UNIVERSITY OF NORTH CAROLINA CHARLOTTE | J. MURREY ATKINS LIBRARY

2023 Report on the Experiences of Neurodivergent Students at Atkins Library

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Executive Summary

This report describes the study our team conducted to better understand the needs and experiences of students at UNC Charlotte who identify as neurodivergent and/or as having a disorder related to mental health or function, specifically as they related to Atkins Library and UNC Charlotte. The research team for this study was comprised of representatives from the library's committees for Assessment, Diversity & Inclusion, and Student Engagement. To make this assessment, we used a multi-method approach that included interviews and photovoice discussions, in which participants took photographs that were then discussed in group sessions. All participants in the study were students at UNC Charlotte who identify with the indicated population. Deliberate steps were taken to reduce the influence of the potential biases of the research team and to ensure that participants felt comfortable sharing frank feedback on potentially sensitive topics. After analyzing the gathered data, the research team identified six prominent themes in the comments by participants, each of which are divided into subthemes that are explained in the full report:

1. My condition affects my library experiences most commonly by making it difficult to focus when I'm trying to use a library space to study.

2. Besides struggling to focus, my most typical negative experiences in the library are feeling overwhelmed and/or socially anxious.

3. I greatly value how the library's variety of spaces and resources supports the many different ways I want to use the library, including as a place to relax.

4. UNC Charlotte is a much more supportive and inclusive environment for my condition than schools I've attended in the past.

5. COVID had a negative impact on my experiences as a student, and there are a few things I still struggle with as a result of the pandemic.

6. My first semester was the one I found the most difficult.

Using our findings, the research team assembled a list of five recommendations intended to better align Atkins Library with the needs and experiences of neurodivergent students:

1. Create a sensory-friendly study room.

2. Offer noise control strategies in other study rooms.

3. Create a marketing campaign for this community.

4. Make it easier for users to find the right space on arrival.

5. Advertise online contact methods at new points-of-need.

Introduction

In 2022, Atkins Library decided to undertake this study of the needs and experiences of neurodivergent students with Atkins Library and UNC Charlotte. Among the most important factors that led us to this decision was the release, in March of 2022, of the findings from the Adolescent Behaviors and Experiences Study (ABES) by the Centers for Disease Control's (CDC) (Centers for Disease Control and Prevention, 2022). These findings, arriving in the wake of the global COVID-19 pandemic, illuminated the extent of the mental health crisis affecting young people in the United States. Among the many concerning statistics, the CDC reported that "more than a third (37%) of high school students reported they experienced poor mental health during the COVID-19 pandemic." They continued:

> Findings also highlight that a sense of being cared for, supported, and belonging at school — called 'school connectedness' — had an important effect on students during a time of severe disruption. Youth who felt connected to adults and peers at school were significantly less likely than those who did not to report persistent feelings of sadness or hopelessness (35% vs. 53%); that they seriously considered attempting suicide (14% vs. 26%); or attempted suicide (6% vs. 12%). However, fewer than half (47%) of youth reported feeling close to people at school during the pandemic. (Centers for Disease Control and Prevention, 2022)

These data aligned with trends that have been observed in college students of increasing rates of mental health struggles. As a university, we stand to inherit these grim trends as today's high school students move into higher education, and we know that the experiences they represent have a significant negative effect on academic success. As rates of mental health concerns like depression and anxiety soar upwards among our students, their academic success suffers, and students with pre-existing mental health challenges may be the hardest hit (Horgos et al., 2020). We know well that learning disabilities and psychiatric disorders, independent from acquired mental illnesses, can negatively affect success in higher education, especially by reducing student retention (Koch et al., 2018).

As a library with an ongoing commitment to accessibility, we have already undertaken a number of initiatives to make the library more accessible[1]; however, we had not yet conducted a study focusing on the unique needs and experiences of students whose accessibility needs are related primarily to mental differences, disorders, and disabilities. Preliminary findings from our ongoing Student Engagement & Success Study indicate that engaging with the library contributes to increased academic success, graduation rates, and retention (Croxton & Moore, 2020). In addition to these wide-ranging academic struggles, findings from our own student surveys suggest that students from this community may be struggling in the library especially with issues related to focus, distraction, and sensory processing. By conducting this study that listens more closely to this community, we hope to reduce any accessibility barriers they may face. We believe that, in doing so, we might increase their engagement with the library and thus contribute to their academic success. Additionally, we believe that library spaces, services, and employees are well situated to fulfill the CDC's recommendation of increasing school connectedness among this population.

This study is an adaptation of the study model we used in 2022 to investigate the needs and experiences of Black students at UNC Charlotte (Moore et al., 2022). That study itself was inspired by Duke University's internal report, "Understanding the experiences and needs of Black students at Duke."

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[1] See our accessibility plan at https://docs.google.com/document/d/1Z50GV4V7uAFgd7gTHAgnI_PAiCcq-TKrP4eb_d5wmxM/edit?usp=sharing

We found that using photovoice methodology, as shown in Chapman et al. (2020), was effective in gathering significantly more feedback from our community of focus, and it gave participants more freedom to control the direction of the study than traditional methods would elicit. We also valued this study model's attention to building relationships of trust between the participants and researchers.

Our ultimate goal in performing this study is to elevate the voices of neurodivergent students and eliminate any barriers that may exist that prevent us from fully hearing and understanding their perspectives, whether those barriers are physical, mental, or emotional. As a library at a university that serves more than 30,000 students, we make decisions every day which affect thousands of lives in ways both mundane and profound. It is our responsibility to understand the impact of yesterday's decisions so that today's decisions can improve.

In this case, reaching that understanding requires us to pay special attention to issues of organizational trust and to take steps that minimize the effects that our own biases could have on the direction of the study. We hope that we have done so effectively, and that our final recommendations reflect what the experiences of neurodivergent students at Atkins Library really are, rather than what we assume them to be. Following the release of this study, we hope to maintain our commitment to elevating the voices of neurodivergent students in decisions regarding how these recommendations are enacted.

Methodology

RECRUITMENT

We recruited participants for this study via a mass email announcement to UNC Charlotte students using the "Research Study Announcement" system and the recruitment script in Appendix A. We invited interested students to respond to an online questionnaire in Google forms which requested that they (1) provide an email address for further contact, (2) affirm their eligibility to participate, and (3) volunteer for one or both sections of the study. Potential participants were informed about what to expect from each section.

We advertised that participants would receive a $15 online gift card for participating in an interview or photovoice session and $20 for participating in the photography activity, sent through the service Giftogram. The maximum incentive a participant could receive (by participating in one interview, one photovoice discussion group, and the photography activity) was $50.

