STUDIES IN ENGINEERING EDUCATION

Experiences of Undergraduate Engineering Students Navigating the Accommodations Process

EMPIRICAL RESEARCH

ISABEL MILLER
KARIN JENSEN
*Author affiliations can be found in the back matter of this article

VIRGINIA TECH PUBLISHING

ABSTRACT

Background: Students in engineering can have a challenging time navigating the accommodations process. The process can be confusing, long, and frustrating. Additionally, students will have varying kinds of supports and barriers from instructors that can make engineering a welcoming or hostile space, especially for students with disabilities.

Purpose: The purpose of this work is to motivate the dismantling of ableism in engineering and understand how engineering students navigate the accommodations process and interact with instructors.

Design: Undergraduate engineering students at a public, Midwest, R1 institution were interviewed and given the opportunity to take a survey about their experiences requesting and using accommodations.

Results: Students often reported both positive and negative experiences, sometimes even within a single interaction. Specific supports and barriers that contributed to making an experience positive or negative were identified. Supports include kinds of emotional support, instrumental support, esteem support, and instructional support. Barriers include kinds of invalidation, disengagement, denigration, and the withholding of information.

Conclusions: Navigating the accommodations process is tenuous. Processes are not always clear to students or faculty, and students also sometimes feel reluctant to start a discussion with instructors about disability and accommodations.

CORRESPONDING AUTHOR:
Isabel Miller
University of Michigan, US
isabelmm@umich.edu

KEYWORDS:
students with disabilities; undergraduates; accommodations; qualitative

TO CITE THIS ARTICLE:
Miller, I., & Jensen, K. (2026). Experiences of Undergraduate Engineering Students Navigating the Accommodations Process. *Studies in Engineering Education*, 7(2), 1–21. DOI: https://doi.org/10.21061/see.194

INTRODUCTION

For context, this work focuses on higher education in the United States. Institutions elsewhere may have differing procedures and policies for addressing student accommodations. Higher education is inherently structured to serve some students and not others (Dolmage, 2017; Kazis, 2020; Stephens et al., 2019). Students with disabilities often face institutional and systemic barriers while navigating university spaces (Evans et al., 2017; Lindsay et al., 2018). The valuing and acceptance of an ideal, productive, non-disabled student is ableist and is a key structure in education in the United States (Dolmage, 2017; Timberlake, 2020; Wertans & Burch, 2022). Ableism appears in higher education institutions in the United States in many different ways, including the framing of accommodations as a "fix" available for only students with medical proof unable to meet certain academic standards (Freedman et al., 2020; Nieminen, 2023), refusal or reluctance of instructors to provide accommodations (Freedman et al., 2020; Nieminen, 2023), and the physical structures and spaces that make up a college campus (e.g., non-working elevators, stairs or steps without handrails, tight-cramped classrooms, and inaccessible bathrooms) (Dolmage, 2017; Wertans & Burch, 2022). One does not have to be disabled to experience ableism. The expectations and structures of ableism impact everyone.

In engineering specifically, there is an "ideal" and "normal" conception of an engineering student, who is hard-working, productive, and able to withstand rigorous demands and constant stress (Dringenberg et al., 2022; Godfrey & Parker, 2010; Riley, 2017; Slaton et al., 2019; Wright et al., 2021). These conceptualizations do not consider the different ways in which people learn and work, which often means the needs of disabled individuals are not considered when designing courses and institutional policies. In science and engineering fields, students with disabilities make up 28% of the undergraduate student population in the US (National Center for Science and Engineering Statistics, 2019). Colleges in the US often have disability services available for students who need accommodations, as required by US federal law under the Americans with Disabilities Act (ADA) (Southwest ADA Center, 2017). However, the accommodation process itself can be ableist and difficult for students to navigate. Further, many instructors do not fully understand their responsibilities under the ADA (Becker & Palladino, 2016; Rao & Gartin, 2003) or feel they have time to implement certain accommodations (Jensen et al., 2004).

Accommodations are supports or changes to courses made on an individual basis for students. They have been shown in some studies to have a positive effect on academic outcomes (Blasey et al., 2023; Kim & Lee, 2016). Many institutions in the US require students to register with a disability services office, which may require a medical diagnosis or documentation, in order to be eligible to receive accommodations. This process suggests that a disability must be proven by an "expert" in the medical field to first exist (i.e., be diagnosable) and second be worthy of an accommodation (i.e., demonstration of a limitation) (Krebs, 2019). It implies that disabled individuals are not capable of knowing their own bodies and minds or understanding their needs. Additionally, access to healthcare is not equitable and can be costly (Krebs, 2019; Long & Stabler, 2022). Even with a diagnosis, there is another limitation placed on accommodations through the stipulation of "reasonableness" (Krebs, 2019; Womack, 2017). A "reasonable" accommodation cannot burden the institution or diminish the perceived rigor of a course. This implies that some needs are excessive and thus not worth supporting. Additionally, some disabilities may be seen as not being serious enough to warrant accommodations (Gabel & Miskovic, 2014; Harbour, 2013; Ingman, 2023). Students may not want to disclose their disability to the institution or instructor because of stigma and shame (Getzel, 2008; Nieminen, 2023). In this study, we focus on student-faculty interactions during the accommodations process. A typical official accommodations process at US colleges will involve 1) gathering documentation of disability, which may include doctor's visits, 2) submitting forms to register with disability services, 3) meeting with disability services to discuss accommodations and access needs, 4) receiving a letter of accommodations, which contains information on what accommodations instructors need to provide, and 5) communicating needs with instructors via letter or other means. However, students may also interact with instructors about accommodations without starting with the official process. Instructors may have the discretion to modify their course design or policies (e.g., flexible attendance policies,

providing lecture recordings, providing assignment extensions, etc.) without the need for formal accommodation documentation. In this work, we also include students who are not requesting accommodations because a lack of interaction may be indicative of barriers to the process.

In previous work, we found that students seemed more comfortable interacting with disability service offices than with faculty (I. Miller & Jensen, 2025). We include both formal, documented accommodations, such as those mandated by disability service offices, *and* informal requests, such as those from students not registered with disability services, as types of accommodations students may request from instructors. By including a broader range of accommodation types, we open this study to more students and include the voices of disabled students who are not registered with disability services but may still be asking for accommodations.

LITERATURE REVIEW

As students navigate the accommodations process in the United States, they may interact with a variety of institutional agents, including administrators to discuss resources, disability services to discuss registration and resources, accommodations specialists to discuss specific accommodations that may address access needs, student advisors to discuss planning courses, physicians and/or counselors to obtain medical documentation, and faculty to implement accommodations in the classroom. Every semester, in every course, students must disclose their accommodations to each instructor to ensure their needs are met. At the institution of study, students who register for disability services must then send notification to their instructors that they have accommodation letters. Sometimes these interactions go well, with instructors being kind, understanding, and caring (Cole & Cawthon, 2015; Mamboleo et al., 2020). The instructor's tone and attitude can influence whether a student approaches them for accommodations or other access needs (Cole & Cawthon, 2015; Hartman-Hall & Haaga, 2002). If an instructor appears rigid or strict, students are less likely to disclose or request accommodations because they are more worried about potential negative consequences and stigma (Cole & Cawthon, 2015; Quinlan et al., 2012). Students may be worried about privacy (Mamboleo et al., 2020; Simpkins, 2023; Zaussinger & Terzieva, 2018), appearing as if they have an "unfair" advantage over other students (Grimes et al., 2019; Mamboleo et al., 2020; Pfeifer et al., 2021), suspicion and judgement from instructors (Denhart, 2008; Kali et al., 2021; Mamboleo et al., 2020; Shpigelman et al., 2022; Zongrone et al., 2021), being "othered" (Kranke et al., 2013; Mamboleo et al., 2020), humiliation (Campbell, 2020), and impacts on future academic or professional opportunities (Kranke et al., 2013; Martin, 2010). Students may also face internalized ableism, which causes them to avoid disclosure (Szechy et al., 2026). Internalized ableism is the proscription of negative attitudes of disability towards oneself and can manifest in a variety of ways, including questioning one's own needs or disability, holding oneself to non-disabled standards of independence (e.g., not using testing accommodations because other students do not), and hiding traits or overcompensating to appear "normal" (e.g., forcing yourself to complete activities despite pain, or not using aids in public settings) (Lindsay et al., 2018; Moriña, 2024; Szechy et al., 2026). Due to power dynamics, students may also be pressured to always appear grateful and agreeable when interacting with instructors in order to avoid potential negative incidents (Freedman et al., 2020).

