.[27] Reinsfelder[28] describes the unique advantages of the consultation: "the method of instruction can be quite effective and is used frequently by on-campus tutors and writing centers because these personal meetings allow for greater attention to detail and the ability to address unique concerns of each student in a way that is not possible in larger groups."

Several studies have found that students report increased research confidence after the consultation[29] and this confidence can have lasting effects beyond the project at hand.[30] Fewer studies investigate the effect of the research consultation on stress and anxiety and, when they do, it is not the central focus of the study. In a small study at Colorado State University—Pueblo undergraduate participants exhibited mild decreases in library anxiety over the course of one semester. However, the study included both instruction and consultation and it was not determined which had a greater impact on anxiety, if any.[31] In a study conducted at Utah State University, 80 percent of students who expressed library anxiety prior to the consultation were comforted by the professional knowledge of the librarian.[32] Although the central focus of their research was not stress, Magi and Mardeusz[33]—in their qualitative study at the University of Vermont—found, after coding the open ended comments, that students reported increased confidence and reduced stress after the consultation. Of the 52 students in the study, more than one-third said they felt overwhelmed before the consultation and about 20 percent referenced a feeling of stress or anxiety in their comments. After the consultation all but one remarked on a positive change. Responses in the appendix show 40 percent of the students mentioned feelings of confidence/readiness/preparedness, and about 20 percent mentioned feelings of relief or relaxation after the consultation.

The observation of heightened stress for Gen Z in the beginning of the COVID-19 pandemic is supported by the findings in the APA 2020 Stress and America report. Gen Z adults (aged 18–23 in 2020) reported high levels of stress with a 6.1 rating on a 10-point scale, compared to 5.0 for all adults. Eighty-two percent of Gen Z adults in college said that the uncertainty going into the 2020–21 school year would likely result in stress.[34] However, in the 2021 study Gen Z stress levels had lowered to 5.6, the second highest cohort after Millennials. Several studies have found that COVID-19 directly affected student stress levels. Active Minds surveyed undergraduate students in September 2020 and found that 89 percent reported that COVID-19 has had an impact on their stress/anxiety levels. When asked what the most stressful factor was, college students ranked having troubles focusing on studies and/or work as the third highest stress factor at 14 percent.[35] In interviews of undergraduates at Texas A&M in April 2020, 71 percent of respondents reported that their stress and anxiety had increased due to COVID-19, 89 percent of respondents reported difficulty concentrating, and 82 percent were concerned about their academic performance.[36] In contrast, a study comparing measurements before and after the University of Vermont moved all instruction online due to COVID-19 did not find significant changes in stress levels in their study. They hypothesized that the lack of stress changes could be attributed to moving back home, or to the additional pandemic-related accommodations instructors provided.[37]

Methodology and Demographics

Students who scheduled a research consultation with four of the nine instruction liaison librarians at Western Michigan University were invited to participate in the study, which was reviewed and approved through the IRB process. These four librarians served the areas of fine arts, business, health sciences, and education and were selected because of their breadth of disciplines, as well as their history of having a high volume of research consultations. Study participants were not asked why they sought the consultation, but there are a variety of incentives at the university. In some classes it is required. In others the instructor recommends the service, particularly when a student is struggling, or offers extra credit for using the service. Students in the business college can use the research consultation as an option for obtaining

a badge in a microlearning credentials program. Multiple librarians at the university have reported that students seek consultations for individual assistance after an instruction session was delivered to their class. There were 209 students eligible for participation and 108 opted into the study resulting in a response rate of 52 percent. The pre- and post- questionnaires were on the same Qualtrics web-based survey with a page in between asking students to keep the tab open and pause to resume the session. Prior to the study students were asked to self-report their feelings related to their project with the question: "How much stress do you feel about this project?" (possible responses were: None at all (1), A little (2), A moderate amount (3), A lot (4), A great deal (5)); and were asked about their overall stress via the question: "How much overall stress do you feel this semester?" (possible responses were: None at all (1), A little (2), A moderate amount (3), A lot (4), A great deal (5)). Definitions of project and overall stress were not provided, leaving interpretation to the students. Immediately after the consultation students were asked to report how their project and overall stress levels had changed with the questions: "How is your project stress after the research consultation?" (possible responses were: Much better (5), Somewhat better (4), About the same (3), Somewhat worse (2), Much worse (1)), and "How is your overall stress after the research consultation?" (possible responses were: Much better (5), Somewhat better (4), About the same (3), Somewhat worse (2), Much worse (1)). The study launched in week six of the fall 2019 semester and was suspended in week ten of the spring 2020 semester when it was announced that the following week campus would move to virtual services because of the COVID-19 pandemic. The study resumed in week six of the fall 2020 semester and ended in week ten of the spring 2021 semester to measure changes in reported project and overall stress before and during the COVID-19 pandemic. The weeks correspond to late October and early March. During the study period prior to the pandemic, the four librarians collecting responses for the study conducted 92 percent of their consultations in-person and none via web conferencing; while during the pandemic none of their consultations were in-person and 93 percent were via web conference. Other mediums for consultations included IM/Chat and phone.

