Academic Support for (Un)belonging: The Role of the First-Generation Office's Peer Tutoring Program in the Confidence and Academic Improvement of FGLI Students

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Literature Review

As a predominantly white institution (PWI), Dartmouth College only has a few students who identify as first-generation, low-income (FGLI) college students. Specifically, as defined by the Higher Education Act of 1965 and 1998, a first-generation student "[typically] has both parents [who] did not complete a bachelor's degree, or…[is] liv[ing] and supported by only one parent, [who] did not complete a bachelor's degree" (Laemmli, Grodsky, and Macgregor 2022). With a lack of parental guidance surrounding a college environment and discrepancies between students, FGLI students experience several adversities at higher institutions, attributing such disparities to cultural capital differences (Roksa et al. 2020). Furthermore, in a study that interviewed first-generation students, many described having lower GPAs than their peers and receiving less support and resources from their college (Romanelli 2020). Therefore, to mitigate the difficulties faced by FGLI students, the First-Generation Office (FGO) at Dartmouth serves to help FGLI students academically, socially, and professionally through exclusive events and the sharing of resources via their website, social media, and emails. One of the programs offered by the FGO is a peer tutoring program that matches FGLI students with other FGLI peers. Broadly, the courses with a higher tutor demand are STEM courses. Therefore, to assess the extent to which the FGO's tutoring program has remained beneficial to FGLI students, this literature review examines the importance of peer support and existing theories that link participation in a peer tutoring program with increased confidence and improved academic performance for FGLI students.

With many FGLI students finding such STEM courses significantly challenging due to a lack of exposure to content, it becomes apparent that a disconnect exists between the curriculum and overall support. Emphasizing the clear low academic achievement of FGLI students, a study attributes the distinction within educational outcomes to the *cultural mismatch theory*. The theory involves how, customarily, the college environment foregrounds independence; however, first-generation students remain socialized as interdependent, as seen with their connection to their background and community (Almeida et al. 2021). Researchers found that first-generation students perform significantly better academically in interdependent environments. Concerning the peer tutoring program offered, an interdependent-driven program would benefit students the most based on these research findings, and depending on other FGLI students as tutors would likely help students the most.

Additionally, the *student developmental theory* further stresses the transitions that FGLI students tend to experience, especially when entering an unfamiliar environment. Researchers concluded that a vital component of the approach is *developing competence* as they attain new skills that equip them with navigating the new environment (Abes 2016). Connecting to the First-Generation Office, the *student development theory* conveys the importance of allowing students to develop skills based on their experiences and providing them with the necessary resources where they feel comfortable because studies have shown that "resources allow FG students to adapt more rapidly and successfully" (Ivemark and Ambrose 2021). The peer tutoring program is one of many options allowing students to transition easily to Dartmouth.

First-generation students have an internalized sense of non-belonging before college, affecting their college experience and academic performance. Sense of belonging can be enhanced by various programs in college, such as social identity-based student organizations, supportive faculty, academic support services, and high-impact educational practices. For instance, students of color gravitate towards campus multicultural organizations to solidify their sense of belonging. The same results could be achieved by first-generation students participating

in organizations designed for them (Means and Pyne 2017). While some campus support services directly affect students' sense of belonging, academic support services and high-impact educational practices impact academic performance. Such programs could include peer tutoring, which raises retention and positively impacts academic performance (Nguyen and Nguyen, 2020).

From different programs targeted at increasing retention and reducing student dropouts, "programs involving peers as resources showed up particularly well. The most expensive programs were not more effective than cheaper ones, and size of the institution was not a factor in retention and dropout rates" (Topping 1996). In addition, the social facts of peer tutoring, such as having people from similar social groupings like age, race, culture, and overall background, create a more robust connection that is not based on professional roles, which increases students' sense of belonging and confidence and lowers anxiety leading to higher retention. Furthermore, "students who regularly attended the peer tutoring sessions obtained significantly better degree assessment outcomes" (Topping 1996). Students with higher attendance rates also had more favorable opinions of the program and positive course outcomes.

First-generation college students enroll in STEM fields at lower rates than their continuing-generation peers and are less likely to complete college with a STEM degree. STEM courses present a cumulative disadvantage because preparation in high school, such as coursework and performance, has been linked to higher STEM degree completion rates in college (Bettencourt et al. 2020). First-generation and low-income students starting high school were constrained in their pre-college STEM exposure and experiences. Compared to continuing-generation students because they are less likely to have access to rigorous math and science classes leading to lower test scores and lower preparation for college courses. The additional burden of many FGLI students working on campus is that they have less time to study (Bozick 2007). With many FGLI students finding such courses challenging, the courses with a higher tutor demand are STEM courses.