Unfortunately, negative experiences with instructors are not isolated, uncommon incidents. A literature review by Lindsay et al. (2018) found examples of stigma and discrimination across multiple studies on disability disclosure and accommodations. Weatherton et al. (2017) identified barriers to the inclusion of individuals with disabilities in engineering. They identified climate, strict culture, negative instructor attitudes, low self-efficacy, and a lack of awareness of available supports as barriers to persistence in engineering. Cech (2023) found that engineers with disabilities are more likely to be excluded and undervalued. In the authors' own review of literature pertaining to engineering students with disabilities and their experiences in the accommodations process, we also found multiple descriptions of negative experiences across eight studies (I. Miller & Jensen, 2026). Our literature review is limited in number because the experiences of engineering students with disabilities are not often voiced in research. From the eight studies that mentioned negative

experiences, some of the themes included feeling the institution or faculty does not care about them as a person, faculty not being understanding, and feeling unwelcome in engineering (I. Miller & Jensen, 2026). McCall et al. (2020) explored the professional identity formation of students with disabilities and found that many students had encountered conflict when trying to conflate their disability and engineering identities. In another study by Figard et al. (2023), disabled engineering students described their experiences of faculty being inflexible, not understanding, and refusing to provide accommodations, which led to worsened feelings of well-being and reluctance to self-advocate. For many of the co-researchers, "it felt easier to accept defeat than to constantly explain and fight for their accommodations" (Figard et al., 2023, p.11). Further, Figard's (2025) scoping literature review found that most papers that mention engineering and disability are about designing or developing products for disabled individuals rather than disabled engineers themselves. These findings indicate the need to improve supports for disabled students, and the importance of valuing local knowledge. Further, while literature on the experiences of engineering students broadly exists, few studies explore a specific aspect of higher education systems as we do here, with a focus on student-faculty interactions within the accommodations process.

RESEARCH AIMS

This work is part of a larger project aimed at understanding the experiences of engineering students who request and use accommodation. In this paper, the goal is to understand how engineering students navigate the accommodations process. The research question framing this discussion is:

1. What are the experiences of engineering students in the accommodations process as they interact with faculty, and how are these experiences influenced by instructors' actions or attitudes?

Our research question focuses on a particular portion of the accommodations process- instructor-student interaction – because this can be a common way for students to be introduced to accommodations in college. Both students formally registered with disability services, and those not registered can have access needs and make accommodation requests from instructors. Thus, our dataset includes all students regardless of formal registration with disability services. Our study is designed with questions asking students about their experiences interacting or communicating with instructors, which includes experiences where the student chooses not to interact or communicate with their instructor. The overarching goal of the author's collective work, including this article in tandem with the other studies conducted by Miller and Jensen (2025, 2026), is to help dismantle ableism in higher education and advance engineering to be more equitable and inclusive, particularly for students with disabilities.

POSITIONALITY

During her undergraduate engineering studies, the first author used accommodations and, like many other students, had to weigh the costs and benefits of disclosing needs to instructors. She was afraid to use accommodations because people might think she did not really need them or had gotten them unfairly. These experiences may bias the first author's interpretation of student data and their descriptions of their own positive and negative experiences, but they also help the first author connect to and understand students who have faced similar experiences. Reflecting on her own hesitancy to claim a disability, the first author made sure to invite all students who have interacted in the accommodations process in some capacity, regardless of disability identity or registration with institutional disability services. The second author does not identify as experiencing a disability, nor does the author have experience as a student navigating the accommodations process. The author identifies as an advocate for mental health and disability justice. As an engineering instructor for 10 years, the author has experience working with students in the accommodations process.

GUIDING FRAMEWORK

This study is guided by principles of Critical Disability Theory (CDT): 1) disability is fluid and dynamic (i.e. disability can change or look/feel different in different situations), 2) local knowledge and lived experiences are valued, 3) work strives towards emancipation, human rights, and social justice and 4) disability, impairment, and the environment are interconnected (i.e. disability exists in context) (Evans et al., 2017). CDT can be applied in different ways and concurrently with other guiding theories.

Shpigelman et al. (2022) studied the power structures that impact students' academic success with the help of critical and student development theories. Abes and Wallace (2018) use CDT and intersectionality theories to study the experiences of students with physical disabilities and acknowledge the ableist structures that influence these experiences. Figard et al. (2023) use CDT and the Design Justice Framework to study how faculty interactions (as a power structure) influence student experiences. Roberts (2019) uses critical theory, poststructural feminism, and critical discourse analysis (CDA) to analyze university discourses and their role in the production and reproduction of ableism. Williams (2022) used critical theory, referred to as Critical Disability Studies, in her thesis to study how students with auditory disabilities experience accessibility services. Robinson (2017, p. 1) uses CDT to examine the intersectionality "of race, dyslexia and giftedness," in his auto-ethnographic poem. These researchers use CDT to study different phenomena, but a theme of revealing power and ableist structures underlie them all.

In this study, CDT has influenced recruitment and data collection, data analysis, data presentation, and our interpretations of findings and recommendations. In terms of recruitment, we do not restrict participation to students registered with disability services because access to diagnoses is not equitable, and some students may be reluctant to disclose a disability to their institution. Additionally, we do not restrict participation to students who identify as disabled because individuals conceptualize disability differently (i.e., one student with a specific disability may consider themselves disabled, but a student with the same disability may not). CDT informed the design of the research questions in such that we framed our question to be broad to allow for the varied experiences of disabled students to be represented.

In recognition of the environment's impact on disability, we offered both virtual and in-person interview options to better meet participant accessibility needs. We included detailed maps with accessible entrances and pathways identified to help participants navigate to the interview room. During interviews, we gave participants a large text print-out with the research questions or shared screen to display the questions for virtual participants. Additionally, in-person participants were welcome to use fidget toys and sensory items provided in the interview space.

We made a conscious choice to present data in the participants' own voices as they describe their experiences using accommodations as the focus of this paper to reiterate the importance of lived experiences as valuable sources of knowledge. In addition to coding students' experiences, we use CDT as a tool to analyze the power structures existing in classrooms to identify the direct actions of instructors that influence students' engagement with and experience of the accommodations process. To promote justice, we provide actionable suggestions for how institutions and faculty can better support students.

METHODS

All components of the study followed the appropriate guidelines for human subjects research and were approved by the university's IRB. Data was collected through a survey that contained both quantitative measurement scales and open-ended response questions, and through semi-structured interviews. More details on the survey design can be found in our quantitative focused article (I. Miller & Jensen, 2025).

QUALITY

We used Walther et al.'s (2013) Q3 framework to ensure the quality and trustworthiness of the work. Key ethical considerations included representing marginalized voices, which involved ensuring the data collection methods were accessible, broad sampling to ensure a fuller representation of experiences, and member-checking to allow for validation of our interpretations of quotes and themes. Further details on quality for the entire project can be found in Miller and Jensen (2025).

POPULATION

The study population can be divided into five main groups:

1. Students who identify as having disabilities
2. Students who do not identify as having disabilities
3. Students who are formally registered with disability services and use accommodations
4. Students not formally registered with disability services and use accommodations
5. Students who are not registered with disability services and do not use accommodations

We chose to open participation to all undergraduate engineering students because all students have access needs and may be making accommodation requests, both formally and informally. The varied ways students may engage with the accommodations, paired with the complexity of disability identity, mean that students who engage in the accommodations process do not all neatly fall into one defined grouping. Thus, we did not restrict our study population to only students with disabilities, so that we are not inadvertently excluding relevant populations (i.e., students who are requesting accommodations but do not identify as disabled) from the study. Out of 11 students selected to participate in interviews, 6 identified as disabled, 5 were registered with disability services, and 9 used accommodations (Table 1). Thus, we can confirm that disability identity was not a sole indicator of impairment or accommodation use (i.e., students who did not identify as disabled were also engaged in the accommodations process) and can justify our inclusion of all undergraduate engineering students regardless of disability status.

PSEUDONYM	DISABILITY IDENTITY	REGISTERED WITH DISABILITY SERVICES	USES ACCOMMODATIONS	MAJOR
Aaron	No	Yes	Yes	Mechanical Engineering
Amalie	No	Yes	Yes	Biomedical Engineering
Brooke	Yes	Yes	Yes	Industrial and Operations Engineering
Cassidy	Yes	No	Yes	Mechanical Engineering
Eva	Yes	Yes	Yes	Electrical Engineering
Jonathan	No	No	Yes	Biomedical Engineering
Nadia	Yes	No	Yes	Industrial and Operations Engineering
Rosa	Unsure	Yes	Yes	Environmental Engineering
Taylor	Yes	No	No	Aerospace Engineering
Vanessa	Yes	No	Yes	Electrical Engineering
Xavier	No	No	No	Mechanical Engineering

Table 1 Interviewee Demographics.