SPSS version 27 was used in analysis of the data. The researchers consulted with the Associate Director of the Office of Institutional Research on the appropriate statistical tests, following up to verify the validity of the findings. Three of the factors were condensed in order to increase within-group sample size. Class standing was reduced from five categories (first year, sophomore, junior, senior, and graduate student) to three categories (first year/sophomore, junior/senior, and graduate student). Project stress and overall stress were reduced from five categories to two categories: low (none at all/a little/a moderate amount) and high (a lot/a great deal). Additionally, project stress change and overall stress change were transformed from much worse, somewhat worse, about the same, somewhat better, and much better to –2, –1, 0, 1, and 2 respectively to quantify the magnitude and direction of change of respondents from their previous state.

Of the 108 respondents, 43 percent (n=46) took the survey before the COVID-19 closures in Michigan and 57 percent (n=62) of respondents took the survey during the COVID-19 pandemic when library services and most courses were offered virtually. Eighty-five respondents gave their age. The ages of respondents ranged from a minimum of 17 to a maximum of 50 with a mean of 22.2 and standard deviation of 4.6. The ages and dates of participation were used to sort students into generations. Seventy-nine percent (n=67) of respondents who gave their age were from Gen Z, 19 percent (n=16) were Millennials, and 2 percent (n=2) were from Gen X.

Class Standing

Twelve percent (n=13) of respondents were first years/sophomores, 76 percent (n=82) were juniors/seniors, and 12 percent (n=13) were graduate students. This indicates that the primary audience for the research consultation service, at least among librarians in the study, is juniors/seniors.

There was a significant association between COVID and class standing ($x^2(2)=10.306$, $p=.006$), as exhibited in table 1. More respondents than expected were graduate students before COVID (late October 2019 through early March 2020), and there were more first years/sophomores than expected during the COVID phase of the study (late October 2020 through early March 2021). Examining LibAnswers consultation reporting statistics of librarians in the study, there were many more undergraduate consultations (178 versus 78) and slightly more graduate consultations (18 versus 16) during the COVID phase. While the researchers do not have an explanation for the change in graduate students, there was a first-year class that was strongly encouraged to meet with one of the librarians in the study during the COVID phase.

Results

Stress Change

TABLE 1
Class Standing and COVID (n=108)

			Class Standing		
			First Year / Sophomore (n=13)	Junior / Senior (n=82)	Graduate Student (n=13)
COVID	Before (n=46)	Count	1	36	9
		Expected Count	5.5	34.9	5.5
	During (n=62)	Count	12	46	4
		Expected Count	7.5	47.1	7.5

The primary interest of the study was to observe whether or not students reported an improvement in perceived stress after the research consultation. Thirty-seven percent (n=40) of respondents reported high levels of project stress and 64 percent (n=69) reported high levels of overall stress before the consultation. Respondents reported an improvement in both project stress and overall stress after the research consultation. Frequencies can be seen in figures 1 and 2. Respondents in the study experienced a mean positive change in project stress of 1.5 units and a mean positive change in overall stress of 1.2 units.

Chi-square Goodness of Fit Test Analysis

Using crosstabs, the researchers performed a chi-square goodness of fit test to explore associations between the variables and found significant associations between: 1. Project Stress and Covid; 2. Overall Stress Change and COVID; 3. Project Stress and Overall Stress; and 4. Project Stress Change and Overall Stress Change. One area of interest was whether participants in the study demonstrated higher levels of stress during the COVID phase of the study than in the pre-COVID phase.

There was a significant association between COVID and project stress before the consultation ($x^2(1)=10.297$, $p=.001$), but the data showed there were more respondents than expected