For all respondents who were both eligible and had selected at least one section, the PI reached out by email to organize further participation. All participants were required to review and sign a statement of informed consent. Participants who signed the consent were further contacted to schedule a discussion session using the service Calendly.

PARTICIPANTS

The study solicited responses from a total of 24 participants. Aside from each participant's attestation that they were a currently enrolled student at UNC Charlotte at the time of participation, that they were age 18 or above, and that they identified as neurodivergent and/or as having a disorder related to mental health or function, no further demographic information was sought to better protect participants' confidentiality.

Of the 24 participants, 19 participated in an interview session, 10 submitted photographs and captions, and 13 participated in a photovoice group discussion session. There was overlap between participants in each section of the study. For further security, names were not collected in the notes for each session. To the extent that names appeared in transcripts, the PI and qualitative research specialist censored these names before transcripts were shared within the remainder of the research team. Each participant in a group session was assigned a code number for use in analysis. Participants who joined both an interview and photovoice group were coded with a separate number for each.

DATA COLLECTION

We employed multiple qualitative methods in a sequential order: interviews, photovoice (including a photography activity followed by group discussions), and then member checking. Each method in this chain built upon data gathered and analyzed by the previous method.

Interviews

Participants were asked to join an individual interview session, with an option to join either in-person in a library conference room or virtually using Zoom. Each session was scheduled to last up to one hour, although not all sessions required the full time. These interviews were designed to be semi-structured, using a set of 12 major questions, with freedom for the facilitators to explore follow-up questions as needed. The interview facilitators made several adjustments to the master list of questions as the interviews progressed, with the intention of gathering the maximum amount of detail regarding topics brought up frequently by interview participants.

In each session, one facilitator guided the interview while another took notes. In five sessions, the PI led the discussion, while the qualitative research specialist did so in 14. Facilitators used the document "Interview Facilitator's Guide" to guide these discussions. The questions used in that document are attached in Appendix B. This guide contained the master list of questions, a short introductory script, and suggested follow-up questions.

In recruiting a qualitative research specialist to perform these interviews, the study team specifically encouraged current students who identified as neurodivergent and/or as having a disorder related to mental health or function to apply for the position. We recognize that, despite putting together a diverse planning team, none of us are positioned to have more insight into the current experiences of students in this community than a person who belongs to that student community currently.

We also recognize that it may be difficult to share criticisms of an institution like Atkins Library or UNC Charlotte with people that have established positions of authority in the institution. We wanted participants to feel comfortable knowing that we had done our best to minimize any opportunity for anyone outside the room, even on the study planning team, to connect their specific comments with personally identifiable information.

A digital recording device was used to capture audio from each session. Although we attempted to minimize the use of names while recording was active, the captured audio was first reviewed by the PI so that any names used in-session could be removed prior to analysis. This was done using the application Audacity. The PI then used the service Otter.ai to transcribe the audio from each session into text.

Photovoice

The photovoice method consisted of two activities for participants. In the first activity, they were asked to capture photographs in response to a set of prompts written by the study planning team. They were further requested to provide a short caption for each photograph. Participants were encouraged to explore the library building and the campus at large to capture their photographs, but they had the freedom to choose other locations at their own discretion. We requested that each participant submit at least four photos. They were given a period of one week to capture and submit their photos. An example of the photography activity instructions provided to participants can be seen in Appendix C.

In the second activity, participants were asked to join small group discussion sessions which were conducted and analyzed in much the same way as the interviews. However, instead of using pre-written questions from the study planning team, group discussions were organized around the photographs and captions submitted by participants. Participants were shown a slideshow with a selection of photographs and captions and asked to reflect and share about their reactions to them, any feelings they brought up, or any other concept which stood out to them. Facilitators asked follow-up questions as needed. The guiding questions used by facilitators can be seen in Appendix D.

We performed a total of four photovoice group discussions. In three of these sessions, we were able to complete the full hour as planned; however, one of these sessions was forced to end prematurely because of an unplanned fire alarm. The study team made the decision that the data gathered prior to the alarm was not significantly different in character from the other transcripts, merely curtailed, and so was suitable to include in the analysis.

Member Checking

To reduce bias on the part of the study planning team, we employed member checking to give participants the chance to provide feedback on our interpretation of the data prior to publication. The objective of member checking is to allow participants to correct any possible misinterpretations, misunderstandings, or misrepresentations on the part of the researchers. In our situation, because the study planning team was intentionally kept separate from many details for bias reduction and confidentiality, we determined that member checking was essential to confirm our findings. After analyses were made, an excerpt of the draft report was distributed to participants to solicit their feedback. Participants did not suggest any changes to the provided analysis,

Analysis and Discussion

CONTENT ANALYSIS OF TRANSCRIPTS

We first performed a content analysis of the transcribed comments from the group discussion sessions. There were 23 individual transcripts for analysis, each representing up to one-hour of conversation between session facilitators and participants.

Using NVivo, the qualitative research specialist applied codes to the transcribed comments which described the variety of topics being discussed. Multiple topic codes could be applied to the same snippet of text if applicable. Across all transcripts, a total of 164 code tags were created. A full list of codes, and the number of session transcripts and text snippets to which they were applied, is found in Appendix E.

THEMATIC ANALYSIS

We conducted a thematic analysis of the data collected from the 23 transcripts of interviews and photovoice group discussions. The goal of this analysis was to synthesize the findings of our content analysis into a collection of the major thematic factors motivating participants' responses.

Each of these six themes represents a summary of what we believe to be the most common viewpoints among our study participants. Each theme is derived from what we observed to be frequently repeating patterns in the data as identified in the content analysis.

It is important to recognize that study participants were not monolithic and that any individual participant may or may not agree with the themes as presented here. It is also important to recognize that participants made many comments which were valuable and insightful but not necessarily indicative of a larger pattern in our observations. Such comments are not included in this analysis, but we hope to find another appropriate outlet to share those insights.

The six themes which we present here are as follows. Each theme is divided into subthemes that are explained in more detail below.

1. My condition affects my library experiences most commonly by making it difficult to focus when I'm trying to use a library space to study.

2. Besides struggling to focus, my most typical negative experiences in the library are feeling overwhelmed and/or socially anxious.

3. I greatly value how the library's variety of spaces and resources supports the many different ways I want to use the library, including as a place to relax.

4. UNC Charlotte is a much more supportive and inclusive environment for my condition than schools I've attended in the past.

5. COVID had a negative impact on my experiences as a student, and there are a few things I still struggle with as a result of the pandemic.

6. My first semester was the one I found the most difficult.

What follows is a depiction of the themes and subthemes, with quotations from the transcripts and participant-submitted photographs providing evidentiary support. For the sake of brevity, not all quotations and photographs that apply to each theme are presented here — only a selection which the authors believe are most representative.

Theme 1. My condition affects my library experiences most commonly by making it difficult to focus when I'm trying to use a library space to study.