Note. Reprinted from "*Engineering students' attitudes and perceived norms toward disability and accommodations*," by I. Miller and K. Jensen, 2025. Journal of Engineering Education, 114(4), e70028. © 2025 I. Miller and K. Jensen. *Journal of Engineering Education* published by Wiley Periodicals LLC on behalf of the American Society for Engineering Education.

RECRUITMENT AND DATA COLLECTION

In 2023, the survey was pre-tested through cognitive interviews with participants in the colleges of engineering and other colleges to gather feedback on the organization, wording, and understanding of questions. We did not collect data on responses to the interview questions

themselves. We revised questions based on student suggestions. The final survey was distributed to all engineering undergraduate students at a large, public, Midwest, R1 institution, through college, student organization, and departmental newsletters at the beginning of the 2023 Fall semester. The survey included the Attitudes Towards Requesting Accommodations (ATRA) scale (Barnard-Brak et al., 2010) and open-ended questions about both positive and negative experiences and instances when instructors made them feel comfortable or uncomfortable.

In the following 2024 Spring semester, we selected students (n = 11) based on a stratification of engineering major and year to participate in hour-long semi-structured interviews (full interview protocol in Appendix A). We told the participants that the interviews would be about norms and expectations in engineering and their experiences in the accommodations process. To center participant voices and experiences in alignment with CDT, interview questions were informed by themes that emerged in the survey responses. Example questions included "Can you describe a time where you had a positive experience?" and "What would you change at the University that would make interacting with faculty about accommodations a more positive experience?" To align with the CDT tenet of valuing local knowledge and lived experience, the interviewer would clearly state the purpose of the interview as learning about their experiences at the beginning of the conversation. We also took into account that disability is fluid and dynamic and thus did not attempt to label students as disabled ourselves or push for binary responses regarding disability identity. Quotes from the survey and interviews were analyzed separately, and then similar codes were interpreted together in the writing of the results. More details about recruitment, participant demographics, and data collection can be found in a previous article focused on the survey piece of the project (I. Miller & Jensen, 2025).

DATA ANALYSIS

Data from the survey and interviews were analyzed separately. Analysis of different data sets is a form of triangulation (Creswell, 2009; Thurmond, 2001) that we use to compare the limited experiences of interview participants with our broader set of 375 students who responded to the survey. The main focus of the questions in both data sets was to explore the experiences of students interacting with instructors; thus, we find it appropriate to mix these analyses as they are intended to answer the same research question. Transcripts of interview audio were anonymized. Mentions of specific instructors or peer names were redacted from survey responses and transcripts. A total of 375 open responses across seven open response questions in the survey were analyzed in NVivo. Interview transcripts were analyzed in ATLAS.ti. Both transcripts and survey responses were inductively and deductively analyzed following the same coding process. Inductive/deductive hybrid coding helps bring a fuller description of a phenomenon (Fereday & Muir-Cochrane, 2006; Proudfoot, 2023). In this method, initial coding may be guided by a framework or theory, but is not limited by it. We believe using a hybrid method helps identify and describe the complexities of students' lived experiences.

Coding was guided by Saldaña (2016). The coding process included the creation of an initial codebook with general themes that we expected based on the literature review, such as negative and positive experiences. These a priori codes were kept general to allow for the emergence of codes through participants' own voices, as local knowledge is a central tenet of CDT. The first round of coding was line-by-line initial coding to identify and categorize behavior and the different actions and feelings that arise in the accommodation process and in interactions with faculty. After this initial round of coding, we matched a priori codes with emergent codes and revised the codebook. Then coded again using the a priori and emergent codes of the revised codebook. We repeated the process of coding, synthesizing codes, and re-coding until no new codes appeared to identify and categorize behavior and the different actions and feelings that arise at different steps of the accommodation process. This process was followed for both the coding of interview transcripts and the open responses in the survey. Codes, definitions, and use cases are presented in Table 2. Similar themes between data sets were then identified and compared.

CODE	DEFINITION	USE CASE	CODE TYPE
Positive Experiences	An experience that is overall positive (i.e., not exacerbating stress/fear/anxiety) for the student. May have been initially stressful, but the student received support/help and stress or other negative emotions lessened.	*When to use*: Use when a participant describes a positive experience where they felt supported in the process of asking for or using accommodations. *When not to use:* Do not use when a participant is describing a negative experience, or if a participant does not explicitly state they felt supported or use positive language (i.e., if they refer to an experience using neutral language that could be inferred either way).	A priori
Emotional Support	Providing support by listening, caring, affirming, etc.	*When to use*: Listening without judgment, acknowledging and validating someone's emotions, providing words of comfort and reassurance, and validating (e.g., legitimizing, recognizing) disability experience. *When not to use:* Invalidating students' experiences or feelings.	Emergent
Instrumental Support	Providing tangible support that could be through financial means, material means, or direct assistance.	*When to use:* Instructor provided accommodations (like extended test time or flexible deadlines), instructor advocated for student needs. *When not to use:* Accommodations were not provided effectively or refused.	Emergent
Instructional Support	Providing information or advice that is true and helpful.	*When to use:* Instructor provides information (e.g., suggestions, advice, procedures, etc.) that helps a student navigate the accommodations process. *When not to use:* Instructor provides information that is not correct or unhelpful, or fails to provide any information.	Emergent
Esteem Support	Providing support that helps build confidence and sense of belonging	*When to use:* Instructor is affirming student experiences, challenging a student's negative perceptions of disability or accommodation use, or normalizing accommodations. *When not to use:* Instructor is discouraging students from engineering or using stigmatizing language.	Emergent
Negative Experiences	The student experienced stress, fear, anxiety, or other negative emotions in the process of asking for or using accommodations, and/or did not receive the support/help they needed.	*When to use:* Use when a participant mentions feeling negative emotions (e.g., stress, fear, anxiety, etc.) or invalidations when describing their experiences regarding accommodations. *When not to use:* Do not use if describing an incident/experience that occurred before college or does not relate to accommodations in the classroom (such as in the library).	A priori
Invalidation	*(opposite of Emotional Support)* Not feeling heard or listened to; not feeling cared for; feeling dismissed of feelings or experiences (includes not acknowledging, denial, and mitigating seriousness), etc.	*When to use:* Instructor questioning seriousness of disability or need for accommodations (e.g., not understanding accommodation), instructor not listening to students describe their needs or experiences. *When not to use:* Instructor is providing emotional support.	Emergent
Disengagement/ Obstruction	*(opposite of Instrumental Support)* The withholding of tangible support, either deliberately (obstruction) or unintentionally (disengagement).	*When to use:* Instructor refusing to provide accommodations, ignoring student communication, or pushing responsibility onto another party so they do not have to give support. *When not to use:* Instructor is providing instrumental support.	Emergent
Withholding Information	*(opposite of instructional support)* Not providing information (suggestions, advice, procedures, etc.) or providing false information.	*When to use:* The instructor does not include information on the syllabus, or the information provided is incorrect. *When not to use:* Instructor is providing informational support.	Emergent
Denigration	*(opposite of Esteem Support)* Discouraging belonging, positive sense of self, and confidence.	*When to use:* Instructor tells student they should drop the class, expresses a negative view of disabilities or accommodation use, or uses stigmatizing language. *When not to use:* Instructor is providing esteem support.	Emergent

Table 2 Codes, definitions, use cases, and code types.

RESULTS AND DISCUSSION

Survey and interview data were not linked. Thus, some responses from the survey may have come from participants who were also interviewed. Quotes coming from the survey are labeled with "Open Response" and the participant number. Quotes coming from interviews are labeled with the participant's pseudonym.

Engineering students who had experience interacting with faculty about accommodations were asked to provide examples of positive and negative experiences, as well as instructor actions or language that made them feel comfortable or uncomfortable. In this analysis, we pay special attention to features and types of supports that made an event positive or negative, and to the perceptions of power and control. Themes for positive and negative experiences are summarized in Table 2.

