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| Research Article

Peer mentorship and academic supports build sense of community and improve outcomes for transfer students

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ABSTRACT The experience of transferring to a 4-year college, especially in STEM programs, can be particularly challenging for students. While much of the onus for preparing students for transfer has been placed on community colleges, the 4-year institutions to which students transfer have critical roles to play. With this in mind, we established the Pre-transfer Interventions, Mentoring, and Experience in Research (PRIMER) program to support students transferring into the biology department at our university. The design of this program is based around the key elements of Schlossberg's Transition Theory, focusing on the support and strategies elements of the theory. Through a weekly academic skill course, peer mentoring, and informal academic and social supports, our goals were for students to increase their involvement in the campus community and to increase their use of academic support resources. We used qualitative and quantitative assessments to compare sense of community and use of campus resources between students who participated in our program and others. We found that students in our program strongly increased their sense of community during the semester compared to other students and used campus resources at a higher rate. Our insights from the PRIMER program can help others in developing programs to support transfer students in biology departments.

KEYWORDS transfer experience, peer mentoring, sense of community, transition theory, study skills

Students who transfer from a 2-year college to a 4-year university experience numerous challenges not faced by non-transfer students. Nationally, about 40% of the transfer population begins at a community college (1), and much of the research on the transfer experience has focused on these students. While 80% of community college students intend to complete a bachelor's degree or higher, about 31% of them transfer to a 4-year institution within 5 years, and only about 13% actually complete a degree (2, 3). This pattern is consistent across majors, including those in STEM. Among STEM students beginning a bachelor's program directly, 48% complete a STEM degree, and nearly 80% complete any degree within 6 years; biological sciences are no exception to this pattern (4).

One potential explanation for this gap between transfer and non-transfer student retention is the experience described as "transfer shock," a drop in GPA in the semester after transfer (5, 6). This experience is typically not due to academic preparedness, as community college STEM courses provide equivalent preparation as introductory courses at 4-year colleges (7). Rather, students often struggle with the norms and policies of their new institutions, including larger class size, less accessible faculty, and differences in expectations (8). Many researchers have tried to parse out the characteristics of students and educational experiences that lead to discrepancies in retention for transfer students (9–13), although no single set of factors has emerged from this body of research.

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Many colleges and universities have established programs to better support transfer students. Historically, the focus of reforms and interventions has been at the level of the 2-year college, which fails to account for the role that the 4-year institution plays in student success (14). Recommendations for supporting students after transfer have included skill workshops, peer support from successful transfer students, and mentorship (15). Transfer learning communities, where transfer students meet regularly to support academic skill development and discuss challenges, have been successful at supporting transfer students (16).

Our approach to supporting transfer students is based on Schlossberg's theory of adults in transition (17). This framework describes transitions as "any event or non-event that results in changed relationships, routines, assumptions, and roles" (18, p. 39) and notes that even people experiencing planned and positive changes need support. The authors provide four factors that influence how a person copes with the transition they are experiencing:

1. Situation: What type of transition is occurring? What else is going on at the time of the transition?
2. Self: What are the characteristics of the person in transition?
3. Support: What kind of community or help is available to the person in transition?
4. Strategies: What tools or resources does a person have that may help them deal with a transition?

The situation experienced by transfer students is similar in broad details: the change of academic institutions partway through the completion of a degree. The context of transfer may vary significantly from student to student, based on their pre-transfer educational experience, their family or financial situations, and their motivations for transferring (18).

A student's self includes social identities, personality, and beliefs, including and apart from their experience as transfer students. Numerous studies have demonstrated the ways that aspects of social identity, especially race or ethnicity and gender, influence a student's experiences in higher education (19–23). Also important are a student's mindsets about intelligence (i.e., growth oriented vs fixed), goals, and motivations for learning (24). Characteristics like social anxiety influence how students experience their academic environments (25), and community college transfer students are often at higher risk for anxiety than their peers (26).

A transfer student's social support system is closely tied to that students' integration into the campus community. Student involvement in an academic community is critical to college student retention, and social engagement fostering a sense of community is an important element of involvement (27). Students build their sense of belonging through both informal (i.e., discussions outside of class) and formal (i.e., participation in student organizations) social activities (28). Sense of belonging can be closely tied to belief that a student, especially a student of a marginalized identity, may be successful in an academic program (20, 29). At the community college level, a sense of belonging is often fostered in small classes where students are able to connect with faculty, and this sense of belonging to one's campus community can be disrupted following transfer to a much larger institution (30, 31).

