Navigating Competitive Transfer Pathways: Transfer Student Experiences in Health and IT Majors

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The health care and information technology (IT) fields demand a more diverse set of qualified graduates who can appropriately fulfill the needs of the varied communities they serve. Currently, community colleges serve as stepping stones for diverse student populations and groups. When it comes to pursuing Health- or IT-related fields, community college students are often drawn to those majors with positive career placements and outcomes. Such majors include nursing, business, engineering, and education. However, at many colleges and universities, these majors are considered limited access, meaning that they have strict academic admissions criteria and accept only a limited number of students each year. This study seeks to understand community college student experiences and perceptions related to health or IT transfer pathway careers and success. We specifically examine Health and IT transfer pathways for students studying at a public community college in the Midwest (MidCC) to a large public research institution in the Midwest (MidU) and the faculty and staff working with these populations of students.

Keywords: transfer, STEM pathways, health majors, IT majors, transfer success

INTRODUCTION

Currently, there is a national drive to increase the number of students pursuing degrees in science, technology, engineering, and math (STEM) fields (National Science Board, 2018; Wang, 2016). As one specific example, Health and Information Technology (IT) fields are seeking a more diverse set of qualified graduates who can appropriately fulfill the needs of the varied communities they serve. Community colleges serve as critical pathways for those interested in pursuing a career in STEM (Bailey et al., 2015; Wang, 2016). Moreover, community colleges are known for offering a pathway into higher education for racially

minoritized students, low-income students, first-generation college students, adult learners, and students with disabilities (Malcom-Piqueux, 2018; Wang, 2016).

This study explores the experiences of community college students who were interested in transferring or recently transferred from a small, public community college in the Midwest (Midwest CC) to a large, public university in the Midwest (Midwest U). We sought to examine STEM transfer pathways, specific majors in Health and IT, and how higher education institutions can better improve pathways for transfer students interested in Health and IT careers.

Previous research with community college-based samples illustrates how helpful institutional support can be for students pursuing STEM careers (Jackson & Laanan, 2015; Starobin et al., 2016). However, while 80% of first-time community college students aim to earn a bachelor's degree, only 25% of community college students transfer to a four-year institution (Baker, 2016). Among students that do transfer, 42% earn a bachelor's degree within six years of college entry (Wang, 2016). Within most universities, many STEM majors are considered "limited access," which means they have strict academic admissions criteria and accept only a limited number of students each year. Musoba et al. (2018) found that community college transfer students often faced challenges with the level of academic performance that would be required to enter limited-access majors, and did not have a realistic estimate of their personal likelihood of being accepted into such a major. As a result, many students continued to "cling to their chosen major" for several semesters after being denied admission, eventually resulting in at least some students leaving the university before they earned a degree (Musoba et al., 2018, p.716).

Community college students who successfully transfer may experience challenges in their psychological, academic, and environmental adjustments to the new setting (Laanan, 2001). The new university environment may be perceived as unwelcoming, unsupportive, competitive, or unfriendly (Jackson et al., 2013). Many transfer students report experiencing limited interactions with faculty members, feeling lost within larger classroom environments, and perceiving the classroom to be more competitive (Jackson & Laanan, 2015). However, within STEM fields, these challenges may be exacerbated by the highly structured curriculum these majors require (Zhang, 2019). Unlike liberal arts courses, which are often intentionally set up for transfer and offered regularly year-round, many STEM major courses are highly linear and sequenced (Wang, 2020). For example, less flexibility in course offerings can also delay the time towards transfer. Additionally, course credits earned at the community college may not always transfer to the university context. When course credits are not transferrable to the university environment nor apply to the student's academic goals, a student's time to degree may be extended. This can ultimately impact a transfer student's adjustment into a university context and delay their trajectory since STEM courses are so highly structured (Jackson & Laanan, 2015). Transfer students may need more support from programs, mentors/advisors, and campus initiatives to help them acclimate to new academic environments (Walker & Okpala, 2017). Cepeda et al. (2021) found that transfer student capital (TSC), or institutional knowledge accumulated to support the transfer process, along with social support and the student's level of self-efficacy work in tandem across both sending and receiving institutions to support transfer student success. Therefore, it is imperative to understand transfer students' experiences throughout the entirety of their transfer process.

LITERATURE REVIEW

There is a dearth of literature explicitly exploring Health and IT transfer pathways from community colleges to universities. Therefore, we approach this review of literature as a way to situate the current study. First, we explore the need to increase enrollment in Health and IT programs within community colleges. Next, we delve into the institutional supports and challenges within STEM programs at community colleges more broadly. Finally, we examine the literature centered on STEM transfer within a university context.