> "I struggle with focusing [when] sitting down and studying. So I have my own ways of studying. I like to stand up, walk around and study." I.10

Theme 1a. I have specific needs to support focus that usually include noise levels, lighting, physical comfort, and the presence of others engaged in study.

> "There's multiple things that can make me unable to focus [such as] noises … whether or not I'm physically comfortable. … it's a lot of very small stuff but it's very easy for me to not be able to focus because of that." PV3.1

Theme 1.1.1. I prefer an environment that strikes a balance between silence and background noise.

"[My attention] will bounce everywhere if there's too much noise but if there's no noise, my brain is searching for that sensory input. So having that slight bit of noise helps counteract both sides of that." PV3.2

"I struggle a lot with sound, just in terms of if there's too much sound, or if there's not enough sound." I.17
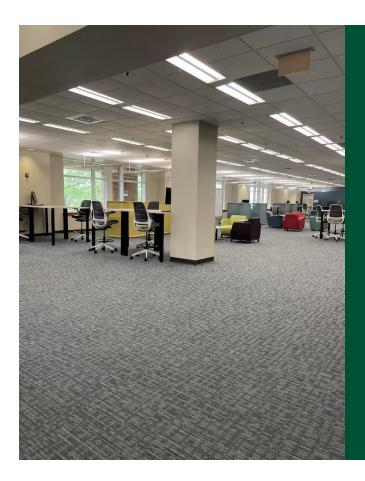
"It's easy for me to get lost in the fact it's so quiet I can basically hear every single movement that's going on, whether it's someone shifting in their chairs, or the screech of a pencil against paper or something like that. But also for me, if it's too noisy, then I'd have a hard time focusing." PV3.1

"The in between of it's not super noisy … but there's enough background noise where it kind of helps with focus and not necessarily worrying about little sounds like 'Oh, I dropped my pen and now everyone's staring at me.'" PV1.3

"Sometimes noise can be hard. But I know that for me, hearing other people studying makes me want to study more and helps with motivation. So I think that that can also be a thing too, but I definitely agree about the medium noise area." PV4.3

Due to this being the quietest place in the library, it is often where I feel that no matter what, I can focus.

> This area is often a good hybrid as it is not so crowded to be overwhelming as the third floor is but it is not so silent that I feel as if I need to watch every sound I make. There is often a calmness in the slight background noise that helps me focus on my work.

Theme 1.1.2. I prefer natural lighting to harsh fluorescent lighting (unless the natural lighting contributes to excessive heat).

> "I definitely think natural lighting has an impact on one's mental health. If I have to get work done when I'm not feeling well, I'll move to a second space to get out of there. And so I'll usually come to the library near a window because the sun helps." I.11

> "Fluorescent lights can be really painful during an active migraine attack" I.1

> "The fluorescent lighting can be very grating. Honestly, I think that the worst part of having to be in the library for long periods of time is [that] it gets overwhelming being as bright as it is." I.19

Theme 1.1.3. I prefer flexible and adjustable seating that can accommodate different needs and body types.

> "The problem that I would have with the chairs is ... the low back chairs are a little bit of a nightmare sometimes because I'm putting more strain on certain parts of my body rather than being able to relax and focus." PV3.2

> "Some of the chairs cut into my legs. There's some chairs here that aren't designed for people with a bigger body and that's one thing I have found annoying." I.7
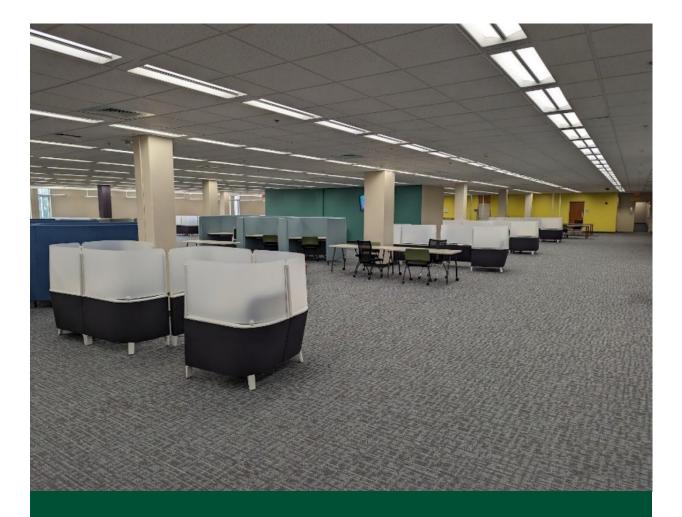
> "Having a comfortable chair really makes a difference [whether] you're going to be productive or not" PV4.2

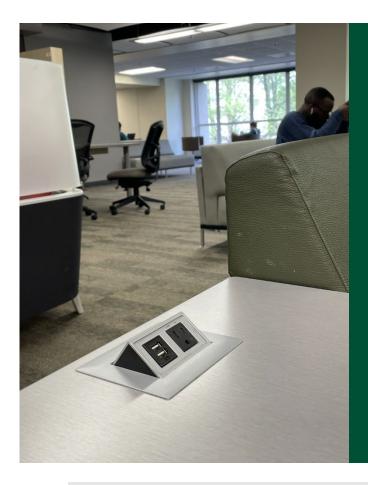"Seating arrangement can make or break my ability to concentrate." PV4.1

Theme 1.1.4. I find it easier to focus on work and study when I am in the presence of others in the library who are doing the same.

"I know that for me, hearing other people studying makes me want to study more and helps with motivation." I.4

"The environment [at Atkins Library] feels a lot more focusing and calm than any other place because it feels like people are here to work on things." I.12

Noise! Even in the individual study desks, the ambient noise of other students can make it nearly impossible to focus, and although I've purchased noise-cancelling headphones, I really don't like using them in the open spaces because I don't like to lose situational awareness of what's going on around me.

I need a decent-sized flat surface to work on with access to an outlet in a place with other people in my ideal study environment.

> "I think the vibe is very nice at the library because lots of students [are] studying, focusing, or working on things. … It's nice, because if I need to really focus on something, I'll just put myself in the library because I know that everyone else's energy is going to make me try at least to work a little harder on what I'm doing." I.9

Theme 1.2. The spaces that most closely match my needs for focus in the library are the private study rooms, and to a lesser extent, the study cubicles and tower floors.

> "Honestly, [private study] rooms are where I feel the best if I'm needing to do work or study just because they're quiet [and] they're private. I don't have to worry about other people. So this is probably my ideal place where I feel like everything is met for what I need." I.4

> "I like [how the study cubicles] offer a lot of privacy, because it helps you tune out what's going on around you if you get too overwhelmed or anxious. And that's sort of like a nice way to disconnect. … everything you need is right there" PV1.1

> "I like that the tower floors are quiet or [have] minimal noise. They've definitely helped me to focus on my work and not get distracted. And I like that other people have to respect that rule." I.15

Theme 1.3. The space that least supports my needs for focus in the library is the third floor.

