A Mixed Methods Case Study of Students' Academic and Career Decision-Making in a Guided Pathways Community College

by

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Dedication

To Teddy and Lily, who make every day great and fun. I love you.

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Abstract

Community colleges provide broad access to postsecondary education to students of every identity, background, and level of academic preparedness. However, while community colleges offer a diverse range of educational and career pathways, completion rates remain low. In the past decade, the guided pathways framework emerged as a model for how institutions can redesign and deliver curricular structures and supports in ways intended to support more students in achieving their academic and career goals. A central assumption of the guided pathways framework is that students make an academic and career decision upon entry to college so that the academic milestones necessary to complete their chosen pathway are clear from the start. While more than 450 community colleges nationwide are using this model to strengthen the structures and processes that guide students' choices, we know little about the factors that inform how students navigate this process with agency.

In this mixed methods case study, I explore how students make academic and career decisions in their first year of enrollment in guided pathways community college. I use quantitative survey and administrative data, as well as semi-structured interview data, to examine the socio-cognitive and other factors that inform how students navigate the curricular structures and supports of the academic career choice process. From this exploratory analysis emerged a new conceptual framework that extends Wang's (2017) theoretical model of momentum for community college success. This new model introduces *Academic and Career Choice* as a domain that should be considered by community college practitioners who wish to support students' academic and career success. It also presents a new conceptualization of the curricular

environment, making explicit the role of the curricular and sociocultural context on students' academic and career outcomes.

Chapter 1 Introduction

Community colleges create value for society by offering students multiple pathways to achieve academic and economic well-being while upholding a broad institutional commitment to access and equity (Cohen et al., 2014; Mellow & Heelan, 2014). A comprehensive community college offers programs that enable students to develop general competencies necessary for transfer to a four-year university; develop occupational skills and competencies necessary for professional work; address learning and basic skills deficiencies in the areas of reading, writing, and/or mathematics; and engage in non-credit learning that exercises personal or professional interests (Bahr & Gross, 2016; Cohen et al., 2014). Community college programs are delivered by faculty and staff who engage students of all backgrounds and abilities, delivering coursework that fulfills academic program requirements and meets community and workforce needs.

Unfortunately, the undeniable contributions of community colleges to individuals and society are complicated by a history of low completion rates. Community colleges' outsized role in delivering postsecondary access is hard to contest. Each year nearly 5 million students enroll in a community college—or approximately a quarter of all students enrolled in any postsecondary institution in the United States (National Student Clearinghouse [NSC], 2021). Broad access is achieved, in part, due to the relative affordability of a community college education. In the academic year 2020-2021, the average annual tuition and fees for a full-time community college student was $3,800, adjusted to $0 after accounting for grant aid received (Ma & Pender, 2021). The economic returns of a community college credential are also positive and meaningful. Completing an associate degree boosts an individual's lifetime earnings by 25

percent compared to what they would earn with a high school diploma alone (Carnevale et al., 2021). However, community college students' chances of earning a credential can be equated to a flip of a coin: over half of all students who enter a community college have not completed a postsecondary credential six years later (Causey et al., 2022). Low completion rates must be addressed if community colleges are to deliver on educational equity by conferring degrees of value to individuals and society (Bragg & Durham, 2012).

In recent years, research on community college student success has looked beyond identifying student- or institution-specific factors that may explain community college student outcomes, instead offering a systemic explanation for why many students struggle to succeed in this institutional environment. For example, Rosenbaum et al. (2007) compared the institutional structures and procedures designed to support student success at public community colleges to those employed by private two-year vocational colleges. The authors found that, in general, administrators at community colleges assume that students can weigh the programmatic options offered by the college and efficiently and effectively navigate their way toward their personal goals; occupational colleges, in contrast, assume that structures should be in place to efficiently guide students toward prescribed career goals. The authors argue that the general approach of community colleges to offer many academic and career programmatic options with great flexibility may have the unintended consequence of reducing students' certainty that they can fulfill these programmatic requirements, especially while balancing the many demands of life and work (Rosenbaum et al., 2007).

In *The Shapeless River*, Scott-Clayton (2011) helped to illuminate the complexities of the community college curriculum by likening students' experience earning a community college credential to "navigating a river on a dark night" (p. 1). She explained that community colleges

accumulated a confusing array of program options that are difficult for students to navigate due to a well-intentioned effort to fulfill their multiple missions and present a wealth of academic and career options to a diverse group of students. In her paper, Scott-Clayton (2011) presented the "structure hypothesis" (p. 1), or the idea that clear and rigid academic and career pathways would benefit overall attainment by allowing students to understand the academic and career choices before them, as well as the steps necessary for degree completion. She conceded that increasing the rigidity of the curriculum, whether it be through more prescriptive programmatic requirements or more highly structured support services, could benefit some students while unintentionally pushing others out of the curriculum. She called for more empirical research to understand the consequences, unintended or not, of a more highly structured community college environment.

Bailey, Jaggars, and Jenkins (2015) extended Scott-Clayton's (2011) "structure hypothesis" (p. 1) by offering an institution-spanning framework known as guided pathways. The guided pathways framework is intended to inform how institutions design and deliver against core structures and processes, including intake and support services, curricular offerings, teaching and learning, and developmental education. Like Scott-Clayton, the authors support this framework by citing recent theories about how the complexity of the organizational environment can affect individual decision-making associated with long-term outcomes (Kahneman, 2011; Thaler & Sunstein, 2008; 2021). They also draw from a body of empirical literature on how early success in college, measured at the course and programmatic levels, is predictive of students' "momentum" toward long-term completion (Adelman, 2006; Attewell & Monaghan, 2016; Belfield et al., 2016; Calcagno et al., 2007; Jenkins & Bailey, 2017; Jenkins & Cho, 2013). In presenting the guided pathways framework, the authors shift the focus away from individual

student behavior associated with poor student outcomes, toward a broader systemic and cultural approach that centers student success (Bailey et al., 2015; Jenkins et al., 2021). Community colleges that use the guided pathways framework commit to clarifying the academic and career pathways offered by the college. They work to ensure that students are aware of the curricular sequences and steps needed to achieve long-term academic and career success.

In addition to offering institutions a clear theory of change, the guided pathways framework identifies specific practice areas that should be addressed by community colleges seeking to create a more structured and supportive student experience. Specifically, the guided pathways framework is organized into four practice areas: (1) clarifying program pathways and mapping them to students' education and career goals; (2) helping students choose and enter a pathway; (3) supporting student progress within a pathway; and (4) assessing student learning within a pathway (Bailey et al., 2015; Community College Research Center [CCRC], 2021; Jenkins et al., 2018b). Community colleges engaged in this reform commit to making changes to the curricular structures, rules, and supports related to each of these areas. For example, when mapping program pathways, participating colleges articulate broad program areas or "meta-majors" that align with general education requirements, as well as clusters of academic and career pathways (Bailey et al., 2015, p. 22; Waugh, 2016).

Central to the guided pathways framework is the idea that students should be advised to select a meta-major upon enrollment and choose a program of study within that meta-major within a prescribed number of terms (Bailey et al., 2015; Waugh, 2016). Community colleges may design mandatory gateway courses that introduce students to each meta-major, while also creating opportunities to further develop students' academic, career, and life skills. Moreover, they may create mandatory student advising checkpoints and devise assessment practices that

assess how students are learning within and across broad program areas. In other words, once the community college has clarified the academic and career options available to students, students should be able to identify their path early and begin making progress toward their goals immediately upon enrollment.

Guided pathways is a promising framework in part due to the sustained interest and engagement of a robust and varied group of stakeholders organizing around its theory of change. To date, over 450 community colleges nationwide, including statewide reform efforts in 16 states, have used the guided pathways framework to restructure their programmatic offerings and reform how students choose and experience an academic or career pathway (Brown et al., 2022). Organizations with a national reach, such as the Association of American Colleges and Universities and the Center for Community College Student Engagement at the University of Texas Austin, are supporting institutional efforts aimed at redesigning the student experience and enhancing student learning using the guided pathways framework (Center for Community Colleges Student Engagement [CCCSE], 2020; McNair & Bonneville, 2021). Scholars engaged with the effort have conducted multiple descriptive studies to understand how institutions are approaching implementation and efforts are underway to examine the causal impacts of the model (CCRC, 2021; Jenkins et al., 2017b).

Considering the high level of interest among community college practitioners in using the guided pathways approach, there is a need to supplement evaluative assessments with explorations of the underlying mechanisms that support this comprehensive reform model. Given the model's emphasis on when and how students declare their intended program of study, this includes stepping back to understand how students make academic and career choices in the community college, exploring variations that may exist within pathways, and by student

motivating factors. This need contributes to the creation of the current study. It builds on existing empirical work in this area by using a mixed methods study design that utilizes survey, administrative, and interview data, allowing for a comprehensive empirical investigation of the factors that inform students' academic and career decisions. This study also builds upon the existing empirical literature on students' major choices within the guided pathways context by examining the role of self-efficacy on students' aspirations, curricular experiences, and early outcomes in the community college. This theoretically important construct has yet to be examined within this context. Finally, this study examines how students themselves express their aspirations relative to their experiences navigating the structures of the college, adding an important lens by which to understand the efficacy of the guided pathways model in supporting community college student success.

Overall, this study extends our understanding of how structural reforms, such as those prescribed by the guided pathways framework, affect students' agency as they navigate decisions that lay the groundwork for academic and career well-being. It aims to broaden our theoretical understanding of how this academic and career choice process unfolds for students within the community college context. It also adds to our empirical understanding of the effects of the guided pathways framework on student success and points to possible unintended consequences that should be considered as more community colleges implement or advance structural changes that inform when and how students declare a program of study. This is an important area of research given the diversity of characteristics, experiences, and goals held by community college students (Cohen et al, 2014). This research aims to support community college leaders, faculty, and staff in pursuing college-wide changes that account for students' unique interests and needs. By strengthening institution-wide reforms that are structural in nature, we can support

community colleges in their ongoing efforts to help more students—especially those who have been historically marginalized within higher education—earn credentials of value and succeed.

Research Questions and Contribution of Study

The overarching question that guides this research is: *How do students develop their academic and career interests in a community college that is using the guided pathways framework to inform college-wide changes?* The following sub-questions inform my response to this broader question:

- What is the relationship, if any, between students' self-efficacy beliefs and their outcomes in their first year of enrollment in a guided pathways community college?
- How do students relate their curricular experiences to their academic and career aspirations?
- What patterns are revealed from merging the qualitative data about students' aspirations and curricular experiences in the community college with quantitative data measuring students' self-efficacy and decidedness about their choice of program of study?

I explore these questions using multiple data sources including survey, interview, and academic transcript data collected from a community college that began implementing the guided pathways framework in January 2015. Using multiple methods of analysis, and applying a sociocultural perspective, I examine students' self-efficacy and aspirations relative to their experiences and early outcomes in their chosen program of study in the community college. I also explore additional theories to explain whether and how students' beliefs and motivations affect their curricular experiences in college, and through their curricular experiences, their outcome expectations and motivations for success. Specifically, I extend the guided pathways framework by applying assumptions and key constructs from Wang's (2017) theoretical model

of momentum for community college success and Lent et al.'s (1994; 2002) Social Cognitive Career Theory (SCCT).

The findings from this exploratory study are intended to provide insight into students' experiences in a community college that has made meaningful strides in recent years to implement the guided pathways framework as a key strategy toward achieving higher and more equitable outcomes. It is also my hope that the theoretical and empirical findings of this study will help to inform the work of other scholars and practitioners who wish to better understand how institutional changes, such as those prescribed by the guided pathways framework, affect students differently. This responds to Scott-Clayton's (2011) concern that not all community college students will benefit from institutional changes intended to give a more structured experience to most students, as well as to her call for more empirical research on the matter.

Chapter 2 Literature Review and Conceptual Framework

Guided pathways is an organizational framework used to support community college student success. The guided pathways framework invites community college leaders and practitioners to streamline academic structures and processes that are critical to students' efficient progress through college. Central to the framework is the college curriculum, and the process by which students choose and enter a pathway, or a group of conceptually or practically related programs of study known as meta-majors (Waugh, 2016). As Bailey et al. (2015) explain, "the guided pathways approach to redesign starts with students' end goals in mind, and then rethinks and redesigns programs and support services to enable students to achieve these goals" (p. 16). Therefore, a community college that is fully engaged with the guided pathways framework at scale must also be able to support a process of goal articulation, development, and achievement for all students, and across all academic and career programs in the college.

In this chapter, I define the guided pathways reform by describing the theory of change, practice areas, and central assumptions of the framework as applied to the community college context. I then review the theory and empirical literature related to students' choice of program of study within the guided pathways reform, addressing the gaps in both theory and research. Finally, I outline a conceptual framework that will address gaps in research and serve as a research design for this study.

Guided Pathways Theory of Change and Practice Areas

The need for the guided pathways framework stems partly from two institutional characteristics that are foundational to community colleges, but which complicate their role in the postsecondary landscape and subsequently their curricular functions. The first is the diversity of purposes that community colleges serve for individuals and the communities in which they are situated. Community colleges are guided by multiple missions that are sometimes in tension with each other (Dougherty & Townsend, 2006). Often, these missions are expressed through various curricular functions that include preparing students for transfer to a four-year institution, delivering skills that prepare students for specific trades and professions that are in demand, providing opportunities for individuals of all ages to engage in life-long learning, and addressing academic and skills deficiencies of incoming students (Cohen et al., 2014). Embedded within the community college mission is also a broad commitment to providing affordable access to postsecondary education to any student who chooses to enroll (Cohen et al., 2014). When pairing these purposes with an equally strong commitment to preparation and success, community colleges fulfill their role in the postsecondary landscape as engines of social mobility and opportunity for individuals and society (Bailey & Morest, 2006; Bragg & Durham, 2012; Cohen et al., 2014). However, for students pursuing a community college credential while balancing family and work responsibilities, the diversity of missions and purposes of the community college can translate into a confusing array of programs and services that are overwhelming and difficult to navigate (Bailey et al., 2015).

The second institutional feature that is both defining and complex is the diversity of interests and needs of the students who are served by community colleges. Each fall, community colleges are the entry point to postsecondary education for roughly five million students (NSC,

2022), of which nearly one-third would be the first in their family to attain a postsecondary degree or credential (American Association of Community Colleges [AACC], 2022; Nomi, 2005). Community colleges enroll a disproportionate number of low-income students, students of color, and older students who are either entering college for the first time or returning to advance their academic and career pursuits (Ma & Baum, 2016). Often, community college students are balancing jobs and family obligations alongside their coursework (Mellow & Heelan, 2014). More than half of community college students enter under-prepared for some aspect of college-level coursework (Attewell et al., 2006; Bailey et al., 2010; Bickerstaff et al., 2022), and most are relatively undecided about their academic and career interests and goals upon initial enrollment (Grubb, 2006). Under-preparation, when it requires developmental coursework, delays students' enrollment in credit-bearing courses, which in turn delays opportunities for students to explore academic and career interests. Uncertainty about academic and career interests may both delay and complicate efforts to translate interests and goals into academic and career success. Indeed, data suggest that nearly one-quarter of students enrolled in a community college never declare a major; Of completers, approximately 10 percent are identified as "major undeclared" (Holzer & Baum, 2017). For institutions, supporting students on varied pathways toward an array of academic and career goals can be a challenging task, particularly in a flexible environment that is intending to meet a diverse range of interests and goals (Bahr, 2013).

Indeed, community colleges have struggled to meet the needs of under-prepared and undecided students, perhaps contributing to low overall completion rates. Research has found that once community college students are placed in a developmental math sequence, they struggle to make progress through the remedial sequence, which may be required before

enrolling in college-level coursework (Bailey et al, 2010). In the context of advising, students are often unsure about whom to contact for support (Karp, 2013). For those who establish connections with advisors, these interactions often fail to address students' long-term interests or goals (Grubb, 2006; Karp, 2013). Lack of clarity around programs requirements for transfer or completion contribute to students' earning excess credits, increasing cost and time to degree (Giani, 2019). Apart from tailored interventions to address these unique challenges, a comprehensive approach to curricular advising and support that spans institutional structures is needed to ensure that more students succeed (Bailey et al, 2015).

The guided pathways framework offers an organizational model for how institutions can better engage and support students in completing a credential of value in a directed and efficient manner. It offers institutional leaders and practitioners four distinct practice areas that should be addressed, beginning with clarifying how institutions engage students around the complex academic and career choice process. Specifically, the practice areas are (1) clarifying the academic and career pathways available to students with attention to how these pathways map to students' goals, (2) helping students to choose and enter a pathway, (3) supporting student persistence within a pathway, and (4) ensuring that students are learning the skills and competencies necessary to be proficient within a pathway (CCRC, 2021; Jenkins et al., 2018b). In this study, I focus on the second area of practice—helping students choose and enter a pathway—to explore the critical question of how students make academic and career decisions in a community college that is using the guided pathways framework to inform the institutional change process.

In the section that follows, I review empirical literature on guided pathways reforms that address the first two practice areas: (1) clarifying academic and career pathways, and (2) helping

students choose a pathway. I address the first two areas of practice due to their incremental relationship and relevancy to the primary research question that guides this study. In each area, I identify specific colleges and practices that have been documented by evaluators of the guided pathways framework, noting how these practices support institutional engagement with the framework and, in turn, students' pursuit of their goals. While some practices are incremental and ideally implemented in an ordered manner, others are overlapping in that they serve the objectives of more than one practice area. The practices referenced in this review of the practice literature are not all-inclusive but are instead intended to highlight general practice areas embarked upon by community colleges that use the guided pathways framework to inspire institutional change.

Clarifying Academic and Career Pathways

Central to the guided pathways framework is the concept of the meta-major, or a broad grouping of majors and associated courses that are conceptually or programmatically related (Waugh, 2016). Meta-majors are designed to help students easily discern the programmatic options offered by the college; they allow for the institution to embed advisors within specific areas of the curriculum and support the ability of faculty and staff to cultivate learning communities (Jenkins et al., 2021). For community college leaders and practitioners, the first step in implementing the meta-major model is to identify a grouping of majors that are relevant to student's academic and career interests. In creating meta-majors, community colleges strive to offer those that are "high-opportunity" (Fink & Jenkins, 2020; Jenkins et al., 2021, p. 3), meaning that the college has explored whether and how each program leads to jobs that are well-paying and needed within the local or regional economy or, for academic programs, whether they lead to transfer with junior standing at a four-year institution. For example, Alamo Colleges

District in Texas facilitated this process across each of its five community colleges. Faculty and staff worked with area employers and universities to map all programs to employment and transfer outcomes (Jenkins et al., 2020).