Familiarity with strategies for coping with the transition is the final core area in the transition theory. These include the skills needed to be academically successful as well as the awareness and ability to use campus resources for self-improvement. Tools and behaviors that facilitated success at the community college may not be as effective at the transfer institution due to differing norms and expectations (8). These tools and behaviors are elements of cultural capital, the familiarity with the knowledge and attitudes that match institutional norms (32). Cultural capital derived from socioeconomic factors like race, gender, and parental education affects student persistence differently at 2-year and 4-year colleges (33). There are also elements of cultural capital that are derived from experience at a particular institution that transfer

students might lack (34); learning these institutionally centered skills and norms might be an important strategy for coping with a transition. Institutions may be able to help students increase their likelihood of using campus resources (35).

Based on this theoretical foundation and preliminary surveys on the needs of students at our institution (36), we developed the program Pre-transfer Interventions, Mentoring, and Experience in Research (PRIMER) to improve the outcomes of transfer students in the biology department of our institution. The scope of the program was limited to biology and biochemistry majors, as those are the majors housed in the department creating this program, with the idea that if successful outcomes could be found in these students, then this program could potentially be expanded to other departments. The goals and content of the PRIMER program were informed by Schlossberg's framework, but the program was not intended to be a test of this theory as the framework is largely descriptive. The program included three "levels" of interventions: biology course adjustments and advising opportunities for pre-transfer at a partner community college, mentoring and academic support for transfer students at the 4-year institution, and opportunities for transfer students to participate in research at the 4-year institution. Here, we focus on the mentoring and academic support level; the other two levels are described elsewhere (37).

This paper evaluates the effectiveness of the PRIMER mentoring and academic supports at increasing biology transfer student's knowledge and use of campus resources. We ask two primary questions:

1. Do mentoring and academic interventions increase a sense of community among biology transfer students at the level of the university and department (related to the support pillar in Schlossberg's framework)?
2. Can peer mentoring and targeted instructor guidance increase biology transfer students' use of academic resources (related to the strategies pillar in Schlossberg's framework)?

METHODS

Study population

East Carolina University (ECU) is a large doctorate granting university (R2; Carnegie Classification of Institutions of Higher Education) located in eastern North Carolina. Approximately 30% of ECU students (and 26.3% of biology students) transfer to the university; the majority of these transfer students began at 2-year colleges. In our study, "transfer students" were defined as those students who completed 25 or more academic credits at any institution other than ECU, including students whose transfer credits came from participation in early college high school programs. This more expansive definition was intended to capture all students who had the experience of transferring two semesters of college credit, therefore starting at the institution in at least 2,000-level courses, and who may have been interested in additional services.

Incoming transfer students with intended majors in biology or biochemistry were contacted multiple times by email and by phone during the period when course registration was open to encourage their participation in the PRIMER program. Additionally, students who had transferred during the prior semester and had struggled in their first semester (GPA <2.7) were contacted, and academic advisors were asked to encourage eligible students to sign up for the program during their second semester at the 4-year institution. Students participating in PRIMER were not given financial incentives but were given access to special advising, mentorship, academic supports, and research experiences. All aspects of the human subject research were approved by the Institutional Review Board at ECU (UMCIRB 18-001371).

PRIMER intervention

In this study, we focus on the tier 2 PRIMER interventions, a biology elective course for transfer students and a peer mentorship program. All students in the course (n = 36 over six semesters) participated in the program, and an additional 14 students received peer mentoring without enrolling in the course. Not all students completed all assessment instruments; relevant sample sizes for each instrument are listed below. Demographics of the students involved in these PRIMER interventions are included in Table S1.

The one-semester PRIMER course met weekly and was delivered either in-person or synchronous virtual meetings. The 12 class sessions focused on connecting students to their fellow transfer students and to the greater campus community. In addition, the course explicitly discussed academic skills (e.g., study strategies and time management) and the use of campus resources. A full schedule for a typical semester is included in Table S2. Students were asked for input on topic selections for many class sessions, so the course could be tailored to each cohort. Peer mentors were assigned to meet with each of the students involved in the PRIMER program. These mentors were initially selected based on transfer status, academic performance, participation in campus activities, and a successful interview, and in subsequent semesters, additional mentors were recruited from the population of students who participated in PRIMER as mentees. Students met individually with their mentors weekly and discussed campus resources, goal setting, time management, test-taking strategies, and other skills. Mentors shared weekly reports about these meetings, detailing the topics covered and student progress. The mentors underwent training for academic success coaching through the university's Pirate Academic Success Center (PASC) and spent part of their weekly meetings on academic skill lessons that had been designed by the center.

Data collection and analysis

Different data sources were used to evaluate each research question (Fig. 1). To address the first research question, we used a sense of community (SoC) survey (20, 28) and student reflections. For the second research question on resource use, we used data on actual resource use from the university's academic success center. All quantitative analyses were conducted in R (38), while qualitative analyses were completed in NVivo (39).