> "[When] I tried to focus on the second or third floor, I just can't because even with music, I can still hear other people talking and just can't focus." I.12

"I pretty much never go to or study on the third floor because there's just so much going on all the time. ... it's more like a hangout space to me." I.1

"I think of [the third floor] more as a social place than a place to do work. So I've tried to do zoom meetings there and homework, but I just haven't been able to." I.14

Theme 2. Besides struggling to focus, my most typical negative experiences in the library are feeling overwhelmed and/or socially anxious.

"There's just times where there's a lot of people there and it can get a little overwhelming trying to figure out where I need to go [and] what I need to do." I.17

"[When Atkins Library] becomes an anxiety inducing experience, where all I can think about is all the study rooms are going to be taken ... and I'm going to have to hear some person talking, yelling on their phone, chewing, burping, whatever. And those even minor sounds are supremely distracting." I.13

"Being [on the first floor of Atkins Library] is a little overwhelming for me since I always get really disoriented [because] I never know if I'm on the ground floor or the first floor." PV4.3

The private study rooms are definitely the most supportive areas for helping maintain my focus (even though the rooms themselves can feel pretty sterile - just having the space for quiet solitude is critically helpful).

When I had online classes and being in my lab was just too much stimulation, I would retreat to the library to find a quiet place to log on and learn. Most days, I tried to get a study room, but when I couldn't, I found these study stalls to be amazing at blocking out distractions and keeping me focused on my class.

Theme 2.1. When I feel overwhelmed in the library, it's usually because I feel like my senses are overstimulated or because I feel confused.

"Especially [on] the lower floors where they're really large, it can be hard to find a map to figure out where you are." PV1.2

"I think it was the sheer amount of space, the different staircases and avenues I could go. It just felt so vast that I did not know where to start that felt overwhelming." I.4

"I do wish that [there were] sort of guidelines on what's available and how to utilize them for stuff like the makerspace [or] perhaps a little more obvious. ... The 3d printing [is] unclear I guess if it's meant solely for academic stuff, or if it's something you can utilize outside of that. That's just one example." PV4.1

Theme 2.1.1. Navigating Atkins (and its spaces) is challenging, especially as a new student.

"I think [Atkins Library] can feel very overwhelming. When I first walked in as a new student, not knowing anything about the library, I walked in and basically walked right out, because I just didn't know where to start." I.4

"[Atkins Library] can be really overwhelming just because of how big the building is. ... It's going to be a little confusing to navigate" I.16

"I would say [Atkins Library needs] more signage. I think the map is super confusing, I can never understand [it]. ... My friends really can't understand it, either." I.14

"I just know that for me personally it can feel a little confusing and overwhelming like espe-cially the first time when I came to the library and I wasn't sure [if] I needed to go to the desk to check out books like is there another place I can check them out?" PV4.3

Theme 2.2. When I feel socially anxious in the library, it's usually because I feel self-conscious about my noise levels or because of potential conflict with other students.
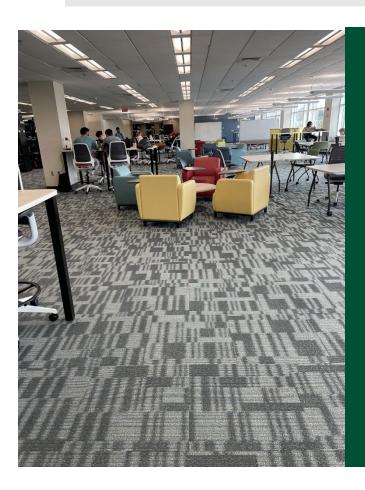
"When I book a room and I go to get my room and somebody is still in it and they don't want to leave, that makes for some unpleasant discussions." I.1

"One time I went for my biology study group, and there was a group of people in the room. And we were like, hey, it's our time, we reserved this room. … I didn't do most of the talking. … I avoid confrontation like the plague. It was really my partner, my other group partner who was like, really, really well at handling that situation…. I [would've] probably just left…" I.15

"There's enough background noise where it kind of helps with focus and not necessarily wor-rying about like little sounds of like Oh, I dropped my pen and now everyone's staring at me." PV1.3

Theme 2.3. When I have a negative experience in the library, my response is usually to leave, rather than search for other options within the library.

"Sometimes, if [Atkins Library] gets to be too much, like too loud [or] too many people, I will just end up leaving and finding someplace else to study." PV4.2

The library's third floor is the one that most students fre-quent and has the largest amount of space to sit and work but is also the loudest. To the point where it can sometimes make getting things done a little difficult. It also is often excessively hot due to the numerous amount of windows.

I like hands off help, such as a self serve vending machine for supplies when I need to get a new pen.

"I know that there's been a couple of times where I just really need quiet, and I tried to focus on the second or third floor. I just can't because even with music, I can still hear other people talking and just can't focus. And those are times that I've just gone to my dorm room." I.12

"Not being able to think about anything except what's really annoying me right then [such as] the sounds, people, and feeling generally super anxious … I just want to leave [Atkins Library]." I.6

Theme 2.4. When I feel socially anxious and need help with something in the library, I would rather do it myself than ask someone for help.

"Sometimes, it really depends on how I'm feeling. Because on a good day, I can interact with people, no problem. But if it's not a great day for me … I want as little contact with people as possible, which is [why] the chat function is a great resource." I.4

"Being able to reserve a room reduces the stress of thinking about it. But also the fact that you can do it online without having to talk to someone in person … I don't like asking questions, and stuff like that to people. If I can do something online and avoid that interaction, I will…" I.15

Theme 3. I greatly value how the library's variety of spaces and resources supports the many different ways I want to use the library, including as a place to relax.

> "I [value] the variety of spaces because I do typically come here to study but anytime I am not here to study, there's still stuff to do like the makerspace…" I.12

Theme 3.1. I value my access to the collection as a way to learn more about personal interests, not just academic ones.

> "I just think that it's a really great thing that there are different books to choose from that aren't just academic and that [they are] front and center when you walk in." PV4.3

> "I do like all the different offerings that there are in the library. Like if I want to, I can read up on topics that interest me, or if I want to I can read more about something that I'm struggling with [that's] either academic or personal." PV4.2

Theme 3.2. I value spaces in the library that help me relax or decompress, including the Makerspace, Starbucks, and the nap pods.

> "I really like the makerspace. [It's] one of my favorite places to go. I love that there's a whole bunch of resources and tools that we can utilize and it's pretty much all for free. [The makerspace] really lets me relieve a lot of stress by being creative." I.16

I love the variety encapsulated in this picture- whether you want to sit with friends, work alone at a computer, or go in one of the pods and take a nap- there's something for everyone!