FIGURE 1
Project Stress Change Histogram

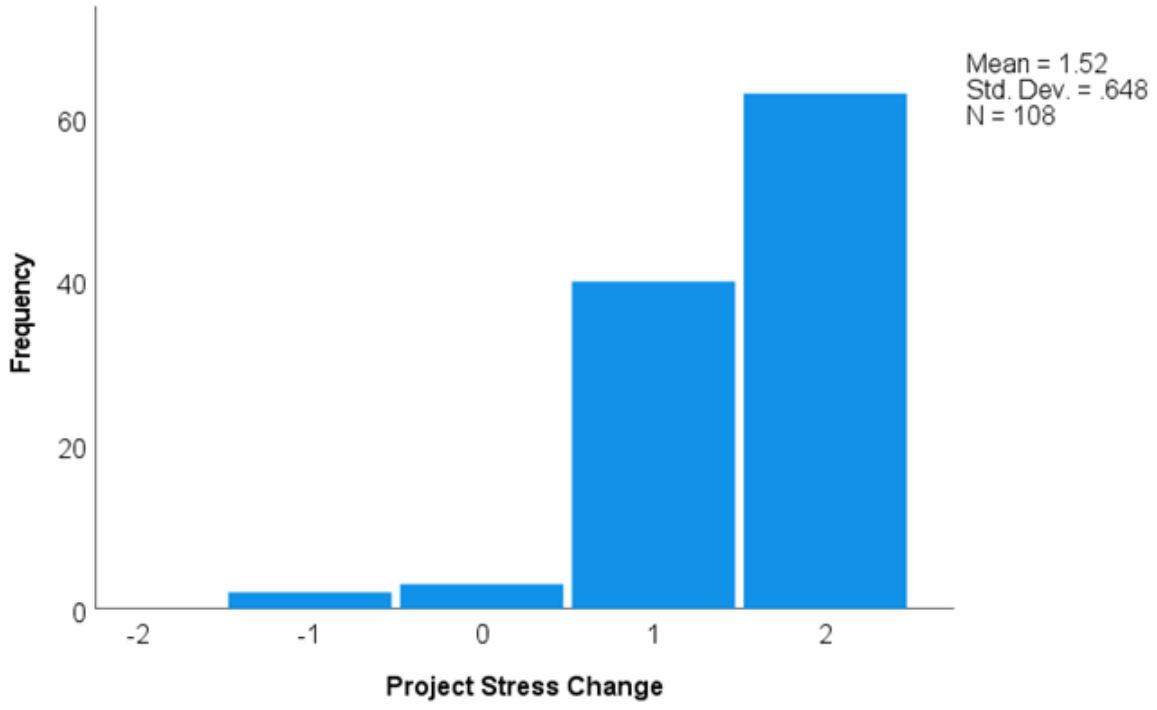
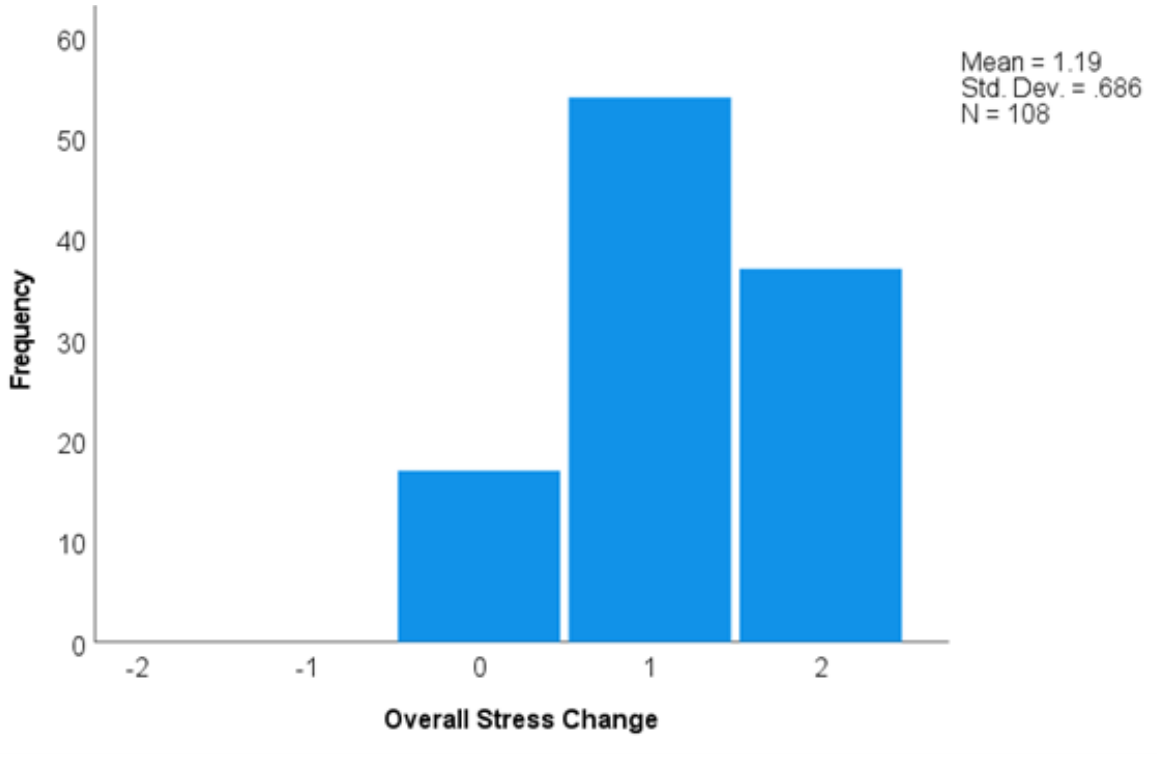


FIGURE 2
Overall Stress Change Histogram



reporting high project stress *before* COVID (late October 2019 through early March 2020). Likewise, more respondents than expected reported low project stress *during* COVID (late October 2020 through early March 2021) as shown in table 2. A similar analysis on overall stress before the consultation did not show a significant association with COVID.

TABLE 2
Project Stress and COVID (n=108)

			Project Stress	
			Low (1–3) (n=68)	High (4–5) (n=40)
COVID	Before (n=46)	Count	21	25
		Expected Count	29	17
	During (n=62)	Count	47	15
		Expected Count	39	23

There was a significant association between COVID and overall stress change ($x^2(2)=6.725$, $p=.035$). There were more respondents than expected reporting a positive overall stress change by two units before COVID, and more than expected reporting no overall stress change, or a positive stress change by one unit during COVID (see table 3). No students reported a negative overall stress change. In general, improvements in overall stress were higher before COVID. A similar analysis on project stress change did not show a significant association with COVID.