Sense of community

SoC survey

A sense of community survey was given to students at the start and end of the semester. The survey included three items from Hurtado and Carter (27, Appendix B) about belonging in the overall campus community as well as six questions focusing on belonging in the biology department from Smith et al. (19, p. 133). All nine items used a seven-point Likert scale ranging from "strongly disagree" to "strongly agree." Although these questions were originally from two separate surveys, we found that they had high inter-item reliability (Cronbach's alpha = 0.86), indicating that all items were measuring the same construct. Thus, we created a single SoC score as the mean of the nine items, ranging from 1 to 7. This survey also collected demographic data, including gender, status as a "person excluded based on ethnicity or race" (40), and first-generation college student status.

In addition to PRIMER students who completed both the pre-course and post-course survey (n = 31) as a PRIMER course requirement, we administered this instrument to three course sections of a 2,000-level genetics course as a comparison group; students were primarily students in biology or biochemistry majors. This population was chosen to represent students at a similar point in their academic careers as PRIMER students as well as being a population we expected to include transfer students. These students were incentivized to participate in the survey with either a small amount of course credit

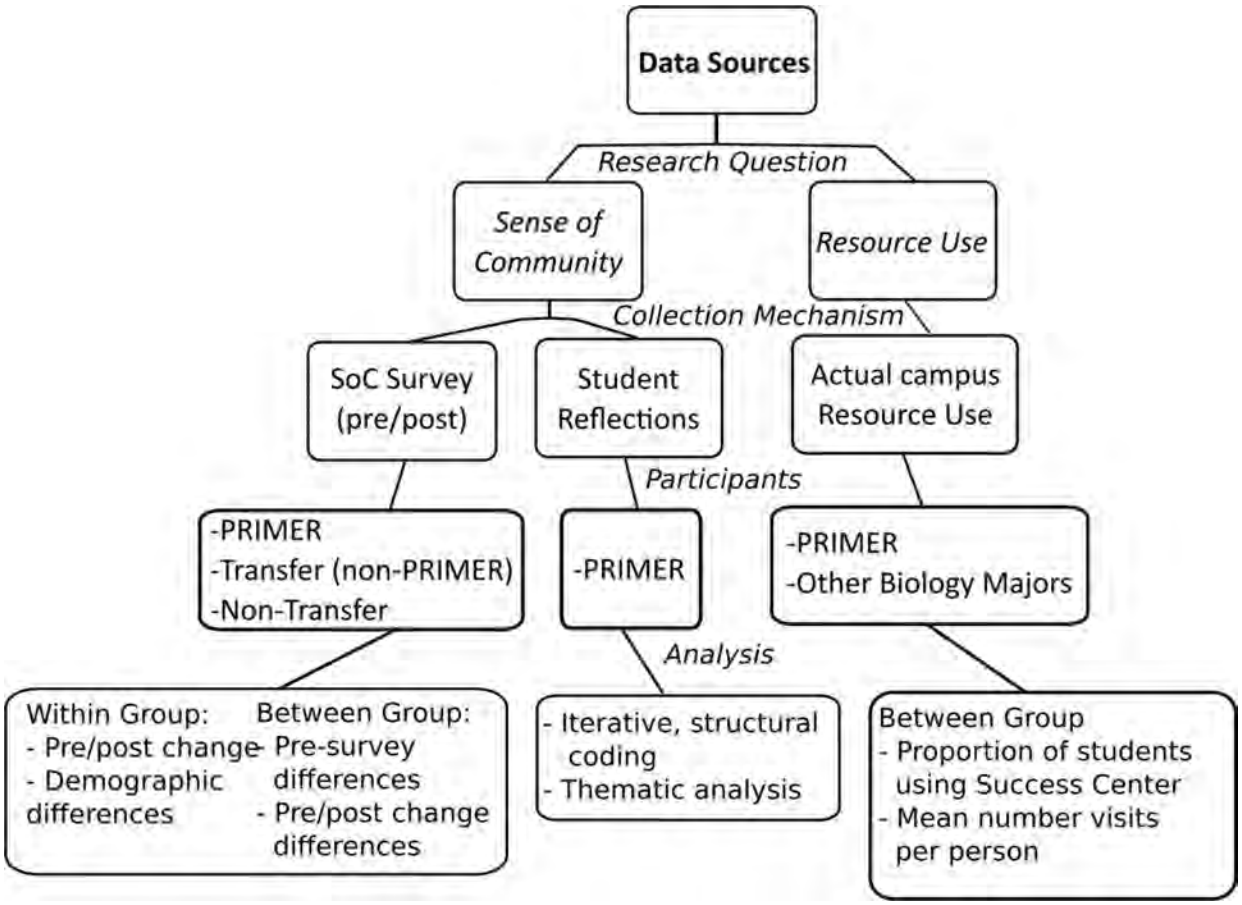

FIG 1 Overview of data sources and analyses used to address our two primary research questions. The SoC instrument is a combination of questions from Hurtado and Carter (27) and Smith et al. (19). Reflections on sense of community were collected at the end of the semester as an assignment in the PRIMER course. Actual student resource use was provided by the PASC, the campus tutoring and resource center.