> "I was [at Starbucks] earlier because I was feeling kind of overwhelmed with the amount of research I had to do. ... [It gave me] half an hour to just sit and let me not worry about the project." PV1.3

> "Those nap pods on floor three [are] a really cool thing. [The nap pods allow you] to disconnect if you've been studying hard and need to be away from people for a second." I.8

Theme 3.3. I value the ability to regulate my environment by choosing where I study to support my sensory needs at that time.

> "I [value] the different spaces because there's a different space for everyone and a space where [everyone] is going to feel the most comfortable. ... I struggle a lot with sound so the thing I love the most [is] having the different floors where you can choose what you need. ... Being able to choose where I need to be is extremely helpful." I.17

> "Fluorescent lights can be really painful during an active migraine attack, and having the ability to turn on like one set of lights versus all of them was helpful to me. So I didn't have to teach in complete darkness. But I also didn't have to have fluorescent light on me." I.1

Theme 4. UNC Charlotte is a much more supportive and inclusive environment for my condition than schools I've attended in the past.

Theme 4.1. I feel supported and included by the UNC Charlotte community, because I feel more connected to instructors and other students, and I have access to more disability accommodations than in the past.

Theme 4.1.1. I appreciate the general campus culture and the university's efforts.

> "I would say that most of the people that I interact with, whether that's professors, employers, [or] classmates, they all have a pretty good understanding of neurodivergence and mental health in general." I.2

> "There's so much that's going on behind the scenes to make sure that we're okay as students and as humans. So I think that that shows that the university's perspective is in the right place." I.1

Theme 4.1.2. I find it easier to connect with other students here.

> "I was just very pleasantly surprised with how open people were and the absence of a social hierarchy." I.2

> "A lot of the students seem to care about each other, much more so than my previous school." I.4

> "When you're in the dorms, I feel like it's super easy to meet people, because you're all around people that also want to make friends." I.8

I love that the library is not just for academic things- there are fun books, too! This is especially nice as someone who doesn't have a car, so I can't always get to a public library. The "fun books" to me represent the diversity of offerings at Atkins.

Theme 4.1.3. I have access to, and support from, many instructors.

> "I just had a lot of support from faculty and professors, just about understanding and listening to what's going on in the background, and being willing to work with me to make sure that I could finish strong in their classes." I.16

> "Most of my instructors have been very accommodating. I have not sought accommodations through the Office of Disability Services, but even then, there are many professors who will provide accommodations… without that documentation." I.19

Theme 4.1.4. I'm engaged with formal accommodations and/or a variety of university services.

> "My grades aren't always the best, so they've been improving a lot since coming here because I actually was able to get accommodations." I.10

> "Most of my positive experiences were through the Disability Center… because it's very resourceful." I.3

> "I was able to get involved with [CAPS] and start talking with a counselor who was able to help me navigate something really difficult, without knowing that I had a mental health disorder." I.1

Theme 4.2. Generally, a college environment is more supportive of my condition than high school because I have more independence to pursue personal interests.

> "I'm now able to actually study how I want to study and do the classes that I want to do to get closer to my degree." I.10

17

> "I think having a set direction of where I'm going to be for college, and what I'm going to study and do after, really helps a lot." I.8

> "Getting into college was a boon, because I'm doing things that I'm actually interested in now." I.9

Theme 4.3. I also have more experience with my condition than I did in the past, typically because of recent diagnoses or new tools and techniques I've personally developed.

> "This is the only time that I've totally been on medication to control [another condition] as well as my mental health disorder that I didn't know was there until about a year ago. I have never, as a doc student, gotten anything less than an A. Whereas it was a lot more of a struggle in undergrad." I.1

> "I passed one class during the entire three semesters of online classes…. Then I got diagnosed, and then we came back in-person at the same time, and it's been mostly smooth sailing ever since." I.6

Theme 5. COVID had a negative impact on my experiences as a student, and there are a few things I still struggle with as a result of the pandemic.

> "My grades reached all-time lows during the pandemic." I.10

> "I had many courses, sometimes an entire semester's worth of courses, that I would have to drop due to my mental health." I.19

For me, the Makerspace is the most valuable. I craft in my free time and I enjoy having access to a space with materials and different machines available to use.

When I feel overwhelmed I like to sit in one of the napping pods. It's usually very quiet in that room, you can close the top completely so you have total privacy, there is even a massage and gentle music option. It's a great place to decompress and refocus my mind.

Theme 5.1. My condition made it difficult to adjust to online classes, which caused me to struggle academically.

"There was one class that was only-online that I signed up for, because I figured, if we're going to be doing online learning, then this one's already catered to be online, [so] this will be better." But I ended up failing it… because of how online-focused it was." I.18

"I didn't really have any chance to connect with professors or get to know them, and I learned that's a big thing you're supposed to do in college. So I definitely felt like I was missing out on that experience." I.8

Theme 5.1.1. I struggled to find a learning environment that supported me.

"Moving into all-online school was very difficult in part because… I wasn't in the right environment to set my brain up to pay attention and absorb information." I.18

"I can't really learn when I'm in my own home because… I like having that routine of going to school and getting focused at school. Sometimes I would go to the library before class [to] try to find some more quiet because getting out of my dorm where I lived was better for if you [need to] focus." I.3

"Because there wasn't a shift in space that let me shift my focus, it got very hard for me to do work outside the point of class times, because in my head, I'm like, 'I'm just in my room. I'm just hanging out with all my stuff.'" I.9

Theme 5.1.2. I had difficulty with time management and awareness.

> "I'd never had all of my courses online. So that was a little bit of a struggle. I actually ended up having to drop one class because I just couldn't learn it online…. There wasn't a structured time to work on things." I.12

> "My sense of time got really weird during COVID…. I'm like, 'Wait, how long has it been? What day is it? Oh, it's already Thursday? Oh, no, I had a thing that I was supposed to turn in by now." I.9

Theme 5.2. I had difficulty staying connected to others and felt isolated, and my condition typically made that more difficult to overcome.

Theme 5.2.1. I did not feel as connected to friends and other students.
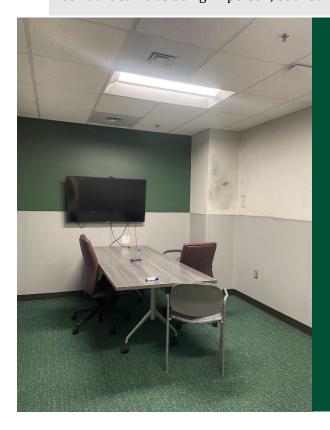
> "I only had two or three friends, and I never spoke to them…. It always scares me to talk on the phone." I.10

> "It just became more difficult to keep in contact with people and stay super close when the closest thing you could get to being with the other person was FaceTime and hoping that your Wi-Fi didn't cut out." I.18

> "I wasn't really able to have any social interaction outside of Zoom, since we lived with my grandpa who was immunocompromised, so I couldn't leave the house." I.2

Theme 5.2.2. I was not able to build the relationships with instructors that I would have liked.