TABLE 3
Overall Stress Change and COVID (n=108)

			Overall Stress Change		
			0 (n=17)	1 (n=54)	2 (n=37)
COVID	Before (n=46)	Count	5	19	22
		Expected Count	7.2	23	15.8
	During (n=62)	Count	12	35	15
		Expected Count	9.8	31	21.2

In addition to the difference between initial project stress and COVID, there was a significant association between project stress and overall stress ($x^2(1)=5.101$, $p=.024$). There were more respondents than expected with both low project and overall stress, and likewise more than expected with both high project and overall stress (see table 4). In general, students with low project stress also had low overall stress and students with high project stress also had high overall stress.

TABLE 4
Project Stress and Overall Stress (n=108)

			Project Stress	
			Low (1–3) (n=68)	High (4–5) (n=40)
Overall Stress	Low (1–3) (n=39)	Count	30	9
		Expected Count	24.6	14.4
	High (4–5) (n=69)	Count	38	31
		Expected Count	43.4	25.6

There was also a significant association between project stress change and overall stress change ($x^2(6)=35.181$, $p < .001$). In general, students that showed large positive changes in project stress were more likely to show large positive changes in overall stress (see table 5).

TABLE 5
Project Stress Change and Overall Stress Change (n=108)

			Project Stress Change			
			–1 (n=2)	0 (n=3)	1 (n=40)	2 (n=63)
Overall Stress Change	0 (n=17)	Count	2	1	12	2
		Expected Count	.3	.5	6.3	9.9
	1 (n=54)	Count	0	2	23	29
		Expected Count	1	1.5	20	31.5
	2 (n=37)	Count	0	0	5	32
		Expected Count	.7	1	13.7	21.6

Regression Analysis of Project and Overall Stress Change

An ordinal regression model using the Cauchit link function in SPSS was used to estimate the relationships between changes in stress and possible explanatory variables including: COVID, Millennial, Gen Z, class standing, and initial project/overall stress respectively. The use of this model was affirmed by the model fitting, Pearson, and Deviance tests.

The ordinal regression model for project stress change found two explanatory variables that were statistically significant (see table 6). Students in the pre-COVID portion of the study reported stronger positive changes in project stress on average than students in the COVID portion (beta = 1.817, se = 0.885, p = 0.040). Students with low project stress prior to consultation reported stronger positive changes in project stress on average than students with high initial project stress (beta = 1.986, se = 0.876, p = 0.023).

TABLE 6
Regression of Project Stress Change

Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[ProjectStressChange = –1.00]	–20.649	21.738	0.902	1	0.342	–63.254	21.956
	[ProjectStressChange = .00]	–5.065	4.333	1.367	1	0.242	–13.556	3.427
	[ProjectStressChange = 1.00]	2.664	1.615	2.721	1	0.099	–0.501	5.829
Location	[GenZ=0]	0.964	1.003	0.924	1	0.336	–1.002	2.930
	[GenZ=1]	0[a]			0			
	[COVID=0]	1.817	0.885	4.220	1	0.040	0.083	3.551
	[COVID=1]	0[a]			0			
	[ClassStanding=1.00]	1.645	1.450	1.286	1	0.257	–1.198	4.487

TABLE 6
Regression of Project Stress Change

Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Location	[ClassStanding=2.00]	0.863	1.078	0.640	1	0.424	–1.251	2.977
	[ClassStanding=3.00]	0[a]			0			
	[ProjectStressHigh=.00]	1.986	0.876	5.146	1	0.023	0.270	3.702
	[ProjectStressHigh=1.00]	0[a]			0			
	[ProjectStressHigh=.00]	–20.649	21.738	0.902	1	0.342	–63.254	21.956
	[ProjectStressHigh=1.00]	–5.065	4.333	1.367	1	0.242	–13.556	3.427

Link function: Cauchit.

[a] This parameter is set to zero because it is redundant.

A cross tab analysis shows the responses to these questions and illustrates the difference between the estimated and reported values (see table 7). Respondents before COVID reported a higher-than-expected project stress change of two units and a lower than expected change of one unit while those during COVID reported a lower than expected project stress change of two units and higher than expected change of one unit. In general, respondents reported lower levels of project stress change during COVID than they did before.

TABLE 7
Project Stress Change and COVID (n=108)

			Project Stress Change			
			–1 (n=2)	0 (n=3)	1 (n=40)	2 (n=63)
COVID	Before (n=46)	Count	1	2	13	30
		Expected Count	.9	1.3	17	26.8
	During (n=62)	Count	1	1	27	33
		Expected Count	1.1	1.7	23	36.2

Table 8 shows that respondents who reported high project stress (4–5) reported lower-than-expected results for a positive project stress change factor of two and higher than expected results for zero project stress change and a positive project stress change factor of one.