The research question–to what extent is the FGO's peer tutoring program improving confidence and improvement among Dartmouth FGLI students in STEM courses?– is designed to help address inequality in the STEM field for FGLI students and help FGO create programs that are more effective in assisting FGLI students in achieving their academic and social goals. This helps address the gap in knowledge because it specifically addresses Dartmouth Students and a Dartmouth organization and how effective and impactful it is. Even though STEM is where most first-generation and low-income students face severe challenges, most research out there generalizes all courses under academic performance. In addition, more research must address how affecting peer tutoring programs are for STEM courses.

Methods

Measures and Research Methods

For this study, we recommend using a survey method that employs both qualitative and qualitative methods. Specifically, we find it most helpful to run this study through a cross-sectional retrospective survey via an online program, such as qualtrics. This method has a few advantages over other ways, such as allowing the survey to be low-cost, which is vital to maximizing the FGO's fund for use on student programs. It also would allow for less time-intensive research, meaning less staff involvement in the research process and more time spent on running student programs. However, there are disadvantages to using this study method over another, like observational studies or interviews. The main disadvantage is the retrospective nature of this survey, which means we aren't getting real-time data from students as they are experiencing the effects of the FGO's peer tutoring program. An observational study would make observing students in the tutoring program and collecting more objective data more accessible. Likewise, with an interview, getting closer to participants and creating a more personal bond to gather more detailed and accurate responses would be possible. The main disadvantage of using the survey is this less personal collection of data and the collection of data after students have already been involved, meaning there is a possibility of decreased accuracy. Regardless, we found that the advantages of the survey method would be more in line with the FGO's needs and resources while still providing accurate data.

Our conceptual model for this study is relatively straightforward. The survey would measure the impact of the peer tutoring program on Dartmouth FGLI students, and to do so, we outlined our variables of measurement: Independent variable is FGLI identity, the dependent variable is feelings of confidence and academic improvement, and our mediating variable would be the participation in the program.

In terms of operationalization, our dependent variables will be operationalized through an improvement in grades throughout the course, in which participants will self-reported in terms of positive change, negative change, or no change. For feelings of confidence, students will also self-report using quantitative scales ranging from one to five. Additionally, we include short response questions to operationalize feelings of confidence further to get written accounts and testimonials about how specifically the peer tutoring program increased students' confidence and what parts assisted them most. Regarding our study procedure, we suggest starting with a purposive sample using lists generated by the FGO's data and then contacting these students to participate. Ideally, the study would only take a few weeks to run entirely.

Sampling and Recruitment

The target population for this study should be members of the FGLI community, ideally, people who have participated in the peer tutoring program: first-year students through seniors. For this reason, non-probability would be best because a random sample isn't necessary since we

are already focusing on a specific group of people. Additionally, it would be beneficial to choose members who haven't participated in the program to have additional data on how effective peer tutoring is. As for sampling, as mentioned earlier, we recommend purposive sampling as the method to use since it allows you to choose specific cases that represent the population. This would give more flexibility in the study; however, a downside would be that in selecting cases, certain participant experiences or backgrounds might be left out in deciding cases, and we might not get an accurate representation. The sampling frame would be constructed through a list of students from the FGO who fit the criteria of participation and identification. Participation in studies, specifically surveys, is usually low or hard to get; however, by telling students the purpose of the research and how it is meant to help improve the FGO's programs, it can be easier to ensure participation as this directly affects the resources and programs they have access to. Regarding compensation, the FGO could offer gift cards for participating or have a room where students can take the survey and then receive snacks. In terms of sample size, it would be difficult to know how many students are necessary for an accurate sample. However, having at least half or a third of the FGO community participate would be a good number to aim for, depending on how big the community is.

Interpretation of Data

Researchers–in this case, the First-Generation Office–will analyze the survey data collected from the FGLI community to determine the relationship between FGLI identity, participation in peer tutoring programs, and feelings of confidence and academic achievement. The quantitative data, such as participation rates and confidence level rankings, will be analyzed using descriptive statistics and data analysis to determine the significance of the relationship between the variables. The qualitative data, which will be obtained from short answers provided by participants, will be analyzed using content analysis to identify patterns and themes in the responses. They will use the improvement trend in grades to operationalize the dependent variable and determine if participation in peer tutoring programs significantly impacted grade improvement. The results interpreted from the data can give insight into the effectiveness of peer tutoring programs. The office can use this to improve the programs and better serve the needs of the FGLI community.