Meta-majors can also be used to identify the programmatic options and related progression milestones for students. For instance, Laramie County Community College in Wyoming presents meta-major options on its website and through advising materials along with program maps that highlight when students need to make decisions to progress in their pathway (Jenkins et al., 2020). Efforts have also been made to highlight the specific math courses that students should take within a given pathway or to integrate developmental math education within program-specific college-level coursework to address under-preparation while also enabling forward progression in students' chosen academic or career pathway (Jenkins et al., 2017a; Jenkins et al., 2018a). Some community colleges have taken a more structured approach to math design and delivery. For example, once students at North Central State College in Ohio choose a program upon entry to the college, they are automatically directed toward one of two math pathways: statistics and algebra/calculus (Jenkins et al., 2017a). The college has also implemented corequisite support for nearly all math courses. Under this model, students who enroll in a statistics pathway are required to take a corequisite course in algebra that reinforces essential skills.

Some community colleges have moved beyond viewing meta-majors as solely a mechanism to organize the curriculum and are now approaching these conceptually related programmatic groupings as ways to build and support academic and career communities that embed advising opportunities in ways that foster deeper programmatic connections (Jenkins et al., 2021). For example, Linn-Benton Community College in Oregon provides students with a

"meta-advisor" or faculty advisor in their major who works with students on goal refinement after their choice of program of study is made (Fay & Lahr, 2019). At Alamo Colleges District in Texas, advisors are embedded within meta-majors, allowing them to stay engaged with faculty and staff who are more in tune with students' academic needs within their chosen area (Jenkins et al., 2020).

At some community colleges, efforts are being made to ensure that students can efficiently explore academic and career options even after selecting a meta-major. Lorain County Community College (LCCC) in Ohio embedded common gateway requirements across each meta-major to allow entering students to continue to explore academic and career options without risking a loss of early credits (Klempin & Lahr, 2021b). At LCCC and Stark State College in Ohio, students can remain within an exploratory major until they have earned a threshold number of credits that are transferable across program paths (Klempin & Lahr, 2021b). Other community colleges have embedded both career-technical and transfer-oriented programs within each meta-major to guard against segregation across academic and career pathways (Jenkins et al., 2021). The centrality of the meta-major concept to the overall reform suggests its importance, as does the varied approaches by community colleges in implementing these broad academic and career groupings. Yet scholars suggest that important questions about the meta-major design and its impact on student decision-making remain untested (Baker, 2016; Karp, 2013).

Helping Students Choose a Pathway

Community colleges using the guided pathways framework have devised several structures by which to engage students in academic and career exploration, choice, and advancement. Advising is an important mechanism by which this process is supportive, starting

with students' initial enrollment. In general, students are assigned an advisor upon enrollment based on the meta-major that they indicated to be of interest. Colleges then require students to meet with their dedicated advisor before orientation and at various checkpoints upon enrollment to college. This systematic approach to case management allows for more strategic uses of advising resources. For example, at Walters State Community College in Tennessee, advisors are trained to work with students on establishing clear academic and career goals, with a special focus on those who have indicated an interest in general studies (Jenkins et al., 2018a). Other community colleges, such as Southern State Community College, Owens Community College, and Sinclair Community College in Ohio, have targeted additional advising resources toward students who are undecided about their academic or career path (Jenkins et al., 2017a).

Advising within a guided pathways framework has also proven to be beneficial for adult students or students whose goals seem to be fixed. Klempin & Lahr (2021a) explain: "Many adult students assume that they need a certain type of credential to align with their goals, when that might not necessarily be the case" (p. 8). Advisors can work with students to test assumptions and explore academic and career options that align with students' prior experiences, interests, and goals—including those they had yet to consider. Moreover, they can work with students to establish program maps that establish a course plan for each projected semester of enrollment. Creating course plans has the added benefit of helping students returning to postsecondary education determine how prior credits earned or credits earned through prior learning assessments can fulfill program requirements (Klempin & Lahr, 2021a).

The community college onboarding process is a critical moment to engage students in academic and career exploration and choice. In the community college, the onboarding process encompasses the steps students need to take to apply to the college, enroll, and be placed into the

curriculum at the appropriate developmental level. Given that community colleges typically offer open and rolling admission, these processes are designed to be flexible and to support all students through the process. Jenkins et al. (2020) explain that traditional onboarding processes "do not take into account the intricate learning process involved in choosing a major" (p. 4). Advising appointments that are a part of onboarding have tended to focus on orienting students to campus and registering for first-term courses, rather than providing opportunities for students to explore their motivations for enrolling in college or express their ambitions related to transfer or career prospects (Jenkins et al., 2020). Advising in an institutional environment that lacks a conceptually and practically organized curriculum, such as that supported by meta-major groupings, limits the ability of advisors to connect students to faculty, staff, and students who share their academic and career interests.

Community colleges that are using the guided pathways framework and have used the meta-major concept to structure their curriculum have reported the need to strengthen advising in ways that support students' academic and career exploration and discovery (Jenkins et al., 2021; Klempin & Lahr, 2021b). Given this need, the onboarding process presents itself as an opportunity to support students in making an initial program selection while also forging connections with advisors and others who can support students throughout their academic experience. Community colleges that take this approach to onboarding and advising within the guided pathways framework are encouraged to apply an approach known as the Ask-Connect-Inspire-Plan framework (Jenkins & Lahr, 2022). This framework consists of four practice areas: 1) Ask students about their experiences, interests, and aspirations in a manner that helps them explore the programmatic options before them; 2) connect students with faculty, staff, and peers who share their interests; 3) inspire students to take at least one college-level course in their first

term that is career-relevant; 4) plan students' complete set of academic courses and requirements by the end of the first term. Jenkins and Lahr (2022) further explain that "colleges implementing guided pathways have recognized that they need to provide more support to students with different life experiences and goals" (p. 7). They advise: "Colleges need to proactively reach out to offer these supports to underserved students and adapt them to particular student groups" (p. 7).

Theoretical Framing of the Guided Pathways Model

Community colleges are open access institutions designed to increase opportunity in postsecondary education to a diverse group of learners (Cohen et al., 2014; Mellow & Heelan, 2014). In their ideal form, they offer program options and deliver learning experiences that align with local and regional labor market needs, prepare students for transfer to four-year institutions, and provide opportunities to a diverse student body. Yet, in their effort to be responsive to multiple stakeholders, community colleges have struggled to simultaneously achieve their multiple missions, while also ensuring that students are successful in earning a credential of value. In offering the guided pathways framework, Bailey et al. (2015) theorize about why this may be. They draw primarily from the decision sciences literature, which has roots in cognitive psychology, as well as economics. They refer to the community college as a "cafeteria or self-service college" (p. 13), explaining that students who enter the college are presented with varied and often disconnected course options. Students are mostly on their own to choose the courses that align most closely with their interests and goals or to seek out support if they need it. Navigating the community college is an overwhelming task for many and may contribute to student's inability to complete a degree or transfer in a timely and cost-efficient manner. Bailey et al. (2015) argue that institutional changes are needed to clarify the academic and career

pathways available to students, and to align more structured pathways and associated support systems with students' academic and career goals. The authors hypothesize that when these institutional changes are made students will more effectively navigate the curriculum in ways that align with their interests. This, in turn, will support students' progress toward their goals. They argue that, at the organizational level, accelerating students' progress through a streamlined curriculum and exposing them to academic and career experiences that are relevant to their long-term aspirations will increase their overall likelihood of success, especially for students historically marginalized in higher education including low-income students and students of color (Bailey et al., 2015; Jenkins & Cho, 2013; Lin et al., 2023).

Choice Architecture

Bailey et al. (2015) draw from the decision sciences literature to provide a theoretical rationale for the model, specifically Thaler and Sunstein's (2008; 2021) concept of choice architecture. Choice architecture is the decision-making context that individuals experience within a given setting, such as a community college. The concept is built on the assumption that how an organizational context is designed can influence individuals' choices within that context. For example, in the guided pathways context, providing clear program maps that outline the steps that students must take to be successful in each academic or career area can help students more easily identify a path that is suited to their interests and strengths. Individuals who design decision-making contexts with organizations are referred to in the literature as "choice architects" (Thaler & Sunstein, 2008, p. 11). Choice architects aim to understand the myriad ways that individuals approach a decision in any context, and how signals of that environment may influence their decision. In the community college, choice architects are administrators,

faculty, and staff who design the community college curriculum, onboarding, and advising processes, and who also support students through the consequential choice of program of study.

The concept of choice architecture is situated in a recently developing discipline, behavioral economics, which sits at the cross-section of economics, cognitive psychology, and decision theory. Herbert Simon (1947), an economist, political scientist, and cognitive psychologist can be credited with providing many of the economic and psychological principles that inform the concept. Simon theorized about how organizations, through the individuals who lead them, learn and thereby make decisions. His concept of bounded rationality extended rational choice theory by affirming the "intendedly rational" (Jones, 1999, p. 298) process by which people make decisions, while also highlighting the cognitive and environmental barriers that can lead to systematic errors in decision-making. Cognitive barriers may include problems of attention, memory, comprehension, and communication, thereby affecting individuals' ability to make complex or high-stakes decisions that unfold over long periods of time. Environmental factors, such as ambiguity or uncertainty, may provide negative feedback to the decision-maker, clouding their preferences and making the expected outcomes unclear (Jones, 1999).

Decision theory provides insight into how the context of a decision, as well as human cognitive biases, inform behavior and the choices people make. Most famously, Prospect Theory (Kahneman & Tversky, 1979) posits that people edit and evaluate their choices based on their conception of the prospect of gains and losses. Empirical research using this theory has demonstrated how individuals evaluate their choices or preferences based on how a decision is framed (Tversky & Kahneman 1981), or how individuals use heuristics as tools to help evaluate the likelihood of various outcomes (Tversky & Kahneman, 1974). Research supports the idea that the use of heuristics, while helpful in easing the cognitive load required by some decisions,

can lead to systematic errors in decision-making that stem in part from the biases that individuals hold. Often these biases emerge when humans rely on their own intuition to guide their decisions, rather than conscious efforts to assess preferences and make decisions. Kahneman (2011) summarized his and Tversky's many contributions to the literature in his book, *Thinking Fast and Slow,* in which he identified individuals' automatic responses to choice sets as "System 1" and their reasoned responses as "System 2" (pp. 20-21).

Thaler and Sunstein (2008) describe System 1 and System 2 or, as they refer to it, the "Automatic System" and the "Reflective System" (p. 19), in their description of an organizational nudge. They explain that humans have two systems of thinking, "one that is intuitive and automatic, and another that is reflective and rational" (Thaler & Sunstein, 2008, p. 19). Classical economic theory posits that individuals most often engage the second system, the rational one, as they deliberate life's many choices. Yet, Thaler and Sunstein (2008) argue that individuals' instinctive reactions often supersede their deliberate thought processes, resulting in errors in judgment and decision-making. The authors present the nudge as an organizational feature, signal, or response that helps to ensure that individuals' instinctive choices are aligned with assumed preferences. When nudged, individuals make choices that could be predicted as if they had engaged in a rational decision-making process.

Scholars have argued about whether an organizational nudge is ethical, and whether a more complete and nuanced definition is needed than that provided by Thaler and Sunstein. For example, Hausman and Welch (2010) explore the ethical boundaries of libertarian paternalism, or the idea employed by Thaler and Sunstein that by engaging in choice architecture, organizations and the individuals within them can take actions that move individuals toward choices that are assumed to be better in some way. Hausman and Welch (2010) explain that

encouraging a choice with an organizational design or feature rather than through rational persuasion places limits on individual autonomy. “Their [the decision-makers] actions reflect the tactics of the choice architect rather than exclusively their own evaluation of alternatives” (Hausman & Welch, 2010, p. 128). The authors concede that, in some instances, it is appropriate for nudges to be used to lead individuals to certain choices. Yet, the choice architect should acknowledge and be respectful of their power to assert control over another by exploiting human flaws in decision-making. The choice architect should also recognize that, as humans within organizations, they share a limited cognitive capacity and inability to know the preferences and welfare of others with the decision-maker. Moreover, when organizations or actors choose to nudge, they should also consider when and where it is appropriate to instead engage individuals in rational persuasion (Hausman & Welch, 2010).

Barton and Yanoff (2015) argue that more mechanistic evidence is needed to understand whether and how organizational nudges “affect the rationality of a decision, its correspondence to fundamental goals, and the presence of external influence—all factors relevant for determining the degree of autonomy of a decision” (p. 356). To aid this investigation, Hansen (2016) calls for a more complete, transparent definition of an organizational nudge, which he offers. His definition of a nudge is an intentional action that aims to influence behavior in predictable ways by engaging with “cognitive boundaries, biases, routines, and habits in individual and social decision-making posing barriers for people to perform rationally in their own self-declared interests” (Hansen, 2016, p. 20). Collectively, the authors’ critiques highlight that more research is needed to understand how the use of a nudge affects individuals across decision-making contexts and organizational settings.

If the concept of libertarian paternalism is extended to guided pathways as an organizational framework, improved completion rates are the greater outcome that community colleges are nudging their students toward. Efforts to help more students complete a credential of value is "a self-conscious effort by institutions 'to steer people's choices in directions that will improve their lives'" (Hansen, 2016, p. 5). However, when applying the nudge concept to the guided pathways framework, two ethical issues are important. First, in their definition of a nudge, Thaler and Sunstein (2008; 2021) note that individuals who are affected by the reform must also perceive the intended outcome to be an improvement in their lives. In the context of program choice, students should therefore feel that the program choice that they are guided toward aligns with their own interests and goals. Moreover, they should be confident in their ability to translate their academic learning into long-term success. Consequently, institutions should make extra effort to ensure that students are empowered as their own agents in selecting a program that aligns with their abilities, interests, and goals. Second, institutions that nudge students toward behaviors and choices that are designed to lead to better outcomes must also employ other modes of advisement and support that engage students as agents of their own success. Here, Hausman and Welch (2010) warn, "When the government [or in this case, an educational institution] employs non-rational means of persuasion, it should take care not to undermine its capacity to persuade people rationally" (p. 135). In the context of guided pathways, it may be warranted to investigate the extent to which students are being nudged versus advised into program pathways, as well as how institutional methods of support interact with individual autonomy and decision-making.

The guided pathways model offers several assumptions that should be tested as part of an ongoing effort to support improved community college student success. Central to the

framework is the college curriculum, and the process by which students choose and enter a pathway defined as a group of conceptually or practically related programs of study. As Bailey et al. (2015) explain, "the guided pathways approach to redesign starts with the students' end goals in mind, and then rethinks and redesigns programs and support services to enable students to achieve these goals" (p. 16). Therefore, key assumptions that inform the model are: (1) community colleges should ensure that intake, advising, and curricular processes and structures are aligned with academic and career outcomes that are considered "high-opportunity" in the regional economy (Fink & Jenkins, 2020; Jenkins et al., 2021, p. 3); and (2) students should be asked to make their academic and career goals explicit upon entry to the college to ensure that progress is made in an efficient yet supported manner.

As an organizational framework, the guided pathways model centers students and their success within the broader organizational change process. It draws from the decision sciences literature to acknowledge the ways that organizations influence individual decision-making and, within the postsecondary context, student success. Therefore, another key assumption is: (3) individuals make choices within certain contexts, and those contexts support or constrain those choices and subsequent outcomes. Given that guided pathways is an organizational model, it does not speak directly to the ways that students as individual actors express agency throughout the choice process or how curricular processes and structures intended to support overall success rates may affect students differently. This research addresses this gap by exploring how students as rational agents make decisions in a guided pathways community college.

Academic Momentum

Scholars and practitioners engaged with the guided pathways framework have used measures of students' early outcomes in college that are associated with long-term student

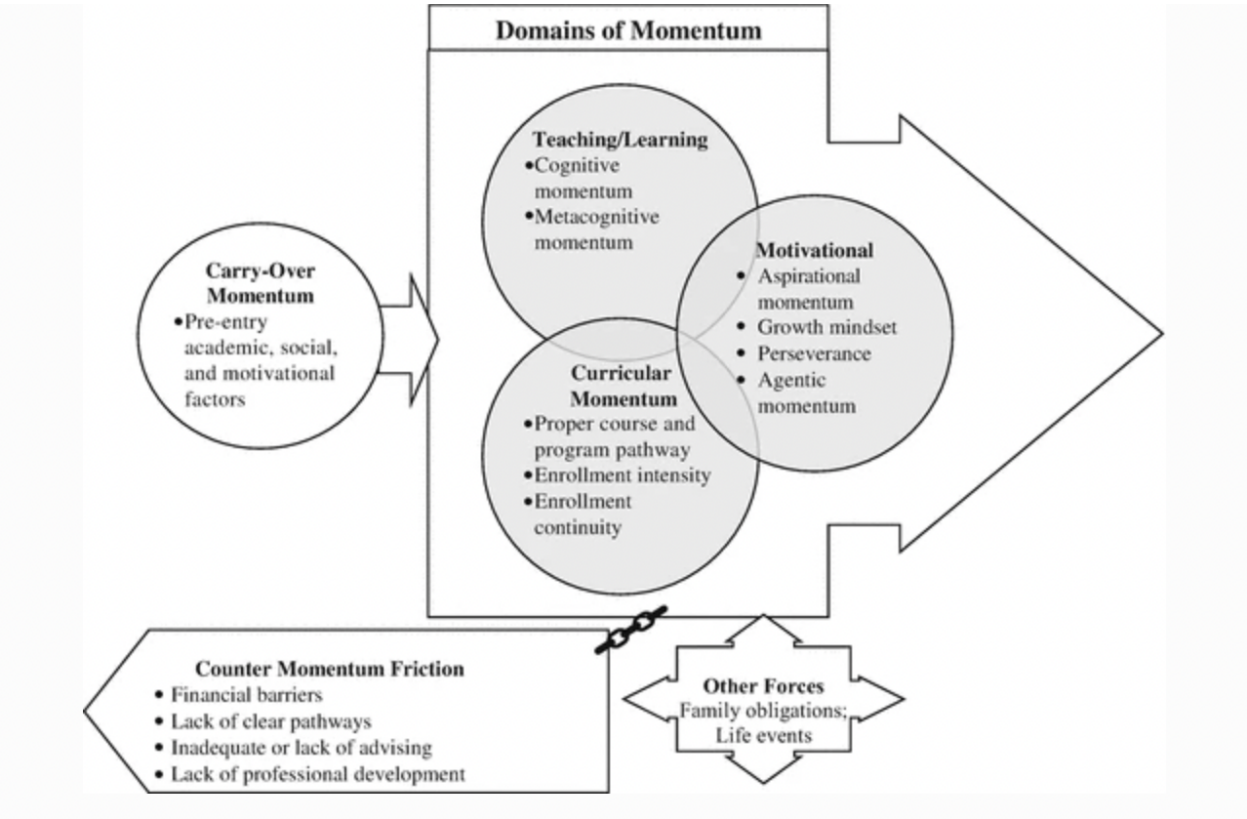
outcomes (known as proximal outcomes) as a way evaluate the effectiveness of early-stage implementation efforts (Jenkins et al., 2018a; Jenkins & Bailey, 2017). Proximal outcomes are designed to measure "early momentum" through course credit, gateway, and program progression in the community college (Jenkins & Bailey, 2017, p. 1). Typical measures used by evaluators include: (1) course credit momentum defined as attempting at least 15-semester credits in the first term or at least 30-semester credits in the first academic year; (2) gateway momentum defined as taking and passing the appropriate college-level math and college-level English course for a student's chosen pathway in their first academic year; and (3) program momentum defined as taking and passing at least nine-semester credits in the student's chosen pathway in the first academic year.