TABLE 8
Project Stress Change and Project Stress (n=108)

			Project Stress Change			
			–1 (n=2)	0 (n=3)	1 (n=40)	2 (n=63)
Project Stress	Low (1–3) (n=68)	Count	2	1	21	44
		Expected Count	1.3	1.9	25.2	39.7
	High (4–5) (n=40)	Count	0	2	19	19
		Expected Count	.7	1.1	14.8	23.3

In general, participants reported lower levels of project stress change when they had high initial project stress than when they had low initial project stress.

Similarly, the overall stress change regression found overall stress and COVID to be the two significant explanatory variables (see table 9). Students in the pre-COVID portion of the study reported stronger positive changes in overall stress on average than students in the COVID portion (beta = 2.252, se = 0.837, p = 0.007). Students with low overall stress prior to consultation reported stronger positive changes in overall stress on average than students with high initial overall stress (beta = 1.594, se = 0.646, p = 0.014).

TABLE 9
Regression Analysis of Overall Stress Change

Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[OverallStressChange = .00]	–0.759	1.044	0.528	1	0.468	–2.805	1.288
	[OverallStressChange = 1.00]	3.136	1.300	5.820	1	0.016	0.588	5.683
Location	[GenZ=0]	–0.451	0.771	0.341	1	0.559	–1.963	1.061
	[GenZ=1]	0[a]			0			
	[COVID=0]	2.252	0.837	7.238	1	0.007	0.611	3.893
	[COVID=1]	0[a]			0			
	[ClassStanding=1.00]	2.011	1.287	2.442	1	0.118	–0.512	4.534
	[ClassStanding=2.00]	0.400	0.894	0.200	1	0.655	–1.353	2.153
	[ClassStanding=3.00]	0[a]			0			
	[OverallStressHigh=.00]	1.594	0.646	6.086	1	0.014	0.328	2.860
	[OverallStressHigh=1.00]	0[a]			0			

Link function: Cauchit

[a] This parameter is set to zero because it is redundant.

Respondents before COVID had a higher-than-expected overall stress change for two units and lower than expected change for zero and one units (see table 10). Respondents during COVID had a lower-than-expected overall stress change of two units and a higher-than-expected change for zero and one units. In general, respondents reported lower levels of overall stress change during COVID than they did before and when they had high initial overall stress.

TABLE 10
Overall Stress Change and COVID (n=108)

			Overall Stress Change		
			0 (n=17)	1 (n=54)	2 (n=37)
COVID	Before (n=46)	Count	5	19	22
		Expected Count	7.2	23	15.8
	During (n=62)	Count	12	35	15
		Expected Count	9.8	31	21.2

Respondents who reported high overall stress (4–5) reported lower than expected results for a positive overall stress change factor of two and higher than expected results for zero overall stress change and a positive overall stress change factor of one (see table 11). In general, respondents who reported higher overall stress had lower levels of stress change than people with lower overall stress.

TABLE 11
Overall Stress Change and Overall Stress (n=108)

			Overall Stress Change		
			2 (n=37)	1 (n=54)	0 (n=17)
Overall Stress	Low (1–3) (n=39)	Count	5	18	16
		Expected Count	6.1	19.5	13.4
	High (4–5) (n=69)	Count	12	36	21
		Expected Count	10.9	34.5	23.6

Discussion

The most impactful finding of this study is the consistent positive change in reported student stress after the research consultation. While the researchers were expecting to see a positive change in project stress, the researchers were very encouraged to see a corresponding positive change in overall stress. The overall stress change was lower in magnitude during the COVID phase of the study. This study did not ask students to describe the factors contributing to their overall stress and stress factors may have been more persistent during COVID times than prior. In their study of 243,694 students seeking counseling support, the Center for Collegiate Mental health found that levels of distress related to academics, eating, and family were heightened in 2020.[38] The finding that project stress levels were lower during the COVID period of our study was surprising. Anderson, Fisher, and Walker[39] analyzed 3,331 reference encounters at Georgia State University from the fall 2019 and spring 2020 semesters, coding them for level of difficulty, and found that transactions during COVID were more difficult than those before COVID. However, as the Vermont study speculated, accommodations from instructors during the COVID period of change may explain reduced stress.[40] Western Michigan University faculty may have improved communication and support—many faculty went through professional development when transitioning their courses online in the spring and summer of 2020. Additionally, the registrar offered students the opportunity to change their grading structure to pass/fail during the COVID lockdown with no penalty. In Texas A&M's study students reported increased stress due to COVID.[41] There was no significant difference in reported overall stress before and during COVID in our study or Vermont's,[42] but it's possible that students saw the project as a lower weighted stress factor in comparison to factors that arose from the context of the pandemic. The regression analysis found that, similarly to overall stress change, project stress change had a lower magnitude during the COVID phase of the study.

The findings in the regression analysis that respondents with lower initial project stress, or lower initial overall stress, experienced greater change is unexpected because there was less opportunity for change—if stress is already low, you wouldn't expect it to have as much room for improvement. However, it is easier to remove a small amount of stress than a large amount, and students going from some stress to none could see this as a great improvement.