Increasing Community College Enrollment in Health and IT Programs

In the 2016-2017 academic year, community colleges in the United States awarded over 186,000 associate degrees in health programs, which is approximately 20% of all conferred associate degrees (National Center for Education Statistics, 2018). Approximately one-third of medical students attend community colleges (Talamantes et al., 2018). This finding suggests that community college students in health majors transfer to universities to obtain a baccalaureate degree and eventually pursue medical school. For this reason, community colleges serve as fertile grounds for medical schools as these campuses typically have a diverse student pool (McFarland & Pape-Linstrom, 2016). According to the U.S. Department of Labor (2019), it is expected that healthcare occupations will increase by 14% in 2028, which amounts to the fastest increase for all occupations (STEM and non-STEM) combined. Healthcare programs within community colleges are popular due to the potential of career aspects (Li, 2021). Therefore, community college students interested in pursuing STEM fields "embody a vital pool for the country's STEM future" (Wang, 2016, p.545).

By contrast, there is a gap in literature explicitly focused on community college students interested in majoring in a second STEM area: computer science and IT. Higher education institutions are experiencing a decline in IT and computer science enrollments, likely due in large part to the decrease in majors who are women and/or from racially minoritized backgrounds (Tupper et al., 2010). Because community colleges support diverse populations, recruiting students to major in IT, then transfer, is a strategy that community colleges can implement (Jaggars et al., 2016). Tupper et al. (2010) developed programmatic efforts to increase the number of women and racially minoritized students enrolled in technology majors at The Community College of Baltimore County. These strategic efforts included assigning mentors to students and offering course reimbursements for completing their first credit in math or computer technology (Tupper et al., 2010). Through institutional support and monetary incentives, the college was able to increase its student transfer rates in computer science majors. As a result, community college and university administrators, faculty, and researchers must continue to investigate the experiences of students within IT pathways to find ways to increase enrollment and completion rates and support these students.

Institutional Supports and Challenges Within STEM Programs at Community Colleges

Research on community college students in STEM emphasizes how institutional support can be beneficial for students interested in pursuing STEM. For example, Starobin et al. (2016) found that community college advisors and faculty were influential on women students and their motivation to pursue transfer and obtain a STEM degree. Additionally, transfer students in the community college environment were socialized to engage in one-on-one formal and informal interactions with faculty members and engage in a smaller classroom and nonthreatening or competitive STEM environments (Jackson & Laanan, 2015). Engaging with peers and faculty members positively socialized students in STEM fields, which in turn encouraged them to obtain their degrees and achieve professional goals. However, the scholarship also indicates that community colleges present institutional delays towards students' transfer pathways in STEM fields. To be specific, community college students may be delayed from transferring due to dissatisfactory advising, imperfect program alignments with universities, and college resource limitations (Packard et al., 2012). Therefore, community colleges must work on the efficiency and effectiveness of STEM transfer pathways because they "can have numerous returns for both the nation's workforce and for the lives of those interested in pursuing careers in these fields" (Packard et al., 2012, p.671).

STEM Transfer Pathways Within a University Context

Community college transfer students may perceive universities as unwelcoming, unsupportive, competitive, or unfriendly (Jackson et al., 2015). Within a university context, transfer students have limited interactions with faculty members, experience larger classroom environments, and perceive the classroom to be more competitive (Jackson & Laanan, 2015). Students enrolled in STEM majors experience challenges that can hinder their academic success, such as inaccurate advising, greater financial need, rigid curriculum structures, and a decrease in diversity in the field (Wang, 2020).

Over the last few years, there has been an increase in advocacy efforts among statewide policymakers to support STEM education (Li, 2021). The President's Council of Advisors on Science Technology [PCAST] (2012), released a report providing recommendations on how to develop and expand STEM transfer pathways from the 2-year to the 4-year programs. To increase the retention rate of those in STEM programs, institutions are encouraged to do the following: (1) reevaluate the first two years of STEM education in college, (2) provide students with the tools needed to excel, and (3) diversify the pathways of STEM degrees further (PCAST, 2012). More research is needed to understand how students are experiencing STEM transfer pathways and progressing toward these STEM-related degrees.

PURPOSE

The purpose of this research study is to explore the experiences of students in Health and IT transfer pathways from an urban community college in the Midwest (which we call "Midwest CC") to nearby large public research institution (which we call "Midwest U"). The research questions guiding this study are:

1. What are the experiences of transfer students interested in Health and IT majors?
2. What are the current barriers or challenges for transfer students who have an interest in Health and IT pathways?

