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Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

Addressing Barriers for Persons with Disabilities Pursuing Postsecondary Research

Prepared by: Hayley Roth, Albert Trinh, Christie Gan, Angelica Giner, Wanting Song

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The Confounders

Hayley Roth, Albert Trinh, Christie Gan, Angelica Giner, Wanting Song

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Executive Summary

This study investigated the most effective solutions to the barriers of accessibility, physical support, and accommodations for postsecondary students with physical disabilities when attempting to conduct research. It aims to progress disability research, awareness, and create an environment of inclusivity for future students with disabilities in academic research. The barriers addressed were sourced from previous literature on physical barriers for persons with disabilities. Our data was obtained using an online survey through Qualtrics of 76 participants with and without physical disabilities (M=21.6 years) who were recruited through convenience and snowball sampling. Data was analyzed in three separate repeated-measures ANOVAs as well as three separate Holm post hoc tests. Our three hypotheses were 1) adding elevators and ramps was the most effective solution to the barrier of accessibility, 2) adding Assistive Technology (AT) was the most effective solution to the barrier of physical support, and 3) adding an accommodations tab on the institution's web page was the most effective solution to the barrier of accessing disability information and accommodations. All hypotheses were partially supported, suggesting that there are more solutions to be examined and more barriers to be addressed outside of the scope of this study.

Addressing Barriers for Persons with Disabilities Pursuing Postsecondary Research

Disability research has been utilized in the creation of equal education, employment rights, and opportunities[1] as well as to improve our understanding of those whose abilities differ from our own, so that we may become supportive allies. However, the solutions to barriers faced by students with physical disabilities when attempting to conduct postsecondary research have yet to be thoroughly explored. This study aims to address physical barriers from our literature review by providing effective solutions. The removal of these barriers will make students with disabilities more likely to conduct research at the institution.

Previous research on physical disabilities has mainly focused on identifying social, psychological, or physical barriers present in everyday life,[2] without necessarily trying to mitigate them. A team of researchers explored the barriers present in science and engineering laboratories for students with physical disabilities through a national online survey.[3] Some of their biggest barriers included limited laboratory access, insufficient accommodations, and assistance from instructors. A different study looked at the differences between physical access to buildings, and physically being able to work in the space once inside the building.[4] The results showed that for those who did not have difficulty accessing the building, participation was hindered by the design of the actual environment, making both access and environmental design barriers to participation. A third study we looked into was concerned with physical barriers affecting participation for those with visual and hearing impairments.[5] The study found that there were restrictive environments with little adaptive equipment, a lack of instructor assistance, and a lack of instructors that knew how to assist them. While each study identified major physical barriers, many similar issues were found. Our study was created to address such issues.

For our research, we wanted to determine the most effective solutions for the barriers of accessibility, physical support, and accommodations for students with physical disabilities when attempting to conduct research at postsecondary institutions.

We hypothesized that: (1) increasing the number of elevators, and ramps will be the most effective solution for accessibility;[3-7] (2) adding assistive technology will be the most effective solution for physical support [2-5, 8] in accessing, and using research facilities; and (3) adding an accommodations tab on the institution's enrollment web page will be the most effective solution for accessing information on disability information (accommodation).[4-7,9]

Methods

Participants. This study intended to gather participants who were prospective, or current postsecondary students. Based on a power analysis using an 85% confidence level with an assumed effect size of 0.25, a minimum sample size of 72 participants was required. We received a total of 79 responses and excluded 3 of these responses due to failure to complete the survey. After exclusions, we retained a final sample size of 76 participants, consisting of 17 males, 53 females, and 6 non-binary or third gender individuals. Out of all participants, only 12 stated that they had a physical disability while the other 64 participants stated that they did not have a physical disability. Participants' ages ranged from 18 to 38 years (M = 21.6, SD = 3.2).

Conditions. Our study was designed to determine the best solution for a given barrier; therefore, we divided our conditions into three independent sections, where the conditions in a section were specific to a single barrier. We employed a within-subjects, 3-by-3 design (3 barriers by 3 solutions), resulting in 9 solutions that acted as our conditions.