> "I still tried to go to office hours and stuff even during the pandemic. I mean, it definitely wasn't the same as being in-person, but I still tried to build those connections." I.2

Private study rooms have been a game changer during my undergraduate and graduate studies. When I am experiencing a migraine attack on campus, they give me a refuge from my lab where it is quiet and I can work (to the best of my abilities with a migraine) without having to stop to answer questions or re-focus because the light and noise in the lab are just too much.

"I don't think you really know your professors when they're online. You, maybe, go to office hours, but it's different than meeting your professor in person and them knowing you more personally." I.3

"I didn't really have any chance to connect with professors or get to know them." I.8

Theme 5.3. Many of my challenges from the pandemic have been resolved now, but there have been some lasting changes.

Theme 5.3.1. It is still affecting academic performance.

"Especially after the pandemic, I felt that my mental health has definitely impacted my work. It hasn't necessarily brought my grades down, but it's made it more challenging for me to maintain that high level of achievement that I'm used to." I.15

"I'd never had to study a day in my life beforehand. Information that I learned just stuck in my brain naturally…. After the pandemic, however, I would do the same thing, and the information just wouldn't stick in my brain." I.15

Theme 5.3.2. I feel my social anxiety has been exacerbated, especially with the shift to in-person class.

"I'm immunocompromised, so from the day that quarantine started in March 2020 to the day I got vaccinated in May 2021, I did not leave my house a single day. The only face I saw was my mom. So it takes a toll on you a little bit. It definitely affects me still now. There are days where the fear and anxiety gets to me so bad that I have to miss class because I feel like if I see anyone else, like I'm going to be in physical danger…. After the pandemic, it felt almost like it was twice as difficult, because I was not only dealing with all the work that I had to do, but also the mental aftermath of what came from it." I.15

"I think my conditions just amped it up when I finally came back to school and started going [out] in public again, because I was on lockdown for a long time…. Coming back to school, coming back into the public… I was really struck by the pandemic." I.11

Theme 5.3.3. I have experienced a feeling of resolution, or even a positive outcome.

"I don't do good in online classes. I have a very hard time focusing on them…. I feel like, through that, I had changed my work ethic, which I think in general actually made it more positive for me in the future. I think because of that, I do have more studying skills or time management skills than I did before." I.7

"I got better at note taking…. The only way for me to focus in online classes was [that] I would write down everything." I.12

Theme 6. My first semester was the one I found the most difficult.

Theme 6.1. I had nervousness or jitters that are typical before a big change.

"I remember it was the week before I came to Charlotte, I didn't sleep at all…. I don't think it was this scared [type of] anxiety, but I think it was just the anticipation… I was basically starting a new life." I.11

"Before starting? Well, I was very nervous. But I feel like starting school anyways, very nervous." I.7

Theme 6.2. I was concerned about or struggling with coursework throughout the semester.

> "My first semester was a little difficult, too, mostly with keeping up with my classwork." I.12
>
> "[During my first semester,] I just couldn't focus. I couldn't think straight a lot of the time. I didn't want to get up and do anything. It was hard to get myself to go to class." I.17
>
> "I really struggled my first semester, and I had a few C's on my transcript." I.3

Theme 6.3. It was difficult to build new social connections while making so many other adjustments.

> "It's really, really hard to meet and make friends when you have GAD, so that's been a little bit of a– actually a lot of a struggle." I.11
>
> "It was a little bit hard at first getting adjusted [to] the social aspect…. I'm not great at approaching people and starting conversation." I.8
>
> "My first semester here, I had pretty bad roommates, so I would spend a lot of time in the library trying to avoid them, and then it just became a habit…. I come here at least once a day." I.11

Theme 6.4. I had difficulty adjusting to managing a new way of scheduling and/or attending my classes.

> "I had an 8 AM class last semester. Boy, boy, did I not want to go to that class. But I still had to be accountable for myself…. College definitely requires you to be a lot more self-sufficient." I.15
>
> "Last semester was pretty good for me. All of my classes were in person…. It was the consistency of having everything all together on campus and having to drag myself out of my room and go do some schoolwork. I think that was really nice… especially having the gap in between classes…. Usually, I would go to the library." I.3

Recommendations

The following recommendations are intended to (1) identify any major shortcomings found in the analysis and suggest potential solutions, and (2) identify any major stories of success found in the analysis and suggest potential ways to expand or generalize that success. To that end, we recommend these five changes.

RECOMMENDATION 1. CREATE A SENSORY-FRIENDLY STUDY ROOM

The primary goal of this study room would be to use specific furniture, features, and design elements to create a learning environment that better supports focus. The secondary goal of this space would be as a site to evaluate and collect feedback on prototypes of various sensory-friendly and focus-enhancing features that could be implemented throughout other study spaces in the library.

We recommend that the space should include at least the following features, in addition to the typical features of a study room:

- Sound-reducing panels

- Lamps with adjustable lighting
- A variety of accessible seating options
- Prominent signage promoting sensory-friendly items to borrow from the Self-Care Collection

The Accessibility Committee and Facilities should be engaged in the design of this room to survey similar projects at other institutions and determine what additional features would be suitable and achievable. Additional internal and/or external funding should be sought to support this project.

Due to the variety of lamps and seating options available, multiple options for these features should be tested in the space, and feedback from users of the space should be collected regularly.

To ensure that this room remains available for its target audience, reserving this room should require a basic registration, similar to the one required for the family-friendly study rooms, which is integrated into the upcoming redesign of the study space reservation system.

RECOMMENDATION 2. OFFER NOISE CONTROL STRATEGIES IN OTHER STUDY ROOMS

We believe that two strategies could be employed immediately to reduce the impact of noise on students' ability to focus in other study rooms.

First, signage within study rooms should advertise the availability of (1) noise-cancelling headphones and (2) white noise machines to borrow from the collection. These two resources should help students find the right balance of noise to silence to support their needs. The Communications, Marketing, and Signage Committee should be engaged in designing this signage.

We believe that we currently have enough noise-controlling equipment available to support foreseeable requests by students, but if additional promotion of these resources causes requests to outpace our availability, additional internal and/or external funding should be sought to allow us to add to our supply. Representatives from Area 49 and the Student Engagement Committee should be involved in those discussions.