THEORETICAL FRAMEWORK

The theoretical framework that informed this study is Schlossberg's (1981) transition theory. When developed, this model offered a conceptual framework for assessing clients and generating strategies for adults in transition (Schlossberg, 1981). Since then, this theory of transitions has expanded into higher education scholarship on college student development (Patton et al., 2016). Transitions are defined as "an event or non-event that results in a change in assumptions about oneself and the world and thus requires a corresponding change in one's behavior and relationships" (Schlossberg, 1981, p.5). Although transitions vary from person to person, common transition themes may include leaving something familiar (such as when transitioning from a community college to a university), finding one's way, and a sense of loss from what has been left behind (Anderson et al., 2021). Self-perception heavily contributes to this theory because a transition exists only if it is defined by the individuals experiencing it (Goodman et al., 2006; Patton et al., 2016). Overall, the transition model is composed of three major parts: moving in, moving through, and moving out (Goodman et al., 2006).

Moving In

First, it is imperative to identify transitions to further understand the context and impact of the transition. Currently, there are three types of transitions: (1) *anticipated transitions*, which are expected or predictable, (2) *unanticipated transitions*, which are nonscheduled or nonpredictable, and (3) *non-events*, which are transitions that are expected but do not occur (Goodman et al., 2006). By identifying a transition as one of these three types, one can then understand the context of the transition (e.g., *moving in*). According to Anderson et al. (2021), contextual factors like gender, socioeconomic status, or ethnicity, must be considered because they may influence people's lived experiences. In addition, when considering context, the relationship of the individual to the event resulting in change is also central to our understanding of transitions (Anderson et al., 2021). More importantly, it is essential to understand the impact of the "degree to which a transition alters daily life" (Patton et al., 2016 p.37). Because positive and negative transitions produce a form of stress on an individual, multiple transitions can compound the stress (Patton et al., 2016). Students experience numerous transitions during transfer, such as changes in class sizes, campuses, living situations, and social groups, leading to multiple potential sources of stress.

Moving Through

Understanding the type of transition, context, and impact can support the transition process, taking stock of coping resources. According to Goodman et al. (2006), there are four major factors, the 4 S's, that

influence an individual's ability to cope with a transition: situation, self, support, and strategies. In addition, "no matter where one is in the transition process, no matter where the transition is, one deals with it differently depending on the availability of these resources" (Anderson et al., 2021, p.41). The *situation* variable calls for the examination of what is happening through the following factors: trigger, timing, control, role change, duration, previous experience with a similar transition, concurrent stress, and assessment (Anderson et al., 2021). Next, the *self variable* considers factors that are important to the individual through two categories: personal and demographic characteristics and psychological resources or aids to coping with the transition. Following, the *support* variable considers social support from intimate relationships, families, friends, and institutions and/or communities people are a part of. Effect, affirmation, aid, and honest feedback are functions of support that can help individuals cope with a transition. Finally, the *strategies* variable refers to three coping strategies individuals may partake in: modifying the situation, controlling the meaning of the problem, or managing stress after it has occurred (Anderson et al., 2021). How one cope with the stress of transition (which we established is common in transfer students) can depend not just on accurate assessment of the situation, but also on the strength of one's self and other support networks.

Moving Out

With relation to these coping strategies, individuals can then take charge of their transition. Four coping modes can be employed: information seeking, direct action, inhibition or action, and intrapsychic behavior (Anderson et al., 2012). Intrapsychic behavior refers to "the mindsets individuals use to resolve problems that arise...which include denial, wishful thinking, and distortion, and enable people to carry on" (Anderson et al., 2021, p.90). Goodman et al. (2006) share that people rarely experience one single type of stressful transition. Instead, they experience a variety of events that intersect with transitions. Therefore, individuals' ability to handle stressful situations and transitions may look different across time and may be handled differently across situations (Anderson et al., 2021). For transfer students, employing different coping strategies may lead to different academic outcomes. Focusing on denial or wishful thinking, for example, could result in delayed time to graduation as the student becomes focused on admittance to their preferred program (Musoba et al., 2018). Focusing instead on information-seeking and direct action could result in a smoother transition to the university environment and a more direct path to graduation.

Overall, transition theory offers us a lens to examine how transfer students experience their transition (*move-in*) within a new academic environment. Through the understanding of students' transfer experiences, we can then identify how transfer students *move through* and *move out* of challenges across the entire transfer process.

METHODS

We applied a constructivist grounded theory approach (Charmaz, 2014) to understand individual experiences and perceptions related to students' transfer pathways in Health or IT. The constructivist grounded theory allows researchers to generate a theory that connects to a problem or research question. This study examined the transfer pathway experiences from an urban public community college in the Midwest (Midwest CC) to a nearby large public university (Midwest U). We sought to interview four subsets of participants: (1) students who already transferred to Midwest U from Midwest CC and are in a limited-access Health or IT major, (2) staff members at Midwest U who work closely with this population of students, (3) current Midwest CC students interested in transferring to a Health or IT major at Midwest U, and (4) staff members at Midwest CC who work closely with this population of students.