For the barrier of physical access to postsecondary campus and research facilities, our three solutions were 1) convenient campus transportation, 2) increasing the number of elevators and ramps for access to buildings, and 3) adding braille signage in and around facilities. For the barrier of physical support in using research facilities, our solutions were 1) having available staff, or volunteer students to assist in navigating the facilities as well as conducting research, 2) creating wider doorways and spacing between workspaces, and 3) adding Assistive Technology (AT) to facilities. For the barrier of accessing disability information and accommodations from the institution, our solutions were 1) add an accommodations tab for students with disabilities on the institution's enrollment web page so that the information is readily available, 2) assign accommodations support contacts through email to anyone who applies to the institution stating a disability, and 3) send automated emails with updates on disability policies, physical access, and opportunities to students with disabilities as it becomes available.

Measures. We designed a survey to test our three hypotheses regarding the most effective solution for each of the three barriers (see Appendix A). Participants were asked to rate how effective they thought each solution was for a specific barrier (i.e., for the barrier of physical access, they were asked, "How effective is this solution: convenient transportation to get across campus?"). Participants responded to each question on a 5-point Likert scale (1 = not at all effective, 2 = a little effective, 3 = somewhat effective, 4 = effective, and 5 = very effective). We opted for a 5-point Likert scale instead of a higher point scale to reduce confusion and decrease frustration by ensuring that participants were not overwhelmed with choices, further increasing the quality of responses[10]. Asking participants to rate each solution's effectiveness allowed us to evaluate our hypotheses pertaining to the most effective solution for each barrier. In addition, participants also had the option to suggest solutions of their own for each barrier.

Procedure. We mainly utilized convenience sampling by distributing the survey online through postsecondary institutions, and our social media accounts (see Appendix B). To obtain our target sample size, we also employed snowball sampling where existing participants helped in the recruitment process. Data was collected from March 4, 2021 to March 25, 2021 for a total of 21 days. The survey took approximately 5-8 minutes for an individual to complete. Participants were directed to our study on the UBC Qualtrics web page, which began by collecting their informed consent. The survey consisted of three main sections. Each section explained one barrier and presented the three solutions respective to that barrier. At the end of each section, participants could suggest a solution of their own for the barrier presented. After rating all solutions, participants indicated their age, gender, and stated whether they have a physical disability.

Initially, data collection in the first two weeks was sluggish since we planned to target prospective, and current postsecondary students with physical disabilities. It was notably

challenging to recruit participants who fit this criterion. We ended up opening the survey to individuals without physical disabilities, and the frequency of responses increased in the final week. Furthermore, as participants were not asked about their schooling, we cannot be sure that a good proportion of participants were prospective or current postsecondary students.

Results

In order to determine the most effective solution for each of the three barriers, we used an alpha level of .05 and conducted three separate repeated-measures ANOVAs, as well as three separate Holm post hoc tests. Under each barrier, the average rating of each solution across participants was calculated and compared with the other two solutions.

Hypothesis 1. Our first hypothesis that increasing the number of elevators and ramps for access to buildings will be the most effective solution for the barrier of physical access to campus and research facilities was partially supported, being significant overall with a result of $F(2, 150)=4.861$, $p=.009$ (see Table 1A in Appendix C). Our Holm post hoc test (see Table 1B in Appendix C) revealed that in comparison to convenient campus transportation ($M=3.816$, $SD=0.875$), increasing the number of elevators and ramps ($M=4.092$, $SD=0.836$) has a significantly higher mean effectiveness rating, $t(2)=-2.764$, $SEM=0.100$, $p=0.019$. However, in comparison to adding braille signage to facilities ($M=4.079$, $SD=0.920$) increasing elevators and ramps is not significantly different, $t(2)=0.132$, $SEM=0.100$, $p=0.895$. Adding braille signage has a significantly higher mean effectiveness rating than convenient transportation, $t(2)=-2.632$, $SEM=0.100$, $p=0.019$. See Figure 1 in Appendix C for descriptive plot.

Hypothesis 2. Our second hypothesis that adding AT to facilities will be the most effective solution for physical support in accessing and using research facilities was also partially supported, yielding overall significance at $F(2, 150)=3.269$, $p=0.041$ (see Table 2A in Appendix D). According to our post hoc test (see Table 2B in Appendix D), compared to staff or student assistance in navigating facilities and conducting research ($M=4.118$, $SD=0.832$), adding AT to facilities ($M=4.355$, $SD=0.761$) is not significantly different, $t(2)=-2.332$, $SEM=0.102$, $p=0.063$. Adding AT also does not differ ($t(2)=-2.073$, $SEM=0.102$, $p=0.080$) from adding wider doorways and spacing between workspaces ($M=4.145$, $SD=0.890$). The post hoc p values for adding AT to facilities when compared to the two other solutions is greater than .05 but smaller than .1, suggesting that the mean effectiveness for AT is marginally higher than the two other solutions. Staff or student assistance is not significantly different from adding wider doorways and spacing, $t(2)=-0.259$, $SEM=0.102$, $p=0.796$. See Figure 2 in Appendix D for descriptive plot.