Research that supports the use of early momentum metrics in community colleges focuses primarily on providing definitions and techniques for operationalizing key metrics (Attewell & Monaghan, 2016; Belfield et al., 2016; Calcagno et al., 2007; Jenkins & Cho, 2013). In her paper, *Toward a Holistic Model of Momentum for Community College Success,* Wang (2017) argues that while research on academic momentum in community colleges is empirically grounded, it lacks a conceptual basis that helps to untangle and explain causal relationships that may exist between measures of academic momentum and long-term outcomes. She turns to this literature to construct a theoretical model of momentum that can serve as a starting place for such scholarly inquiry. Wang's model conceptualizes the student-level factors that can support student success in the community college. In presenting the model, she says that, like guided pathways, it focuses on "what educators can do to help students build momentum, rather than the question of how much momentum students require for success" (Wang, 2017, p. 290).

Wang's theoretical model for momentum for community college success is presented in Figure 2.1. In her model, Wang (2017) includes three main domains of momentum: (1) curricular, (2) teaching and learning, and (3) motivational. Curricular momentum, as defined by Wang, is students' progress with a defined curricular pathway toward an explicit academic or career goal. Here, Wang directly connects this model to the guided pathways framework, noting that momentum ideally occurs within a structured curricular environment rather than one in which "students are expected to navigate the often overwhelming choices with little direction, leading to potential confusion, loss of momentum, and dropping out" (p. 283). Instead, students progress through "well-scaffolded and aligned course sequences" (p. 283), receiving strategic advising and support along the way. Additional indicators of curricular momentum are enrollment intensity, such as students' part-time or full-time enrollment status or the number of credits attempted within an academic semester, and enrollment continuity or students' uninterrupted and continuous progress toward their educational and career goals.

Figure 2.1

Wang's (2017) Model of Momentum for Community College Success



The second domain is teaching and learning as it pertains to students' knowledge and skill acquisition within their area of academic or career interest. Specifically, Wang (2017) highlights cognitive momentum, which she defines as "students' cumulative progress toward the learning and mastery of the subject matter at hand" (p. 284). She also includes metacognitive momentum, which consists of the strategies developed and used by students to "regulate, adjust, and assess one's own learning processes" (Wang, 2017, p. 284). As with the curricular domain, the definitions of each subarea are positively framed, highlighting how the constructs support students' success in the community college.

The third domain is the motivational domain that engages students' aspirations, learning mindset, perseverance, and agency with their overall educational journey. Wang (2017) defines

aspirational momentum as "students' clear definition of and sustained commitment to their education goals" (p. 285). In other words, students who experience aspirational momentum would ideally declare their goals and persist in their effort to achieve them. A growth mindset is students' belief that their histories do not define them, but rather that their success in college is determined by their continuous effort in their chosen path. Perseverance is students' ability to persist in the face of challenges that are institutionally derived or otherwise. Within this domain, Wang highlights agentic momentum, or students' proactive approach to navigating both the curricular and teaching and learning environment in the college.

Supporting the model are key assumptions that Wang (2017) presents to the reader. First, it can be assumed that as teaching and learning institutions, efforts by the community college to support students' short- or long-term outcomes are most often centered in the classroom. Second, while classroom learning is central to how we conceptualize students' academic momentum in college, this domain intersects with students' motivational orientations and curricular experiences in ways that are meaningful to students' overall success. Third, momentum is "malleable and can be collectively built by students and the community colleges that they attend" (p. 291). In expounding upon this latter assumption, Wang explains that there exists within the academic literature on community college student success an overemphasis on "individual students' decisions and choices" (p. 291). This approach has created the opportunity for practitioners to distance themselves from low student outcomes by placing the onus for poor outcomes on students themselves, which can contribute to a deficit framing (Harper, 2010). On the other hand, she also contends that students can and must "play an active role in developing their own momentum" (p.292). Thus, within the motivational domain, she identifies agentic momentum as a "generative force that empowers community college students to assume a

proactive approach in developing other forms of momentum" (p. 292). Here, she acknowledges the role of agency in guiding students' choices and subsequent outcomes in college. While every person brings agency to developmental processes such as academic and career choice, I argue that students' agency intersects with key curricular structures and processes and may be affected, positively or negatively, by the structures and supports offered by the college. These assumptions are in accordance with those put forth by Wang's Model of Momentum for Community College Success.

Missing from Wang's model are mechanisms related to the process by which students' academic and career choices are made. Rather, her model includes "proper program and course pathway" as a component of "curricular momentum" that students and their colleges must attend to. I agree with Wang that community colleges and students must be partners in each other's success; however, how students make decisions within a structured and supportive curricular environment is arguably a critical component of academic and career momentum. A student's academic and career decision-making should be conceptualized as a complex process that develops and evolves along with the student and throughout the entirety of their academic experience. It is a learning process that unfolds over time rather than occurring in a single moment in time. As with other domains of momentum, the academic and career choice process should ideally occur through a supportive process that is student-led and institution-guided.

Review of the Literature

Considering the prevalence of recent structural reforms in community colleges that affect how and when students choose a program of study, scholars have turned their attention to the process of academic and career choice. Scholars have utilized survey instruments to collect information about how students group programs within "consideration sets" (Baker, 2016, p.

207; Baker & Orona, 2020), whether there is an alignment between students' goals and their academic experiences in the community college (D'Amico et al., 2019), and the ways in which community college students—particularly Latinx students—gather knowledge and career capital related to their academic and career choices (Salas et al., 2018). The use of survey data reflects the lack of data collection around student major choice, particularly in the community college setting. At the same time, the use of survey instruments to collect data related to the process of academic and career choice provides the opportunity for scholars to design instruments that measure relevant and critical constructs, adding to our theoretical and practical knowledge base.

For example, D'Amico et al. (2019) used the concept of career capital (DeFillippi & Arthur, 1994; Inskson & Arthur, 2001) to construct a survey instrument that measures students' reasons for college enrollment (knowing why), knowledge and skills about navigating college (knowing how), and support networks (knowing whom). These data were used to measure college and career alignment, or "the connections between a community college student's academic journey and their career experiences and plans" (D'Amico et al., 2001, p. 62). When matched with students' demographic information, academic records, and regional labor market data, the authors ran exploratory regression models to identify factors that predicted higher levels of college and career alignment. The authors observed statistically significant variables in each portion of the career capital framework (knowing why, knowing how, and knowing whom). For example, an interesting finding is that students who indicated that their primary reason for enrollment was "professional advancement" had a significantly higher value of college and career alignment than their peers. The authors also observed students enrolled in career-oriented programs to have higher levels of perceived college and career alignment. The authors lacked precise data on the types of programs students chose to pursue, apart from whether the chosen

pathway was career- or transfer-oriented. Situating this study in a community college or community college system using the meta-major to group programs of study would have enabled the authors to examine variation in the outcome across program types due to having access to program data that was measured with a higher level of granularity and, arguably, practical relevance. The authors noted that a limitation of this study is an inability to capture students' perceptions about whether a program of study is meeting students' individual needs. They called for "more inquiry capturing student voices" (D'Amico et al., 2019, p. 77) and, specifically, student perceptions about their college and career aspirations relative to program fit.

Schudde et al. (2020) used national survey data to explore predictors of meta-major switching in community colleges. The authors operationalized meta-major categories using state-implemented guided pathways reforms as a guide. The meta-major categories included STEM, humanities/liberal arts, social sciences, education, business, health sciences, industry/manufacturing/agriculture/construction, and public safety. The authors also accounted for students who did not declare a major during their period of observation. Beginning Postsecondary Students Longitudinal Study (BPS) data captured 4,250 students' major choices in their first and third year of enrollment. The authors employed descriptive analysis and logistic regression on the full sample and subsequently by each meta-major to measure the probability that a student would switch between meta-majors early in their enrollment along with predictors of movement across meta-majors. The authors found that 40 percent of students switched meta-majors at least once within their first and third years of college. Based on this finding, they argue for meta-majors that share common general education credits to prevent credit loss. Interestingly, among students who switched their meta-major, the most common destination was undeclared. This finding suggests that many students are choosing a program of study that may not align with

their interests and long-term goals. From a practical standpoint, it also highlights the need for ongoing and targeted advising for students who are unsure about their initial program choice. Among predictors, the authors observed academic advising to be negatively associated with switching meta-majors. This finding lends support to ongoing advising for students at the point of major selection and throughout their time in college.

Other scholars have utilized enrollment and transcript data to examine patterns of what if any program students choose at various points of enrollment, the relative "value" of those programs, and the effect of switching meta-majors on students' short- and long-term outcomes in the community college (Holzer & Xu, 2021; Liu et al., 2021). These studies provide new information about whether and how students are making academic and career choices in the community college. They also allow for subgroup analysis to examine whether key differences in choices and outcomes exist by sex, race/ethnicity, thus contributing to segregation across majors or stratified outcomes. For example, Liu et al. (2021) found that Black and Hispanic students were less likely to declare a major as compared to White students. For those who declared a major, Black students were more likely to be enrolled in workforce programs that were aligned to jobs of medium- or high-market value, or enrolled in structured transfer programs that, if completed, would result in junior-standing in a four-year institution in a defined academic area. Contrastingly, Black students were significantly less likely than their White peers to complete their degrees. Hispanic students, on the other hand, disproportionately enrolled in lower-value workforce programs or unstructured transfer degree programs but completed their programs at higher rates than their peers in other racial/ethnic groups. The authors acknowledged that this study is one of the first to examine students' academic milestones across pathways in the community college, and more research is needed to test the robustness of the findings. Studies

such as these highlight the value of institutional efforts to gather data on what programs students are enrolled in and whether these programs lead to outcomes of value.

Scholarship on community college major choice is limited yet growing. Scholars have attempted to focus on discrete aspects of students' academic and career choice to support practitioners in their efforts to support students at different points of the choice process. They have also utilized different theories that conceptualize choice as a dynamic and unfolding process, thus acknowledging the unique and varied strengths and sources of capital that students bring to the process (Baker & Orona, 2020; D'Amico et al., 2019; Huerta et al., 2022; Salas et al., 2018). At the same time, scholars are limited in their ability to model and explore academic and career choice in the community college as a process due to limited and/or cross-sectional data sets. They also lack socio-cognitive student variables (e.g., self-efficacy, outcome expectations, uncertainty) that have been shown to be related to student's choice of major and revisions to that choice over time (Lent et al., 1994, 2002; Wiswall & Zafar, 2014; Zafar, 2011).

Due in part to a reliance on survey and administrative data, scholars have yet to ascertain how students themselves perceive the academic and career choice process in the community college, including where and how they can express agency over the process in ways that meet their personal needs and interests. D'Amico et al. (2019) explain: "The alignment of college and careers is an individual experience through which community college students build agency—a premise that can be explained through inquiry capturing student voices" (p. 77). Studies that are both situated in community colleges that have imposed new rules and structures around the academic and career choice process, and which capture students voices relative to the process, would allow for an examination of whether and how students build agency relative to their academic and career goals and interests. These studies also have the potential to shed light on

where and how that agency is facilitated or constrained by the curricular context that students are navigating.

Conceptual Framework

In this study, I turn to Social Cognitive Career Theory (SCCT) (Lent et al., 1994; 2002) to illuminate the developmental process of students' academic and career choices. The model identifies key socio-cognitive constructs that guide how people make academic and career choices in cultural and contextual settings. SCCT and the guided pathways framework share the assumption that people make decisions in context and that those contexts inform the decisions that people make. Moreover, the people who make up these contexts also inform the available choices. These shared assumptions support SCCT's use as a logical extension of the guided pathways framework. SCCT introduces to the framework key cognitive constructs that inform how people make academic and career decisions in context.

In this study I focus on three central constructs of the model: (1) self-efficacy, (2) outcome expectations, and (3) goals. Lent et al. (1994; 2002) posit that these constructs operate together in ways that inform students' interest development in context. They also claim that these constructs are relevant to both academic and career choices, thus supporting the use of the model in a context where students engage in decision-making related to both areas of their lives. Within SCCT, self-efficacy is defined as an individual's evaluative judgment of their ability to make progress toward their goals in a chosen area. Drawing from Bandura's social cognitive theory (1986), the authors describe the role of self-efficacy as "constituting the most central and pervasive mechanism of personal agency" (Lent et al., 1994, p. 83). Outcome expectations are an individual's perceptions about what will result from a sustained effort of working toward their goals, as well as the value they place on that outcome. Goals are an individual's expression of

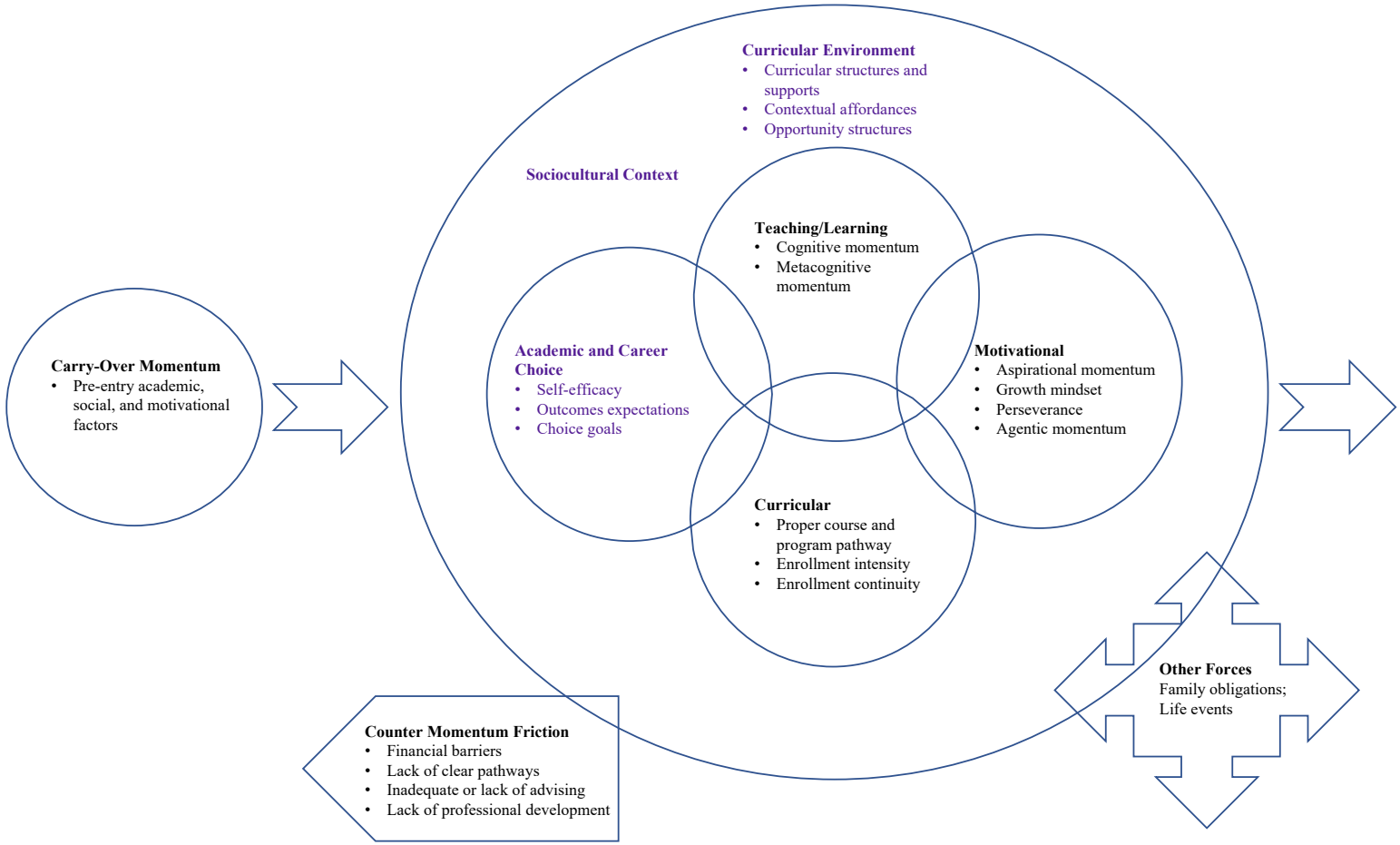
their commitment to achieving in a chosen area and are mediated by interests. According to Lent et al. (1994, 2002), once a goal is determined, an individual can identify and organize the steps they need to achieve success. Early, incremental progress toward a goal can provide motivational support that makes continued progress toward a goal more likely. Central propositions in the SCCT model as applied to my research question include:

1. Self-efficacy beliefs as they relate to student's ability to persist and succeed in college, as well as the outcomes students expect relative to their academic or career choice, affect students' interest development over time.
2. Self-efficacy beliefs and outcome expectations relative to students' academic or career pathway affect students' short- and long-term goals, both directly and indirectly through their interests.
3. Students who achieve in coursework and activities closely linked to their chosen pathway will experience increased self-efficacy and commitment to their academic or career pathway over time.

I use these propositions to extend Wang's (2017) *Model of Momentum for Community College Student Success,* thus proposing a fourth domain of momentum that addresses students' academic and career interest development and choice. This proposed model, *Model of Academic and Career Choice Momentum in Context,* is presented in Figure 2.2.

Figure 2.2

Model of Academic and Career Choice Momentum in Context



As shown in Figure 2.2, I include a fourth domain of momentum that highlights the importance of students' academic and career choices upon entry and throughout their time in college. This domain, highlighted in purple, is titled *Academic and Career Choice.* Drawing from SCCT, I posit that (1) self-efficacy, (2) outcome expectations, and (3) choice goals relative to students' academic and career interests inform how students make their choice of program of study in college. When students make academic and career choices that are supported by feelings of positive self-efficacy, expectations of strong future outcomes, and personally meaningful goals, they experience positive and early momentum in college. This domain of momentum intersects with the curricular and teaching and learning domain, put forth by Wang (2017). Therefore, momentum accrued in the *Academic and Career Choice* domain affects momentum generated by students in each subsequent domain.