Recruitment and Procedure

Purposeful sampling was used to identify information-rich cases to gain an in-depth understanding of transfer experiences (Patton, 2002). We collaborated with administrators at both Midwest CC and Midwest U to send recruitment interview e-mails to prospective participants. Participants who were interested in participating in an interview scheduled appointment meetings through an online scheduling system. We

conducted one-on-one, semi-structured Zoom interviews. There were two different interview protocols for students and staff members. Interview protocols for students included questions that explored campus and major selection, transfer preparation, and campus life experiences. Interview protocols for staff members explored professional experience, programmatic information, transfer student preparation and matriculation, and collaboration across Midwest CC and Midwest U. Only student participants were offered a $25 gift card as an incentive.

A total of 31 interviews were conducted for this study. This study was split across the following three groups: students who have already transferred to Midwest U from Midwest CC and are in a Health or IT major (N = 15), current Midwest CC students interested in transferring to a Health or IT major at Midwest U (N = 10), and staff members at both Midwest CC and Midwest U (N = 6).

Analytical Approach

In alignment with grounded theory, we employed three coding phases: initial coding, focused coding, and theoretical coding (Charmaz, 2006). Our analysis of the interview data began with initial line-by-line coding. Through the construction of our initial codes, we sought to gain an understanding of the information we had, instead of attaching an apriori theory to the information (Charmaz, 2014). Next, we engaged in focused coding to sort through the initial codes generated (Charmaz, 2014). Focused coding allowed us to think about which initial codes made the most sense analytically, helping us categorize our data (Charmaz, 2014). Lastly, we engaged in theoretical coding. Theoretical coding conceptualizes how codes may relate to each other and may be integrated into a latent theory (Charmaz, 2014). In addition to coding, we engaged in memo writing. Memo-writing is a crucial part of grounded theory because it prompted us to continue data analysis, draw connections across codes, and crystallize directions to pursue (Charmaz, 2014). Through our coding and memo-writing processes, we identified challenges transfer students experience and the ways they *move in, through,* and *out* of their transfer experiences.

RESEARCHER POSITIONALITY

According to Charmaz (2014), constructivist grounded theory acknowledges that researchers construct the theories and cannot separate their experiences from the research or analysis. For instance, Charmaz (2014) argues that:

> *Neither data nor theories are discovered either as given in the data of the analysis. Rather, we are part of the world we study, the data we collect, and the analysis we produce. We construct our grounded theories through our past and present involvements and intersections with people, perspectives, and research practices (p.17).*

Highlighting the role of the researcher within a study demonstrates that a researcher's experiences and frameworks impact how research studies are conducted, completed, and disseminated. Therefore, we offer our positionalities to illustrate how our experiences impacted our engagement with this study.

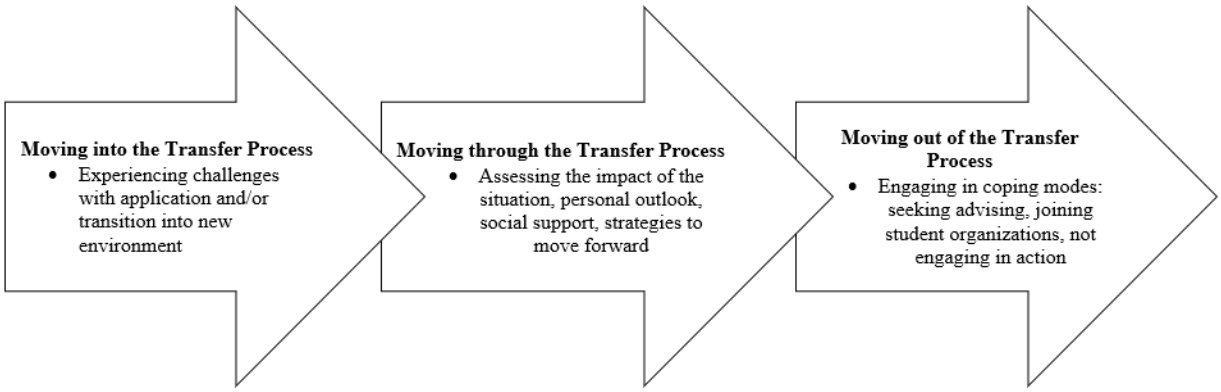
Rebecca is a fourth-year Ph.D. candidate in Higher Education and Student Affairs and has had prior professional experience working in California Community Colleges within the First Year Experience and Guardian Scholars programs. Her own identities as a Woman of Color and first-generation college student informed the lens through which she engaged in this study to think critically about how institutional practices influence transfer students' experiences. Igdalia is a third-year Ph.D. student in a Higher Education and Student Affairs program and has prior professional experience working in Educational Opportunity Programs and other Special Support Programs within the California State University (CSU) system. As a first-generation college student, she has first-hand experience with what it means to not only pursue higher education but also support students who come from low-income and educationally disadvantaged backgrounds, especially those students who are pursuing STEM fields. Melissa is a Professor of Psychology with a primary appointment at a large university. Since 2008, Shanna has directed research studies focused on college student success, with an emphasis on community college and transfer students.