Hypothesis 3. Our third hypothesis that adding an accommodations tab on the institution's enrollment web page will be the most effective solution for accessing information on disability information was partially supported with overall significance, $F(2, 150)=11.042$, $p < .001$ (see Table 3A in Appendix E). Our post hoc test (see Table 3B in Appendix E) demonstrates that compared to sending automated emails containing updates on disability policies and opportunities for students with disabilities ($M=3.868$, $SD=0.971$), adding an accommodations

tab (M=4.303, SD=0.783) has a significantly higher mean effectiveness rating, $t(2)$=4.664, SEM=0.093, $p < .001$. However, compared to assigning accommodations support contacts to students with disabilities (M=4.132, SD=0.789), adding an accommodations tab is not significantly different, $t(2)$=1.837, SEM=0.093, p=0.068. Assigning support contacts has a significantly higher mean effectiveness rating than sending automated emails, $t(2)$=2.827, SEM=0.093, p=0.011. See Figure 3 in Appendix E for descriptive plot.

Additional Results. Out of the 12 participants who declared having a physical disability, 4 of them suggested their own solutions regarding the barriers we proposed, and also gave insight into other barriers to consider (see Appendix F).

Discussion

Overall, the solutions addressed in our hypotheses had the highest mean effectiveness ratings compared to other solutions under the particular barriers (see Results); however, they do not appear to be significantly more effective. This implies that further solutions should be investigated for greater effectiveness in overcoming the barriers chosen. Our study addresses a niche topic, wherein we are not only investigating environmental factors that hinder persons with disabilities, but specifically delving into the physical challenges they may face when conducting academic research. Because it is now increasingly common for students to conduct research as part of their degree or for practical experience in their field, it is paramount that we explore this territory, and were able to through the present study. However, the caveat that we had a small sample size should be kept in mind, as this negatively affects our analyses' statistical power, resulting in our study having lower sensitivity to detect an effect that truly exists.

Of particular importance are the alternative solutions and barriers provided by our participants with physical disabilities. In terms of accessing campus and research facilities, participants stressed that transportation across campus should be more efficient at night, a valuable recommendation since it could be dangerous and inconvenient for minorities—including students with physical disabilities—to be walking on campus instead.

To handle lacking physical support in research facilities, the idea of implementing AT was supported by a participant who suggested that students with low mobility could use a computerized program containing a laboratory simulation. Interestingly, one participant noted that American Sign Language (ASL) should be a mandatory first-year university course, and that ASL interpreters should be abundant. This is important to consider since some physical disabilities (i.e., deafness) may not be immediately apparent. Therefore, other means of communication may be essential, and a lack of personnel who specialize in non-verbal communication is another barrier to take into account. A third participant proposed that laboratory stations could be lower in height and have wheels added for easier access and mobility, which is another essential consideration.

Finally, for easier access to disability information and accommodations, a participant agreed that they would have preferred to have had an accommodations support contact after being accepted into the university. This emphasizes the need for postsecondary institutions to strengthen the presence of accommodations personnel, which would make it more convenient for

students with physical disabilities to participate in a wider range of campus activities. It is evident that there is room for improvement in supporting students with physical disabilities so that they do not refrain from opportunities in fear that it may be troublesome.

The biggest limitation of our study was the fact that our target demographic was a minority population, since that made participant recruitment a challenge. Therefore, we opted to recruit students without physical disabilities as well. Casting a wider net to institutions across Canada, as well as contacting facilities that help the disabled community, could have aided the data collection process. We also found an unequal representation of ages and gender. Around 70% of our participants identified as female, and the mean age of 21.6 only represented the young postsecondary student population, leaving out mature students.

Notably, there were huge issues with the distribution of our survey to populations outside those that were immediately accessible to us (see Appendix B). Most universities we contacted were hesitant to assist us with circulating our survey to their student body. Some universities also required us to seek ethics board approval before distributing our survey. Since we had a limited amount of time to do so, we were unable to reach many prospective participants.