Second, we believe that a relatively small number of sound-reducing panels would significantly improve the noise levels in particularly noisy study rooms. We would not need the amount of paneling used in, for instance, the EZ-Video studios, because our goal is not to eliminate external noise but merely to reduce it to a more manageable level.

While additional funding may be required to purchase these panels, we are also aware that there are methods to create your own sound-reducing paneling. A batch of these, enough for testing purposes, could be an engaging activity in the Makerspace that encourages participation from students themselves.

RECOMMENDATION 3. CREATE A MARKETING CAMPAIGN FOR THIS COMMUNITY

The Communications, Marketing, and Signage Committee should be engaged to design a marketing campaign oriented to this community. It is not necessary to name this community in marketing materials, but the goal would be to promote the resources they most value about the library through channels most relevant to them.

The campaign should highlight the numerous ways that library resources support non-academic, personal use, especially:

- The variety of spaces in the library to support different needs
- The Makerspace as a place to support hobby crafts
- Self-directed learning and leisure reading in the print collection
- The Self-Care Collection
- Library events that support student connectedness

The committee will know better than this team the best avenues to reach students; however, based on comments from our participants, we would advise, to the extent possible, that any such campaign should focus on reaching students in the first semester. Some potential channels of communication might include:

- Print advertisements in dorms, especially those with high numbers of first-year students
- Campus offices that this community highly values, such as the Office of Disability Services and CAPS
- Bookmarks provided with materials from the popular reading collection

RECOMMENDATION 4. MAKE IT EASIER FOR USERS TO FIND THE RIGHT SPACE ON ARRIVAL

Because we observed that students in this community are much more inclined to leave the library when they feel overwhelmed in a library space than to look for an alternative space, it is important that we make it easy for them to learn what to expect from a library space before they settle in. Our goal should be to make it possible for them to select the optimal space for their needs and then stay there.

To do this, first we recommend that the Web Advisory Group (WAG) be engaged to make improvements to the library website. The floor maps pages should be updated to provide more information about the study spaces on each floor.[2] On each floor page, we suggest that the various study spaces on that floor be listed along with, for each space:

- A photo representing the space
- Its expected noise level
- The availability of natural lighting (and a heat warning when appropriate)
- A description of the furniture in that space, especially when accessibility-oriented furniture (like adjustable standing desks) is available.

WAG should also consider how these updated floor maps can be made easier to find from the library homepage. Some amount of testing may be required.

Additionally, more effective signage and wayfinding tools can assist students in making this decision when they arrive at the library. The ongoing and separate study of navigation and wayfinding in the library should consider how more informative floor maps could be integrated into the kiosks under consideration. Likewise, to reduce the need for additional physical signage, that study should collaborate with the Communication, Marketing, and Signage committee to investigate how our signage might use more vibrant, noticeable colors while maintaining a similar or reduced density of signage and conforming with university brand standards.

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[2] See some examples of a similar resource from NCSU: https://www.lib.ncsu.edu/sensory-friendly-maps, https://www.lib.ncsu.edu/spaces,

RECOMMENDATION 5. ADVERTISE ONLINE CONTACT METHODS AT NEW POINTS-OF-NEED

The Communication, Marketing, and Signage committee should be engaged to design and deploy a targeted addition of physical signage advertising library chat. The goal of this signage would be to reduce feelings of being overwhelmed at particular points-of-need in the library building where publicly requesting help may be difficult.

The first location we recommend deploying this signage is outside of reservable study rooms, where students frequently experience confusion or anxiety because of the many variables surrounding the reservation process. The second location is in the compact shelving on the ground floor, where students experience difficulty with call numbers and operating the compact shelving while being expected not to disturb nearby students using the silent study area.

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Appendix A. Recruitment Script

Subject: Earn $15 to $50 for helping to improve Atkins Library by participating in a study!

Atkins Library is conducting a study about the experiences of students with the library. We are hoping to talk to students who identify as neurodivergent or as having a disorder related to mental health or function. If you're a student at UNC Charlotte who identifies this way, we invite you to participate!

In this study, we have two opportunities to participate. If selected to participate, you may do one or both of the following:

- **Interview:** $15 online gift card (Giftogram), 30 to 60-minute interview plus up to 30 minutes of online communication for scheduling purposes. Members of the library's research team will ask questions, take notes, and create an audio recording of the session.
- **Photovoice:** $35 online gift card (Giftogram), 1-hour discussion session, 2-hour photography activity, plus up to 30 minutes of online communication for scheduling purposes. Participants will take photographs that represent their point-of-view, and then join a small group of other students to discuss these photographs. Members of the library's research team will be there to ask questions, take notes, and create an audio recording of the session.

This is completely voluntary. It's your choice if you would like to participate. If so, respond to the eligibility survey at LINK.

Prior to the publication of any data gathered from this study, participants will have the opportunity to review a draft of the final report and provide feedback to ensure the accuracy of the findings.

You'll receive an online gift card through Giftogram if you're selected to participate. The discussion sessions will be conducted in-person at a campus location, with optional participation using Zoom. Your information will be kept confidential. We'll use the information you share with us to make improvements to the library for students.

If you have any questions about the study, please email Jon Moore, User Experience Librarian, Atkins Library at EMAIL.

Thank you,

Atkins Library Community-Driven Experience Study Research Team:

Jon Moore, User Experience Librarian, Atkins Library
Becky Croxton, Head of Strategic Analytics and Special Projects, Atkins Library
Tracie Krumbine, Patron Services Manager, Atkins Library
Bridgette Sanders, Social Sciences Librarian, Atkins Library
Olivia Patterson, Student Success Librarian, Atkins Library

This study is approved by the UNC Charlotte Institutional Review Board: Study #IRB-22-0035

Appendix B. Interview Questions

1. How would you describe your experiences as a student prior to coming to UNC Charlotte?

2. What words or feelings come to mind when you think about UNC Charlotte?

3. How much would you say your experience as a student at UNC Charlotte has been affected by the COVID-19 pandemic? In what ways?

4. What words or feelings come to mind when you think about Atkins Library?

5. What would you say is the most valuable thing about Atkins Library to you?

6. What would you say is the most difficult or unpleasant thing about Atkins Library to you?

7. Can you think of a situation when you had a positive experience related to your condition that involved the library? If so, tell us about that.

8. Can you think of a situation when you had a negative experience that involved the library related to your condition? If so, tell us about that.

9. (<4 semesters) Think back to just before you started your first semester at UNC Charlotte. How did you feel at that time?

   (>4 semesters) Did you have any semesters that were especially difficult? If you can think of one in particular, what contributed to that semester's difficulty?

10. (<4 semesters) Think about the time just before you started your most recent semester at UNC Charlotte. How did you feel at that time?

    (>4 semesters) Did you have any semesters that went especially well? If you can think of one in particular, what contributed to that semester's success?