Her research informs her belief that both sending and receiving institutions should be responsible for identifying and addressing systemic barriers to student success.

FINDINGS

Findings from this constructivist grounded theory study revealed that transfer students experience both academic and personal challenges during the transfer process. We organize our findings to describe students' challenges and the resources they utilized to cope with their transitions. The Transition Model of Community College Transfer Students in Health and IT (see Figure 1) offers a visual representation of how transfer students experience challenges in the transfer process and examples of ways in which they may move *through* these challenges. We embed participant quotes as part of our headings for these themes to further depict their experiences. The three themes we identified are: (1) "I am going to try again and again until they accept me": Transfer commitments to a Health or IT major, (2) "It just didn't count": Getting Accepted into the major and transfer credit applicability, and (3) "Midwest U is not very sensitive": Students with marginalized identities and discrimination. Additionally, although we interviewed staff, we center student narratives and quotes throughout this particular paper but include quotes or perspectives from faculty and staff that align with students' experiences.

FIGURE 1
TRANSITION MODEL OF COMMUNITY COLLEGE TRANSFER STUDENTS IN HEALTH AND IT



"I am Going to Try Again and Again Until They Accept Me": Transfer Commitments to Health or IT Majors

As Midwest CC students prepared to *move into* the transfer process by indicating an intended major and undergoing Midwest U's application process, they expressed how stressful the idea of transfer was. Overall, Midwest CC students shared feelings of anxiousness as they planned to *move into* the transfer process in Health and IT because of their perceptions of existing in a larger campus environment, increasing classroom sizes, and lacking a sense of belonging on campus. For example, one student shared their experiences talking to their peers about the transfer. They said, "So many [students] at Midwest CC were pretty nervous about going to Midwest U because it's a much bigger school." Another student shared how intimidating it was *moving into* a new academic environment. They stated,

> "[My transition to Midwest U] …it was exciting but also intimidating. I felt like an imposter…like I didn't belong at the same time. Here I am. 26 years old, and I'm just now getting here while all these other kids are 18 or 19. I remember being in high school and I had to do my FAFSA by myself because my father had passed away and my mom was

> working like 10 jobs to support us. It was exciting [to be at Midwest U] but also intimidating."

For some students, academic transitions can come as a shock. In this student's case, they realized that they were much older than their peers. When considering the transfer process, this student mentioned that the traditional college-going age of these students was 19. This student's insights and frustrations about *moving into* a new academic environment as a nontraditional student poignantly illustrate anxious feelings concerning the transfer process. When students feel like an imposter, their self-efficacy to succeed may lower, and these feelings may limit their help-seeking behaviors from others to *move through* and *out* of the transfer process. Though this specific student was nervous about the transfer process, they decided to continue to pursue transfer and their STEM degree at Midwest U.

When deciding on pursuing STEM pathways, students in this study acknowledged the competitive nature of Health and IT majors at Midwest U and their relatively low acceptance rates. While assessing potential challenges, like being denied admission into their major, students identified strategies to continue to *move through* the transfer process. For example, some students considered a backup STEM major that would still support their intended career path. However, like Musoba et al. (2018), we found that many were committed to their Health or IT major and, after being denied admission, applied again during the following admissions cycle. For example, one student shared,

> "I applied to Midwest U before and got rejected [into their health major]. I am the type of person who if I want to be somewhere, I am going to try again and again until they accept me. I didn't have a backup plan because I feel like when I set my mind to something, I'm going to do everything I can to complete my goal and not give up. I started this journey in 2015 and it is 2021. I still haven't given up."

The conceptualization of switching majors or having a backup major was perceived as "giving up" on their career goals. The competitive admissions decisions within these Health and IT programs illustrate a threat to students' ego or sense of self. When a student is denied admission, they may perceive this decision as a denial of their dream or future path. How a student copes and responds (i.e., resilience versus resignation) can lead to polarizing outcomes. In our study, Midwest CC students demonstrated their determination to stick to their desired major and find ways to better strengthen their applications for the next application cycle. Another student shared, "[If not accepted to Midwest U] I would go to an advisor and ask them how I can strengthen my application to see if I can do better next time...I do not have a backup major. If you want it that bad, you are going to do what you got to do." Midwest CC students displayed strong elements of self-determination and resiliency to continue to *move into* the transfer process because of their desire to obtain their bachelor's degree and pursue a specific career path.