In the proposed model, I make explicit the role of the curricular environment on students' academic and career momentum as represented by the four domains: (1) academic and career interest and choice, (2) teaching and learning, (3) curricular, (4) motivational. In keeping with SCCT, the curricular influences account for the "physical, cultural, material, and social features of the environment" (Lent et al., 2002, p. 274), as well as the features that students perceive to be present or lacking in the college. More specifically, curricular structures and processes account for the physical attributes of the environment that students experience throughout the processes of onboarding, enrollment, advising, and teaching and learning. Contextual affordances are defined as "resources one perceives as being provided by one's environment" (Lent et al., 2002, p. 274). This construct highlights the need for practitioners to consider how students effectively navigate the structures and supports of the college, and whether and how they perceive these curricular experiences to be supportive of their academic and career progress. Lastly, I include

opportunity structures, defined by Lent et al. (2002) as the sociocultural influences that "affect people's ability or willingness to transform their career interests into goals and their goals into actions" (p. 275). Within this category, Lent et al. (2002) identify proximal influences such as "emotional and financial support for selecting a particular option, job availability in one's preferred field, sociocultural barriers" (p. 275); among distal contextual influences, they include "opportunities for skill development, cultural and gender-role socialization processes, range of potential academic-career role models" (p. 275).

In sum, the curricular environment encompasses the aspects of the curriculum that are influenced by the greater sociocultural context in which the college is situated (Lattuca & Stark, 2011). Moreover, they represent areas of the curriculum that practitioners must consider and address to support greater equitable opportunities and improved outcomes in college. By making explicit the role of the curricular environment on students' academic and career momentum, I incorporate a central assumption of the guided pathways framework into the model: specifically, that the curricular context—including the sociocultural and structural aspects of the environment—support or constrain students' choices and subsequent outcomes in college.

In this study, I use a mixed methods design to explore several key constructs and their relationships proposed by this model. I first used quantitative data and methods to examine the relationship, if any, between students' self-efficacy and early outcomes in a guided pathways community college. Using student interview data, I then introduced the student voice around how students express agency in making these consequential decisions in context, addressing a key gap in the literature. Here, I focused on how students express their academic and career aspirations relative to their curricular experiences (Wang, 2017). In the qualitative and mixed portions of the analysis, I combined central constructs and propositions derived from SCCT with

Wang's (2017) *Model of Momentum for Community College Student Success.* SCCT provides a framework to understand how students make course and program decisions. By extending Wang's model, a new framework is offered that can be used to explore how students experience academic and career momentum in context.

This study builds upon the existing literature on academic and career choices in the community college in several ways. First, the analysis benefited from three types of data—survey, administrative, and interview—that support a mixed analysis that advances theory development. Second, administrative data provided by the site college included students' meta-major selection, which allowed for an exploration of student progress toward key milestones relative to their pathway selection. Third, the study introduced a theoretically important construct within the career choice literature, shedding light on whether and how students' self-efficacy relates to their early academic outcomes, as well as their aspirations and curricular experiences in college. Fourth, interview data introduced the student voice, addressing D'Amico et al.'s (2019) call for more research that introduces students' perceptions about their college and career aspirations relative to their choice of program of study.

Overall, this study provides a conceptual framework that can inform research into the effectiveness of structural reforms that center students' unique ambitions, needs, and outcomes. It paves the way for more research that not only tests the effectiveness of reforms that span institutions but also explores where and how reforms can be adjusted to support student success across the spectrum of students' goals and experiences. Moreover, the propositions set forth by the SCCT model allow for an investigation of the unintended consequences that could result from community colleges' engagement with the guided pathways model. For example, students who lack confidence in their academic abilities may be less likely to choose a program of study

that they view to be overly rigorous, regardless of their interests or abilities relative to that area of study. Students' lack of confidence, coupled with the pressure imposed by the college for students to choose a program of study early in their academic experience, may divert these students into areas that do not fully align with their interests and needs. Alternatively, students who do not see themselves represented in the classrooms or curriculum of a particular program of study may not expect to succeed in that area, regardless of their interests and abilities. Mixing quantitative and qualitative findings allowed for an examination of the underlying process of how students make academic and career decisions in a community college that has imposed new structures on the choice process. These findings provide a nuanced understanding of how community colleges can ensure that all students benefit from structural reforms.

Chapter 3 Methodology

Community colleges are increasingly adopting the guided pathways model to organize institutions around how and when students make the important choice of program of study. Yet little is known about how community college students make this choice and the factors that influence their decision. To understand this choice process more fully, I conducted an exploratory study of how students choose their program of study in a community college that is using the guided pathways framework to inform institution-wide changes that encompass students' intake, enrollment, and advising processes. In this study, I examine what factors – including students' self-efficacy beliefs – relate to students' early outcomes in college. I then explore whether and how students relate their early experiences navigating the college curriculum with their academic and career aspirations. Finally, I merge the quantitative and qualitative findings to identify any factors that are found to be influential across both sets of findings.

Research Questions

The overarching question that guides this study is: *How do students develop their academic and career interests in a community college that is using the guided pathways framework to inform college-wide changes?* The following sub-questions provide support to this broader question:

(1) What is the relationship between students' self-efficacy beliefs and their outcomes in their first year of enrollment in a guided pathways community college?

(2) How do students relate their curricular experiences to their academic and career aspirations?

(3) What patterns are revealed from merging the qualitative data about students' aspirations and curricular experience in the community college with quantitative data measuring students' self-efficacy and decidedness about their choice of program of study?

Using a mixed methods case study design, this study begins to reveal the process by which students make their academic and career decisions. This topic not only underlies every student's experience in college, but it has also gained importance given the centrality of these decisions in how community colleges use the guided pathways framework to inform institution-wide changes intended to direct and support students through their curricular experience.

Below I identify the philosophical and methodological approach used in this study. I then outline the data collection procedures and steps used in order to provide transparency around the methodological approach of this study (Creamer, 2016). I provide a justification for using a mixed methods case study design, identify the timing of the qualitative and quantitative data collection as well as their relative priority, and explain when and how the mixing of data collection and analysis occurred.

Mixed Methods

Scholars who conduct mixed methods research use data that is collected and analyzed using both quantitative and qualitative methods, thus taking advantage of the opportunity to integrate paradigmatic, theoretical, and methodological approaches in a single study (Tashakkori & Creswell, 2007; Creswell & Plano Clark, 2018). There is a natural tension between using more than one method in a single research study due to sometimes conflicting philosophical

underpinnings or practical approaches of each unique method. However, scholars versed in this methodological approach take the stance that the complexity of a mixed methods approach can support an investigation that honors the complexity of our social world (Creamer, 2016; Greene, 2007). Scholars who employ mixed methods research identify with a range of worldviews, such as post-positivist, constructivist, transformative, pragmatist, or dialectic (Creswell & Plano Clark, 2018). In the next section I will describe the worldview that I embrace for the purposes of this study.

Dialectic Perspective

In recent years, scholars have proposed a dialectic paradigmatic worldview that acknowledges the multiple assumptions and ways of thinking that support qualitative and quantitative approaches to research, considering and applying each in a way that "affords a meaningful engagement with difference, an engagement intended to be fundamentally generative of insight and understanding that are of conceptual and practical consequence" (Greene & Hall, 2010, p. 124). Greene (2007) defines the dialectic perspective as one which acknowledges that "the assumptive sets of different paradigms are different in important ways, but paradigms themselves are historical and social constructions and so are not inviolate or sacrosanct" (p. 69). Regarding its practical application, she explains:

> Paradigmatic assumptions importantly guide and direct practical inquiry decisions, along with context and theory. Important paradigm differences should be respectfully and intentionally used together to engage meaningfully with difference and, through the tensions created by juxtaposing different paradigms, to achieve dialectical discovery of enhanced, reframed, or new understandings. (Greene, 2007, p. 69)

The dialectic perspective is applicable to research designs that incorporate various stages of mixed methods analysis and aim to deepen our understanding of complex social processes in context (Greene, 2007; Greene & Hall, 2010; Shannon-Baker, 2015). Scholars who employ a

dialectic worldview strive for a high level of methodological transparency due to the multiple and sometimes conflicting motivations, philosophical orientations, and approaches to mixed methods of data collection and analysis (Creamer, 2016; Creswell & Plano Clark, 2018).

I approach this study with a dialectic perspective that acknowledges the assumptions that underlie the qualitative and quantitative strands of data collection and analysis (and the tensions that might arise from the two). For instance, a post-positivist lens relates most closely to the quantitative strand, allowing for an exploration of the factors – including choice of program of study – that were most influential on students' early outcomes in college. A constructivist worldview relates most closely to the qualitative strand, highlighting the belief that how students choose an academic or career interest within the community college is a complex social process that is influenced by many factors, some of which students bring with them to their college experience and others which exist within the structures of institutions and society. The outcomes that students experience must be considered in context and attention must be given to the socially constructed nature of the process. Due in part to these multiple approaches and assumptions, I classify my perspective as dialectic, given that I employ both quantitative and qualitative approaches to explore supports and barriers that students consistently experience throughout the academic and career choice process, as well as those that are socially constructed and specific to the community college context. A dialectic lens enabled me to merge the quantitative results with qualitative findings, allowing for reflection on the differences in students' outcomes and experiences, as well as whether and how they relate to the choice process itself (Greene, 2007; Greene & Hall, 2010; Shannon-Baker, 2015).

The dialectic lens is well suited to the theoretical approach applied through Social Cognitive Career Theory (SCCT) (Lent et al., 1994; 2002). SCCT employs a cognitive

constructivist approach to academic and career development. Specifically, the model emphasizes the role of personal agency throughout the choice process, while also representing how individuals interact with their environment in ways that inform their interests, choices, and outcomes. Moreover, the authors posit that the environment is socially constructed, which contributes to the ways students experience it in the intended ways, as well as students' varying perceptions of the opportunities afforded by the environment. A constructivist lens is useful when applied to exploratory studies aimed at revealing the behavioral effects of institutional structures, policies, and rules that are targeted and timed to reach specific populations of students. By acknowledging the effect of students' varying perceptions of how institutions design structures and processes related to student's academic and career choices, scholars may be better equipped to reveal where policies or practices are leading to unintended consequences, such as creating signals that some students are better suited or more likely to succeed in some program areas than others.

Case Study Approach

Choosing a program of study or career is a very personal choice. Many factors can come into play in this decision for any one individual. At the same time, the process by which students make academic and career decisions is also informed by actions taken by the institution to impose rules or structures around the process. This is especially true in community colleges that are using the guided pathways framework to inform institutional change. To understand more deeply how students engage with this important choice process, and to help institutions understand factors within the institution that influence students' experiences and outcomes, a mixed methods case study design is used. In this study, the case is bound at the institutional level and involves students enrolled in a community college that has made substantial changes to the

student intake, enrollment, and advising processes related to how students make academic and career decisions early in their college experience.

A mixed methods case study design enabled this multifaceted approach to analysis, enabling me to ask both what and how questions that are supportive of theory building (Alvesson & Karreman, 2011; Eisenhardt, 1989; Eisenhardt & Graebner, 2007). According to Eisenhardt (1989), "Analyzing data is the heart of building theory from case studies, but it is both the most difficult and the least codified part of the process" (p. 54). Alvesson and Karreman (2011) explain: "Theory emerges through intimate contact with empirical materials and through the frictions and tension between and within various data sets" (p. 2). While Eisenhardt (1989) advocates for an inductive approach to theory development, Alvesson and Karreman (2011) support an approach to research in which "we ask and explore if empirical material can encourage the challenging and rethinking of established theory and thus inspire novel lines of theory development" (p. 5). The methodological approach used in this paper aligns with Alevesson and Karreman's (2011) view that mixed methods case studies can be used to generate theory, as well as to "challenge, rethink and illustrate theory" (p. 4).

Convergent Parallel Design

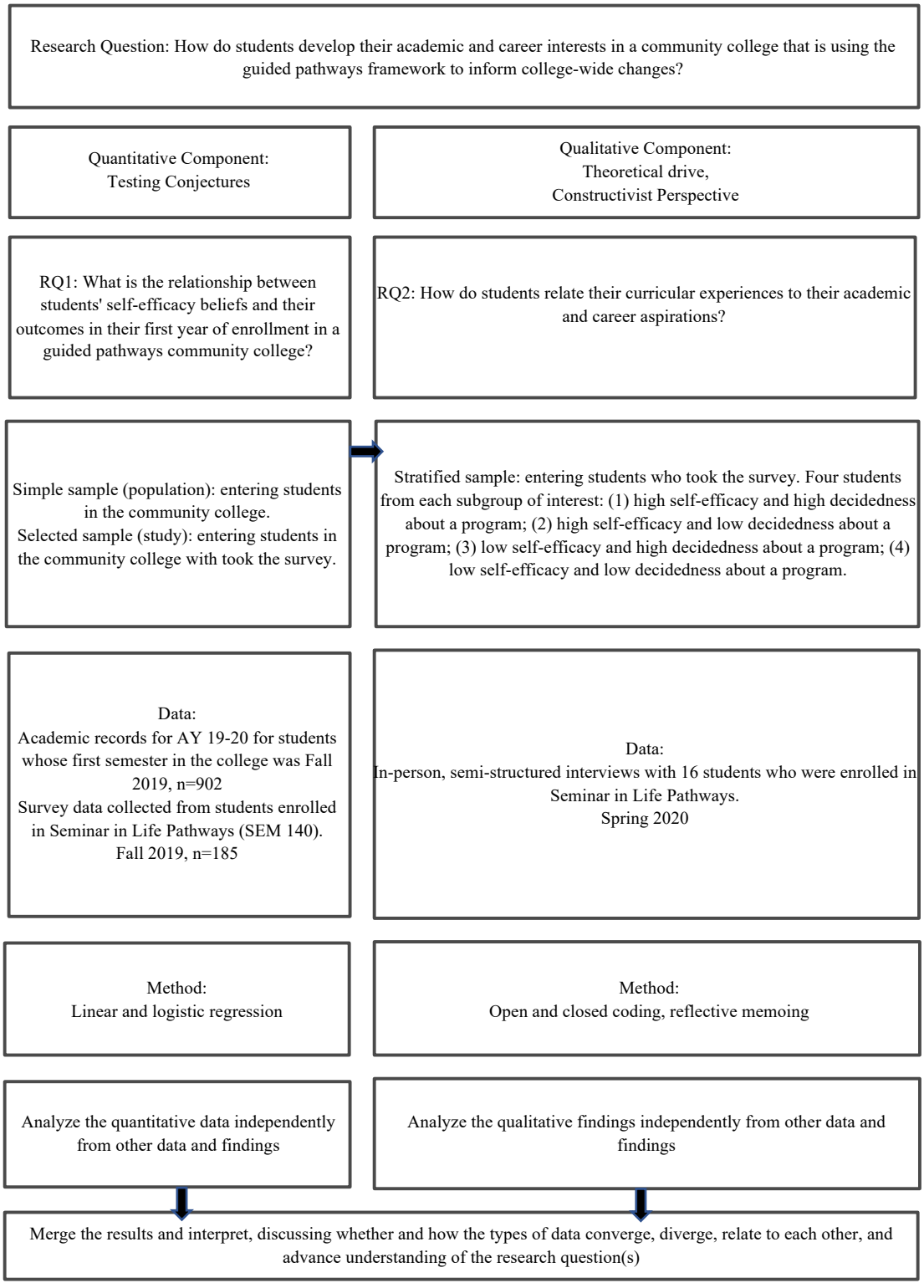
I explore the case using a convergent design, first analyzing quantitative and qualitative data separately and then merging the results to achieve a more complete understanding of the case (Creswell & Plano Clark, 2018). Quantitative and qualitative data were mixed at the sampling stage and again at the final inference stage.

The convergent parallel design is shown in Figure 3.1. The qualitative strand served as the core component of the study. A sample of 16 students were chosen to participate in semi-structured interviews. Students' responses were used to explore how they related their

experiences in college to their academic and career aspirations and choices. The quantitative strand served as the supplemental component, allowing for an investigation of key conjectures or hypotheses related to students' choice of program of study. As a final step, the quantitative and qualitative findings are considered together to expose those that agreed or conflicted. In this way, the mixed methods case study approach is complementary, meaning that "it seeks to elaborate, enhance, deepen, and broaden the overall interpretations and inferences from the study" (Greene, 2007, p. 101). This approach is well-suited to an exploratory research design that intends to unravel a complex social process such as students' academic and career choices in context.

Figure 3.1

Mixed Methods Case Study: Convergent Parallel Design



Quantitative Strand

Quantitative data, primarily administrative and academic records shared by the site college, provide information about whether a relationship exists between students' self-reported self-efficacy across academic and career pathways and key outcomes in students' first year in college. The data also help identify other individual-level factors that may shape students' early outcomes in community college. When combined with the qualitative data, students' academic and survey data provide a well-rounded look into the characteristics that inform students' choice of program of study, as well as the curricular factors that students perceive as being important to their choice.

Hypotheses

I use Ordinary Least Squares (OLS) regression analysis to test the following hypothesis: *H_{1}- H_{3}: Self-efficacy beliefs are positively related to students' short-term outcomes in college, such as the number of attempted credits, the number of completed credits, and grade point average.* Finally, I use logistic regression analysis to test the following hypothesis: *H_{4}: Self-efficacy beliefs are positively related to students' early persistence in college.*

Data and Methods

The quantitative portion of this study benefits from survey data collected from a subsample of the study population and administrative records shared by the site college for all entering students in academic year 2019. The original data file included 1,351 students who were enrolled at Momentum Community College[1] (MCC) during the 2019-2020 academic year. This sample excludes the data of 30 students who indicated through the study consent process that

[1] Momentum Community College is a pseudonym used to protect the anonymity of the site college.

they did not want their academic records shared by the college.[2] Of this sample, I excluded 339 students whose start term at the college was a semester before or after Fall 2019. I excluded 51 students who attempted 0 credits in Fall 2019, and 24 students who were identified as being non-degree seeking. Finally, I excluded 36 students whose chosen pathway was Skilled Trades. This pathway was omitted from the analysis due to small numbers and because of the strong emphasis within this programmatic curriculum on preparing students for immediate placement into the professional trades, an outcome that warrants its own investigation. This resulted in a final population sample of 902 students. In the Fall 2019 semester, these students enrolled in at least 3 credits and at most 19 credits.

The administrative records provided by the site college were supplemented by survey data collected for this study. The purpose of the survey was to introduce students to the study's aims, which is to gain an understanding of how students' beliefs, perceptions, and goals inform their academic and career choices early in college. The survey was also the primary mechanism by which students' self-efficacy—a central construct used in the empirical investigation—was measured. Exploratory interviews with students at the site college were conducted to pilot the survey design and questions (Oksenberg, Cannell, & Kalton, 1991).

In survey methodology, two areas of design consideration should guide the researcher's decisions: (1) the measurement of constructs and (2) the representation of the population of interest (Groves et al., 2009). Regarding measurement, I collected information related to students' general self-efficacy using Chen et al.'s (2001) new general self-efficacy scale. This eight-item scale captures individuals' beliefs about whether they can be successful in a range of situations and contexts and has been found to be correlated with motivational variables (Chen et

[2] As part of the consent process, students were asked to indicate yes or no to the following statement: *I agree to allow researchers to access my academic records for the purposes of this study.*

al., 2004). The scale has been shown to be "theory based, unidimensional, internally consistent, and stable over time" (Chen et al., 2001, p. 69). I chose a general measure of self-efficacy given that the study population included students who represented a broad range of beliefs, experiences, and interests.