POSITIVE EXPERIENCES

Emotional Support positively impacts students

Some features of making these interactions positive were feeling cared for, supported, and reassured (i.e., instances of Emotional and Esteem Support). Being listened to can influence a student's experience in the accommodations process. One student described how their professors check in with them and listen to them when they request accommodations:

> *...many professors have been wonderful about checking in with me and being willing to hear my side and act in accordance with the class policy to help me as best as possible or in some cases going above and beyond to advocate for me in other classes. This is always reassuring, and results in me being far more engaged in the class and willing to contribute. – Open Response 4*

Sharing during group discussions or answering questions in a big lecture hall can be intimidating. Establishing a welcoming environment that makes students feel their voices are heard and considered may help reduce anxiety and fear of speaking up in a group.

Creating an inclusive, supportive environment through the demonstration of Emotional Support in the form of verbal affirmations of care or written policies may also influence students' perceptions of their instructor's willingness to help:

> *And this specific professor has mentioned in their first class that they are teaching-focused, that they care more about the students... .And so people should feel free to come, talk to them whenever they feel like they need it...that was what made me feel like I could probably reach out to this person for help if I need to. – Cassidy*

The statements from Cassidy's instructor made her feel like she was safe to reach out if she needed, which was not the case with other instructors. Reaching out for help and not being sure of your instructor's attitudes towards accommodations or disability can be distressing (Shpigelman et al., 2022). For engineering students, additional tensions exist between seeking help and meeting expectations for the persona of the ideal engineer, who is often perceived as independent and tough (Cech, 2023; Pfeifer et al., 2021; Wright et al., 2021). Thus, aspects of emotional support, such as feeling listened to, cared for, and supported, are crucial in encouraging engineering students to request and utilize accommodations. Instructors can incorporate Emotional Support in the form of statements like Cassidy described into syllabi or course policies (Gurung & Galardi, 2022; Nusbaum et al., 2021; Thompson, 2007).

Sometimes accommodations do not work as intended, and instructors may need to make modifications to effectively support students:

> *I have had professors work directly with me to formulate accommodations... they discussed with me my difficulties in class and what solutions would best serve me. It was nice feeling like the professor actually cared that I succeed to the best of my abilities in the course. – Open Response 1*

> *It made me feel supported like he cared about what I might need. [The instructor] was anticipating, my needs... . So, he went above and beyond, which made me feel supported. – Brooke*

These students had professors who not only demonstrated Emotional Support through listening and care but also made an effort to find and implement accommodations that would be beneficial (Instrumental Support).

Normalization and Esteem Support improve interactions

Disability and accommodations are still stigmatized topics across higher education and engineering (Cech, 2023; Dolmage, 2017). Disclosing a disability or accommodation needs can be a distressing event (Kali et al., 2021; Shpigelman et al., 2022; Weatherton et al., 2017) because of pressures for engineering students to be gritty and independent (Cech, 2023; Dringenberg et al., 2022; Godfrey & Parker, 2010; Riley, 2017; Slaton et al., 2019). A way to help students feel more comfortable interacting with instructors is through the normalization of accommodations and making requests (Esteem Support):

> *I reached out to my professor, who said not to worry about coming to class and to use lecture recordings and office hours to learn the material instead. I felt relieved after this discussion because I had previously been worried ... since I was having trouble attending class without having an anxiety attack. The way the professor treated it as a "normal" situation rather than an unusual or "weird" request also helped ease my anxiety and made it a positive experience. – Open Response 3*

When ideal engineering norms, such as grit and independence, are replaced by the normalization of accommodations and asking for help, we can ease the emotional strain it takes to initiate the conversation about disability or access needs. Simple declarations of accommodations being "no big deal" or "normal" interactions are quick ways that all instructors can begin implementing immediately to normalize disability and accommodations. Other normalization tactics could be discussing accommodations as access needs, recognizing that every individual has their own dynamic access needs (Reinholz & Ridgway, 2021).

Students believe instructors are trying their best

Throughout many of the interviews and survey responses, students acknowledged that instructors were trying to be inclusive and meet accommodation needs:

> *...I don't really know what it's like to be an instructor. But I, [think] that they will try to do their job to the best of their ability to make sure their students are getting the best experience out of a particular class, even though sometimes it may be extremely difficult for some. So, I would say probably on a legal level, they do have to think about disabilities. But I would say if it comes down to if they actually care, I'm not too sure. – Jonathan*

Students are aware that faculty are trying their best in most cases. But less clear is whether instructors are following inclusive/equitable/accessible practices because it is part of their teaching philosophy or because it is just a legal responsibility. Meeting the legal requirements for accessibility is often the goal of institutions, but abiding by these laws is often not enough to support students (Dolmage, 2017; Skrtic et al., 2013). There can be disconnects between what institutions are legally required to do and what the student actually needs. Consequently, some students have negative experiences in an accommodations process that is more focused on legalities and "reasonableness" than on students' specific needs. Further, institutions often do not provide instructors with much training on providing accommodations or inclusive practices (Gokool-Baurhoo & Asghar, 2019; Long & Stabler, 2022; West et al., 2016). Instructors may have good intentions, but are often not aware of how to adequately support students with disabilities.

NEGATIVE EXPERIENCES

Invalidation through course policies

Note that in the first quote of the *Positive Experiences* section, the student also specifically mentions that the instructor is acting "in accordance with the class policy." Here, accommodations are not an exception or exemption from obeying course policies, but a feature built in. Yet this also

supposes that there is a "right" way to do accommodations, where accommodations not outlined in course policies may be justifiably restricted or denied. Xavier shares a similar perspective towards accommodations:

> *I would say that professors or instructors are welcoming to [providing accommodations], if you have a good reason..., if you are a [disability service office] student... – Xavier*

Professors are willing to provide accommodations, but only for students with a "good reason" who have appropriate documentation. The power to decide what is "right" or "reasonable" lies with the institution, which can police the bestowment of accommodations as they see fit and push the responsibility off onto an inanimate policy (i.e., "there is nothing I can do, it's what the policy says...") or a separate governing body like the disability services office.

Another student elaborates on how instructors can use policies to dismiss or doubt students:

> *...the factors of the positive (accommodation) experiences are the professors treating the students as humans and being gracious and believing the student, as opposed to coldly referring the student to a course policy regarding late work or asking for documentation about the illness or issue (it can feel like the professor doesn't believe us or thinks we are lying). – Open Response 5*

This student contrasts how instructors ask them to provide documentation, as policy may require, with instructors treating them as human. Providing documentation is personal, and some may prefer to keep this information private. With some policies, this means that all students must disclose personal information (which is emotionally straining) regardless of their own personal wishes for privacy (Freedman et al., 2020; Martin, 2010; Simpkins, 2023). Requiring documentation also inherently sets up a standard for what "counts" as a disability or reasonable accommodation, which creates situations where institutional agents could reject some documentation or reasons for not being "enough" (Gabel & Miskovic, 2014; Harbour, 2013; Ingman, 2023). Some students see this ability to restrict accommodations based on course policy as a legitimate manifestation of power.

Fiona K. Campbell explains this adherence to policies based on non-disabled worker norms as "technicism" and calls it a "tool of humiliation" used against the disabled body (Campbell, 2020). Accommodations are afterthoughts, built in for students who do not meet the idealized expectations, and at the same time, only for students who meet some arbitrary standards of disabledness. Doubting a student, requiring detailed information, or refusing to meet needs based on technicalities are humiliating acts done by instructors and institutions. The next student quote shows contrasting experiences with instructors who are less rigidly holding onto some standard of what it means to be disabled or have access needs:

> *So, I feel like a lot of times, when I talk to people about my condition, just because it's not a physical condition, sometimes I do get like questionable looks or responses [like], "I don't know if I necessarily trust that." And so, for [the professor] to ... not have to ask any additional questions... and kind of just being understanding and being there for me and recognizing [my strengths]... I think it really made me feel like [the professor] was in my corner... – Nadia*

In contrast to instructors who require documentation or proof, Nadia felt supported by their instructor, who did not question her need or character. Students do not want to engage in an argument with instructors trying to defend their disability or need for or right to accommodations (Figard et al., 2023; Long & Stabler, 2022; Shpigelman et al., 2022).

Obstructions make getting accommodations challenging

Adherence to inequitably designed policies, which are often built upon White supremacy culture, prevents students from getting support. Institutions may use diagnoses or other medical documentation as prerequisites for access to supports. Getting a diagnosis is not easy, as the next students share:

> *I had a friend with ADHD symptoms who wanted to get diagnosed, but the wait time for the diagnosis was over a year, so instead she asked the professor for any additional options, and she was told that without a diagnosis she's completely on her own. – Open Response 7*

> *...there has to be some way to prove that somebody actually has a certain disability, but I feel like a lot of my peers with like ADD or anxiety that would benefit from accommodations they don't get them, because they've never been to a psychiatrist or a therapist before, or they just don't have the funds for that ....- Brooke*

Both Brooke and the open response answer reference the difficulty of getting accommodations because of time or financial barriers associated with getting a medical diagnosis. Another student, Taylor, mentioned in their interview that they could see potential benefits to accommodations, but the process is too long to warrant them trying.