However, students were continuing to apply to low-admittance majors with highly structured coursework. This suggests a potential delay in their time to degree and time to career. When considering forms of support for the transfer process, students acknowledged that they would meet academic advisors to ensure that they were on the right track. It is important to note that advising at Midwest CC is not mandatory. One Midwest CC advisor shared, "Our students are not required to have advising meetings. Honestly, I think it's a staffing issue. We would need to have many, many more bodies as advisors to make that happen." Therefore, students are not required to meet with advisors before registering for classes or transferring. If Midwest CC students do not visit their advisors, they may be missing the messaging of the competitive admission requirements or limited acceptances to these majors.

Similarly, one health advisor shared how challenging it was for a student who was dedicated to getting accepted into a health major at Midwest U, even though they retook courses to increase their GPA and meet the program's minimum GPA requirement. They said,

> "I can think of one person right now who's graduating next semester. This kid took human physiology four times, and I wanted to tell them, you should just change your major. Don't

> put yourself through this class. They finally got the grade, and we admitted them, and it worked out in the end. Sometimes that happens. They just kind of stick around and want to finish their major."

Overall, as transfer students cling to their chosen Health or IT majors, this indicates their dedication to their future career prospects. However, because Health and IT majors often limited access, they have strict academic admissions criteria and accept only a limited number of students each year.

"It Just Didn't Count": Getting Accepted Into the Major and Transfer Credit Applicability

Transfer students experienced a myriad of academic challenges as they transitioned into a new academic environment. For example, some transfer students were accepted into Midwest U, but not in their Health or IT major choice. Additionally, there were transfer students who were accepted into their major at Midwest U, however, their credits did not seamlessly transfer or apply to their degree progress.

Accepted Into Midwest U But Not Their Major

Due to specific programmatic requirements or the nature of limited access to Health and IT majors, some students were accepted into Midwest U but rejected from their specific major. For example, within one of the health majors we investigated, students are admitted if they meet the minimum qualifications: a cumulative 2.5 GPA and completion of six pre-requisite courses with a C- or higher. If transfer students do not meet these requirements, they sometimes apply to Midwest U in another major or are funneled into the undecided major. They are then encouraged to raise their GPA or complete prerequisites before applying to the health major once again. One student described their experience getting accepted into Midwest U but not within the health major due to these requirements. They said,

> "It's one thing wanting to be admitted into the program and another process to get accepted into your program…Initially, I went into health, but there was a determination that my GPA does not merit that program. So, I started as undecided, and I did that for a semester or two. And then from that point, I applied for the health program, in which my GPA had been fine-tuned somehow, and was able to get admission into the program."

This student experienced being admitted into Midwest U but not their major, requiring them to further assess the situation. Because they wanted to continue pursuing their health major, they met with an academic advisor and took courses that were still relevant to the health program while they attempted to raise their GPA. However, they also took additional elective courses which did not apply to their degree program. Thus, the time taken to raise their GPA to meet their health major requirements extended their expected graduation date by one semester.

Advisors were able to reach out to students who were not accepted into the health major, offering suggestions to retake courses or work on improving their GPAs. Most students will eventually be accepted into the program if those changes are made, as another advisor from a health major stated,

> "More than likely [a transfer student doesn't get admitted], because they didn't pass a course that they needed to be eligible…I often will send up a follow-up email and say, 'Hey, all you got to do is repeat this class and apply again and we'll admit you.' Trying to make them aware and educate them about why they weren't admitted, and then that way they know that they can come back if they'd like."

However, if a student's GPA is too low, they often select backup majors such as psychology or biology. Students learn about selecting a backup major during their transfer orientations and from emails from advisors. Unfortunately, when students take or retake courses to raise their GPAs because they are not accepted into their specific major, there may be a chance that their time to degree is extended.

Accepted Into Midwest U But Not Their Credits

Additionally, we identified inconsistencies with credit applications specifically within the IT pathway from Midwest CC to Midwest U. To go into detail, transfer students who major in IT at Midwest CC are offered two associate degree options: an Associate of Science and an Applied Associate of Science (AAS). The AS degree in the pathway is designed to prepare students to transfer their coursework seamlessly to Midwest U, while the AAS degree is designed to support students entering the workforce after receiving the degree. Unfortunately, this distinction is not always made clear to Midwest CC students who are interested in majoring in IT. Therefore, if a student obtains an AAS degree, many of their courses are not transferred to their degree program at Midwest U. One student shares their challenges with credit inapplicability,

> "When I was at Midwest CC, there was a mention that most of the classes you take there would transfer to Midwest U with very few problems. That did hold up to be true, but not for all of them. I didn't get every course credited...I took a few classes like HTML as a language and Python as a language, which Midwest U doesn't have direct correlations to. Four or five classes didn't count towards Midwest U's curriculum. It's also not something you normally take as an entire course at a general university because it's too specific. But I have had to use the knowledge from the class in my computer science classes. So, I've still found it helpful. It just didn't count for credit at Midwest U per se."