Researchers at Rutgers University studied subjective factors—such as happiness and confidence—before and after six web search tasks; they found that those who were happy before the search, and who thought the search task would be easy, felt better after the search.[43] In the same study, subjects who felt unhappy before the search did feel happier, as well as more confident and satisfied with the results if the results found were complete and relevant. So, it may be that patrons going into the consultation with low project stress are likely to report improvement afterward regardless of the relevancy of the sources found, but patrons with high initial project stress are more reliant on relevancy for perceived improvement. These findings emphasize the importance of the librarian considering the research question fully and making connections between the information found in the consultation and the research question clear to the patron.

While the study gathered sufficient responses from Gen Z and Millennials to run a comparison, they were too close in age to represent the breadth of their generations. Additionally, there were only two Gen Xers in the study. Over the span of the study from October 2019 through March 2021, the mean age was 22.2 and the standard deviation was 4.6. Sixty-seven percent of respondents who gave their age were between 20 and 23 years old. Our finding of no difference in stress levels by generation is also in line with the APA *Stress in America 2021* study where Gen Z and Millennials report the most similar stress levels of any generation, at 5.6 and 5.7 out of 10 respectively. The researchers theorized there would be a stress difference by class standing—that as students gained experience in their programs, they would gain research and coping skills. However, this may be offset by the increased difficulty of the assignments in the upper levels.

The research coincided with a movement toward personal wellness at the Western Michigan University campus due to groundswell support from students during a series of educational innovation town halls held in 2018 and 2019. In pursuing this goal, the campus adopted the Wellness Wheel model derived from Hettler's Dimensions of Wellness.[44] The wheel adopted included eight dimensions: social, emotional, physical, environmental, financial, purpose/spiritual, occupational, and intellectual. Selected campus services were assigned a dimension and provided to students seeking education on campus wellness options. Through this study the researchers were able to get the research consultation service included on the menu of services for the dimension of intellectual wellness in spring 2020, joining others such as the tutoring and the writing center. Additionally, the library sought out mental health first aid professional development opportunities offered to all employees and invited the Assistant Director of Mental Health Outreach to present at a library all staff meeting.

Limitations and Opportunities for Future Research

The study gathered a sample of 108 completed responses which may limit generalizability to the larger student population at the university. The study did not collect demographic factors beyond class standing and age. Additionally, responses were self-selected and reported on perceived stress, which increases subjectivity. The mode of delivery of the consultation (virtual meeting vs in-person) may have influenced stress levels; this was not explored because the shift in delivery due to COVID was unexpected at the initiation of the study and thus was not included on the survey instrument.

Future opportunities for research include analyzing changes and perceived stress by comparing students who sought the research consultation intervention to a control of stu-

dents who did not seek a consultation. This would likely have the additional advantage of gathering a larger sample size. While the study focused on having a short survey in order to increase responses and to decrease consultation time dedicated to the survey, additional demographic questions could be included to analyze differences by gender, race, ethnicity, GPA, and first-generation status, among others. The post-test was administered immediately following the consultation. Future studies could investigate persistence of the effects further into the semester. One of the librarians in the study does collect Project Outcome data on the research consultation at the end of the semester and received 26 responses during the period of the study. Ninety-six percent reported using the resources for their assignment and 81 percent reported they applied what they learned to another research task; however, these responses do not touch on stress. Overall and Project Stress also could be further segmented. Future studies could include the incorporation of assessment metrics, such as the Perceived Stress Scale (PSS) or Bostick's Library Anxiety Scale. Another opportunity would be to conduct a study incorporating factors of confidence, happiness, stress, and library anxiety, which are frequently studied separately.

Conclusion

Findings of the study confirm the researchers' hypothesis that the library research consultation improves perceived stress levels at the project and overall level in the population surveyed. While the researchers want to affirm their belief that the consultation is not in any way a replacement for professional counseling services, the results show that it is a wellness-focused student service that can help students to reduce academic stress. Therefore, they argue it could be included with other campus services promoted to students seeking wellness triage, particularly for students who seek intellectual wellness. The researchers hope this is just the beginning of librarianship interest in utilizing the research consultation to its fullest potential not only in student learning but also as one of several academic services contributing to student wellness.

Acknowledgements

The authors would like to acknowledge the work of Will Stutz, Data Scientist and Associate Director at the Western Michigan University Office of Institutional Research for advising the authors on appropriate statistical tests and interpretation of the data.

Notes

1. Beth McMurtrie, "A 'Stunning' Level of Student Disconnection," *The Chronicle of Higher Education* April 5, 2022, https://www.chronicle.com/article/a-stunning-level-of-student-disconnection.

2. Michael Dimock, "Defining Generations: Where Millennials End and Generation Z Begins," *Pew Research Center,* January 17, 2019, https://www.pewresearch.org/fact-tank/2019/01/17/where-millennials-end-and-generation-z-begins.

3. Wendy Rubin, American Psychological Association, "Stress in America™ Generation Z. Stress in America Survey," *American Psychological Association*, no. October (2018): 1–11, https://www.apa.org/news/press/releases/stress/2018/stress-gen-z.pdf.