To achieve a near representative sample, I administered the survey in-person in 24 independent sections of "Seminar in Life Pathways" (hereafter referred to as SEM Life Pathways), a gateway course implemented as part of the guided pathways framework and designed to help students select an academic program of study early in their college experience. SEM Life Pathways is required of all incoming students to the college with some small exceptions. As part of the consent process, students were told that they would be entered into a lottery to win 1 of 5 gift cards worth a value of $50 should they complete the survey.

In total, 248 students completed the survey (the survey instrument is provided in Appendix A). Of this subsample, data for 63 respondents were excluded because their first term in college occurred before Fall 2019 or their starting term was unknown. Of these, 25 respondents provided complete survey responses but did not assent to their administrative records being shared by the college for the purposes of this study. The final analytic sample consisted of 185 students who provided consent for the overall study and their administrative records being shared by the college, provided complete responses to the survey questions, and whose first term in the site college was Fall 2019.

Across each of the four regression models in this study, the dependent variables are (1) a discrete variable that measures the number of credits attempted in a student's first semester in college, (2) a discrete variable of the number of credits completed in a student's first semester in college, (3) a continuous variable of the grade point average (GPA) earned in a student's first

semester in college, and finally, (4) an indicator variable of whether or not the student persisted from their first to their second semester in college.

For each model, the independent variable of interest is a student's self-reported self-efficacy as measured through the survey instrument. Self-efficacy was calculated by averaging students' responses to Chen et al.'s (2001) eight-item new general self-efficacy scale.[3] This is a continuous variable that measures general self-efficacy on a five-point, reverse Likert scale. Students whose scores placed them in the top 25th percentile for general self-efficacy (4.75-5.0 on a five-item, reverse Likert scale) were deemed to be of higher self-efficacy, as compared to other survey respondents. Students whose scores placed them in the bottom 25th percentile for general self-efficacy (0.10-4.13 on a five-item, reverse Likert scale) were deemed to be of lower self-efficacy, as compared to other survey respondents.

In each model, I control for students' demographic and other important characteristics, specifically students' race/ethnicity, gender, age, income status, county of residence, and academic preparation.[4] Income data was unavailable; therefore, a student's receipt of a Pell Grant was used as a proxy indicator of whether students were of low-income status. I also created an indicator variable of whether a student was placed into developmental coursework in their first semester in college as a proxy for student's academic preparation for college.

Financial aid was grouped into two categories: (1) non-repayable financial aid such as federal, state, and/or institutional scholarship aid, and (2) self-help aid such as federal or private loans. These variables were included as controls across each model. I included a categorical

[3] The response scale was a five-item reverse Likert scale: 5=strongly agree, 4=somewhat agree, 3=neither agree nor disagree, 2=somewhat disagree, and 1=strongly disagree.

[4] In the quantitative strand of analysis, I used institutional data to generate measures of race/ethnicity, gender, age, income status, county of residence, and academic preparation. In the qualitative and mixed strands of analysis, I use students' self-reported data for sex and race/ethnicity collected through the survey instrument shared in Appendix A.

variable that indicated the academic or career pathway selected by the student in their first term in college; this was used as a control variable across each model. In the final model that explores factors related to students' persistence from Fall to Winter term, I include controls related to students' course achievements in the Fall term. These include separate measures of whether a student completed at least one college-level math course or college-level English course, the number of attempted credits, and their GPA for their first term in college. The variables used across each of the four models and their definitions are provided in Table 3.1.

Table 3.1

Definitions of Variables

Variable	Description	Model 1	Model 2	Model 3	Model 4
General Self-Efficacy	Average score to an eight-item survey, measured using a five-item reverse Likert scale: 5=strongly agree, 4=somewhat agree, 3=neither agree nor disagree, 2=somewhat disagree, and 1=strongly disagree.	IV	IV	IV	IV
Black	1 if Black, 0 otherwise	X	X	X	X
Other Race	1 if Other Race, 0 otherwise	X	X	X	X
Female	1 if female, 0 otherwise	X	X	X	X
Age 19 or less	1 if age 19 or less, 0 otherwise	X	X	X	X
Age 20-24	1 if age 20-24, 0 otherwise	X	X	X	X
Low Income	1 if low income, 0 otherwise	X	X	X	X
MCC County	1 if MCC County, 0 otherwise	X	X	X	X
Fall Developmental Coursework	1 if enrolled in at least 1 developmental education course, 0 otherwise	X	X	X	X
Non-Repayable Financial Aid	Non-repayable financial aid amount measured in thousands of dollars	X	X	X	X
Self-Help Financial Aid	Self-help financial aid amount measured in thousands of dollars	X	X	X	X
Chosen Pathway	Categorical variable	X	X	X	X
Business and Computer Technology	1 if Business and Computer Technology pathway				
Health Sciences	2 if Health Sciences pathway				
Human Services	3 if Human Services pathway				
Liberal Arts	4 if Liberal Arts pathway (base outcome)				
Science, Engineering, and Mathematics	5 if Science, Engineering, and Mathematics pathway				
College-level Math in Fall	1 if completed at least one college-level math course in Fall 2019, 0 otherwise				X
College-level English in Fall	1 if completed at least one college-level English course in Fall 2019, 0 otherwise				X
Attempted Credits in Fall	Number of attempted credits in Fall 2019	DV		X	X
Completed Credits in Fall	Number of completed credits in Fall 2019		DV		
Grade Point Average in Fall	Grade Point Average in Fall 2019			DV	X
Persistence, Fall to Winter	1 if student persisted from Fall to Winter 0 otherwise				DV

Analytic Plan: Multinomial, Ordinary Least Squares, and Logistic Regression Analyses

In this section, I present the types of analyses that are conducted to explore the relationship of students' self-reported self-efficacy to key outcomes in their first year in college.

For Models 1-3, I estimate a series of ordinary least squares (OLS) regression models for each respective outcome: the number of attempted credits in the student's fall semester, the number of completed credits in the student's fall semester, and the student's GPA in the fall semester. In the case of attempted credits, the model is specified as:

$$AttCred = \alpha + \beta X + \gamma A + \delta Z + \varepsilon$$

where *AttCred* is the number of credits a student attempted in their first semester in college; *X* represents a set of demographic and financial characteristics, such as race/ethnicity, gender, age, income status, and local county of residence. Variable *A* represents the financial aid received by the student in the form of non-repayable or self-help financial aid. Variable *Z* represents the academic preparation and chosen pathway as measured by whether the student was enrolled in a developmental education course in Fall of 2019 and a categorical variable indicating the student's choice of academic or career pathway. Each of the parameters ($\alpha, X, A,$ and Z) are estimated by the model. Lastly, ε represents a random error term that is normally distributed.

For Model 4, I estimate a logistic regression model to explore the conditional relationship between students' self-efficacy and whether they persist from the first to second semester in college. The technique is used due to the dichotomous nature of the outcome variable, which measures whether a student persists or not (Long, 1997; Rodriguez et al., 2018).

The logistic regression model is specified as follows:

$$\log \frac{P}{1-P} = \alpha + \beta X + \gamma A + \delta Z + \varepsilon$$

where P is the probability that the student will persist from the first to second semester in college. Variable X represents a set of demographic and financial characteristics, such as race/ethnicity, gender, age, income status, and local county of residence. Variable A represents the financial aid received by the student in the form of non-repayable or self-help financial aid. Regressor Z represents the academic preparation, chosen pathway, achievement, and influential course enrollments of the student in Fall 2019. This vector includes variables that measure a student's GPA in the fall term, chosen academic or career pathway, number of credits attempted in the fall term, the academic or career pathway selected by the student, whether the student completed a college-level math course, and whether the student completed a college-level English course. Each of the parameters ($\alpha,\ X,\ A,$ and Z) are estimated by the model. The final term is ε, which represents a random error term that is logistically distributed.

Qualitative Strand

The qualitative data used in this study provide insight into how students related their curricular experiences early in college to their academic and career aspirations. As students enter college, many engage in a process of imagining how their academic journey may affect their future outcomes. A student may envision what their personal, academic, and professional life will be like when they achieve their goals. They may then take steps, in and out of the classroom, to achieve those goals. This process can be described as "aspirational momentum" (Wang, 2017, p. 285). Wang states, "Aspirational momentum refers to students' clear definition of and sustained commitment to their educational goals" (Wang, 2017, p. 285). I used qualitative thematic analysis (Braun & Clarke, 2006; Kiger & Varpio, 2020) to explore the ways that students experience aspirational momentum, as conveyed by students themselves.

Sampling

The primary qualitative sample was drawn from a subpopulation of students who participated in the study survey, administered in SEM Life Pathways, as described above. Any student who was enrolled in SEM Life Pathways in Fall 2019, completed the survey, and provided consent to participate in the interview portion of this study, regardless of whether they were in their first term of enrollment at MCC, was included in the potential interview sample (*n* = 250).[5] Through the survey, students who provided their consent to be contacted for an in-person interview were asked to provide their preferred contact information.

Based on students' composite scores for self-efficacy and decidedness, students were placed into four subgroups using a two-step process that considered students' scores for both measures. In this study, decidedness is defined as the degree to which students are free from doubt about their academic or career choice in college (adapted from Merriam-Webster, n.d.). Students' scores on two questions related to decidedness – the ease of their choice and their level of commitment to stay in their chosen pathway – were averaged. These questions were also measured using a reverse Likert five-item scale, with the top 25th percentile range for this measure stable at 5.0 out of a possible 5.0 and the lower 25th percentile range between 0.10-3.0).

The subgroups that resulted from this process reflect students' following characteristics: (A) high levels of self-efficacy and high decidedness about their program of study, (B) high levels of self-efficacy and low decidedness about their program of study, (C) low levels of self-efficacy and high decidedness about their program of study, and (D) low levels of self-efficacy and low decidedness about their program of study. These quadrant groupings provided a sampling mechanism by which to explore the relationship that may exist between students'

[5] Students who were younger than age 18 and/or were dually enrolled in high school at the time of survey administration were excluded from participation.

levels of self-efficacy as it related to their college experience, as well as an opportunity to examine whether students who were more decided about their program choice were better able to articulate their motivations to succeed within their chosen academic or career area. From each subgroup, at least four students were invited to participate in semi-structured, in-person interviews, resulting in a total sample of 16 students.[6] Figure 3.2 provides a visual representation of the placement of the 16 interviewees by high/low self-efficacy and decidedness about their choice of program of study.[7] Table 3.2 displays the distribution of self-efficacy and decidedness scores for study participants.

[6] A total of 28 students were in the first quadrant, based on their composite scores for self-efficacy and decidedness. Of those 28 students, eight students did not assent to participate in the interview portion of the study. Therefore, I invited and confirmed four students to participate out of a total of 20 students. A total of 11 students were in the second quadrant and all provided their consent for the interview portion of the study. A total of five students were in quadrant three and all provided their consent for the interview portion of the study. A total for 19 students were in quadrant four and all but two students provided their consent for the interview portion of the study. As with the first quadrant, for each of these groups I confirmed four students to participate in the interview process. While I tried to invite students within these groups who represented a range of program interests and personal characteristics, I was primarily focused on ensuring that I confirmed at least four students within each group.

[7] I use pseudonyms throughout the study to maintain the anonymity of study participants. I selected the pseudonyms for each participant and used those the shared the same first letter as the participant's name.

Figure 3.2

Quadrants of Self-Efficacy and Decidedness

	High Decidedness (5.0)	*Low Decidedness (1.5-2.5)*
High Self-efficacy (4.75-5.0)	(A) Amos Corrine Joline Tab	(B) Aaliya Jenai Tessa Zeke
Low Self-efficacy (2.88-4.00)	(C) Calem Kaelah Karli Susanne	(D) Philippa Scott Tanya Thomas

Note: Survey questions are measured using a five-item reverse Likert scale: 5=strongly agree, 4=somewhat agree, 3=neither agree nor disagree, 2=somewhat disagree, and 1=strongly disagree. I used pseudonyms throughout the study to maintain the anonymity of study participants.

Table 3.2

Distribution of Self-Efficacy and Decidedness Scores for Student Participants

Name	*Interview Quadrant*	*Self-Efficacy (reverse)*	*Self-Efficacy Quartile*	*Decided-ness (reverse)*	*Decided-ness Quartile*
Amos	A	4.88	1 *(high)*	5.00	1 *(high)*
Corrine	A	4.75	1 *(high)*	5.00	1 *(high)*
Joline	A	4.88	1 *(high)*	5.00	1 *(high)*
Tab	A	4.88	1 *(high)*	5.00	1 *(high)*
Aaliya	B	4.75	1 *(high)*	2.00	4 *(low)*
Jenai	B	4.75	1 *(high)*	2.50	4 *(low)*
Tessa	B	5.00	1 *(high)*	2.00	4 *(low)*
Zeke	B	4.75	1 *(high)*	2.50	4 *(low)*
Calem	C	3.88	4 *(low)*	5.00	1 *(high)*
Kaelah	C	2.88	4 *(low)*	5.00	1 *(high)*
Karli	C	4.00	4 *(low)*	5.00	1 *(high)*
Susanne	C	4.00	4 *(low)*	5.00	1 *(high)*
Philippa	D	2.88	4 *(low)*	2.50	4 *(low)*
Scott	D	3.50	4 *(low)*	2.50	4 *(low)*
Tanya	D	4.00	4 *(low)*	2.00	4 *(low)*
Thomas	D	3.88	4 *(low)*	1.50	4 *(low)*

Note: Survey questions are measured using a five-item reverse Likert scale: 5=strongly agree, 4=somewhat agree, 3=neither agree nor disagree, 2=somewhat disagree, and 1=strongly disagree.

Resultant Sample

Table 3.3 summarizes students' demographic characteristics by interview quadrant. Each quadrant represented variation in students' self-efficacy and decidedness scores due to the purposeful sampling technique described in this chapter. Regarding other characteristics, student participants were evenly distributed across the six pathways offered by the college. At least one participant from each program of study was represented among this group of students; two students reported that they were undecided about their pathway choice. Among the student participants, 10 students reported their sex as female and six students reported their sex as male.[8] Participants' racial and ethnic identities included eight students who identified as White; three students who identified as Black; one student who identified as Hispanic; one student who identified as White and Black; one student who identified as White and Filipino; one student who identified as White and American Indian or Alaska Native; and one student who identified as "some other race."

[8] On the survey, students were only given the option to report their assigned sex as female or male.

Table 3.3

Student Participant Characteristics by Interview Quadrant

Name	*Pathway*	Sex	*Race/Ethnicity*	*Interview Quadrant*
Amos	Human Services	Male	White	I
Corrine	Science, Engineering, and Mathematics	Female	Black	I
Joline	Health Sciences	Female	Black	I
Tab	Skilled Trades and Agriculture	Male	White, American Indian or Alaska Native	I
Aaliya	Health Sciences	Female	Hispanic	II
Jenai	Health Sciences	Female	White, Black	II
Tessa	Health Sciences	Female	Black	II
Zeke	Business and Computer Technology	Male	White	II
Calem	Business and Computer Technology	Male	White	III
Kaelah	Liberal Arts	Female	White	III
Karli	Liberal Arts	Female	White	III
Susanne	Business and Computer Technology	Female	White	III
Philippa	Liberal Arts	Female	White	IV
Scott	Liberal Arts	Male	White, Filipino	IV
Tanya	Undecided	Female	White	IV
Thomas	Undecided	Male	Some other race	IV

Note. [a] I: High self-efficacy, high decidedness about a program of study; II: High self-efficacy, low decidedness about a program of study; III: Low self-efficacy, high decidedness about a program of study; IV: Low self-efficacy, low decidedness about a program of study.

Semi-structured Interviews

In Wang's (2017) theoretical model for community college student success, she broadly defines curricular momentum as "the forward motion students maintain through course-taking patterns and efforts along either a formal program of study, or a sequence and configuration of coursework leading to a tangible educational goal" (p. 6). She further breaks this construct into three action areas: (1) well-supported progress on a structured academic and career path or through a set course sequence, (2) enrollment intensity, and (3) enrollment continuity. Through semi-structured interviews, I explore students' perceptions of the first action area, due in part to the time-limited nature of the interview data that was gathered through a single conversation early in the student's academic experience in the college. Once again, I ground the use of this construct in the assumption that the curriculum that students experience is influenced by the greater sociocultural context in which it is situated (Lattuca & Stark, 2011). While the purpose of this study is not to explore those specific factors or their role in shaping the curriculum, acknowledging the role of the sociocultural context on students' academic and career choices is important given the focus of this study on understanding how students experience a curriculum that has been informed by an externally derived framework such as guided pathways.

I conducted a total of 16 one-hour interviews with students from the months of January 2020 through March 2020 (the interview protocol is provided in Appendix B). Given that our conversation took place in at least their second semester of enrollment at the community college, each student had already chosen their pathway and had been exposed to some aspect of the curriculum related to that pathway. The semi-structured interview protocol centered on students' aspirational beliefs about themselves in college and in their present stage in life. The 60-minute timeframe and semi-structured format allowed for the time and flexibility required for students to

answer each question in detail and for me to ask follow-up questions that were tailored to their unique interests and experiences. The interviews were conducted in person and on campus, though in a location that afforded the participant's privacy. At the start of the interview, students were once again briefed on the purposes of the study and were provided with a form approved by the Institutional Review Board that detailed the consent process, which was also discussed at that time (the IRB-approved consent form is provided in Appendix C). Each student received a $50 gift card at the time of the interview to compensate them for their time. After each interview was completed, I remained in the interview location and wrote my reflections about each student in context, as well as what I perceived to be salient aspects of our conversation. As a final step, all interviews were recorded and transcribed verbatim for the purposes of analysis.

Data Analysis

I used thematic analysis to explore how students formed academic and career aspirations in context (Braun & Clarke, 2006; Kiger & Varpio, 2020). I used the qualitative software analysis program NVivo (released in January 2022) to analyze student interview data using both an open and closed coding process. As a first-cycle coding procedure, I used *in vivo* coding methods that used students' own words as an initial coding category (Miles et al., 2018). As I read through each transcript, I considered how the *in vivo* categories related to other similar expressions used by students and revised the codes into concept categories that reflected these shared ideas and experiences. This approach was used to allow for students' own voice to come through even at the point of analysis. I also used a small subset of a priori codes that related to my research questions. A primary example of this is students' goal expressions, which I coded as "aspirations."

As I coded each transcript, I reviewed and revised codes, allowing for subcodes to emerge. For example, within "aspirations," I began to see the various levels and motivating factors students identified when articulating their goals. I assigned subcodes to capture whether an aspiration related to a shorter-term goal that was academically oriented, or a longer-term goal that was career oriented. I also assigned codes for whether students' aspirations were motivated by a desire to achieve satisfactory grades, to engage in activities that allowed them to discover where their true interests lay, or to achieve personal or practical fulfillment. As subcodes emerged, so too did the complexity of each code.