Finally, using different research methods to acquire more qualitative data, such as semi-structured interviews, or using a different scale for the survey, such as ranking solutions from worst to best, could diversify results and provide in-depth insight not previously attained. If participants had the option to rank our barriers by importance and suggest their own, useful insight into the most significant barriers could be provided.

Recommendations for UBC Client

To combat demographic limitations (see Discussion), centers that provide rehabilitation, physical therapy, or workplace training/placement may be a good resource for recruiting our target population for future research. Moreover, there was a lack of correspondence from UBC's own Centre for Accessibility, despite us contacting the front desk prior to sending our initial email. We would suggest looking into your own internal avenues for reasons of non-assistance, especially for studies that stand to benefit the institution and its minority student population.

Investigating a wider variety of barriers and solutions, especially those suggested by our participants (see Discussion), would be another way to build upon our study. Furthermore, disability research should not only include physical barriers, but also emotional, social, political, and spiritual barriers.[2] For instance, students with disabilities may decide not to participate in conducting research due to stigma surrounding disabilities, low self esteem, and previous negative experiences.

This study was important in progressing disability research, awareness, and increasing inclusivity for future students with disabilities in academic research. Such research has not previously existed in the UBC SEEDS program, but was very much needed if we were to further support this minority population. With studies like this one, we can find ways to increase funding to break down barriers, and hopefully become a leading institution in accessibility for all.

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Appendix A

Qualtrics Survey

This survey is about addressing barriers for people with physical disabilities pursuing postsecondary research. You will answer a few questions about each barrier.

Barrier 1: Physical access to Postsecondary Campus and Research Facilitates

This barrier is about a lack of convenient access to campus as well as the laboratories (e.g. lacking transportation to get to campus or across campus). Please rate the effectiveness of the following solutions to this barrier below.

How effective is this solution: Convenient transportation to get across campus?

Not at all	A little	Somewhat	Effective	Very effective
○	○	○	○	○

How effective is this solution: Increasing the number of elevators and ramps for access to buildings?

Not at all	A little	Somewhat	Effective	Very effective
○	○	○	○	○

How effective is this solution: Adding braille signage in and around facilities?

Not at all	A little	Somewhat	Effective	Very effective
○	○	○	○	○

Please provide any other solution that you believe would be best in overcoming this barrier. If you do not have other suggestions, please leave this blank.

Barrier 2: Physical support in accessing and using Research Facilities

This barrier is about a lack of available physical support from other students, professors, or staff (e.g. care worker, colleague, or support staff), as well as laboratory accommodations (such as desks and chairs with adjustable heights). Please rate the effectiveness of the following solutions to this barrier below.

How effective is this solution: Having available staff, or volunteer students to assist in navigating the facilities as well as conducting research?

Not at all	A little	Somewhat	Effective	Very effective
○	○	○	○	○

How effective is this solution: Creating wider doorways and spacing between workspaces?

Not at all	A little	Somewhat	Effective	Very effective
○	○	○	○	○

How effective is this solution: Adding Assistive Technology (AT) to facilities? *(AT is any item, piece of equipment, software program, or product system that is used to increase, maintain, or improve the functional capabilities of persons with disabilities).*

Not at all	A little	Somewhat	Effective	Very effective
○	○	○	○	○

Please provide any other solution that you believe would be best in overcoming this barrier. If you do not have other suggestions, please leave this blank.

Barrier 3: Accessing Information and accommodations from the Institution
This barrier is about a lack of information readily available to students about the accommodation process (e.g., access to assistive technology, teacher assistance, class participation concessions, parking, etc.). Please rate the effectiveness of the following solutions to this barrier below.

How effective is this solution: Add an accommodations tab for students with disabilities on the institution's enrollment webpage so that the information is readily available?

Not at all	A little	Somewhat	Effective	Very effective
O	O	O	O	O

How effective is this solution: Assign accommodations support contacts through email to anyone who applies to the institution stating a disability?

Not at all	A little	Somewhat	Effective	Very effective
O	O	O	O	O

How effective is this solution: Send automated emails with updates on disability policies, physical access, and opportunities to persons with disabilities as it becomes available?

Not at all	A little	Somewhat	Effective	Very effective
O	O	O	O	O

Please provide any other solution that you believe would be best in overcoming this barrier. If you do not have other suggestions, please leave this blank.

The final section is a few demographic questions.

Do you have a physical disability?