4. Daniel Eisenberg, Sarah Ketchen Lipson, and Julie Posselt, "Promoting Resilience, Retention, and Mental Health," in *New Directions for Student Services* (2016), 87–95, https://doi.org/10.1002/ss.20194.

5. Michael T. Kalkbrenner, Amber L. Jolley, and Danica G. Hays, "Faculty Views on College Student Mental Health: Implications for Retention and Student Success," *Journal of College Student Retention: Research, Theory and Practice* 23, no. 3 (November 1, 2021): 636–58, https://doi.org/10.1177/1521025119867639.

6. Alan M. Woody Schwitzer and John A. Vaughn, "Mental Health, Well–Being, and Learning: Supporting

Our Students in Times of Need," *About Campus: Enriching the Student Learning Experience* 22, no. 2 (2017): 4–11, https://doi.org/10.1002/abc.21287.

7. Jackie Stapleton, Caitlin Carter, and Laura Bredahl, "Research Consultations in the Academic Library: A Scoping Review on Current Themes in Instruction, Assessment and Technology," *Journal of Academic Librarianship* 46, no. 4 (July 1, 2020), https://doi.org/10.1016/j.acalib.2020.102156.

8. Ying Zhong and Johanna Alexander, "Academic Success : How Library Services Make a Difference," in *Proceedings of the ACRL Thirteenth National Conference, March 29–April 1, 2007, Baltimore, Maryland* 2007, 141–57.

9. Krista M. Soria, Jan Fransen, and Shane Nackerud, "Library Use and Undergraduate Student Outcomes: New Evidence for Students' Retention and Academic Success," *Portal* 13, no. 2 (2013): 147–64, https://doi.org/10.1353/pla.2013.0010.

10. Robin E. Miller, "Reference Consultations and Student Success Outcomes," *Reference and User Services Quarterly* 58, no. 1 (2018): 16–21, https://doi.org/10.5860/rusq.58.1.6836.

11. Angie Cox, Anne Marie Gruber, and Chris Neuhaus, "Complexities of Demonstrating Library Value: An Exploratory Study of Research Consultations," *Portal* 19, no. 4 (October 1, 2019): 577–90, https://doi.org/10.1353/pla.2019.0036.

12. Carol Collier Kuhlthau, "The Library Research Process: Case Studies and Interventions with High School Seniors in Advanced Placement English Classes Using Kelly's Theory of Constructs," (EdD diss., Rutgers University, 1983).

13. C. Carol Kuhlthau et al., "Validating a Model of the Search Process: A Comparison of Academic, Public and School Library Users," *Library and Information Science Research* 12, no. 1 (1990): 5–31.

14. Constance A. Mellon, "Library Anxiety: A Grounded Theory and Its Development," *College & Research Libraries* 47, no. 2 (1986): 160–65, https://doi.org/10.5860/crl_47_02_160.

15. Sharon Lee Bostick, "The Development and Validation of the Library Anxiety Scale" (PhD diss., Wayne State University, 1992).

16. Qun G Jiao, Anthony J Onwuegbuzie, and Art A Lichtenstein, "Library Anxiety: Characteristics of 'at-Risk' College Students," *Library & Information Science Research* 18, no. 2 (1996): 151–63, https://doi.org/10.1016/S0740-8188(96)90017-1.

17. Sharon L. Onwuegbuzie, Anthony J., Jiao, Qun G. & Bostick, *Library Anxiety: Theory, Research, and Applications* (Lanham, MD: Scarecrow Press Inc., 2004).

18. Shelley Blundell and Frank Lambert, "Information Anxiety from the Undergraduate Student Perspective: A Pilot Study of Second-Semester Freshmen," *Journal of Education for Library and Information Science* 55, no. 4 (2014): 263.

19. Anthony J. Onwuegbuzie and Qun G. Jiao, "Information Search Performance and Research Achievement: An Empirical Test of the Anxiety-Expectation Mediation Model of Library Anxiety," *Journal of the American Society for Information Science and Technology* 55, no. 1 (2004): 41–54.

20. Peiling Wang, William B. Hawk, and Carol Tenopir, "Users' Interaction with World Wide Web Resources: An Exploratory Study Using a Holistic Approach," *Information Processing and Management* 36, 2000, (2000): 229–251. https://doi.org/10.1016/S0306-4573(99)00059-X.

21. Kalkbrenner, Jolley, and Hays, "Faculty Views," 636–58.

22. Ashley Eklof, "Understanding Information Anxiety and How Academic Librarians Can Minimize Its Effects," *Public Services Quarterly* 9, no. 3 (2013): 246–258. https://doi.org/10.1080/15.

23. Jacqueline Kracker, "Research Anxiety and Students' Perceptions of Research: An Experiment. Part I. Effect of Teaching Kuhlthau's ISP Model," *Journal of the American Society for Information Science and Technology* 53, no. 4 (February 15, 2002): 282–94, https://doi.org/10.1002/asi.10040.