or $10 gift cards (based on the genetics instructor's preference). Institutional data were used to classify respondents as transfer students (>24 credit hours transferred, n = 31) or non-transfer students (n = 116). Therefore, we had three groups to compare for SoC: PRIMER students (transfer students who participated in our tier two interventions), non-PRIMER transfer students (transfer students in the genetics course who did not participate in our tier two interventions), and non-transfer students (in the genetics course).

Within each group (PRIMER, non-PRIMER transfer, and non-transfer), we used Wilcoxon signed-rank tests to determine if students showed a significant change from pre- to post-survey. We also looked for differences among groups in their pre-survey scores and then in their change in SoC from pre- to post- survey using Kruskal-Wallis tests. While we collected data based on demographic differences and acknowledge that students will have different transfer experiences depending on their unique intersectional identities (19), our sample size was unfortunately too small to conduct any significant statistical analysis across the PRIMER students who presented different identities.

Reflections

At the end of the semester, PRIMER students were asked to write a reflection about their sense of community in the biology department. Students were asked to identify barriers to their sense of community as well as what would improve their sense of community at both the campus and department levels. Student responses (n = 25) were coded

iteratively using structural coding (41); the codes used are described in Table 1. Themes were identified inductively from the codes derived from the questions asked in the assignment prompt. Twenty percent of responses (selected alphabetically by filename) were coded by a second coder to determine interrater reliability (kappa = 0.88).

Campus resource use

We compared the student participation rate of tutoring and academic support services, reported by the campus academic services center, between PRIMER students (including students enrolled in the course and students receiving mentorship, n = 50) and a baseline rate based on other biology students within the same time frame (academic years 2019, 2020, and 2021). The baseline data available did not include additional information, such as transfer status, for included students. For each group, we aggregated the total number of tutoring and other academic support visits per student; we excluded visits that were required by the PRIMER program or similar courses. We also compared the use of web-based resources (Canvas sites) provided by the tutoring center. In both cases, we compared the proportion of students with at least one use recorded and the mean number of visits per person for these students using t-tests.

RESULTS

Sense of community

Survey

Changes in sense of community average score are illustrated in Fig. 2. At the beginning of the semester, there was no difference in SoC mean score between PRIMER students, non-PRIMER transfer students, and non-transfer students (P = 0.3646, Kruskal-Wallis test). By the end of the semester, however, the SoC scores of PRIMER students increased by an average of 0.59 points (P = 0.007, Wilcoxon signed-rank test), and PRIMER students' post-test scores were significantly higher than the other groups (P = 0.012, Kruskal-Wallis test). Among non-transfer students, there was no change in the SoC scores (P = 0.674, Wilcoxon signed-rank test) on the post-survey compared to the pre-survey, while among non-PRIMER transfer students, SoC scores decreased by an average of 0.55 points [although this difference was not significant (P = 0.127, Wilcoxon signed-rank test)].

Reflections

In their end-of-semester reflections (summarized in Table 1), students expressed a variety of feelings and attitudes around their sense of community. At the campus level, students were somewhat more likely to make negative (n = 8) or neutral (n = 7) statements about their sense of community compared to positive ones (n = 10). Their feelings about sense of community in the department were slightly warmer, with 12 students expressing positive feelings about being a part of the biology community versus 11 responses that were negative or neutral.

The biggest barrier students reported for their sense of community in the biology department was related to time since declaring a biology (or biochemistry) major. Seven students felt like they had not been a biology major long enough to feel like a part of the community; most of these students specifically noted that they had not taken any biology courses at ECU. Five students noted that the biggest barrier was a lack of contact, primarily with professors.