Ethical Considerations

As the Belmont Report outlines, three ethical principles protect research respondents and participants on a federal level: *respect for persons, beneficence,* and *justice. Respect for persons* involves allowing minors, incarcerated individuals, and those with mental challenges to have autonomy even when participating in a study. *Beneficence* emphasizes the well-being of participants through conducting a cost-benefit analysis to ensure that advantages outweigh costs, including the long-term effects. *Finally, justice* includes a determination that the study's results and outcomes do not negatively impact one particular group (social demographic) more than others. Researchers must follow all three principles to ensure that participants have autonomy and remain treated with dignity and fairness by researchers.

Each principle, however, has potential ethical concerns, as is the case with any research study. Because this research study involves participants with minoritized identities–first-generation and low-income–they likely feel uncomfortable and salient with answering specific questions or sharing their experiences with the researcher(s) as first-generation low-income students. To ensure comfort among all participants, the researchers must emphasize that the researchers and office will not share their responses outside of the First-Generation Office and that they can no longer participate in the study. In other words, the data and survey responses would only be available to owners and who they share it with: generally within the FGO, emphasizing *respect for persons*.

The researchers can also reiterate the purpose of the study: providing an understanding of the impact of the peer tutoring program and how the FGO can improve it for future students. Therefore, a more direct cost-analysis assessment (risk-benefit ratio) would be transparent to participants so they remain knowledgeable of their contributions' long-term impact, demonstrating *beneficence.* Another potential ethical concern includes gathering past information about which students participated in the peer tutoring program to request that they participate in the study. To ensure the information is not shared elsewhere, researchers will save any physical documentation in locked file cabinets and only use the First-Generation online account to access their data. Another step to solidify confidentiality when sending the survey is to ensure that the Google form does not collect respondents' emails.

Overall, because the responses would generally benefit the office, there is no justice concern as the First-Generation Office's primary goal is to help minoritized students on campus: those who identify as first-generation low-income college students. Safeguarding practices will remain implemented to solidify comfort amongst FGLI participants and ensure that their responses are kept confidential and that they receive informed consent before engaging in the study. To achieve informed consent, they will receive a consent form that further details the study's implications (found within the *appendix).* The option to no longer participate will exist throughout any part of the study.

Feasibility and Significance

Dartmouth's First Generation Office supports first-generation college students to thrive in and out of Dartmouth's classrooms. The Office aims to "empower" first-generation students to succeed in academics, social settings, and professional development. The office empowers students through programs. The office offers students academic support programs such as trial classes, peer tutoring, and mentorship. It also provides its students with social events that build a sense of community and hosts a diverse collection of programs, making it clear that the office is open to supporting students in whatever they need. Our research group recognizes the significant disparity between First Generation students and their peers in academic outcomes. According to a report by the Pell Institute, only 11% of first-generation college students earn a bachelor's degree within six years of enrolling in college, compared to 55% of students whose parents have a bachelor's degree. We believe that academic support is the most urgent among all the programs offered by the First generation office. Our research is collecting data to learn what aspects of First generation office programs have the most benefit on the academic achievement of First-generation students and what could be modified about current programs to maximize the benefit accrued by First-generation students.