Fortunately, for this specific student, their expected graduation date was not delayed because they took relevant courses at another university, before attending Midwest CC. However, transfer students who pursue AAS degrees may experience an extended timeline to a degree. According to Midwest U staff within IT majors, students transferring with an AAS would need at least six semesters, and likely more, to complete the pre-requisites and major requirements of the degree at Midwest U. They shared that when Midwest CC students transfer to Midwest U, the IT program is, "pretty much going to take three years…because of how courses are structured and how long it takes to get through the prerequisite path." Another IT advisor shared how frustrating this can be for students. They said, "It is unfortunate when students have maybe spent two or three years at another school [Midwest CC], and they come here and learn that they have six more terms to complete this major. It's a frustrating conversation for the students…but that is the reality of the major." These findings demonstrate the lack of transparency across Midwest CC and Midwest U's advising offices and articulation agreements to support transfer students to avoid delayed time to a degree due to credit inconsistencies.

"Midwest U Is Not Very Sensitive": Students With Marginalized Identities and Discrimination

In addition to experiencing academic challenges with the transfer process, students with marginalized identities also experienced personal challenges, such as discrimination, as they transitioned into a new academic environment. One health major student shared how their Midwest U instructor was contributing to false narratives about medical practice in Africa. They said,

> "We have very mean instructors. People just want to give bad examples of Africa. I'm from Africa. What are you talking about? Do you know? They're talking about things that don't even happen there. They think Africa is a village, and they bring up a small thing that this instructor learned overnight, and they want to come and give false information in class. And students vibe the instructor up. Some things are hurtful. So, you can't stand up to your instructor and say, 'Hey, that's not true.' I feel like Midwest CC was more sensitive...Midwest U is not very sensitive to people's race and cultures."

This student was in an uncomfortable situation in which they were harmed by the instructor in front of their entire class. Because their peers were supporting the instructor's accounts, these students felt like they

could not stand up to and correct their instructor. This specific situation demonstrates the ways instructors can cultivate an unwelcoming and harmful environment for students with marginalized identities.

After experiencing this situation, this student assessed the social support available to them to be able to move forward and cope with this challenge. They shared their experiences with another one of their instructors, and this student was able to find and join a student organization for Students of Color on campus. They stated,

> "I shared [my experiences] with one of my instructors who is Black. I stayed after class, and I was like this is what I'm going through. She's the one who told me to join this [student organization] group. So, when I joined the group, we learned from other people's experiences. So, it's not just me…"

This group demonstrated to be a space in which the student realized that they were not the only ones experiencing micro or macro aggressions and cultivated a sense of belonging on campus.

Another health student at Midwest U also shared their harmful experiences with being questioned about their disability accommodations by instructors. They shared, "I'm registered with the Disability Office, so [faculty] have to be supportive. But sometimes they're so weird about it. With my disability letter, they have been flexible. Sometimes they're like, 'Well are you sure you need that?' And I'm like 'Yes, I have it for a reason." Because this student has an official document declaring the need for accommodation, they assessed their situation and decided they felt comfortable speaking up for themselves when their instructors were questioning the legitimacy of their accommodation. Still, these students felt unsupported by their instructor due to their disability, creating an unwelcoming and unfriendly environment as they moved *through* a new institution.

DISCUSSION

This study sought to understand transfer students' experiences in Health and IT pathways from one community college to a large-research institution in the Midwest. Our findings suggest that transfer students in Health and IT experience both academic and personal challenges as they plan to transfer to a new institution. In alignment with transition theory, transfer students experiencing challenges examined their *situation*, considered *self-variables* that were important to them, sought out *support* from academic advisors on campus, and found *strategies* to help strengthen their application for the next application cycle (Anderson et al., 2021).