More students described barriers to feeling a part of the broader campus community. The biggest barriers were social: 10 students described having trouble making friends or connecting with their peers. Many of these students described themselves as shy, introverted, or anxious, or they attributed their social concerns to a failure to "put [themselves] out there," although two students noted ways that campus culture (e.g., frequent parties) made it more difficult to socialize. The move to virtual instruction during COVID-19 was the other major reason students struggled to find a place in

TABLE 1 Codes used for the analysis of student responses[a]

Category	Code	N	Example quote
Overview statements—ECU			
	Positive	10	"I have felt very great and even proud of being a pirate at ECU. I love how everybody at ECU such as faculty and staff and even students makes me feel part of the school's community."
	Mixed or neutral	7	"I kinda feel like a part of the ECU community."
	Negative	8	"I don't really feel like I am apart of ECU. I know I am a student and I do my classes but the school spirit isn't really there."
Overview statements—biology			
	Positive	12	"As far as the biology department goes, I absolutely feel like I belong."
	Mixed or neutral	5	"The ECU biology department is something I really don't know much about yet."
	Negative	6	"And as being part of the ECU's Biology department, I honestly sometimes feel out of place."
Barriers—ECU			
	Academics	3	"I haven't really gotten involved in too much on campus because my focus has been on my studies."
	Campus culture	2	"It feels like everyone is just so worried about partying and not their classes."
	COVID	8	"I think the only barrier I still have is the pandemic itself."
	Identity	2	"As a military veteran, and a young father I do fall into some different demographic categories than most students. I am 27 years old. Between being a few years older, and at an overall different stage in my personal life than many of the students (particularly freshman and sophomores) I do oftentimes find it slightly difficult to connect with other students."
	Residential life—concerns	4	"I still feel very much homesick and I also am in the stage of getting adjusted to my life on campus."
	Social concerns	10	"As someone who suffers with anxiety it's hard for me to just put myself out there like that and explore the different groups here on campus."
	Work, life, school balance	1	"...feel like time management is a barrier impacting my sense of community in the ECU community, because classes and driving the bus accumulates most of my time."
Barriers—biology			
	Biology courses	4	"...is due to me not having any Biology classes this semester, so there wasn't really any chance for me to get involved."
	Contact with faculty	3	"It is intimidating to reach out and contact professors I don't know."
	Goals or future plans	1	"A lot of biology students had different plans than I did and I couldn't find where I fit in."
	Identity	1	"I also feel like a lot of the people in the STEM field are expected to be really smart."
	Insufficient time in major	3	"...it sort of does not help that I am so new into it, I am still trying to get my footing into the Biology program."
	Lack of contact with department	2	"It's very rare to hear anything about events or such."
	Trouble getting involved	3	"Participation is a major barrier that is impacting my sense of community in the ECU Biology department, because I want to be more involved, but not sure in what."
Supports			
	Campus resources	2	"PASC reps calling to make sure I was aware of tutoring sessions that were available. "
	Extracurricular	7	"I've volunteered a couple of times through some clubs that I've joined which has been fun and I've met some really cool people doing that"

(*Continued on next page*)

TABLE 1 Codes used for the analysis of student responses[a] (*Continued*)

Category	Code	N	Example quote
	Faculty support—general	9	"As far as being a part of ECU Biology, the professors have been great and always willing to work with and help their students"
	Interest	1	" I have always loved Biology specifically microbiology."
	PRIMER class	12	"I feel like the Primer program has welcomed me onto the campus and makes me feel like I belong in the Biology department, not just a student who is majoring in Biology."
	PRIMER mentor	5	"My PRIMER mentor has been phenomenal in helping me cope with setbacks as well as helping me learn about opportunities that I had not considered."
	Residential life	3	"I am in the Biology Living Learning community which has positively impacted my sense of community. "
	Social network on campus	11	"I was able to meet new classmates. Eventually, we have all became friends, which is definitely great considering at first, I didn't believe I suited well to the environment"
	Specific individuals at ECU	4	"Dr. [S] is the director of that and now he's my advisor. Honestly Dr. [S] has been helpful in my transition"
Desires and expectations for future			
	Optimistic or goal oriented	17	"I am hoping to become involved in research over the next few semesters so I am optimistic that this will lead me to making more connections with other students and faculty at ECU."
	Requests	6	"I feel like professors should talk more about events or clubs that are happening in the chem/bio department and if students want to join or learn more about it."

[a]Code frequency is reported as the number of responses that included that code at least once.

the community: eight students focused on the pandemic or their online classes as the primary barrier to becoming more integrated.

Other barriers were more individual. Four students mentioned long commutes or living off-campus; three students focused on academic struggles that made them feel like they might not belong at the college. Only two students mentioned aspects of their identities; both students highlighted being military veterans and being older than other students as their primary barrier.

The majority of students (14 of 25) listed the PRIMER course or mentorship program as an important support to foster their sense of community. More broadly, having a supportive network of people on campus, whether faculty (n = 9), peers (n = 11), or other individuals (n = 4), seemed to be very important to students with a more positive sense of community. While lack of participation in clubs or student organizations was a very common barrier, seven students described positive experiences in participation in extracurriculars.