As a second-cycle coding procedure, I searched for patterns and relationships across and within codes. According to Miles et al. (2018) pattern codes are "inferential or explanatory codes, ones that identify a bigger picture configuration" (p. 79). Pattern codes pull together codes into larger patterns or themes that support theory development (Miles et al., 2018). For example, I considered how codes related to each other within larger groups or categories and also how, within those categories, additional subcategories emerged. At this stage of the analytic process, I conducted this work by hand, moving between students' transcripts and coding reports. I made jottings and notes in the margins of the paper to reflect my thinking, revising and expanding upon the codebook throughout this process. I also made an effort to check for disconfirming cases as a way to examine the validity of my claims (Maxwell, 2013).

As I reviewed the codes and their relationship to each other, I drafted analytic memos that put words to themes that were revealed throughout this phase of analysis. This allowed me to examine categories, themes, and assertions that would eventually be used to answer my research questions in ways that allowed for reflection and could be easily shared. At this stage, and throughout the first stage of coding, I found it important to share my process with trusted others

to gather input and check my own bias toward any particular frame of analysis (Ravitch & Carl, 2016).[9] Analytic memos also allowed me to theorize about the data before merging the findings of the quantitative or qualitative strands.

The final codebook consisted of four categories: 1) "Aspirations" (short-term completion, short-term transfer, short-term credit, long-term career, figure it out, achieve grades, personal fulfillment, practical fulfillment); 2) "Choice Behaviors" (early exposure, expected outcomes, personal connection, search for outcomes); 3) "Choice Barriers" (choice anxiety, perceived lack of agency, lack of clear pathway, math struggle); and 4) "Institutional Supports" (advising support, instructional support). With these categories and codes, the codebook included 26 subcodes.

Mixing at the Inference Level

The third step in a mixed methods case study that uses a convergent parallel design is mixing the quantitative and qualitative strands at the inference level to explore whether and how findings come together or diverge. Creswell and Plano Clark (2018) explain that the convergent design is used to provide "a more complete understanding of a problem" (p. 65) and to serve as a validity check for findings that emerge from each type of data. In answering the overarching research question, I ask a final sub-question: *What patterns are revealed from merging the quantitative data about students' aspirations and curricular experiences in the community college with quantitative data measuring students' self-efficacy and decidedness about their choice of program of study?*

For this strand of analysis, I conducted a thematic analysis of students' interview data within quadrants generated through a two-step process, utilizing survey data that was used to

[9] I appreciate the input of Dr. Jandi Kelly, who reviewed codes, definitions, and coded excerpts and provided questions that allowed me to gain clarity throughout this process.

measure students' self-efficacy and decidedness about their program choice. As with the qualitative strand, I used the NVivo software to code students' interview transcripts without reference to students' quadrant placement. As a second step in the analysis, I printed code reports and organized students' responses relative to each code by quadrant. This and the subsequent steps were conducted by hand. I then reviewed codes by quadrant to identify patterns or themes drawn from students' perceptions that emerged at the organizational level. This analytic approach is aligned with the conceptual model outlined in Chapter Two, which emphasizes the interaction that occurs between individuals and their environment.

For each quadrant, I report students' chosen pathway, sex, and race/ethnicity as reported through their survey response. This within-case analysis allows for an understanding of whether students' aspirations or curricular experiences varied across the self-efficacy scale or relative decidedness about their academic or career choices early in college. This mixed analysis provides an additional look into whether and how self-efficacy relates to students' academic and career decision-making in context as postulated by SCCT, contributing to theory building in this area.

Positionality

In research as in life, each person introduces their own subjectivity in ways that influence our understanding of the world and its events (Peshkin, 1988). In conducting this research, I put forward how my own positionality or experiences, identities, and biases may be reflected throughout this work. First and foremost, I am a believer in the power of a community college education to be of personal meaning and societal value. Community colleges are under-resourced, under-researched, and yet they are responsible for educating nearly half of the undergraduate student population in this country. The students they serve are disproportionately

from communities that are historically underserved by higher education; too often these students are navigating complex personal lives and responsibilities as they pursue a wide range of goals and purposes. In my early career, I worked for leaders and now mentors who have dedicated their lives to these institutions, sharing with me their belief that "the top 100 percent" of people in our country should be afforded a quality, public education such as the one that community colleges strive to deliver (Katsinas et al., 2022, p. 153). I express my commitment to this belief in educational access and opportunity by focusing on this this important sector of postsecondary education and engaging in policy intervention and scholarship that aims to support institutions in their efforts to improve student success. Throughout this research, I have made an intentional effort to reflect on how my belief in the transformative power of these institutions may influence how I conducted this study. I strove to remain aware of any bias I hold as it relates to students' experiences in the community college, and open to students' unique experiences and challenges experienced throughout their educational experience. In this way, I was able to channel my belief in community colleges into my resolve to conduct a sound research study that allowed for students' voices, experiences, and outcomes to speak for themselves.

In my early career, I served in policy roles that were focused on supporting institutional improvements at scale. Based in part on this experience, I am inclined toward efforts to stimulate change. I have reflected on whether and how my experience working in policy has piqued my interest in an institution-wide reform framework such as guided pathways. This interest has sustained me throughout this study, keeping me engaged throughout multiple stages of design, data collection, and analysis. Here, too, I have tried to ask questions that do not suggest support for the guided pathways model but rather demonstrate curiosity about where and how it is affecting students' experiences and outcomes in college. I have also pushed myself to unpack

and examine aspects of the model that are conceptual and elemental to reveal the underlying process that students experience in pursuit of their academic or career goals. This effort required me to focus my questions not on the guided pathways model itself, but rather on students' beliefs and experiences relative to how the institution had engaged with the conceptual or practical aspects of the model.

Throughout my inquiry, I remained mindful of the multiple identities that I bring to this work, including being an outsider to this community of practice. While I have interacted with community college leaders, practitioners, advocates, and scholars through my experiences in policy and program administration, I have never been a community college employee or student. To mitigate against the risk of misunderstanding or misinterpreting students' responses due to my own differing experiences, I spent time getting to know participants through conversation about their family, friends, and motivations before college and related to their current trajectory. I made an effort to support students' ease and comfort in conversation by meeting them where they were, both in their community and in their process of discovering their own interests and goals. For this reason, I chose to administer the survey in students' gateway course that was dedicated to helping them articulate their interests and personal approach to learning. I also met students in-person and on campus for interviews, in a location that was accessible and comfortable. Again, I strove to ask questions that allowed students to share their authentic stories. For example, as a White woman, these and other identities inform assumptions about the goals and opportunities that I perceive to be within reach. I made an effort throughout the research process to ask questions that supported students in sharing their personal stories relative to their goals in ways that challenged my own assumptions. I also spent active time reflecting on

how my own identities and experiences could skew my research choices. In doing so, I hope that meaningful findings emerge.

Study Limitations

This study uses multiple perspectives, theoretical approaches, and methodologies to generate an understanding of students' academic and career choices in a guided pathways community college, an approach that "honors the complexity and contingency of human phenomena" (Greene, 2007, p. 21). The mixed methods study design is used, in part, to offer a conceptual and methodological approach that extends a conceptual understanding of how different students approach this critical decision point within the community college's curricular onboarding process, particularly those that are using the guided pathways framework to redesign this process. At the same time, there are several limitations that should be considered when interpreting findings. I will address the limitations within each strand and at the convergence stage.

The quantitative data used for this study include survey data collected from students in Fall 2019 and academic records for any student enrolled in the college in academic year 2019-2020. The findings generalize to this unique population of students at this unique moment in time. The cross-sectional nature of the data do not account for the longitudinal process that underlies students' academic and career decisions over time. An additional limitation is that data from a single institution and a single cohort of students did not allow for comparisons across sites or groups of students. Moreover, the sample size did not allow for disaggregation by important subpopulations such as race/ethnicity, gender, or students' choice of program of study. While descriptive strategies were used to explore variation at these levels, more data are needed to produce conditional results by subgroup.

The qualitative data also is limited to a single interview that was conducted in Spring 2020. It reflects students' experiences and views at this early stage of their college experience. Additional data artifacts, observations, or interviews at multiple points of time would be needed to reflect how students' goals and choices evolved over time.

Mixing of the quantitative and qualitative strands addressed some of these limitations. For example, the study survey was administered in students' first semester in college, while their interview data were collected during students' second semester. Therefore, data related to students' self-efficacy in college was collected at unique points in time and could therefore be compared to deepen our understanding of this construct. However, a limitation emerged during the administration of this survey that should be noted. Specifically, the inability to access the administrative records of 30 students who completed the survey but who did not assent to their academic records being shared by the college resulted in an incomplete analytical sample. An examination of these students' survey records shows that their self-efficacy score was significantly lower than students who completed the survey and who also provided their positive consent to the administrative data share. The loss of data for these students limited the variation of this key construct, particularly at the lower end of the scale. Incomplete data resulted in an analytical sample that was not representative of the population. This loss of data also prevented a more fulsome examination of the quantitative findings of the study with the qualitative findings at the point of convergence. Limiting mixing of data and findings was due to my inability to access the academic records of three of the students who participated in the interview portion of the study due to lack of consent for the administrative data exchange.

Summary

In this study, I explored my overarching research question of students' academic and career choice in a guided pathways community college through a mixed methods case study design (Creswell & Plano Clark, 2018; Yin, 2018). This methodological choice is well-suited to a study that seeks to use multiple philosophical and theoretical assumptions in ways that are complementary and lead to a complex understanding of a human process in context. Mixing occurred at the sampling level, allowing for a subsample of cases to emerge at the final inference stage. In this stage, quantitative and qualitative findings were compared to explore areas of divergence and convergence related to the question of how students engage in this choice process within a guided pathways community college. In the chapters that follow, I describe the context for the case at the institution- and student-levels and report findings across each strand of analysis.

Chapter 4 Institutional and Student Profiles

As of the year 2021, researchers estimated that approximately 450 community colleges were part of statewide or national efforts aimed at encouraging the broad adoption of the guided pathways framework, and many more community colleges are adopting aspects of the model on their own (Brown et al., 2022; Jenkins et al., 2021). Momentum Community College (MCC), the site college for this study, was a member of both a national and statewide network engaged with the guided pathways framework and was viewed as an early adopter of the model. MCC leaders and practitioners began implementing the guided pathways framework in January 2015, making changes that were first experienced by students in September 2016. In this chapter, I provide a high-level profile of the community college using institutional data and publicly available documents that provide key insights into recent changes made by the college to support improved student outcomes. Additionally, I provide a profile of each interview participant, drawn from reflective memos that were recorded immediately following each interview, as well as students' interview transcripts.

The institutional and student profiles are described at a high level to maintain the anonymity of the site college and each student participant. Both the institutional and student profiles are intended to provide the contextual conditions that are a critical component of case study research (Yin, 2018), but are not intended to be provide a complete reflection of either the institution or the students who participated in this study. Rather, the profiles provide information related to how the college engaged with key aspects of the guided pathways framework and

insight into each student's backgrounds and experiences in ways that support deeper reflection into the factors that informed students' choice of program early in their college experience.

Institutional Profile

MCC is a mid-sized comprehensive community college located in a rural area. In Fall 2019-2020, the unduplicated headcount was nearly 5,000 students, with nearly 3,000 students enrolled full-time. Of this population, 85% of students lived within the region and reported commuting for classes, though the college offered housing to approximately 400 students each semester. Nearly 70% of students reported their race/ethnicity as White, 10% as Black or African American, 6% as Hispanic/Latino, 1% as Asian, 4% as two or more races, and 10% as race/ethnicity unknown. Over 60% of students reported their gender as female. Across the academic year 2019-2020, tuition and fees for full-time, first-time degree-seeking students was nearly $7,000. The college reported that 70 percent of students received some type of financial assistance to pay for the overall cost of college. Using the Voluntary Framework for Accountability's reporting methods[10], the college's six-year degree or transfer rate hovered around 50 percent.

Central to MCC's mission is its articulated commitment to "serving the needs of the whole student" as part of an integrated effort to support students in achieving their goals and completing their program of study. As part of this commitment, the college set a college-wide student success goal whereby the college would strive to improve student retention and completion over a set timeframe. In the area of completion, MCC's specified the need to ensure

[10] The Voluntary Framework of Accountability are reporting metrics designed specifically to capture the performance of community colleges. The metrics were developed by community college practitioners and measure student progress and outcomes including pre-collegiate preparation, academic progress and momentum points, completion and transfer measures, and workforce outcomes for career and technical education. An overview of the metrics can be found here: https://vfa.aacc.nche.edu/Documents/VFAMetricsManual.pdf.

that students were earning credentials of value. From the institutional perspective, this meant that the college would use regional labor market data to ensure any programmatic offering of the college led to a credential that would position students to "earn a family-thriving wage."

The college's commitment to student success is integral to its institutional culture and operations. All members of the community sign a commitment to support the success of all students at the point of hiring, and the effectiveness of programs and efforts are measured against this overarching commitment to student success. In 2018, a group of faculty developed a model of what a commitment to student success looked like from their perspective. From this effort, four categories emerged: 1) building and supporting relationships with students either through one-on-one or group interactions, 2) providing feedback in a clear, transparent, and supportive manner; 3) fostering communication that sets clear expectations across learning platforms and values students' voices; and 4) teaching the whole student with recognition of students' non-academic commitments, disparities, and with a focus on equity.

MCC's commitment to student success is reflected in its approach to student support services including admission, advising, and financial aid, and through the offerings of its Center for Student Success. Admissions staff work to recruit students. Once students are enrolled in the college, they are provided a "seamless transition" to an advisor that is knowledgeable of the areas of the curriculum most of interest to the student. Institutional documents describe their approach to student onboarding: "Recruitment is not simply getting students in the door, but also to provide them with an anxiety-free process to get them ramped to one of our pathways." Advisors work with staff who specialize in records and registration, the college's course placement system, and financial aid, to advise students on programmatic options that align with their personal interests and lead to career outcomes that provide a family-sustaining wage. The

mission of the college's advising staff is to "advocate, inspire, and support all students holistically in the pursuit of achieving their goals."

Advisors are assigned to students by pathway to provide students with guidance that is tailored to their field. Additionally, each advisor is trained to provide general support to meet the needs of any student at any point in their academic journey. The programmatic pathways offered by the college, and which emerged as a first step in the adoption and implementation of the guided pathways framework, include: (a) Business and Computer Technology; (b) Health Sciences; (c) Human Services; (d) Liberal Arts; (e) Science, Engineering, and Mathematics; and (f) Professional Trades/Industry, and Agriculture. Among these offerings, Health Sciences is the only pathway that is a second-admit program, meaning that students must apply for admission to the program after earning general studies and prerequisite credits.

MCC describes its approach to teaching and learning as a process in which "special consideration is given to academic progression." To support a systematic approach to assessment at the program level, faculty recently reviewed and updated their general education philosophy and framework and developed rubrics to adapt the assessment of general education outcomes for relevant programs within pathways. Additionally, faculty assess three "essential competencies" across all programs of study. These competencies include: 1) thinking critically and acting responsibly; 2) working productively with others, recognizing individual contributions to group success; and 3) exhibiting technological literacy. Across all occupational programs, the college recently implemented work-based learning opportunities that are now required of all students.

In recent years MCC made dramatic changes to its approach to developmental education. The college eliminated stand-alone developmental education courses and scaled a co-requisite approach to delivering developmental math, reading, and writing. In this model, students are

taught foundational competencies common to the developmental curriculum in ways that are integrated with college-level coursework; developmental math and English courses are scheduled concurrently with corresponding college-level courses. Finally, the college offers professional development opportunities for faculty and staff of the college that emphasizes participatory learning and focuses on the importance of inclusion, diversity, and equity.

Student Profiles

Below, I provide a general description of each student participant, touching upon their personal background, enrollment aims, and concerns as shared through the interview process. Student profiles are listed in alphabetical order by first name.

Aaliya

Aaliya was enrolled in the Health Sciences pathway. She was recruited to MCC to run cross-country and received institutional scholarship aid. She mentioned that her running coach worked with her directly to choose course registrations and to secure housing. She also met with an academic advisor that is assigned to the team. Ultimately, she wanted to enroll in a state regional college and had already been accepted, but she enrolled in MCC because she was paying her own way and wanted to ease her way into college. She spoke with confidence about her long-term goal of being the first in her family to graduate from a four-year college. She said she never envisioned another outcome. Choosing what her major or career will be, however, had come with more difficulty. She said that her brother's experience living with Asperger's Syndrome is one reason she was exploring the health field, yet she expressed worry that working directly with patients could expose her to difficult situations. She mentioned that her mom had raised concerns about her future job prospects in this area. At MCC she was taking courses in radiography but did not seem certain that this a career she would ultimately pursue.

Amos

Amos was a student in the Human Services pathway. He spoke of his father with pride, describing his work as a member of a local fire department. Following in his father's footsteps, Amos began volunteering as a member of the fire squad beginning in high school. He related this experience to his broader ambition to work in the field of criminal justice. While he described some of his coursework at MCC as "boring," he said that this did not deter him. Rather, his ability to manage through the boring work gave him even more confidence that he would go on to be a member of the local police academy when he completed his credential. He explained, "It's not all police chases and all that stuff. But, I mean, for some people that can kind of push them away from it, [but] it kinda brought me closer. I just like helping people. It makes me feel good."

Calem

Calem was enrolled in the Business and Computer Technology pathway at MCC, though he had first enrolled in MCC through an early high school program. At the end of our conversation, Calem shared with me that he suffered from regular seizures. He spoke with gratitude about his condition because, as he explained, his health outcomes had been better than expected at the time of his birth. He conveyed a sense of admiration for his professors, especially the director of MCC's cybersecurity program, who was influential in his choice of pathway. Calem was very concerned about debt and wanted to move directly into a job once he completed his associate degree. He balanced working while being enrolled full-time in classes and appreciated that MCC's course schedule allowed him to take only two classes each term. For his future job prospects, he shared that he hoped to work in the family business, which is a large public utility company that was based locally.

Corrine

Corrine was a student in the Science, Engineering, and Mathematics pathway. Her ambition was to be a biomedical engineer**,** which she credited to her childhood interest in taking things apart and putting things back together, as well as to a cancer scare that happened in high school and drew her toward the medical field. She applied to four-year colleges but enrolled in MCC for affordability reasons. She said that MCC immediately "felt like home." Corrine spoke with passion about her math courses and appreciated the collaborative effort of her instructors, which may have been an artifact of the college's corequisite model of delivering foundational and college-level math in tandem. Faculty's approach to teaching and learning affirmed her decision to study at MCC: "I don't wanna learn it somewhere else because the teachers here, they have a connection… They're in their little own group, and that group knows how to work with each other to help us." She struggled in other courses, however, and was dropped from her chemistry course because she missed classes. This set her behind academically and resulted in her being placed on academic probation, though she described this as being a learning experience. She described implementing her own strategies to stay on track with her coursework and planned to take additional coursework at another area community college in the summer. Her long-term goal was to transfer to a state regional college to earn her bachelor's and master's degrees in mechanical engineering.