- ○ Yes
- ○ No

What is your age? (in years)

Which gender do you identify with?

- ○ Male
- ○ Female
- ○ Non-binary / third gender
- ○ Other:

Appendix B

Distribution List and Contacts

Our study struggled immensely with distribution from the beginning, and it continued throughout the study. Even with all the effort that was put into reaching out, and the use of creative ideas to reach our demographic our survey just hit our intended number of participants. Below is a summary of the places we tried to contact, the responses received and important contacts who were helpful in this study for future research.

Survey Distribution/ Difficulties

AMS Society: **Contact info**: (Saad Shaoib) Avpexternal@ams.ubc.ca (604-827-4520)
March 10 (email) distribution through internal AMS routes
March 18 University of Victoria Students' Society Director of Campaigns Emily Lowan will distribute our survey

UVIC Accessibility: **March 10 Email sent** **(See AMS Section- SAID YES March 18)**
Contact info: facman@uvic.ca ; 250-721-7616

Facebook Posts:
Contact info: Hayley: **March 4,** posted again via TCMG **March 10**
Posted into 2 disability groups **March 13**
Angelica **March 4**
Albert **March 4,** posted again **March 11**
Christie: Posted on personal account **March 5**
Posted in UBC Class of 2021 group **March 17**

Instagram:
Contact info: Albert **March 4 & 5**
Christie **March 4, 5, 17**
Angelica reposted **March 4, 7, 9**

Wechat:
Contact info: Wanting **March 5**

Facebook Messenger, Whatsapp, iMessage:
Contact info: Christie **March 15, 16, 17, 18, 21, 24**

UBC Centre for Accessibility: Contacted **March 10** via phone then email (Contact is Unda)
Contact info: Info.accessibility.ubc.ca **March 10 Email sent**
604-822-5844
Saad sent an email **March 12** **(No response to either)**

SFU Centre for Accessible Learning (CAL) 9am-12pm, 1pm-4pm

Contact info: 778-782-3112
caladmin@sfu.ca **March 10 Email sent (No response)**

Douglas College

Contact info: Accessibility Services
(New West) 604-527-5486
(Coquitlam) 604-777-6185
stuserv@douglascollege.ca **March 10 Email sent (No response)**

Langara Accessibility Services

Contact info: 604-323-5509
accessibilityservices@langara.ca **March 10 Email sent**
Email asking for us to speak to the ethics board, which we sent an email off to them immediately,
March 24 Ethics board responded (Rana Ahmad LREB Chair) saying approval was NOT needed-- Too late for us to utilize this contact

BCIT Accessibility Services

Contact info: 604-541-6963
accessibility@bcit.ca **March 10 Email sent (No response)**

TRU Accessibility Services

Contact info: 1-250-852-7000
student@tru.ca **March 10 Email sent (No response)**

UFV Centre for Accessibility Services

Contact info: Abbotsford 604-504-7441 ext. 4528
Chilliwack 604-795-2808
ssfrontdesk@ufv.ca **March 10 Email sent (No response)**

UNBC Access Resource centre

Contact info: arc@unbc.ca **March 10 Email sent (No response)**

Emily Carr University Accessibility Services **March 10 Email sent (No response)**

Contact info: accessibility@ecuad.ca

UBCO Disability Resource Center

Contact info: drc.questions@ubc.ca **March 10 Email sent (No response)**
250-807-8053

Centennial Secondary School **March 11 Email sent**

Contact info: aciolfitto@sd43.bc.ca **SAID NO March 16- (No seniors with disabilities)**

KPU Accessibility Resources (all 3 campuses) **March 10 Email sent (SAID NO March 11)**

Contact info: Gagan Hyare (Manager): gagan.hyare@kpu.ca

VCC Disability Services **March 10 Email sent (SAID NO March 11)**

Contact info: disabilityservices@vcc.ca ; 604.871.7000 option 2

Capilano University Accessibility Services **March 10 Email sent (SAID NO March 11)**

Contact info: access-serv@capilanou.ca ; 604 983 7526

Appendix C

Results for Hypothesis 1

Table 1A

Table Showing Within Subjects Effects for the Barrier of Physical Access to Campus and Research Facilities

Cases	Sum of Squares	df	Mean Square	F	p	η_p^2
Solutions: Barrier 1 – Physical Access	3.693[a]	2[a]	1.846[a]	4.861[a]	0.009[a]	0.061
Residuals	56.974	150	0.380			

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated ($p < .05$).