Furthermore, the professor from Open Response 7 is "technically" following University policy that states students must register with disability services (which often requires documentation) to receive accommodations. It seems to be often forgotten that not everyone has equal access to medical care and that receiving a diagnosis can take months or even years. Instructors have the discretion to be flexible and support access needs without "official" approved documentation, but some do not. Brooke mentions needing "some way to prove" a disability in order to receive accommodations, which is a sentiment reflected by the professor's actions. In response to the question "How have your instructors influenced your decision to seek accommodations?" one student shared that:

> *Professors asking for proof of a medical reason for absences (something that isn't always accessible) before providing access to lecture recordings and implying that the student does not have proof/being shocked when they do provide proof. – Open Response 8*

Needing "proof" of a disability implies that there are individuals who are faking and undeserving of supports. This belief that students are faking disabilities or "medical reasons" is harmful. A lack of "proof" does not mean that a disability or its impacts on life are not real. This also sets a precedent that some access needs are more "reasonable" than others, and some disabilities are more "believable" than others. Unfortunately, not being believed is a common experience for engineering students with disabilities (R. A. Miller et al., 2019; Zongrone et al., 2021).

Invalidation and Denigration prevent disclosure

Vanessa, who has used accommodations in some classes, mentions a fear some students have of asking for accommodations because of the possibility of invalidation.

> *...I feel like, if I was thinking of my experience and I go "... I think I'll need this accommodation on this" and then if they say "ohh that seems kind of like a silly thing to [use an] accommodation for." I would just sit there and go "OK" and just leave ... – Vanessa*

Asking a student if they "actually need" an accommodation is dismissive and condescending (Invalidation). This doubting and assumption of need or non-need is ableist. It implies that the disabled person is not as knowledgeable about their own needs as a more educated or professional person, such as an instructor. These experiences can have lasting impacts. As Vanessa mentions, students may be reluctant to approach instructors because they fear being invalidated. Attributing needs or challenges on behalf of disabled individuals is also a problem.

> *I have had professors that I met with regularly because I was struggling in their class due to my disability. Even with evidence pointing to the contrary, they repeatedly expressed the opinion that my challenges were due to a lack of understanding of the course material. They blamed my study habits and work ethic, so they did not see a need for further accommodations. I felt frustrated that my disability was being ignored and hurt that I was made to be the problem. – Open Response 1*

> *In one-on-one settings they have been open to discussing it and have done their best to meet my accommodational needs or requests. And they've been good listeners and kind [but] there's the underlying impression that it seems like you're lazy... – Aaron*

These students' disabilities were made out to be their own fault (Denigration), any challenges were because of their own personal choices (Invalidation), and thus the instructor relieved themselves of any responsibility to implement accommodations that could help their students (Disengagement/Obstruction). Acts of Denigration or Invalidation further cement the idea that students with disabilities are unfit for engineering, and can lead to engineering students avoiding disclosing disabilities (Kali et al., 2021; Zongrone et al., 2021).

Invalidation further cements an idea of an "ideal" engineering student

Experiences of dismissal and invalidation only communicate to disabled students that they are not "cut out" for or welcome in engineering. Other "normal" students are able to do the work or pass the class without the need for accommodations, or when they are ill, so why can't you? A conceptual creation of an "ideal" student that can overcome challenges on their own through hard work and tenacity further stigmatizes students with disabilities and the use of accommodations.

> *The stigma of needing accommodations makes me worry that even if professors don't say anything, they think less of me for needing accommodations... And I worry this perception affects my academic outcomes, letters of rec, etc. – Open Response 10*

Amalie, Cassidy, Nadia, Eva, Rosa, Taylor, and Vanessa also discussed stigma around disability and using accommodations in their interviews. Stigma around using accommodations creates an environment where students are afraid to ask for support (Grimes et al., 2019; Martin, 2010). Using accommodations draws attention to your inability to meet the ableist demands of engineering and further differentiates you from the ideal engineering student. Thus, in efforts to appear as a "normal" student, they may avoid accommodations entirely.

Additionally, there is often an "ideal" disabled student who is entirely grateful for any accommodations an instructor may bestow upon them. As Dolmage (2017, p. 81) describes "students have to feel and act fully accommodated at all times, even when they are not." This leads to conflicting feelings about the interaction. The following student describes negative emotions, but is reluctant to attribute a firm negative label to the experience:

> *I have not had any experiences that I would classify as fully negative. All of the experiences I have been through had positive moments and negative moments. I frequently received the accommodations I requested but still felt isolated in class and struggled to follow through on my plans to catch up on material...I felt heard, and like my requests were met, but also felt brushed off...– Open Response 11*

The main positive components of their experience that this student describes are only related to them receiving their requested accommodations. The specific marking of the reception of accommodations being the only positive moment shows how students are made to feel grateful to instructors for taking the time to help them. Even if the instructor brushes them off or criticizes them, the student must be grateful for receiving any accommodation at all. These experiences have been described in other studies as well, with students feeling "pressure to be agreeable" with instructors (Freedman et al., 2020, p. 29).

Disengagement leads to ineffective accommodations

Even when instructors provide accommodations, some instructors may do the bare minimum to technically meet the request (or their interpretation of it), which results in a useless and unhelpful accommodation, as described by Eva:

> *I've taken exams in some very strange places [laughs], and I mostly think it's funny, but I could see that being a negative for some people. Like I once took [a test... and they ran*

> *out of rooms. So, they put me in the printer room [laugh]. And so, people kept walking in to get their prints. … I think they didn't really care I was there, … I was definitely distracted, …. – Eva*

Eva can find humor in her situation and initially begins to say that her testing room accommodation was fine. As she keeps describing the experience, Eva realizes that the instructor putting her in that room did cause distraction, which goes against her documentation that specifies she must have a distraction-free environment. In this case, the accommodation specifically indicated the need for a distraction-free environment, but the accommodation letter does not clearly explain what makes a "distraction." Staff and faculty may have thought a printer room was a good choice because it is away from other students, but did not seem to consider other possible distractions that may affect Eva's test-taking. Rosa also had a negative experience with an instructor assigning her to a testing room that was an office, and describes how this made her feel:

> *Yeah, I would say [I felt] disregarded, because … we were just pushed off to the side. It felt like we were just a last-minute thought because we didn't get a room booked, how do you not have a room for a final exam for 8 to 12 students? I feel like that's really, really unfair, and then we were placed in an office … at the same time, the people with no accommodations had a full auditorium that they got from start to finish, didn't have interruptions, etc. They got proper desks… – Rosa*

Additionally, some instructors may implement accommodations or flexibility at a performative level, offering options, but do not take care to ensure their implementation meets the needs of students. In the following quote, Cassidy describes a time when she tried to use virtual lecture options for a class that the instructor refused to record:

> *And I realized that [the virtual lecture option] was done not because he was excited about it, and so you could see that there was no care put into that. There was a laptop logged into zoom on one side there was an [instructional assistant] that would check the chat for questions which was really great. But the professor would be writing on the board. You couldn't see the board very well. The professor would frequently walk around the class, so you couldn't hear them in the zoom, and you also can't see the slides… . I understand it's great to have that Zoom component, but it's not really helpful if you cannot use it… – Cassidy*

The instructor did provide a virtual option for students who needed it, but they did not implement it in a helpful way (Disengagement/Obstruction). Similar to buildings having accessible entrances that are often blocked or hard to find, having a virtual class option that has audio and visual issues does not excuse accountability or responsibility for maintenance. Opening Zoom on a laptop and posting a link for students is not enough. The lack of effort and care that the instructor put into this shows that providing accommodations and supporting students is not worth their time. The same instructor also became dismissive of Cassidy when she reached out for help again:

> *[I say to my professor] "Okay, this is close to the end of the semester. Is there any way I can get some time to make up for things? Is there any way we can discuss a plan to help me catch up?" [The professor's] response is [annoyed] …, He also expresses that I have not been participating really well in the class, and that I have not been showing up…He's very dismissive, and he's annoyed that I wasn't participating in class when my disability was the reason I couldn't participate, and his accommodations were nonexistent or unhelpful, and therefore I could never make up for the problems that I had. – Cassidy*

This instructor fully dismissed the student and seemed to expect consistent work and contact, even when the "accessible" virtual option only brought in more issues. Instructors may be disengaged in the accommodations process because they do not feel it is their responsibility or do not understand the ADA (Becker & Palladino, 2016; Rao & Gartin, 2003), they do not fully understand the needs of students (Rao & Gartin, 2003; Jensen et al., 2004), or they feel they do not have the time (Becker & Palladino, 2016; Jensen et al., 2004). Whatever the reason, such disengagement or low effort, even those with good intentions, can create more barriers than fixes, which further harms engineering students with disabilities' academic success.