As our first theme illustrates, students acknowledged the challenges with competitive admission requirements within Health and IT pathways. Despite the competitive acceptance rates, students remained committed to pursuing their intended majors. Similar to Musoba et al. (2018), we found that students were adamant about applying to their intended major again the following year if they did not get admitted during the first admission cycle. When students were denied admission, they continuously clung to these limited-access majors and waited to apply again—even though this decision extended their time to a degree significantly. Students described not having or wanting to create a "backup plan" because their intended major was the only option for their career goal. Therefore, selecting a new major was viewed as "giving up" and not an option. Instead, students sought out support from advisors to better their applications for the next admissions cycle. This finding offers implications for community colleges and universities. For example, universities can work towards expanding limited-access programs by increasing the number of seats available within these competitive programs over time. This can allow community college students the opportunity to continue to pursue their intended major without waiting to apply for the following cycle. In addition, community colleges and universities must be in conversation with one another about calling attention to alternative major pathways students can take that will guide them toward similar career aspirations. Many transfer students were clinging to their majors to pursue a specific career in the future. However, institutions can work together to help advisors present examples of open-access major pathways that can offer similar career opportunities, which will avoid extending time to degree. Lastly, institutions

can also invite alumni to serve on panels and discuss their career paths after majoring in an alternative major.

When transfer students were accepted into Midwest U, they experienced the challenges of being denied admission into their specific major. Therefore, they were then funneled into an undecided or open access major at Midwest U. For transfer students who were accepted into their major, they experienced challenges with their credits not transferring or counting towards their degree progress, ultimately prolonging their time to degree. Research shows that STEM fields often have structured curricula and follow a linear sequence pattern (Zhang, 2019; Wang, 2020). This leads to less flexibility in the types of courses that apply to a degree plan. Students also shared the lack of transparency surrounding GPA requirements for Health and IT pathways and the required pre-requisite courses needed to continue their major coursework at Midwest U. This finding lends support to Packard et al.'s (2012) claim that imperfect program alignments and dissatisfactory advising practices can present delays in the transfer process. One student shared that they did not meet the minimum qualifications to be admitted to the health major, so they were encouraged by their advisor to take other courses to help raise their GPA. Although they took additional courses at Midwest U, these courses did not end up applying to their degree plan. Students also experienced the lack of distinction between transfer or non-transfer associate degree pathways within IT. The lack of knowledge on this distinction led to inconsistencies with credit applications and added additional courses to take at Midwest U. The compounding challenges from rigid curricular structures, competitive admission requirements, and articulation agreements ultimately extended transfer students' time to degree. Delays in the transfer pathway can potentially lower degree completion and inhibit STEM transfer pathway success. Therefore, community colleges and universities must partner to improve articulation agreements to ensure specific courses will transfer and apply to a student's degree progress. Additionally, advising should be mandatory across both institutions in which advisors must explicitly make clear distinctions about transfer pathways, which courses will or will not transfer, and the time to degree. Overall, it is up to institutional agents to support students in understanding articulation agreements and the various pathways that exist on the respective campuses they serve.

Furthermore, findings from this study suggest that a student's environment plays an important role in shaping how students transition from community colleges to universities, especially those interested in pursuing Health and IT transfer pathways. In addition to academic challenges, we found that students with marginalized identities experienced personal challenges related to discrimination. Within this study, some students experienced unwelcoming environments from their Health and IT instructors due to their disability or nationality. A student was questioned by their instructors about the legitimacy of their disability. For transfer students, university environments may already seem unwelcoming, unsupportive, competitive, or unfriendly (Jackson et al., 2015). In this specific case, the instructor questioning their disability added another barrier to this student's academic success and cultivated an unsupportive environment. Another student felt uncomfortable when another instructor offered inaccurate comments about Africa. STEM pathways are recognized to be men- and white-dominant fields and not always inclusive of women and Students of Color (Wang, 2020). In such situations, it is important that instructors create inclusive and safe spaces for students in their classroom, so that students feel they belong. By creating inclusive classroom environments, students can learn how to engage with students who may share different cultures, identities, and backgrounds as them. Forming support networks with faculty, staff, and peers earlier on can also lead to better ways to learn how to handle different forms of racism in the classroom. Moreover, examining how micro or macro aggressions are dealt with in STEM classrooms can help improve diversity and inclusion efforts on these campuses.

CONCLUSION

Community college students interested in STEM have the potential to move the country's STEM future forward (Wang, 2016). Preparing students to obtain a baccalaureate degree and become future scientists is imperative for the future of the U.S. economy (Jackson & Laanan, 2015). This research study contributes to the discussion about how higher education institutions can address the needs of transfer students in STEM

pathways. Our study indicates that community college transfer students need institutional support and transparency in transfer requirements across community colleges and universities. Our results share the perspectives of transfer student experiences to provide a more nuanced understanding of how to better support students' college transitions (i.e., moving *in*, *through*, and *out*). More importantly, this study offers several implications for community college and university administrators, student affairs professionals, and faculty to support transfer student success overall, particularly within STEM fields. To widen the pipeline into health or technology-related careers, institutions need to ensure they are providing spaces of academic support and cultivating welcoming environments for community college students.

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