Jenai

Jenai was enrolled in the Health Sciences pathway. As a child, she spent time living with her grandmother, then her mother, and then in a "juvenile home" when she was in high school. While living in the detention center, she took courses that would prepare her to be a dental hygienist, though she said she did not enjoy the work. A teacher in her detention center

encouraged her to enroll in MCC for sonography, which she did. She had established good relationships with faculty and instructors in the sonography program at MCC and said her teachers and academic advisor regularly checked in on her progress. She was able to take courses that exposed her to the field early in her experience and spoke about how experiences in her life or in the lives of those she loved informed her interest in various specialty areas within sonography. For example, if she pursued a career in cardiac sonography, she would be helping those like her grandmother and mother who have heart murmurs. She said a member of her family had experienced issues with their veins, which piqued her interest in vascular sonography. She credited her communications class with helping her to be more outgoing, which was a personal goal she had set for herself in college. She said, "I think being here with all the diversity of people, I think I'll have a better chance of being more of an outgoing person." She also had a goal of being a 4.0 student and currently held a 3.7 GPA.

Joline

Joline was enrolled in the Health Sciences pathway and planned to be a nurse. She was the first of five children in her family to go to college, and MCC was the only college she considered. When she first enrolled, she considered pursuing a career as a medical assistant after seeing a presentation about this option at MCC's annual pathways showcase, an event designed to introduce students in the college to academic and career pathways that lead to family-sustaining wages. Her interest changed, however, after her grandmother—whom she credited for her enrollment at the college—looked up the salary information for jobs in this area and told her not to settle. Joline said, "She was mad… I told her, it wasn't that deep, that I can pass the classes," but her grandmother, a college graduate herself, encouraged her to push herself and to ask for help when she needed it. Joline planned to apply to the nursing program, though she

wouldn't find out if she was admitted until the following year. Her long-term goal was to work at Children's Hospital and to save enough money for her nieces and nephews to go to college.

Kaelah

Kaelah was enrolled as a part-time student in the Liberal Arts pathway. At the time of our interview, she was unenrolled but spoke of returning to the college. She shared that she had a disability, which she described as "severe muscle spasms and verbal tics." She said that a primary reason she enrolled in MCC was because both of her parents were alumni, but also said that several of her friends encouraged her to enroll in a community college before enrolling in a four-year university. Kaelah said that she struggled in her introductory seminar class. She expressed confusion about how the instructor spoke about the "creator-victim mindset," a concept with which she did not identify. She also scored low on a motivation scale that the instructor asked her to complete. She said that these experiences contributed to her feeling of not belonging in college, even though she tried to find ways to engage with the content. She explained:

> I tried to think of ways that I could fix that, to make my motivation go up. But [I] just kept getting destroyed the further I went into the class because I just felt like I didn't belong in that class, 'cause I kept getting low scores.

She was cautiously optimistic about her future in college, though: "I know I'm gonna be here longer than expected because of the little break that I took. But it doesn't look as upsetting as I thought in seminar."

Karli

Karli was enrolled in the Liberal Arts pathway. She is a first-generation student and shared that she was previously enrolled in college and failed her classes, which she identified as a personal failure. She spoke in detail about several challenges in her personal life, including

experiences with abuse and what she described as toxic relationships, which had contributed to her struggles. She was doing well at MCC and now thought that transferring to a four-year institution was within reach. She spoke with detail and specificity about where she hoped her future degree would take her:

> I want to apply it to, hopefully, signing up through record labels, designing for artists, specifically Christian contemporary artists 'cause there's a lot of new ones that are coming out and they're always looking for graphic designers. That's actually a really, really growing industry, and I'm hoping to eventually move to [a local city] or near.

At MCC she was an honor student and recently applied to join Phi Beta Kappa.

Philippa

Philippa was in the Liberal Arts pathway. She was home-schooled throughout most of her youth. She worked in a daycare facility throughout high school and during a gap year post-graduation. She spoke of her struggle with anxiety and depression, which was first diagnosed in high school. She expressed feelings of nervousness about enrolling in college and did not want to travel far from home. Due to proximity, MCC seemed to be a good fit for her in the immediate term, though she considered transferring to a state regional college. Philippa was paying for her coursework out of pocket and wasn't enrolled in the semester in which the conversation occurred because she had to buy a car. She said she had plans to reenroll in the summer and knew the courses she would take. She was also working two nanny jobs and had her own Etsy shop. Philippa said she would like to continue a career in early childhood education but was told during the enrollment process that MCC does not offer a program in that area and that salaries for early childhood educators were low. She was encouraged to consider a psychology major and liked that it led to jobs in which she could help others, which she described as her "life purpose." She took Psychology 101 in the Fall and said her professor helped to show how her own

professional experience connected to the content of the course. According to Philippa, this teaching strategy had helped her to "remember" what she learned.

Scott

Scott was in the Liberal Arts pathway. He said that his desire to go to college started in high school, though he shared that his parents, who were both factory workers, and four brothers of whom he is the youngest, did not support this goal. He struggled with his grades in high school, so he had searched for a college that would accept a 2.0 GPA and offered an organized gaming community. MCC was a good fit. Scott describes his first year at MCC as a series of highs and lows. He joined a gaming team and spoke with enthusiasm about his role on the team. As for a program of study, he settled on a graphic design program because it related to gaming, was shorter in duration than other programs, and was described positively to him by his peers. At the time of the conversation, he said he had taken mostly general courses in the first year and was saving graphic design courses for the end of his program. His self-described strategy was to "save the fun stuff and try to get through math and English now." He described doing well in English, though his instructor was replaced in the final weeks of the class. He said that math was a challenge for him and said that his instructors had said, "We will let you guys fall really badly, and then we will pick you guys back up." He did not buy into this theory and explained: "they've not really helped pick us up per se, and work's just stacking up, so it's kind of hard." He described his math instructors as nice though, and said one sent him a card when he was sick.

Susanne

Susanne was enrolled in the Business and Technology pathway. She waited five years before enrolling in MCC to decide if she could be successful in college. She had two older brothers who were doing work related to computers and technology and, after being encouraged

by a friend to enroll at MCC, decided to follow a similar career path. She spoke of the ease of the enrollment process at MCC and shared that her academic advisor prepared a complete course schedule for her for their first meeting. She was satisfied with her courses, though she spoke of challenges related to making connections with faculty. She clashed at times with her program chair and was unsure who else in the program could help her. She said she was one of two female students in her program. She shared that she had made positive connections with two male students who sit close to her in class and work with her on assignments outside of class.

Tab

Tab was a student in the Skilled Trades pathway. At MCC, his life revolved around baseball. He received a scholarship from the college to play, lived on campus with other players, and had an academic advisor who worked exclusively with members of the team. He enrolled in college with the idea of doing electrical engineering and had already taken some electrical classes alongside his general education requirements. He enjoyed the hands-on aspects of the work and felt confident in his abilities, both in electrical and math coursework. His father also worked in the trades: "So my dad has always been the plumber or pipefitter, so I've always been hands-on building with my dad." He spoke with knowledge about job availability and local demand: "One of the highest demands for a job right now is electrical." He planned on doing an apprenticeship after completing his degree, though he mentioned that if he got a baseball scholarship to a four-year college, he might consider doing that.

Tanya

Tanya was undecided about her program of study. She enrolled just a few weeks before the start of the semester and, as a result, enrolled part-time. She said this was good for her, though she knew she would need to enroll in the summer to complete her degree and transfer

within two years. Tanya was initially interested in history, though she said that, at MCC, "the culture isn't really there for that." Instead, she thought she would pursue a career in criminal justice, which was an unfulfilled goal of her mother's. She felt there were multiple career pathways in that area and knew that she would find a job since "people are gonna keep going to prison." She spoke highly of her criminal justice professor who worked at a local jail and shared personal experiences with her students about her role during class. She spoke about the stress of choosing a career area, though she felt she would waste time and money if she did not choose. At the time of the interview, she was committed to her choice to major in criminal justice, though she spoke of having low confidence as a student generally.

Tessa

Tessa was in the Health Sciences pathway. She grew up in an urban area and expressed not being sure about college until the summer before enrollment. Her academic advisor at MCC helped her to enroll quickly and easily and advised her to consider nursing, though she initially held an interest in coursework in journalism or education. She enjoyed the hands-on and practical aspects of nursing and appreciated that a job in that area would allow her to help people. She felt like she was moving toward something tangible and that options were still available to her: "There are different options, I could take different routes, just take the prereqs and then I can choose." She continued, "So I just felt like, as long as I picked the basic, I didn't have to be more specific 'cause I'm real indecisive. I didn't wanna change my major 110 times." Her first year in college was not without challenges. She experienced homesickness, as well as difficulty with her statistics class. Fortunately, she regained confidence after passing statistics in her first seven-week semester. She said she knew she would struggle again, though she believed

it was her responsibility to find the confidence within herself to continue. She explained, “I have to help myself before anybody else can help me.”

Thomas

Thomas identified his program choice as “undecided.” He made a late decision to apply to college. He said that he had a relative at MCC who helped him to enroll. He also did a summer program at MCC that boosted his confidence and introduced him to a student organization in which he was involved, called the “Men of Merit.” He described his high school GPA as low and said he was unsure about what to study in college. Though he identified as being undecided about his program choice, he was enrolled in the Liberal Arts pathway at the suggestion of his advisor. He said that being part of the general studies pathway made him feel like he was “behind just a bit, and because other people already know what they want.” He spoke of wanting to study abroad and had not looked seriously into transfer pathways. He was doing well academically, though. He said he held a 4.0 GPA, was working 10 hours a week, running cross-country, and was a member of the Men of Merit group.

Zeke

Zeke was enrolled in the Business and Computer Technology pathway at MCC. He was valedictorian of his high school class and enrolled in MCC for financial reasons. His mom was a full-time employee of the college, which allowed him to receive a tuition waiver at MCC. He was committed to not wasting “money or time” on his way to his degree. He thought he wanted to do cybersecurity, or something related to coding, but decided these areas were too stressful after sitting in on introductory classes offered at a four-year college. At MCC he was taking math courses and working as a tutor and Supplemental Instructor, which is a peer tutor embedded in specific college-level classes. He had yet to take calculus at MCC and enjoyed statistics; he was

worried that ultimately pursuing a major in either area would require too much schooling. He planned to transfer after one year at MCC, though he said he needed to find scholarships to pay for college or an employer who was willing to pay for his education. He expressed confidence about whether that was possible: “With my resume and what I’ve done, I feel like I can probably convince somebody to want to pay me through college. So that’s what I’m hoping for.”

Summary

In this chapter I provide a case description for the site college, as well as brief profiles for each study participant. The institutional case description and student profiles are intended to shed light on the socio-cultural context that informs students’ academic and career decision-making in MCC. In the chapters that follow (Chapters 5-7), I report the quantitative, qualitative, and mixed analyses that inform this study.

Chapter 5 Quantitative Strand of Analysis

This chapter provides the results of the quantitative analyses related to the first research sub-question: *What is the relationship between students' self-efficacy beliefs and their outcomes in their first year of enrollment in a guided pathways community college?* The first section of this chapter provides descriptive analyses of the quantitative data used in this study, including survey data collected for the purposes of this study and administrative records provided by the site college. The second section of this chapter presents the results of the four regression models used to test hypotheses 1-4, which are listed in Chapter 3.

Descriptive Results

Table 5.1 provides the descriptive statistics for students' responses to the survey questions for full survey respondents (n = 248), analytical respondents (n = 185), survey respondents whose first term in college occurred before Fall 2019 (n = 63), and survey respondents whose first term in college occurred before Fall 2019 and who did not assent to the sharing of their administrative data for this project (n = 25).

Self-efficacy was measured using Chen et al.'s (2001) new general self-efficacy scale. Each question was measured using a five-item Likert scale that I reversed for ease of interpretation. The values are as follows: 5=strongly agree, 4=somewhat agree, 3=neither agree nor disagree, 2=somewhat disagree, and 1=strongly disagree. General self-efficacy is a composite score of each student's response to the eight questions.

For the full sample of survey respondents (n = 248), the mean value of self-efficacy was 4.41 (sd = 0.48), which is the high end of the range for this value. For survey respondents who

did not assent to their administrative data being shared by the site college (*n = 25),* the mean value was comparatively lower at 4.28 (*s* = 0.59), representing the low end of the range for this compositive variable. This pattern holds when scanning across each sample and comparing the mean values for survey items a-h, which were averaged to create the value for general self-efficacy. This means that omitting these students from the sample, and therefore the analysis, likely resulted in the loss of important variation in students' responses, particularly at the lower each of the scale.

For students in the analytical sample (*n* = 185), the mean value of self-efficacy was slightly higher than the mean value of self-efficacy for the full sample of survey respondents (*m* = 4.43; *s* = 0.47). Among individual survey questions, survey respondents within the analytical sample (*n* = 185) provided the highest average score (*m* = 4.70; *s* = 0.54) to the question *In general, I think I can achieve outcomes that are important to me* and the lowest average score (*m* = 4.11; *s* = 0.79) to the question *Compared to other people, I can do most tasks very well.* For this question, the full sample of survey respondents shared a score of 4.11 (*s* = 0.79) with the analytical sample. They also shared the same score to the question *I will be able to successfully overcome many challenges* (*m* = 4.49; *s* = 0.62). These data suggest that across the full sample of respondents, students may have lacked confidence in their ability as compared to others yet demonstrated belief in their individual ability to persist even in the face of challenges.

I averaged the responses to two survey items to create a value for students' decidedness about their choice of program of study. For survey respondents within the analytical sample (*n* = 185), the mean value for commitment was 3.99 (*s* = 0.99) out of a possible value of 5 (*strongly agree).* For this sample, the mean response to the statement, *It is easy for me to*

choose a program of study, was 3.53 (s = 1.31), and the mean response to the statement, *I plan to stay in this program of study during my time as a student in this college,* was 4.47 (s = 0.94). These scores were slightly higher than those of the full sample of survey respondents.

Table 5.1

Descriptive Statistics of Survey Data

	Full survey respondents (*n = 248*)	Analytical survey respondents (*n = 185*)	Survey respondents whose first term in the college occurred prior to Fall 2019 and/or who did not assent to sharing their data for this project (*n = 63*)	Survey respondents who did not assent to sharing their data for this project *(n = 25*)
	M (*SD*)	M (*SD*)	M (*SD*)	M (*SD*)
General Self-Efficacy (average of responses to statements a-h)	4.41 (*0.48*)	4.43 (*0.47*)	4.38 (*0.53*)	4.28 (*0.59*)
a. I will be able to achieve most of the goals that I've set for myself.	4.53 (*0.60*)	4.55 *(0.58)*	4.44 (*0.67*)	4.36 (*0.81*)
b. When facing difficult tasks, I am certain that I'll accomplish them.	4.27 (*0.72*)	4.28 (*0.70*)	4.25 (*0.78*)	4.16 (*0.85*)
c. In general, I think that I can achieve outcomes that are important to me.	4.68 (*0.57*)	4.70 (*0.54*)	4.62 *(0.63*)	4.52 (*0.77*)
d. I believe I can succeed at most anything I set my mind to.	4.57 (*0.63*)	4.61 (*0.62*)	4.46 (*0.67*)	4.28 (*0.79*)
e. I will be able to successfully overcome many challenges.	4.49 (*0.62*)	4.49 (*0.63*)	4.49 (*0.62*)	4.48 (*0.65*)
f. I am confident that I can perform effectively on many different tasks.	4.43 (*0.68*)	4.42 (*0.68*)	4.44 (*0.67*)	4.36 (*0.81*)
g. Compared to other people, I can do most tasks very well.	4.11 (*0.79*)	4.11 (*0.79*)	4.14 (*0.80*)	4.12 (*0.83*)
h. Even when things are tough, I can perform quite well.	4.22 (*0.75*)	4.24 (*0.74*)	4.19 (*0.78*)	3.96 (*0.79*)

Table 5.1 (continued)

	Full survey respondents (*n = 248*)	Analytical survey respondents (*n = 185*)	Survey respondents whose first term in the college occurred prior to Fall 2019 and/or who did not assent to sharing their data for this project (*n = 63*)	Survey respondents who did not assent to sharing their data for this project *(n = 25*)
	M (*SD*)	M (*SD*)	M (*SD*)	M (*SD*)
Decidedness about program of study (average of responses to statements i-j)	3.95 (*1.02*)	3.99 (*0.99*)	3.80 (*1.11*)	3.78 (*1.14*)
a. It is easy for me to choose a program of study.	3.48 (*1.34*)[a]	3.53 (*1.*31)[b]	3.33 (*1.44*)	3.40 (*1.41*)
b. I plan to stay in this program of study during my time as a student in this college	4.43 (*0.98*)[a]	4.47 (*0.94*)	4.29 (*1.*08)[c]	4.21 (*1.18*)[d]

Note: Survey questions are measured using a five-item reverse Likert scale: 5=strongly agree, 4=somewhat agree, 3=neither agree nor disagree, 2=somewhat disagree, and 1=strongly disagree. Mean response values are reported. The standard deviation is reported in parentheses.
a. A total of 247 respondents out of the possible 248 respondents answered this survey question.
b. A total of 184 respondents out of the possible 185 respondents answered this survey question.
c. A total of 62 respondents out of the possible 63 respondents answered this survey question.
d. A total of 24 respondents out of the possible 25 respondents answered this survey question.

Table 5.2 provides the distribution of student characteristics including race/ethnicity, gender, age, low-income status, and county of residence for the analytical sample (n = 185) as compared to the population sample (n = 902).[11] When comparing the two samples, there are some significant differences in the magnitude of key characteristics that are important to note. Specifically, 58 percent of the analytical sample was age 19 or less as compared to 46 percent of the population sample, which is significant at the 0.01 level. The analytical sample had a significantly higher proportion of low-income students as determined by their receipt of a Pell Grant to pay for college-related expenses (64.32) as compared to the population sample (45.12), which is significant at the 0.001 level. There was also a higher proportion of students who resided in the county where Momentum Community College (MCC) is located within the analytical sample (56.22) as compared to the population sample (37.80), significant at the 0.001 level.

Students in the analytical sample received a significantly higher amount of non-repayable financial aid ($p < 0.001$). Non-repayable financial aid includes any form of scholarship aid received by the student, including federal aid through the form of a Pell grant or funding through Federal TRIO programs, state grant aid, or institutional aid including sports scholarships. As compared to the population sample, students in the analytical sample also received a significantly higher dollar amount of self-help financial aid, defined as Federal Work Study, federal subsidized loans, federal unsubsidized loans, or private student loans ($p < 0.001$).

When considering their choice of program study, a significantly higher proportion of the analytical sample chose Business and Computer Technology, Health Sciences, or Human

[11] The population sample (n = 902) included any students whose start term at MCC was Fall 2019, was degree-seeking, and attempted at least one credit. It excludes students whose chosen pathway was Skilled trades due to small numbers (n = 36) and students who did not assent to sharing their academic records for the purposes of this study (n = 30).