Campus resource use

PRIMER students used tutoring and other academic support services at a higher rate than biology students as a whole. PRIMER students were significantly more likely to use tutoring services at the university PASC at least once during the period of data collection (Fig. 3): 39.3% of all biology students accessed these services, while 64% of PRIMER students had at least one visit ($P < 0.001$, Welch's t-test). Study websites for courses were also a popular academic resource. More than 30% of non-PRIMER biology students visited one of these sites at least once, while 80% of PRIMER students logged at least one visit ($P < 0.001$, Welch's t-test). Of students who used these sites at least once, there was no difference in number of visits between PRIMER and non-PRIMER students (Fig. 3c and d).

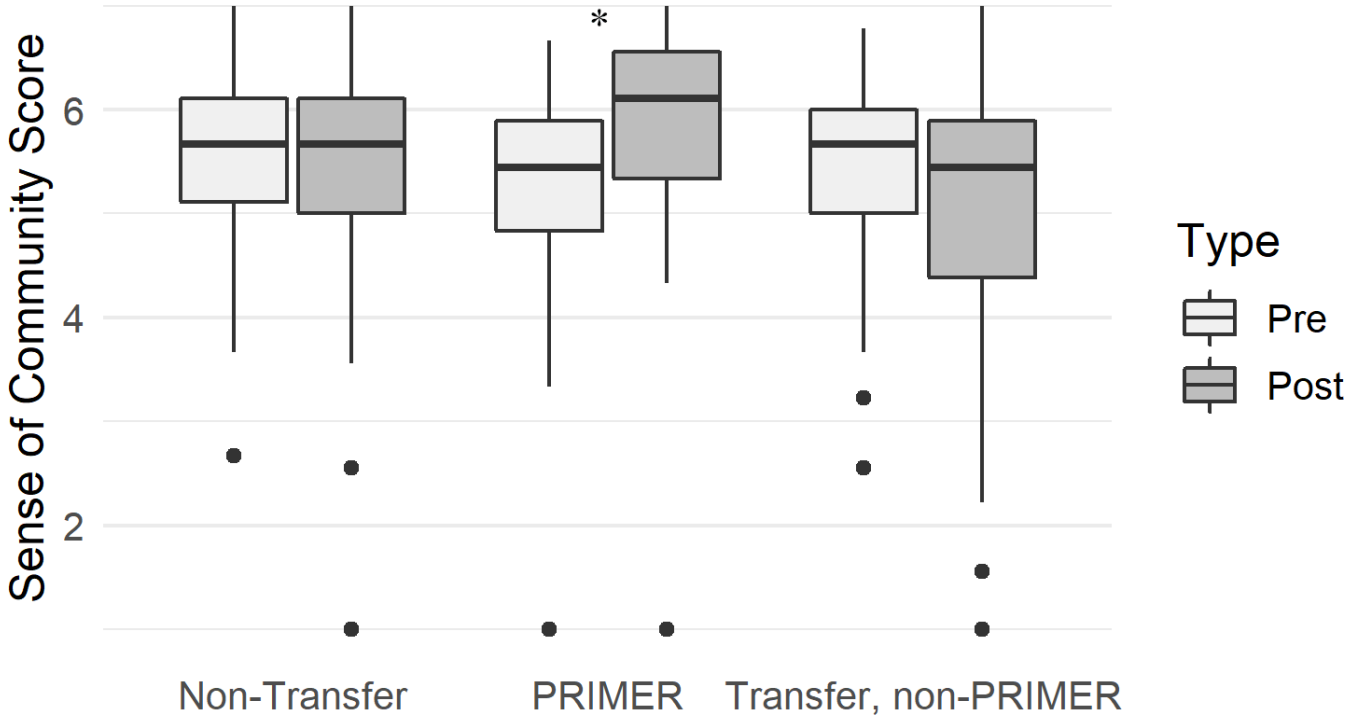

FIG 2 Sense of community scores significantly increased for PRIMER students, but not non-transfer students or other transfer students. Pre-test scores were not significantly different among the types of students (Kruskal-Wallis test, $P = 0.36$), but the change from pre-test to post-test was significantly higher only in PRIMER students ($P = 0.001$).

DISCUSSION

Our goal in establishing the PRIMER program has been to increase the success of transfer students in biology, in part by bolstering two key components of Schlossberg's theory of adult transition: the social and community support students have on campus and the academic and other strategies needed to be successful. In both these cases, we observed improvements among PRIMER students that indicate our program was impactful.