11. Based on our conversation today, what would you say Atkins Library could do better to support your needs?

12. Is there anything that we haven't had a chance to talk about today that you want to tell us?

Appendix C. Photography Activity Instructions

Instructions
1. Take photos that respond to at least 4 different prompts listed in the following section.
2. After taking each photograph, go to our Google form Submit a Photograph and Caption (save the link so it's easy to find!)
3. For each of your photos, select the prompt it responds to, upload the photo, and give it a caption.
4. Submit your photos and captions by the end of the day on **DEADLINE.**
5. Attend a discussion session in Atkins Library room ROOM or by Zoom.

If you don't have a smartphone or camera...
Email me at EMAIL, and we'll provide you with an alternative camera from the library's Area 49 Desk if one is available.

Prompts
- What most represents Atkins Library to you?
- What about the library needs to change to better support students with your condition?
- Where in the library do you feel like your condition is most supported?
- What do you value the most about the library and why?
- What do you find most difficult or unpleasant about the library and why?
- What makes you feel most connected to the campus community?
- What do you need in your ideal study environment?
- What makes it most difficult for you to focus?
- If you need help in the library, what would you do?
- What do you do when you feel overwhelmed?

Guidelines for Photos
- You don't need to take a photo for every single prompt. Aim to respond to at least 4 prompts, but feel free to submit as many photos as you like.
- Don't worry about making your photo look "perfect" or "artistic," but if you'd like to do so, please do!
- You may only take photos which depict other people if the other people are either in a general-use library space (e.g. a study floor, reading room, etc.) or in an outdoor, public area of campus.
- Do not take photos which depict other people if the other people are in a space which is reserved for a private group at the time of photographing.
- Do not take photos which depict other people if the other people have requested that you refrain from photographing them.
- Consider visiting multiple floors of the library to take photos. You may also consider taking photos somewhere completely different if it helps you answer the prompt in some way.

Guidelines for Captions
- Write one to three sentences which give some context to the photograph. Consider explaining:
  - How does the photograph relate to the prompt?
  - What's most important in the photo?
  - How does the subject of the photo make you feel?
- If you want to identify yourself as the creator of the photo, you may do so in the caption.
- Do not reveal names or any other identifying information of anyone besides yourself in the caption.

Appendix D. Photovoice Questions

For each slide:
- Give about 10 seconds for participants to read and think about the photo(s)
- Encourage a discussion using these questions
  - What is your first reaction to this picture/these pictures?
  - What stands out to you most in this picture/these pictures?
  - How does this picture/do these pictures make you feel?
  - What do you think about the caption(s) for this picture/these pictures?
  - How might this picture relate to your experiences with your condition(s)?
- Freely use follow-up questions to dig deeper and encourage conversation between participants. Some examples:
  - Has anyone else had a similar/different experience? Tell us about that.
  - Does anyone else feel similarly/differently?... Why is that?
  - Can you elaborate on that?
  - Can you explain what you mean by that?
  - Can you give me an example?
- Before moving to the next slide, ask:
  - What other thoughts do you have about this slide before we move on?

Use any time remaining to ask:
- What other comments would you like to share if you haven't yet had the chance? (It doesn't need to be related to the photographs)
- Based on our discussion today, what could Atkins Library do to better support the needs of this community of students?

Appendix E. Codes for Content Analysis

Code	Transcripts	Individual References
<u>Atkins</u>	23	647
Spaces	22	198
Private study room	13	36
3rd floor	10	27
Tower floors (3+)	10	21
1st floor	9	12
2nd floor	9	20
Enclosed desk	7	16
Makerspace	7	24
Ground floor	6	6
Chairs	4	5
Cubicles	4	5
Starbucks	3	11
Silent study room	2	4
Pros	21	107
Misc	11	21
Books	10	13
Noise	8	11
Private study room	7	12
Variety	7	17
Website	6	7
Employees	4	5
Makerspace	4	9
Self help	4	4
Chairs	3	6
Lighting	3	3
Starbucks	3	5
Tower floors (3+)	3	3
Vending machine	3	4
2nd floor	2	2
Enclosed desk	2	2
Employees	20	40
Suggestions	20	50
Noise	9	13
Navigation	6	7
Furniture	5	7
Misc	5	8
Lighting	4	5
More of	4	6
Special space	3	6
Heat	2	5
Sterile/renovate	2	2
Website	2	2
Prior libraries	19	58
Negative reviews	12	30
Positive reviews	12	18
Used to	9	15
vs Atkins Library	5	6
Self serve	2	2
Website	19	40

Code	Transcripts	Individual References
Positive reviews	14	17
Used to	11	16
Negative reviews	8	10
Misc	6	9
Self serve	3	5
Suggestions	2	3
Negative experiences	17	55
Misc	7	12
Noise	7	10
Spaces	4	4
Lacking	3	3
Reserved room	3	6
Elevators	2	7
Heat	2	2
Navigation	2	3
Overwhelming	2	3
Private study room	2	3
Cons	13	57
Noise	7	12
Spaces	7	10
Lacking	6	8
Furniture	5	8
Misc	4	5
Navigation	3	4
Elevator	2	8
Heat	2	5
Lighting	2	3
Studying	23	154
Conducive	19	49
Misc	13	16
Noise	10	19
Movement	5	7
Privacy	5	7
Variety	3	3
Comfort	2	4
Not conducive	11	26
Noise	7	14
Misc	5	8
Where	11	14
How	7	7
Covid	18	55
Academic performance	15	28
Social performance	11	13
Teachers	5	5
Repercussions	2	3
School before UNCC	18	109
Academic	16	40
Social	12	20
UNCC	18	74
Semester	18	68
Expectations	17	30
Preparation	2	3
Social	15	26

Code	Transcripts	Individual References
Misc	11	17
Connection platforms	8	10
Challenges	5	5
Involvement	5	5
Negative experiences	13	32
Academic	5	6
Professors	4	5
Student services	4	6
CAPS	3	4
Crowded	3	9
Academic	12	20
Connectedness	11	14
Positive experiences	8	12
Accessibility	2	6
<u>**Condition**</u>	17	65
Triggers	14	27
Noise	7	10
Social situations	6	7
Lighting	4	5
Condition type	9	12
ADHD	4	4
Anxiety	4	6
Migraine disorder	2	2
Pandemic impact	6	8
Medication	4	8
Helps	2	2
<u>**Support**</u>	15	64
Support outside UNCC	13	17
Social	10	12
How they connect	6	6
UNCC support	13	43
Student support services	9	18
Disability center & services	3	8
Misc	7	10
Academic	6	8
vs prior institutions	5	6
Professors	4	6
Social	3	3
Support before UNCC	2	3
<u>**Self serve**</u>	5	8