Specifically, our research will collect data on the experiences of First generation students with peer tutoring. This winter term, the FGO has discontinued its peer tutoring program. The program has run in the past, so we know that a peer tutoring program is entirely possible. Our research intends to provide insight into how to structure the program to maximize students' benefit. We hope that our data can inspire the First Generation office to bring peer tutoring back and equip them with new understandings to optimize the program and empathize with the needs and experiences of their students.
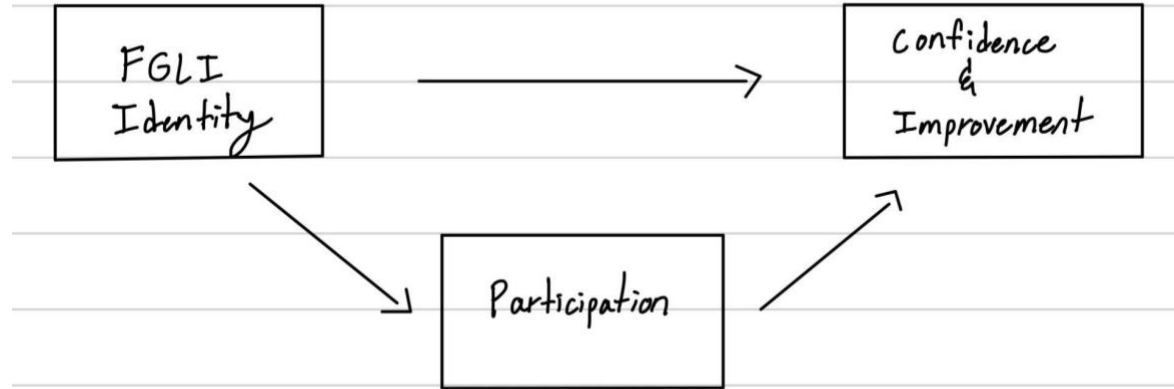
Our research is built upon in-depth surveys that allow First generation students to share the details of their experiences with peer tutoring. The data we are collecting is highly personal and potentially sensitive. We expect many students not to want to share their socioeconomic or academic status. The nature of our data thus causes us to expect a small sample size. Our population is a small portion of students who identify as FGLI, and our sample will be the portion of this group willing to share their stories. Because we foresee having access to a limited number of participants, our survey is thus collecting primarily qualitative data and intends to draw out each participant's unique interactions and opinions of peer tutoring and how it has impacted their academic career. By analyzing these experiences, we hope to uncover previously unrecognized factors that influence the effectiveness of peer tutoring programs.

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Appendix

Conceptual Model

FGLI Identity → Confidence & Improvement

FGLI Identity → Participation → Confidence & Improvement

<u>**CONSENT TO TAKE PART IN RESEARCH**</u>

02/2023. 09/09/2019

Dartmouth College

The Impact of FGO's Peer Tutoring Programs on Dartmouth FGLI Students' Confidence and
Academic Achievement
Principal Investigator:

You are being asked to participate in a <u>research study</u>. Taking part in research is <u>voluntary.</u>

<u>Study Summary:</u> The main purpose of this study is to assess whether the peer tutoring program offered by the First-Generation Office has positively impacted students. There are no risks associated with this study. The benefits include understanding the peer tutoring program's impact and how it may be revised moving forward.

Your decision to take part will not affect your academic standing or standing with the college. Please ask questions if there is anything about this study that you do not understand.

<u>What is the purpose of this study?</u>
The study aims to determine whether the First-Generation Office's peer tutoring program has helped FGLI students taking STEM courses gain confidence and academic achievement.

<u>Will you benefit from taking part in this study?</u>
You will not personally benefit from being in this research study.

We hope to gather information to help the FGO improve its peer tutoring program.

<u>What does this study involve?</u>
Your participation in this study may last up to one week, depending on whether we need to ask clarifying questions based on your survey responses. The survey should not take more than half an hour to complete.

<u>What are the options if you do not want to participate in this study?</u>
The alternative is that you do not take part in this study.

If you participate in this study, what activities will be done only for research?
You will fill out a survey that involves questions about your first-generation, low-income identity and the impact that the peer tutoring program had on you.

What are the risks involved with being enrolled in this study?
There are little to no risks involved with being enrolled in this study. It may happen, however, that you feel discomfort in speaking about your low-income and/or first-generation identities. If this occurs, please speak to the researcher; you can also decide to no longer participate in the study.

Will my data be deidentified and used in the future for other purposes?
Your survey responses data will be stripped of identifiers and used for future research. The Committee will review any future research that uses your data for the Protection of Human Subjects at Dartmouth College, which will determine if the research requires your permission or may be properly done without your consent.

Other essential items you should know:
• **Leaving the study:** You may choose to stop taking part in this study at any time. If you stop participating, it will not affect your standing with the College or the First-Generation Office.

• **Number of people in this study:** We expect 20 to enroll.

• **Funding:** There is no outside funding for this research project.

How will your privacy be protected?
1) The information collected about you as data for this study includes:
   - Socioeconomic status
   - First-generation identity
   - Opinions about the peer tutoring program and the First-Generation Office as a whole

Data collected for this study will be maintained indefinitely.

We are careful to protect the identities of the people in this study. We also keep the information collected for this study secure and confidential.

Google form responses will be shared only in the First-Generation Office.

Will you be paid to take part in this study?

Yes, a $25 gift card.

Whom should you call with questions about this study?

Suppose you have questions about this study or concerns about a research-related problem or injury. In that case, you can contact the research director for this study: Jackelinne Claros Benitez, at (929) 732-0174 during regular business hours.