Support

Our strongest outcomes were in fostering a sense of community among students in our program. PRIMER students showed significantly increased sense of community after one semester in the program when compared to other students, especially other transfer students. A pattern of decline in sense of belonging without intervention has been observed in first-year college students (42), and the perception that one might not belong (often due to race or gender) often leads to lower sense of community (20, 29). The students in the PRIMER program, however, regularly experienced interactions with a diverse group of peers which have been shown to bolster sense of belonging for many college students (43).

Sense of community was deeply tied to social experiences on campus. In their written reflections, the most common barrier to feeling like a part of the community was a struggle in getting involved or making friends, and the most common supports were strong relationships with others on campus (including those they met through the PRIMER program). Several students specifically mentioned their PRIMER mentor as an important source of support, fitting with existing literature on the benefits of peer or near-peer mentorship in fostering a sense of belonging (44). Interestingly, most students who identified social concerns as a barrier in their written reflections focused on themselves as the source of the barrier; they indicated that they were too "shy" or "introverted," or they needed to "put themselves out there" in order to make friends.

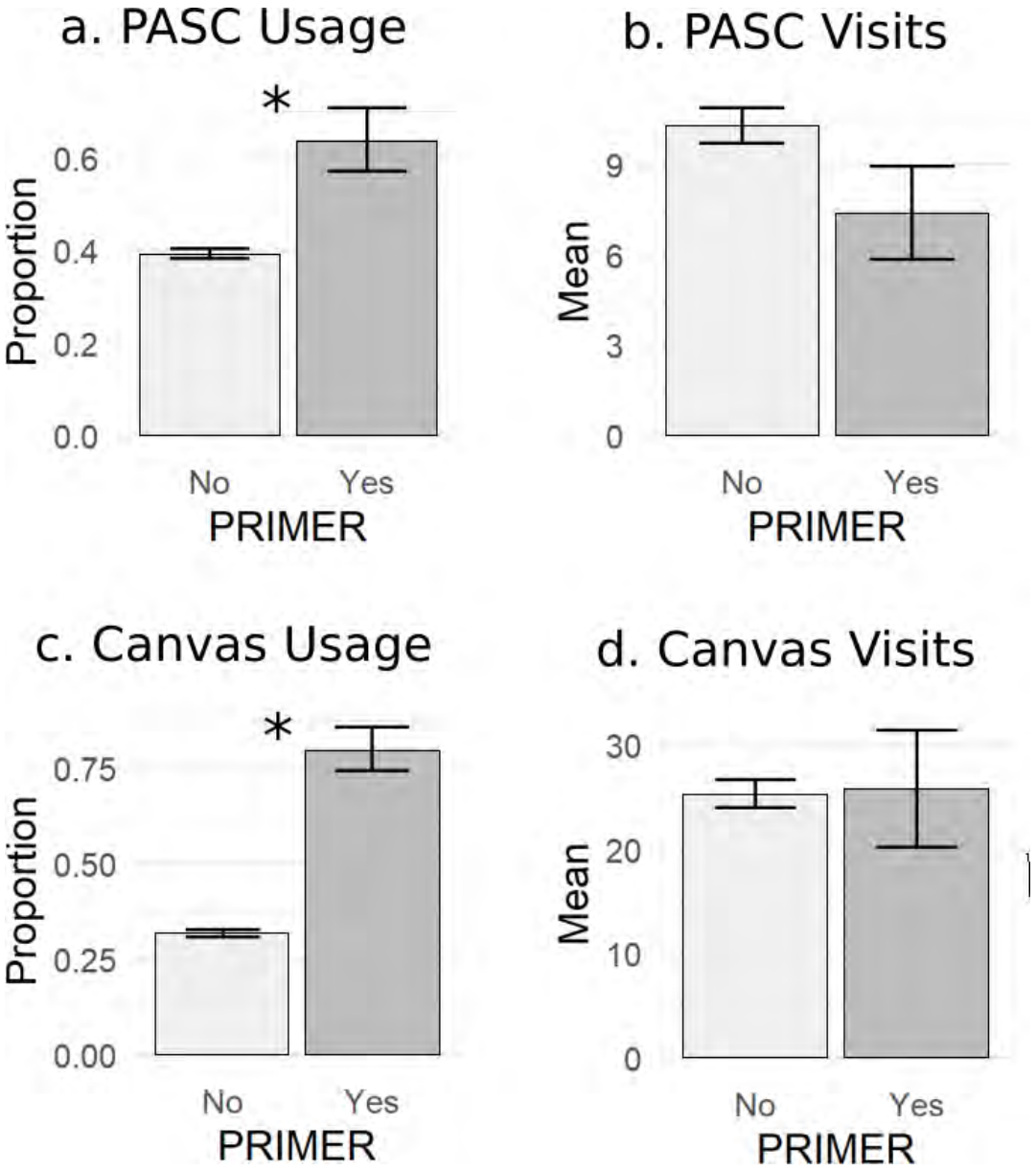

FIG 3 Comparison of academic success center usage between PRIMER (n = 50) and all other biology students (n = 2199) from Fall 2019 through Spring 2022. Plots a and b represent use of tutoring, study skills, study groups, and other "live" services. Plots c and d represent visits to course-specific tutoring websites, typically implemented in Canvas. Usage (a and c) is the proportion (with standard error) of students using the service at least once and is significantly higher for both academic success center and web resource use ($P < 0.001$). Panels b and d are the mean (with standard error) number of visits for students who used a service category at least once and are not significantly different between PRIMER and other biology students.