LIMITATIONS

Not only do the accommodations processes vary between institutions, but students can also interact in the same accommodations process in different ways. Some students prefer to go through the disability services office, some prefer to communicate with instructors directly, some submit their letter of accommodations at the beginning of class, and some disclose their need for accommodations on a case-by-case basis (Kranke et al., 2013). In this paper, we focused more on student interactions with instructors, which is only one piece of the accommodations process and does not account for other experiences students may have with other institutional groups. Additionally, we only invited undergraduate students at one institution to participate. Further work should explore the experiences of disabled students at the graduate level and at different institutions.

IMPLICATIONS

The current climate for disabled students is unpredictable and ominous. Students are uncertain how an instructor will react to their disability or accommodations request. Some react in positive ways, but some students describe negative responses like dismissal and invalidation of experiences. Whether intentional or not, this type of language mirrors the historical treatment of disabled individuals as unable to speak or know about their own experiences (Price, 2011). Addressing these negative responses and preventing them is important because students who have negative experiences are less likely to request accommodations in future courses. In engineering, students may be more reluctant to ask for help due to the norms of stress and hardship (Godfrey & Parker, 2010), so proactively implementing inclusive, flexible, and accessible practices can help students who are too nervous or overwhelmed to ask for support. Faculty are situated in a powerful position to influence student behavior beyond the current semester. By providing emotional support (e.g. listening and showing care, establishing intention to support students on the first day), instrumental support (e.g. enacting helpful accommodations for all students like providing recorded lectures, virtual options, or using a microphone during class), informational support (e.g. informing students of their policies for accommodations or providing resources for support in the syllabus or on course websites), and esteem support (e.g. normalizing accommodations by acknowledging that everyone has access needs and avoiding expressing doubt of disability or needs to students who ask for help); faculty can begin to foster more inclusive and supportive environments that make the accommodations process less distressing and the culture of engineering and higher education less ableist. The type of support provided may differ by class type. Lecture courses may need more focused work on accessible presentations and flexible attendance policies, while lab courses may need more focused work on accessible equipment and transparent, structured protocols. Instructors who teach a class with strict participation or attendance requirements can consider designing alternate make-up assignments for students who miss class (e.g., answering individual discussion questions asynchronously, reviewing a lecture recording and summarizing key points and arguments, etc.) or flexible grading that allows a certain number of excused absences. Culture is not easy to change, and compliance only goes so far. An administrative approach that requires all instructors to record lectures or participate in workshops to learn about accessible and inclusive teaching practices, for example, may help transform the culture of rigor and stress in engineering, and more efficiently and sustainably meet the needs of all students. You do not need to do this alone; refer to resources available from your university's disability services office or centers like the University of Washington's DO-IT (Disabilities, Opportunities, Internetworking, and Technology) Center.

CONCLUSION

Ableism affects everyone. Ideas of rigor and productivity make engineering difficult, but it can be especially harmful to disabled students and staff who do not match the "typical engineer" expectations. Engineering colleges need to rethink and reflect on whether their policies and procedures promote an exclusive, unrealistic ideal for engineers to be constantly working and

producing, and expected to suffer to grow. Are our actions helping to build capacity and confidence in all engineering students? Instructors could benefit from professional development opportunities that specifically focus on disability, accommodations, and how to productively and respectfully engage in conversations about these topics with students in particular. Many institutions have equity and Title IX offices, as well as student disability services offices that host workshops and talks pertaining to disability and accommodations. Instructors should believe students and not dismiss or invalidate their experiences and needs. Additionally, some students enter college with no experience with accommodations and may not fully understand how to navigate this process on their own or what to do when faced with dismissive or invalidating actions and attitudes. Thus, students may benefit from having access to departmental or college-level staff whose priority is advocating for students and helping build student self-advocacy.

APPENDIX A

Semi-Structured Interview Protocol

INTRODUCTION

The main focus of this interview is to hear your stories about norms and expectations in engineering and learn more about how students with disabilities experience the accommodations process and interactions with instructors. These interactions could have occurred during scheduled class times, during office hours, over email for example. I have a list of questions printed out here, but I might ask follow-up questions that are not on the page.

We will not use your real name in any articles or product related to this interview. Would you like to choose your own pseudonym (fake name) or have us assign one?

Do you have any questions or concerns before we begin the interview?

INTERVIEW QUESTIONS

Part A. Engineering as a Field (Norms and Expectations)

The first set of questions I have are about engineering as a field and the culture at [university].

- How would you describe being an engineering student to a friend who is thinking of becoming an engineer?
- What are the typical expectations for engineering students at [university]?
- How would you describe yourself fitting into the ideas and expectations you just shared?
- How do most engineering students view accommodations at [university]?
- How do most engineering students view disability at [university]?
- How is your own view towards disability or accommodations similar or different from your peers?
- How are your views towards disability or accommodations similar or different from your engineering department?
- Is there something about the norms or expectations in engineering for students that you would like to share?
- Is there something about how students or faculty view disability or accommodations you would like to share?

Part B. Experiences in Engineering Courses

The next set of questions I have are about your experiences in your engineering courses. I will be asking about accommodations, and in this interview, accommodations mean both documented

accommodations that would appear in a letter or the Accommodate system, AND accommodations that are not formally documented. The goal of this section is to understand what the accommodations process is like for students.

- What types of accommodations have you used?
- Have you interacted with engineering course instructors about accommodations?

If Yes/sometimes,

- Can you describe a time where this interaction with an engineering instructor was a positive experience?
    - *Can you describe in one word how this experience made you feel?*
        - *Can you explain why you chose that word?*

I am going to ask you about a negative experience next. I want to reemphasize that you can skip questions if you don't want to answer or only give the details you are comfortable with. You are more important to me than data.

- Can you describe a time where this interaction with an engineering instructor was a negative experience?
    - *Can you describe in one word how this experience made you feel?*
        - *Can you explain why you chose that word?*

If no,

- Are there certain reasons why you have not asked for accommodations in your engineering courses?
    - What would you change at the University that would make interacting with faculty about accommodations a more positive experience?
    - What would be your advice for an incoming engineering student who is experiencing challenges due to disabilities or neurodivergence in the classroom?
    - Is there something about the accommodations process or disability supports in the College of Engineering that you would like to talk about?
    - Is there something you would like to share?
    - Is there something you would like to ask me?

ACKNOWLEDGEMENTS

Thank you to the students who shared their thoughts and experiences. Your input and contributions are valuable to this work.

FUNDING INFORMATION

This material is based upon work supported by the National Science Foundation Graduate Research Fellowship under Grant No. DGE-2241144 and Rackham Graduate Student Research Grants. Any opinion, findings, and conclusions or recommendations expressed in this material are those of the authors(s) and do not necessarily reflect the views of the National Science Foundation.

COMPETING INTERESTS

The authors have no competing interests to declare.

AUTHOR AFFILIATIONS

Isabel Miller orcid.org/0000-0002-9774-5812
University of Michigan, US

Karin Jensen orcid.org/0000-0001-9456-5042
University of Michigan, US

REFERENCES

Abes, E. S., & **Wallace, M. M.** (2018). "People see me, but they don't see me": An intersectional study of college students with physical disabilities. *Journal of College Student Development*, *59*(5), 545–562. https://doi.org/10.1353/csd.2018.0052

Barnard-Brak, L., Sulak, T., Tate, A., & **Lechtenberger, D.** (2010). Measuring college students' attitudes toward requesting accommodations: A national multi-institutional study. *Assessment for Effective Intervention*. *35*(3), 141–147. https://doi.org/10.1177/1534508409358900

Becker, S., & **Palladino, J.** (2016). Assessing faculty perspectives about teaching and working with students with disabilities. *Journal of Postsecondary Education and Disability, 29*(1), 65–82. https://eric.ed.gov/?id=EJ1107476

Blasey, J., Wang, C., & **Blasey, R.** (2023). Accommodation use and academic outcomes for college students with disabilities. *Psychological Reports*, *126*(4), 1891–1909. https://doi.org/10.1177/00332941221078011

Campbell, F. K. (2020). The violence of technicism: Ableism as humiliation and degrading treatment In N. Brown & J. Leigh (Eds.), *Ableism in Academia* (pp. 202–224). UCL Press. https://doi.org/10.2307/j.ctv13xprjr.18

Cech, E. A. (2023). Engineering ableism: The exclusion and devaluation of engineering students and professionals with physical disabilities and chronic and mental illness. *Journal of Engineering Education*, *112*(2), 462–487. https://doi.org/10.1002/jee.20522

Cole, E. V., & **Cawthon, S. W.** (2015). Self-disclosure decisions of university students with learning disabilities. *Journal of Postsecondary Education and Disability*, *28*(2), 163–179. https://eric.ed.gov/?id=EJ1074663

Creswell, J. W. (2009). *Research design: qualitative, quantitative, and mixed methods approaches*. 3rd ed. Sage.