24. Gillian S. Gremmels and Karen Shostrom Lehmann, "Assessment of Student Learning from Reference Service," *College and Research Libraries* 68, no. 6 (2007): 488–502, https://doi.org/10.5860/crl.68.6.488.

25. John Watts and Stephanie Mahfood, "Collaborating with Faculty to Assess Research Consultations for Graduate Students," *Behavioral and Social Sciences Librarian* 34, no. 2 (January 1, 2015): 70–87, https://doi.org/10.1080/01639269.2015.1042819.

26. 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 and Research Libraries* 74, no. 6 (2013): 605–18, https://doi.org/10.5860/crl12-363.

27. Pamela N. Martin and Lezlie Park, "Reference Desk Consultation Assignment: An Exploratory Study of Students' Perceptions of Reference Service," *Reference & User Services Quarterly* 49, no.4 (2010): 333–340. https://doi.org/10.5860/rusq.49n4.333

28. Thomas L. Reinsfelder, "Citation Analysis as a Tool to Measure the Impact of Individual Research Consultations," *College and Research Libraries* 73, no. 3 (2012): 263–77, https://doi.org/10.5860/crl-261.

29. Crystal D. Gale and Betty S. Evans, "Face-to-Face: The Implementation and Analysis of a Research Consultation Service," *College and Undergraduate Libraries* 14, no. 3 (December 18, 2007): 85–101, https://doi.org/10.1300/J106v14n03_06; Christine Moghimi and Mary C. Rickelman, "Assessing Information Literacy Skills and Library Anxiety of First-Year Occupational Therapy Graduate Students," *Journal of Occupational Therapy Education* 5, no. 1 (January 1, 2021): 1–16, https://doi.org/10.26681/jote.2021.050104; Lauren Reiter and Carmen Cole, "Beyond Face Value Evaluating Research Consultations from the Student Perspective," *Reference and User Services Quarterly* 59, no. 1 (2019): 23–30, https://doi.org/10.5860/rusq.59.1.7222; Lindsey Sikora, Karine Fournier, and Jamie Rebner, "Exploring the Impact of Individualized Research Consultations Using Pre and Posttesting in an Academic Library: A Mixed Methods Study," *Evidence Based Library and Information Practice* 14, no. 1 (2019): 2–21, https://doi.org/10.18438/eblip29500.

30. Watts and Mahfood, "Collaborating with Faculty," 70–87.

31. Sandy Hudock, "Can Research 'Send Me High?' Addressing Flow Theory," *Reference Services Review* 43, 4 (2015): 689–705, https://doi.org/10.1108/RSR-04-2015-0025.

32. Martin and Park, "Reference Desk Consultation," 333–340.

33. Magi and Mardeusz, "Why Some Students," 605–18.

34. American Psychological Association, "Stress In America: A National Mental Health Crisis," *American Psychological Association* 2020, 1–11, https://doi.org/10.2307/2675115.

35. ActiveMinds, "Student Mental Health Survey," *ActiveMinds*, September, 2020, accessed April 13, 2022, https://www.activeminds.org/wp-content/uploads/2020/10/Student-Mental-Health-Data-Sheet-Fall-2020-1.pdf.

36. Changwon Son et al., "Effects of COVID-19 on College Students' Mental Health in the United States: Interview Survey Study," *Journal of Medical Internet Research* 22, no. 9 (2020): 1–14, https://doi.org/10.2196/21279.

37. William E. Copeland et al., "Impact of COVID-19 Pandemic on College Student Mental Health and Wellness," *Journal of the American Academy of Child and Adolescent Psychiatry* 60, no. 1 (2021): 134–141.e2, https://doi.org/10.1016/j.jaac.2020.08.466.

38. Center for Collegiate Mental Health, "Fall 2021: COVID-19 Impact on College Student Mental Health," Penn State Center for Collegiate Mental Health, 2022, accessed April 13, 2022, https://ccmh.psu.edu/index.php?option=com_dailyplanetblog&view=entry&year=2022&month=03&day=21&id=23:fall-2021-COVID-19-impact-on-college-student-mental-health.

39. Raeda Anderson, Katherine Fisher, and Jeremy Walker, "Library Consultations and a Global Pandemic: An Analysis of Consultation Difficulty during COVID-19 across Multiple Factors," *Journal of Academic Librarianship* 47, no. 1 (January 1, 2021), https://doi.org/10.1016/j.acalib.2020.102273.

40. Copeland et al., "Impact of COVID-19," 134–141.e2.

41. Son et al., "Effects of COVID-19," 1–14.

42. Copeland et al., "Impact of COVID-19," 134–141.e2.

43. Jacek Gwizdka and Irene Lopatovska, "The Role of Subjective Factors in the Information Search Process," *Journal of the American Society for Information Science and Technology* 60, no. 12 (December 2009): 2452–64, https://doi.org/10.1002/asi.21183.

44. Bill Hettler, "Wellness Promotion on a University Campus," *Family and Community Health* 3, no. 1 (1980): 77–95, https://doi.org/10.1097/00003727-198005000-00008.