Table 1B

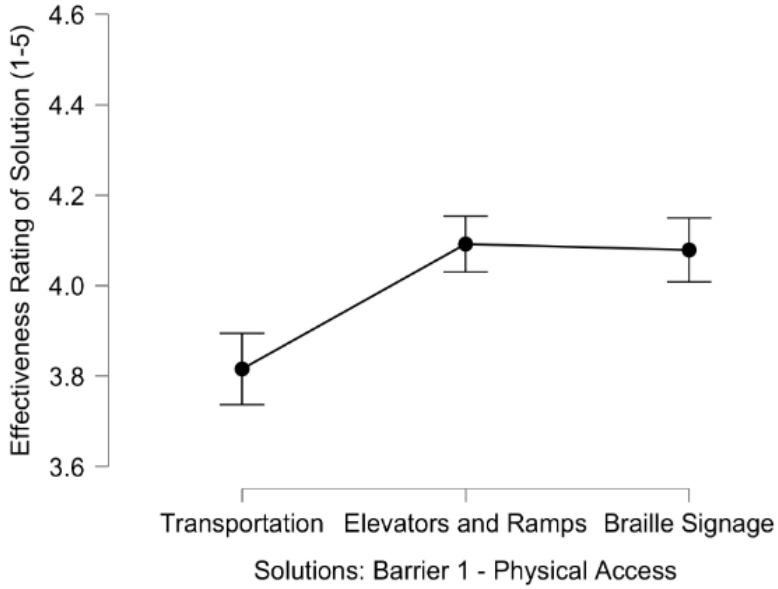
Table Showing Post Hoc Comparisons of Solutions to the Barrier of Physical Access to Campus and Research Facilities

		Mean Difference	SE	t	p_{holm}
Transportation	Elevators.and.Ramps	−0.276	0.100	−2.764	0.019
	Braille.Signage	−0.263	0.100	−2.632	0.019
Elevators.and.Ramps	Braille.Signage	0.013	0.100	0.132	0.895

Note. P-value adjusted for comparing a family of 3

Figure 1

Comparison of Solutions to the Barrier of Physical Access to Campus and Research Facilities



Note. Comparison of the 3 solutions 1) convenient campus transportation, 2) increasing the number of elevators and ramps for access to buildings, and 3) adding braille signage in and around facilities.

Appendix D

Results for Hypothesis 2

Table 2A

Table Showing Within Subjects Effects for the Barrier of Physical Support in Accessing and Using Research Facilities

Cases	Sum of Squares	df	Mean Square	F	p	η_p^2
Solutions: Barrier 2 – Physical Support	2.561	2	1.281	3.269	0.041	0.042
Residuals	58.772	150	0.392			

Note. Type III Sum of Squares

Table 2B

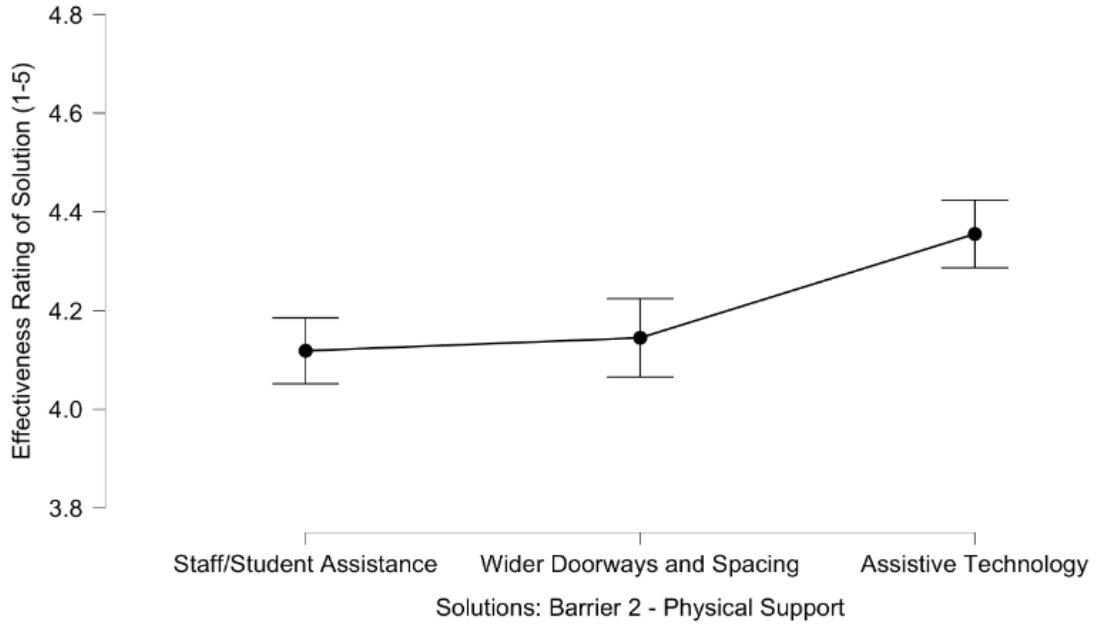
Table Showing Post Hoc Comparisons of Solutions to the Barrier of Physical Support in Accessing and Using Research Facilities