Denhart, H. (2008). Deconstructing barriers: Perceptions of students labeled with learning disabilities in higher education. *Journal of Learning Disabilities*, *41*(6), 483–497. https://doi.org/10.1177/0022219408321151

Dolmage, J. (2017). *Academic ableism: Disability and higher education*. University of Michigan Press. https://doi.org/10.3998/mpub.9708722

Dringenberg, E., Kramer, A., & **Betz, A. R.** (2022). Smartness in engineering: Beliefs of undergraduate engineering students. *Journal of Engineering Education*, *111*(3), 575–594. https://doi.org/10.1002/jee.20463

Evans, N. J., Broido, E. M., Brown, K. R., & **Wilke, A. K.** (2017). *Disability in higher education: A social justice approach*. Jossey-Bass, a Wiley Brand. https://www.wiley.com/en-us/shop/general-introductory-education/disability-in-higher-education-a-social-justice-approach-p-9781118018224

Fereday, J., & **Muir-Cochrane, E.** (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, *5*(1), 80–92. https://doi.org/10.1177/160940690600500107

Figard, R. (2025). Disabled student experiences in engineering undergraduate programs: a scoping literature review (WIP). *2025 ASEE Annual Conference*. Montreal, Quebec, Canada. https://doi.org/10.18260/1-2--56298

Figard, R., Brunhaver, S. R., & **Bekki, J. M.** (2023). "It is so sxhausting to constantly have to explain to people": Exploring the effects of faculty interactions on disabled students. *2023 ASEE Annual Conference*. Baltimore, MD. https://doi.org/10.18260/1-2--42321

Freedman, J. E., Dotger, B. H., & **Song, Y.** (2020). Encountering ableism in the moment. *Critical Education*, *11*(16), 21–37. https://doi.org/10.14288/CE.V11I16.186504

Gabel, S. L., & **Miskovic, M.** (2014). Discourse and the containment of disability in higher education: An institutional analysis. *Disability & Society, 29*(7), 1145–1158. https://doi.org/10.1080/09687599.2014.910109

Getzel, E. E. (2008). Addressing the persistence and retention of students with disabilities in higher education: Incorporating key strategies and supports on campus. *Exceptionality*, *16*(4), 207–219. https://doi.org/10.1080/09362830802412216

Godfrey, E., & **Parker, L.** (2010). Mapping the cultural landscape in engineering education. *Journal of Engineering Education*, *99*(1), 5–22. https://doi.org/10.1002/j.2168-9830.2010.tb01038.x

Gokool-Baurhoo, N., & **Asghar, A.** (2019). "I can't tell you what the learning difficulty is": Barriers experienced by college science instructors in teaching and supporting students with learning disabilities. *Teaching and Teacher Education, 79*, 17–27. https://doi.org/10.1016/j.tate.2018.11.016

Grimes, S., Southgate, E., Scevak, J., & **Buchanan, R.** (2019). University student perspectives on institutional non-disclosure of disability and learning challenges: Reasons for staying invisible. *International Journal of Inclusive Education*, *23*(6), 639–655. https://doi.org/10.1080/13603116.2018.1442507

Gurung, R. A. R., & **Galardi, N. R.** (2022). Syllabus tone, more than mental health statements, influence intentions to seek help. *Teaching of Psychology, 49*(3), 218–223. https://doi.org/10.1177/0098628321994632

Harbour, W. (2013). "Inclusion in K-12 and higher education." In A. S. Kanter & B. A. Ferri (Eds.), *Righting educational wrongs: Disability studies in law and education* (First edition) (pp. 278–288). Syracuse University Press. https://press.syr.edu/supressbooks/619/righting-educational-wrongs/

Hartman-Hall, H. M., & **Haaga, D. A. F.** (2002). College students' willingness to seek help for their learning disabilities. *Learning Disability Quarterly*, *25*(4), 263–274. https://doi.org/10.2307/1511357

Ingman, K. (2023). Addressing equitable access to higher education: Assessing accommodation through syllabi [Bowling Green State University]. https://rave.ohiolink.edu/etdc/view?acc_num=bgsu1698679463698528

Jensen, J. M., McCrary, N., Krampe, K., & **Cooper, J.** (2004). Trying to do the right thing: faculty attitudes toward accommodating students with learning disabilities. *Journal of Postsecondary Education and Disability, 17*(2), 81–90. https://eric.ed.gov/?id=EJ876004

Kali, M. B., Secules, S., & **McCall, C. J.** (2021). Including Alice: uncovering the narrative of one student's experience at the intersection of international student status and mental health. *2021 CoNECD Annual Conference*. Virtual. https://doi.org/10.18260/1-2--36097

Kazis, R. (2020). Inequities in US higher education access and success: Obstacles and opportunities for marginal populations. In J. Bhabha, W. Giles, & F. Mahomed (Eds.), *A better future: The role of higher education for displaced and marginalised people* (pp. 129–151). Cambridge University Press. https://doi.org/10.1017/9781108655101.007

Kim, W. H., & **Lee, J.** (2016). The effect of accommodation on academic performance of college students with disabilities. *Rehabilitation Counseling Bulletin*, *60*(1), 40–50. https://doi.org/10.1177/0034355215605259

Kranke, D., Jackson, S. E., Taylor, D. A., Anderson-Frye, E., & **Floersch, J.** (2013). College student disclosure of non-apparent disabilities to receive classroom accommodations. *Journal of Postsecondary Education and Disability*, *26*(1), 35–51. https://eric.ed.gov/?id=EJ1026808

Krebs, E. (2019). Baccalaureates or burdens? Complicating "reasonable accommodations" for American college students with disabilities. *Disability Studies Quarterly*, *39*(3). https://doi.org/10.18061/dsq.v39i3.6557

Lindsay, S., Cagliostro, E., & **Carafa, G.** (2018). A systematic review of barriers and facilitators of disability disclosure and accommodations for youth in post-secondary education. *International Journal of Disability, Development and Education*, *65*(5) 1–31. https://doi.org/10.1080/1034912X.2018.1430352

Long, R. E. M., & **Stabler, A.** (2022). "This is NOT okay:" Building a creative collective against academic ableism. *Journal of Curriculum and Pedagogy*, *19*(4), 288–314. https://doi.org/10.1080/15505170.2021.1926374

Mamboleo, G., Dong, S., Anderson, S., & **Molder, A.** (2020). Accommodation experience: Challenges and facilitators of requesting and implementing accommodations among college students with disabilities. *Journal of Vocational Rehabilitation*, *53*(1), 43–54. https://doi.org/10.3233/JVR-201084

Martin, J. M. (2010). Stigma and student mental health in higher education. *Higher Education Research & Development*, *29*(3), 259–274. https://doi.org/10.1080/07294360903470969

McCall, C., Shew, A., Simmons, D. R., Paretti, M. C., & **McNair, L. D.** (2020). Exploring student disability and professional identity: Navigating sociocultural expectations in U.S. undergraduate civil engineering programs. *Australasian Journal of Engineering Education*, *25*(1), 79–89. https://doi.org/10.1080/22054952.2020.1720434

Miller, I., & **Jensen, K.** (2025). Engineering students' attitudes and perceived norms toward disability and accommodations. *Journal of Engineering Education*, *114*(4). https://doi.org/10.1002/jee.70028

Miller, I., & **Jensen, K.** (2026). Experiences of engineering students with disabilities in the accommodations process: A scoping literature review. *Journal of Women and Minorities in Science and Engineering*. https://doi.org/10.1615/JWomenMinorScienEng.2025054059

Miller, R. A., Wynn, R. D., & **Webb, K. W.** (2019). "This really interesting juggling act": How university students manage disability/queer identity disclosure and visibility. *Journal of Diversity in Higher Education, 12*(4), 307–318. https://doi.org/10.1037/dhe0000083