Suppose you have questions, concerns, complaints, or suggestions about human research at Dartmouth. During regular business hours, you may call the Office of the Committee for the Protection of Human Subjects at Dartmouth College at (603) 646-6482.

CONSENT

I have read the above information about *The Impact of FGO's Peer Tutoring Programs on Dartmouth FGLI Students' Confidence and Academic Achievement* and have been given time to ask questions. I agree to participate in this study and will be given a copy of this signed consent form.

Jackelinne Claros Benitez is responsible for ensuring all participants in this study have <u>informed consent</u>. Claros Benitez may authorize other appropriately trained individuals to obtain informed consent and sign as 'designee.' These individuals must be listed in the CPHS Protocol Plus and Rapport. The individual signing below should be the individual obtaining consent.

Participant's Signature and Date   PRINTED NAME

I have read the above information about *The Impact of FGO's Peer Tutoring Programs on Dartmouth FGLI Students' Confidence and Academic Achievement*. I have been given time to ask questions. I agree to participate in this study and will be given a copy of this signed consent form.

Researcher or Designee Signature and Date   PRINTED NAME

Recruitment Flyer

[Flyer - SOCY 11](#)

Recruitment Email Template

From:
To:
Subject: Research Candidate Selection
Hi _____,

Dartmouth First Generation Office is sponsoring a research initiative to help improve the academic support offered to first-generation and low-income college students at Dartmouth College. We are reaching out to you today because we need your help. We are searching for students to participate in a short survey about their experiences with FGO academic support services. Your participation in this survey will significantly impact our efforts to support the FGLI student community and help FGLI students achieve greater academic success.

For your participation, you will receive _____.

Thank you for your consideration!

Operational Definitions
      Confidence: Self-perceived ability to successfully complete assignments in STEM courses at Dartmouth
      Improvement: Achieving greater measures of success (academic performance) in STEM courses after participation in peer tutoring programs

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In this survey, a "STEM course" is any course that satisfies the following distributives: SCI, MATH, COSC, ENGS, QDS

1. Have you ever taken a science, technology, engineering, or mathematics course (STEM) while attending Dartmouth?
   a. Yes
   b. No

2. Have you participated in the peer tutoring program offered by the FGO for a STEM-focused course?
   a. Yes
   b. No

3. Which of the following do you feel best identifies you?
   a. First-generation, but not low-income
   b. First-generation and low-income
   c. Not first-generation, but low-income
   d. Neither first-generation nor low-income

4. Did you participate in the First-Year Summer Enrichment Programs (FYSEP) offered by the FGO?
   a. Yes
   b. No

5. How many terms have you participated in this program for a STEM course (0 if you haven't participated)?

   Response options: 0, 1, 2, 3, 4, 5, or more

6. How many hours a term do you participate in a peer tutoring program at Dartmouth?
   a. 0
   b. 1-5
   c. 6-10
   d. 10+

7. Overall, for the class(es) you participated in the peer tutoring program, was there a positive or negative trend in your exam grades as the term went on?
                     Response options: positive, no significant change, negative
8. On a scale of 1-5, how confident did you feel in your STEM academic abilities before participating in the FGO's peer tutoring program?

                     Response options: 1-5 (1 being not at all and 5 being very confident)

9. On a scale of 1-5, how confident do you feel in your STEM academic abilities now?

                     Response options: 1-5 (1 being not at all and 5 being very confident)

10. On a scale of 1-5, how confident did you feel in your non-STEM academic abilities before participating in the FGO's peer tutoring program?

                     Response options: 1-5 (1 being not at all and 5 being very confident)

11. On a scale of 1-5, how confident do you feel in your non-STEM academic abilities now?

                     Response options: 1-5 (1 being not at all and 5 being very confident)

12. Have you participated in other FGO programs (community events, etc.) Please list below. (100 words max)

13. Do you think the peer tutoring program has improved your academic performance? Please explain. (100 words max)

14. What was the most valuable thing you gained from engaging in the peer tutoring program? (100 words max)

15. What suggestions do you have for improving the peer tutoring program, especially for STEM classes? (100 words max)

What potentially valuable measurements can be made from data collected in this survey?

Measurement 1
       X- axis: Hours spent participating in peer tutoring programs
       Y- axis: Change in academic confidence/ performance

Measurement 2
       X- axis: Participation in FYSEP
       Y- axis: Current academic confidence

Measurement 3
       X- axis: Participation in a peer tutoring program
       Y- axis: Current academic performance / confidence

Notes for interviewer while probing:
- Probe for covid impacts on performance
- When probing ask about positive changes in grades but not specific grades