		Mean Difference	SE	t	p_{holm}
Staff.Student.Assistance	Wider.Doorways.and.Spacing	−0.026	0.102	−0.259	0.796
	Assistive.Technology	−0.237	0.102	−2.332	0.063
Wider.Doorways.and.Spacing	Assistive.Technology	−0.211	0.102	−2.073	0.080

Note. P-value adjusted for comparing a family of 3

Figure 2

Comparison of Solutions to the Barrier of Physical Support in Accessing and Using Research Facilities



Note. Comparison of the 3 solutions 1) having available staff, or volunteer students to assist in navigating the facilities as well as conducting research, 2) creating wider doorways and spacing between workspaces, and 3) adding AT to facilities.

Appendix E

Results for Hypothesis 3

Table 3A

Table Showing Within Subjects Effects for the Barrier of Accessing Disability Information and Accommodations From the Institution

Cases	Sum of Squares	df	Mean Square	F	p	η_p^2
Solutions: Barrier 3 – Information Access	7.272[a]	2[a]	3.636[a]	11.042[a]	< .001[a]	0.128
Residuals	49.395	150	0.329			

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated ($p < .05$).

Table 3B

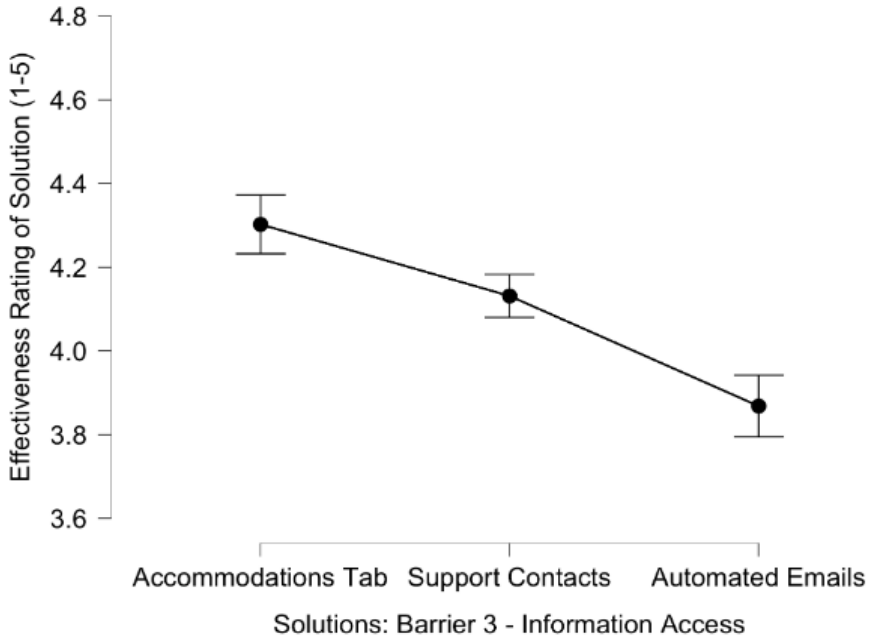
Table Showing Post Hoc Comparisons of Solutions to the Barrier of Accessing Disability Information and Accommodations From the Institution

		Mean Difference	SE	t	p_{holm}
Accommodations.Tab	Support.Contacts	0.171	0.093	1.837	0.068
	Automated.Emails	0.434	0.093	4.664	< .001
Support.Contacts	Automated.Emails	0.263	0.093	2.827	0.011

Note. P-value adjusted for comparing a family of 3

Figure 3

Comparison of Solutions to the Barrier of Accessing Disability Information and Accommodations From the Institution



Note. Comparison of the 3 solutions 1) add an accommodations tab for students with disabilities on the institution's enrollment web page so that the information is readily available, 2) assign accommodations support contacts through email to anyone who applies to the institution stating a disability, and 3) send automated emails with updates on disability policies, physical access, and opportunities to students with disabilities as it becomes available.