Moriña, A. (2024). When what is unseen does not exist: disclosure, barriers and supports for students with invisible disabilities in higher education. *Disability & Society*, *39*(4), 914–932. https://doi.org/10.1080/09687599.2022.2113038

National Center for Science and Engineering Statistics. (2019). *Women, Minorities, and Persons with Disabilities in Science and Engineering: 2019.* (Special Report NSF Special Report NSF 19-304). National Science Foundation. https://ncses.nsf.gov/pubs/nsf19304

Nieminen, J. H. (2023). Unveiling ableism and disablism in assessment: A critical analysis of disabled students' experiences of assessment and assessment accommodations. *Higher Education*, *85*(3), 613–636. https://doi.org/10.1007/s10734-022-00857-1

Nusbaum, A. T., Swindell, S., & **Plemons, A.** (2021). Kindness at first sight: The role of syllabi in impression formation. *Teaching of Psychology, 48*(2), 130–143. https://doi.org/10.1177/0098628320959953

Pfeifer, M. A., Reiter, E. M., Cordero, J. J., & **Stanton, J. D.** (2021). Inside and out: Factors that support and hinder the self-advocacy of undergraduates with ADHD and/or specific learning disabilities in STEM. *CBE—Life Sciences Education*, *20*(2), ar17. https://doi.org/10.1187/cbe.20-06-0107

Price, M. (2011). *Mad at school: Rhetorics of mental disability and academic life*. University of Michigan Press. https://doi.org/10.3998/mpub.1612837

Proudfoot, K. (2023). Inductive/deductive hybrid thematic analysis in mixed methods research. *Journal of Mixed Methods Research*, *17*(3), 308–326. https://doi.org/10.1177/15586898221126816

Quinlan, M. M., Bates, B. R., & **Angell, M. E.** (2012). "What can I do to help?": Postsecondary students with learning disabilities' perceptions of instructors' classroom accommodations. *Journal of Research in Special Educational Needs*, *12*(4), 224–233. https://doi.org/10.1111/j.1471-3802.2011.01225.x

Rao, S., & **Gartin, B. C.** (2003). Attitudes of university faculty toward accommodations to students with disabilities. *The Journal for Vocational Special Needs Education, 25*(2), 47–54. https://eric.ed.gov/?id=EJ854908

Reinholz, D. L., & **Ridgway, S. W.** (2021). Access needs: centering students and disrupting ableist norms in STEM. *CBE—Life Sciences Education, 20*(3), es8. https://doi.org/10.1187/cbe.21-01-0017

Riley, D. (2017). Rigor/us: Building boundaries and disciplining diversity with standards of merit. *Engineering Studies*, *9*(3), 249–265. https://doi.org/10.1080/19378629.2017.1408631

Roberts, E. K. (2019). *Who is missing? A critical analysis of disabled students' subjectivity in an ableist university culture*. [Doctoral dissertation, University of British Columbia] UBC Library Open Collections. https://doi.org/10.14288/1.0378471

Robinson, S. A. (2017). The voice of a gifted Black male with dyslexia represented through poetry: An auto-ethnographic account. *Journal of Poetry Therapy*, *30*(2), 113–119. https://doi.org/10.1080/08893675.2017.1266201

Saldaña, J. (2016). *The coding manual for qualitative researchers.* (3rd ed.). Sage Publications.

Shpigelman, C. N., Mor, S., Sachs, D., & **Schreuer, N.** (2022). Supporting the development of students with disabilities in higher education: Access, stigma, identity, and power. *Studies in Higher Education*, *47*(9), 1776–1791. https://doi.org/10.1080/03075079.2021.1960303

Simpkins, N. (2023). The rhetorical role of syllabi in student conversations about disability accommodations. *College Composition & Communication, 74*(4), 673–694. https://doi.org/10.58680/ccc202332522

Skrtic, T. M., Kent, J. R., & **Cantor, N.** (2013). Rights, needs, and capabilities. In A. S. Kanter & B. A. Ferri (Eds.), *Righting educational wrongs* (pp. 58–101). Syracuse University Press. https://www.jstor.org/stable/j.ctt1j2n77p.8

Slaton, A. E., Cech, E. A., & **Riley, D. M.** (2019). Chapter 17. Yearning, learning, and earning: The gritty ontologies of american engineering education. In W. J. Letts & S. Fifield (Eds.), *STEM of desire: Queer theories and science education,* 319–340. Brill Sense. https://doi.org/10.1163/9789004331068_017

Southwest ADA Center. (2017). *Postsecondary institutions and students with disabilities*. ADA National Network. https://adata.org/factsheet/postsecondary

Stephens, N. M., Townsend, S. S. M., & **Dittmann, A. G.** (2019). Social-class disparities in higher education and professional workplaces: The role of cultural mismatch. *Current Directions in Psychological Science*, *28*(1), 67–73. https://doi.org/10.1177/0963721418806506

Szechy, K. A., Ramos, P., Bray, M., Anderson, N., Wiseman, R., & **O'Donnell, L. A.** (2026). "Rooted in ableism:" An embedded mixed methods study of disability disclosure on a university campus. *Disability & Society*, *41*(1), 51–75. https://doi.org/10.1080/09687599.2025.2498413

Thompson, B. (2007). The Syllabus as a communication document: Constructing and presenting the syllabus. *Communication Education, 56*(1), 54–71. https://doi.org/10.1080/03634520601011575

Thurmond, V. A. (2001). The point of triangulation. *Journal of Nursing Scholarship*, *33*(3), 253–258. https://doi.org/10.1111/j.1547-5069.2001.00253.x

Timberlake, M. (2020). Recognizing ableism in educational initiatives: Reading between the lines. *Research in Educational Policy and Management*, *2*(1), 84–100. https://doi.org/10.46303/repam.02.01.5

Walther, J., Sochacka, N. W., & **Kellam, N. N.** (2013). Quality in interpretive engineering education research: Reflections on an example study. *Journal of Engineering Education, 102*(4), 626–659. https://doi.org/10.1002/jee.20029

Weatherton, Y. P., Mayes, R. D., & **Villanueva-Perez, C.** (2017). Barriers to persistence for engineering students with disabilities *2017 ASEE Annual Conference*. Columbus, Ohio. https://doi.org/10.18260/1-2--27650

Wertans, E., & **Burch, L.** (2022). 'It's backdoor accessibility': Disabled students' navigation of university campus. *Journal of Disability Studies in Education*, *3*(1), 57–78. https://doi.org/10.1163/25888803-bja10013

West, E. A., Novak, D., & **Mueller, C.** (2016). Inclusive instructional practices used and their perceived importance by instructors. *Journal of Postsecondary Education and Disability, 29*(4), 363–374. https://eric.ed.gov/?id=EJ1133764

Williams, S. (2022). *Absent students: A critical disabilities studies approach to accessibility services* [Master's thesis, Brock University]. https://dr.library.brocku.ca/handle/10464/16620

Womack, A. M. (2017). Teaching is accommodation: Universally designing composition classrooms and syllabi. *College Composition & Communication*, *68*(3), 494–525. https://doi.org/10.58680/ccc201728964

Wright, C. J., Hargis, L. E., Usher, E. L., Hammer, J. H., Wilson, S. A., & **Miller, M. E.** (2021). Identifying engineering students' beliefs about seeking help for mental health concerns. Presented at 2021 *Virtual ASEE Annual Conference*. https://doi.org/10.18260/1-2--37269

Zaussinger, S., & **Terzieva, B.** (2018). Fear of stigmatisation among students with disabilities in Austria. *Social Inclusion*, *6*(4), 182–193. https://doi.org/10.17645/si.v6i4.1667

Zongrone, C., McCall, C. J., Paretti, M. C., Shew, A., Simmons, D. R., & **McNair, L. D.** (2021). "I'm looking at you, you're a perfectly good person…": Describing non-apparent disability in engineering. *2021 CoNECD Annual Conference*. Virtual. https://doi.org/10.18260/1-2--36059

TO CITE THIS ARTICLE:
Miller, I., & Jensen, K. (2026). Experiences of Undergraduate Engineering Students Navigating the Accommodations Process. *Studies in Engineering Education*, *7*(2), 1–21. DOI: https://doi.org/10.21061/see.194

Submitted: 05 November 2024
Accepted: 30 April 2026
Published: 16 July 2026

Studies in Engineering Education is a peer-reviewed open access journal published by VT Publishing.

VIRGINIA TECH PUBLISHING