While some work has investigated the relationship between mental health disorders like social anxiety and the college experience (45, 46), there has been limited research on the interaction between personality characteristics like introversion and sense of community. One study showed that introverted students may experience more challenges participating in extra-curricular activities or other aspects of campus life (47). Additional research is needed to understand the best ways to support students' social concerns, especially as evidence shows that social supports are a key component of fostering self-efficacy around transfer (48).

Research into the interaction between sense of community or belonging and aspects of identity has typically focused on characteristics like race (28, 42, 43), gender (20), and

first-generation college status (49). In our study, none of these aspects of identity were raised as barriers to sense of community in student reflections. In the two instances where identity was mentioned, it concerned students' identities as older students, veterans, or parents. Reduced sense of community among student veterans has been well documented (50–52), but our results suggest that there are still gaps in support programs available. Sense of community among older students and student parents has been less frequently studied, and these populations may be important to target for research and support.

Strategies

We were especially interested in the effect of our program on student use of other academic resources. Mentorship programs like ours have shown increased participation in voluntary self-improvement activities among college students (35), and building relationships with faculty and staff help increase social capital among groups like first-generation college students (53). In this study, we found that PRIMER students were significantly more likely than a baseline population of other biology students to use tutoring and other academic support resources at least once beyond the requirements of the PRIMER program. While it is possible that the mentorship provided by the PRIMER program led to this increased likelihood of using a campus resource, it is also possible that students who chose to participate in PRIMER were already more likely to pursue academic supports like tutoring. Of those students who used an academic support service once, however, PRIMER students were no more likely to use these resources again than were non-PRIMER biology students. Therefore, any interventions that require or encourage use of academic support services may play an important role in reducing barriers to students (transfer or otherwise) accessing these services and may increase their likelihood of using these services in the future.

Limitations

One of the primary limitations of this study was that our intervention was an opt-in program that ultimately reached a small portion of eligible students. This left us with a small, potentially skewed sample of students who were motivated to participate. A recent meta-analysis suggests that this is a common problem for interventions designed to increase STEM retention or interest (54). Future research in transfer student retention would ideally target a broader, less self-selected group.

Our recruitment efforts, although not the actual delivery of the intervention, were strongly impacted by campus restrictions due to COVID-19. Enrollment in the program was largest in the first semester when the program was offered; this was the only semester where recruitment occurred at large, in-person events (pre-pandemic). Delivery of the course online, however, did not seem to impact the efficacy of the program. Indeed, when given the opportunity, some students preferred an online option as it reduced commute times or other logistical hurdles, a benefit identified by other studies of distance learning both before and due to the COVID-19 pandemic (55–57).

Considerations for transfer student success programs

The benefits we observed from the PRIMER course and mentorship program provide considerations for others developing similar programs. Most significantly, transfer students may benefit from having regular contact with both peers (especially other transfer students) and supportive faculty, reflecting previous work in a broader student context (42, 58). Our results also highlight the complexity of barriers to belonging at a college or university. Social concerns (ranging from shyness to social anxiety) may weigh heavily on some students, and interventions that include strategies for dealing with social situations may be beneficial. Sense of community or belonging may also be impacted by identity in complex ways; in our program, students were more likely to highlight being older than other students, being a veteran, or being a parent as barriers

to community, rather than more traditionally studied aspects of identity like race or gender. Finally, opt-in or voluntary programs may not reach many of the students who could benefit. Thus, making programs mandatory or providing incentives to participate may allow students to reap the benefits even if they would otherwise be hesitant to opt in.

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Jennifer Teshera-Levye, Data curation, Formal analysis, Investigation, Visualization, Writing – original draft, Writing – review and editing | Heather D. Vance-Chalcraft, Conceptualization, Data curation, Funding acquisition, Investigation, Methodology, Project administration, Supervision, Writing – original draft, Writing – review and editing

ADDITIONAL FILES

The following material is available online.

Supplemental Material

Supplemental tables (jmbe00163-23-S0001.pdf). University demographic information and PRIMER course syllabus.

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