Appendix F

Participant Suggestions: Alternative Solutions to Barriers

Barrier 1: Physical Access to Campus and Research Facilities

"The bus that goes through the UBC town shouldn't be less frequent at night. Think about your demographic: latenight deadlines force into night owl routines, which means we need reliable and frequent transportation 24/7, all year, especially women, queer people, and especially BIPOC people, who are marginalized populations in Canada, in BC, and yes, EVEN AT UBC. Yes sure, the costs may be high, but think about the mental and physical costs on your students. If a woman is walking around campus in the middle of the night and she doesn't have any transport except walking, and she gets assaulted, that's on the assaulter, and that's on UBC not spending enough on safe transport options."

Barrier 2: Physical Support in Accessing and Using Research Facilities

"Increased LAB accessibility (lower lab stations, that can be 'rolled' under, etc)"

"AT technology that was in a computer program where labs where put into a virtual setting for people with limited movement"

"Making ASL a required first-year course for all students, and having ASL interpreters everywhere."

Barrier 3: Access to Disability Information and Accommodations

"As a student with disabilities, I wish someone had I could have declared that I was disabled on my application and that upon acceptance, someone would have reached out to me."

Appendix G

"The Confounders" Team Roles

Hayley: Head of Communications and Distribution

- **Proposal:** Article research, notes and literature review section, hypothesis, research question, conditions, measures, references list, and final edit
- **Distribution:** Emails to postsecondary and secondary institutions, follow-up phone calls, social media posts, personal messages to friends, created Appendix F document, head communication with AMS contacts and Dr. Zhao on issues
- **Presentation:** Introduction, background information, implications, recommendations, slide design, and final edit
- **Final Report:** Title page, introduction / literature review / psychological insights, recommendations, assisted with discussions section, and final edit

Albert: Statistics and Analysis, Presentation Lead

- **Proposal:** Research question, hypothesis, methods, conditions, measures, statistical analyses, edited everything else
- **Distribution:** Emailed postsecondary institutions, posted to social media accounts, personally messaged friends
- **Presentation:** Methods, analysis/results, implications, edited everything else
- **Final Report:** Executive summary, methods, results, discussion, appendix, edited everything else

Christie: Statistics and Analysis, Presentation Lead

- **Proposal**: Research question, hypothesis, methods, conditions, measures, statistical analyses, and final edit
- **Distribution**: Posted to social media accounts, personally messaged friends
- **Presentation**: Methods, analysis/results, suggestions for future research, edited everything else
- **Final Report**: Executive summary, methods, results, discussion, recommendations, appendix, edited everything else

Angelica: Chief Editor and Researcher

- **Proposal:** Article research, hypothesis, methods, conditions, statistical analysis, and final edit
- **Distribution:** Emailed postsecondary institutions, posted in multiple social media platforms, reached out to peers
- **Presentation:** presented the 'method: barrier conditions', edited peers' work, slide design

- **Final Report:** wrote the research question, hypothesis, and discussion part of the final paper, edited my peers' part on the final paper, fixed the reference page, copy-pasted the survey questions in the appendix

Wanting: Communications Team and PPT Presentation Designer

- **Proposal:** Literature/relative study research, Methods, Analysis, Research question, Hypotheses, final edit, and assisted in setting up meetings with Dr. Zhao
- **Distribution:** Emailed postsecondary institutions, posted to social media, assisted in setting up meetings with Dr. Zhao
- **Presentation:** Presented Research question, hypothesis, implications, designed slides and final edits
- **Final Report:** Executive Summary, fixed spacing and letter errors (Final edit)

All team members played crucial roles in all aspects of the project regardless of the title they were unofficially given. For example, everyone presented, everyone took on writing different parts of each assignment, then everyone would follow up, and edit together in zoom meetings. Every team member posted on their social media pages and helped with distribution as well as with contact between our professor, and teaching assistants. This was an amazing group to work with, and we can all agree we shared not only the hours of work that went into this project, but many laughs along the way! Go Team Confounders!