Services as their pathway as compared to the population sample. Conversely, a significantly lower proportion of students in the analytical sample chose Liberal Arts or Science, Engineering, and Mathematics as their pathway, as compared to the analytical sample. These differences are significant at the 0.001 level. Students in the analytical sample also attempted and completed a significantly higher proportion of credits as compared to the population sample ($p < 0.001$). Students in the analytical sample had a GPA that was nearly 3 points higher, on average, than students in the population sample ($p < 0.001$). Lastly, over 70 percent of students in the analytical sample persisted from fall to winter as compared to 60 percent of students in the population sample ($p < 0.001$). Given the observed differences between the full and analytical samples, the findings of this study are strictly exploratory and should not be applied beyond those students whose characteristics and context are statistically similar to those in the analytical sample.

General self-efficacy was measured using survey data and is therefore only available for students who completed the survey and are thus in the analytical sample. The mean value of self-efficacy, or the predictor of interest in each model, was 4.43 out of a possible value of 5 ($s = 0.47$). When considering this construct, it is important to consider any variation that exists within subgroups of respondents. Specifically, Figure 5.1 plots median self-efficacy by pathway. When looking across figures, the median self-efficacy score is similar across each pathway category, though students in the Liberal Arts pathway ($n = 40$) hold the lowest score. The interquartile ranges for each pathway are also similar, though the overall range is greatest for students in the Liberal Arts pathway. Scores for students who are in Liberal Arts are slightly skewed downward. For both the Liberal Arts pathways and the Business and Computer Technology pathway, there are cases that fall outside the overall range and warrant further investigation. Overall, data for each pathway are distributed in similar ways, though the sample

sizes for each pathway are small. Additional data collection, perhaps over multiple terms, would allow for subgroup analysis by pathway to explore possible differences in mean general self-efficacy or other personal characteristics that may predict students' pathway selection.

Table 5.2

Tests of Differences in Student Characteristics by Sample

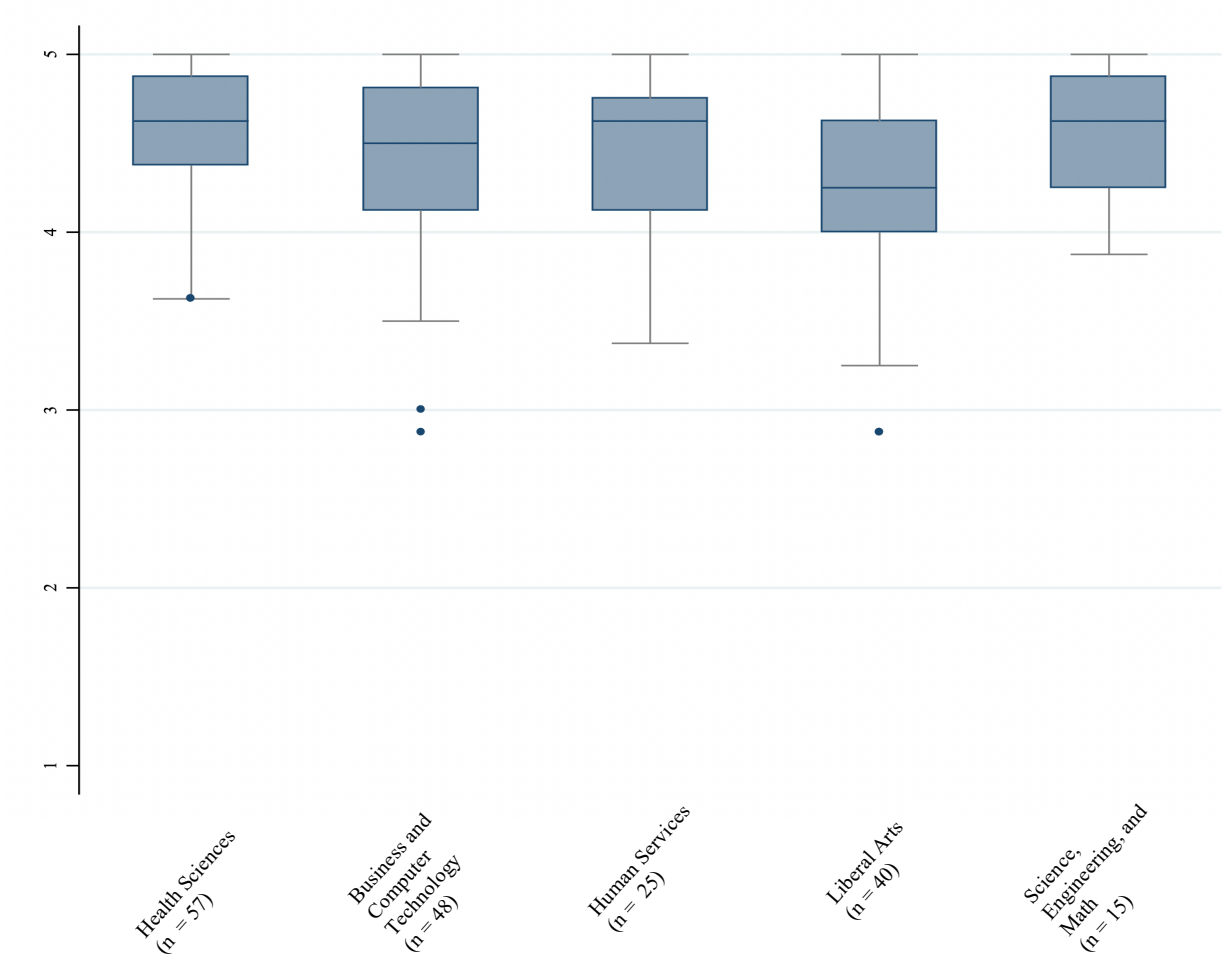
	Population Sample (*n=902)*		Analytical Sample (*n=185)*		Differences Across Samples
	Proportion/M *(SD)*	Missingness	Proportion/M *(SD)*	Missingness	
General Self-efficacy[a]	--		4.43 *(0.47)*	0.00	--
Black (1/0)	22.39	5.32	23.24	0.00	0.02 (χ^2)
Other Race	12.53	5.32	12.97	0.00	0.01(χ^2)
Female (1/0)	65.96	0.00	61.08	0.00	2.47 (χ^2)
Age 19 or Less (1/0)	45.68	9.53	57.84	0.00	(+) 9.53** (χ^2)
Age 20-24 (1/0)	36.59	9.53	31.89	0.00	4.46* (χ^2)
Low Income (1/0)	45.12	0.00	64.32	0.00	(+) 34.66***(χ^2)
MCC County (1/0)	37.80	0.00	56.22	0.00	(+) 35.55***(χ^2)
Non-Repayable Financial Aid (thousands)	4.19 *(4.62)*	0.00	6.26 *(4.32)*	0.00	(+) 49.36*** (*F*)
Self-Help Financial Aid (thousands)	1.74 *(3.42)*	0.00	2.49 *(3.97)*	0.00	(+) 11.47***(*F*)
Fall Developmental Coursework (1/0)	32.93	0.00	34.05	0.00	0.13 (χ^2)
Chosen Pathway	--	2.33	--	0.00	33.68*** (χ^2)
Business and Computer Technology	22.39		25.95		(+)
Health Sciences	28.60		30.81		(+)
Human Services	5.65		13.51		(+)
Liberal Arts	29.38		21.62		
Science, Engineering, and Mathematics	11.64		8.11		
Attempted Credits, Fall	17.22 *(8.51)*	0.00	20.27 *(8.21)*	0.00	(+) 30.78*** (*F*)
Completed Credits, Fall	13.77 *(9.30)*	0.00	16.72 *(9.20)*	0.00	(+) 24.17*** (*F*)
Grade Point Average, Fall	2.73 *(1.18)*	0.00	2.99 *(0.93)*	0.00	(+) 10.81*** (*F*)
Persistence, Fall to Winter	59.98	0.00	70.81	0.00	(+) 11.38*** (χ^2)

Note: Significance: *p<0.05; **p<0.01; ***p<0.001

General self-efficacy is the average score of an eight-item survey, measured using a five-item reverse Likert scale: 5=strongly agree, 4=somewhat agree, 3=neither agree nor disagree, 2=somewhat disagree, and 1=strongly disagree. In the *Differences Across Samples* column, I use a (+) to indicate where the proportion is greater in the analytic sample as compared to the full sample.

Figure 5.1

Mean General Self-Efficacy by Pathway



Regression Results

Table 5.3 displays the results of Models 1-3, which collectively test the hypotheses that students' self-efficacy beliefs are positively related to students' short-term outcomes in college, such as the number of attempted credits, the number of completed credits, and GPA, each in students' first semester in college. I am unable to support the hypotheses that self-efficacy was positively related to either credits attempted or earned in students' first semester, given that self-efficacy—the predictor of interest—is not statistically significant in either Model 1 or Model 2. These findings provide modest support for the third hypothesis that self-efficacy is positively related to students' first-semester GPA. The results of Model 3 show that, on average, every one-point increase in self-efficacy is associated with a 0.25 increase in GPA, significant at the 0.1-level.[12]

Focusing on Models 1-2, several other factors or predictors have a significant association with the number of credits a student attempted and completed in their first semester in college. For example, Black students attempted 1.21 fewer credits on average than White students in the sample, controlling for all else in the model ($p < 0.05$). Black students completed 2.25 fewer credits on average as compared to their White counterparts, all else equal ($p < 0.01$). Students who enrolled in any developmental coursework in the first semester in college also attempted and completed fewer credits than students who moved directly into college-level coursework in that same semester. Specifically, developmental education students attempted 2.51 fewer credits and completed 2.48 fewer credits, on average, than students who were not enrolled in

[12] I ran Model 3 with and without the variable that measures students' attempted credits in Fall 2019. I observed no meaningful qualitative or quantitative differences across the two models. Importantly, in each model, the coefficients for the variable of interest, self-efficacy, were nearly identical. Given that the adjusted R-squared value was slightly higher in the model that included students' attempted credits, I chose to move forward with this model throughout my analysis.

developmental education coursework in their first semester, all else equal. Both values are significant at the 0.01 level.

Focusing on students' attempted and completed credits (Models 1-2), the total amount of non-repayable aid received by students had a statistically significant effect on credits attempted and completed in students' first semester in college ($p < 0.01$). For every $1,000 increase in nonrepayable aid such as federal, state, and local scholarships and grants, a student attempted 0.22 more credits and completed 0.28 more credits, on average, compared to students who did not receive this aid ($p < 0.01$). In Figure 5.2, a-d, I show how increases in non-repayable and self-help aid affect the number of credits a student attempted and completed by subgroup, or in this instance, students' developmental education status. Students who enrolled in developmental education coursework and who received $1,000 in non-repayable aid had a mean predicted value of 7.68 credits attempted, all else equal. Concurrently, students who enrolled in developmental education coursework and who received $15,000 in non-repayable aid had a mean predicted value of 10.74 credits attempted, all else equal. This value is greater than the number of first-semester credits attempted for students who did not enroll in any developmental education credits and did not receive any non-repayable aid. For students who enrolled in developmental education coursework, the mean predicted value of credits earned at $1,000 non-repayable aid is 5.93 and the mean predicted value of credits completed at $15,000 non-repayable aid is 9.87, all else equal. I observe a positive relationship between the amount of self-help aid and the number of credits attempted and earned by a student, though only the relationship between self-help aid and credits attempted is significant ($p < 0.10$).

Few factors in the model have a statistically significant effect on GPA (see Model 3). These results may be partially explained by a lack of precision in the model. Black students, on

average, held a GPA that was more than a half-point lower than White students in our model, when all other variables are held constant ($p < 0.05$). Conversely, female students held a GPA that was 0.40 points higher, on average, than their male counterparts, all else equal ($p < 0.05$). Other statistically significant results are observed across academic or career pathways. For example, students in Human Services held a GPA that was 0.57 points higher, on average, than students in Health Sciences, significant at the 0.05 level. Students in Liberal Arts and Science, Engineering and Math each held a GPA that was slightly more than a half-point higher, on average, than students in Health Sciences, all else equal ($p < 0.01$).

The mean predicted value of GPA by gender and either non-repayable or self-help aid is plotted in Figure 5.4, a-b. It should be noted that non-repayable and self-help aid amounts do not have a statistically significant effect on the outcome, which is students' GPA in fall semester. However, the model predicts that women who received $1,000 in non-repayable aid earned an average GPA of 3.07 compared to men who, at the same non-repayable aid level and all else held constant in the model, earned an average GPA of 2.67. As non-repayable aid increases so too does GPA: a female student who receives $15,000 in non-repayable aid earned a 3.27 average GPA, which is 0.40 points higher than a male student who received the same non-repayable aid amount. Conversely, students who received self-help aid, or some form of federal or private student loans, experienced a decline in their GPA as their loans increased. For example, female students who received $1,000 in self-help aid are predicted to earn a GPA of 3.17 compared to male students at the same self-help aid level who are predicted to earn a GPA of 2.77, all else equal. At a self-help aid level of $15,000, women are predicted to earn a GPA of 2.94 and men are predicted to earn a GPA of 2.54, which again is a differential of 0.40 points, all else equal.

Table 5.3

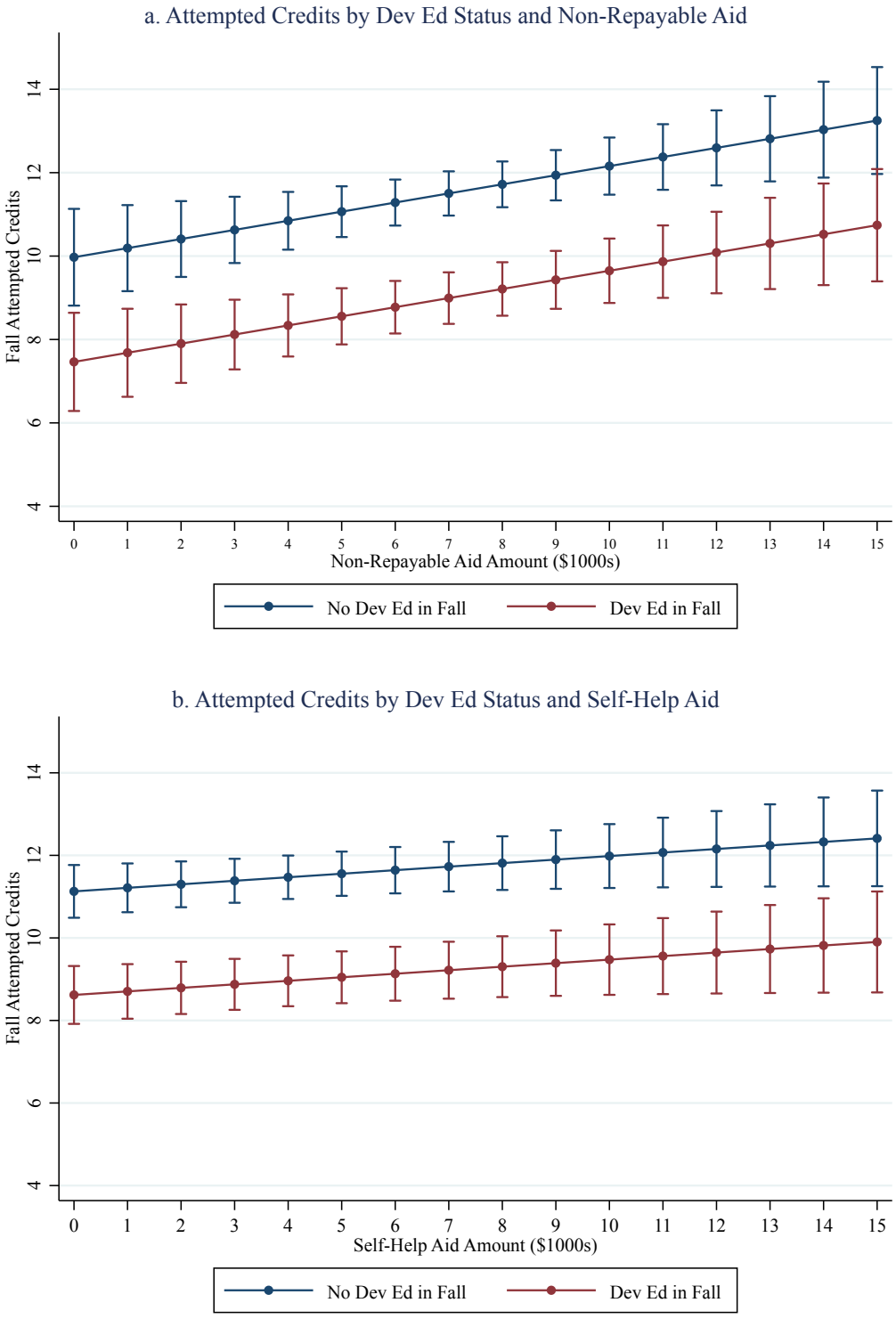
Estimated Coefficients for Ordinary Least Squares Regressions of General Self-Efficacy on Selected Early Outcomes

	Model 1 Attempted Credits, Fall	Model 2 Completed Credits, Fall	Model 3 GPA, Fall
General Self-Efficacy	0.10	0.53	0.25*
	(0.40)	(0.52)	(0.15)
Black	-1.21**	-2.25***	-0.58**
	(0.55)	(0.75)	(0.23)
Other Non-Whites	-1.06	-1.50*	-0.05
	(0.75)	(0.83)	(0.20)
Female	-1.21**	-0.06	0.40**
	(0.54)	(0.63)	(0.17)
Age <=19	3.27***	2.22**	-0.29
	(0.81)	(0.93)	(0.26)
Age 20-24	1.92**	1.51	-0.17
	(0.88)	(0.97)	(0.27)
Low Income Family	-1.53**	-2.20***	-0.33
	(0.59)	(0.73)	(0.20)
Live in County	-0.45	-0.96	-0.13
	(0.45)	(0.58)	(0.15)
Business and Computer Technology	-1.98***	-0.98	0.23
	(0.64)	(0.83)	(0.21)
Human Services	-1.07	0.76	0.57**
	(0.73)	(0.86)	(0.22)
Liberal Arts	-1.23**	0.48	0.63***
	(0.51)	(0.68)	(0.20)
Science, Engineering, Math	-0.12	1.00	0.57***
	(0.71)	(0.97)	(0.21)
Dev Ed Class in Fall	-2.51***	-2.48***	-0.03
	(0.46)	(0.58)	(0.19)
Non-Repayable Aid ($1000s)	0.22***	0.28***	0.01
	(0.07)	(0.09)	(0.02)
Self-Help Aid ($1000s)	0.09*	0.07	-0.02
	(0.05)	(0.07)	(0.02)
Fall Attempted Credits			-0.01
			(0.03)
Observations	185	185	185
R-Squared	0.40	0.33	0.20
Adj. R-Squared	0.34	0.27	0.12

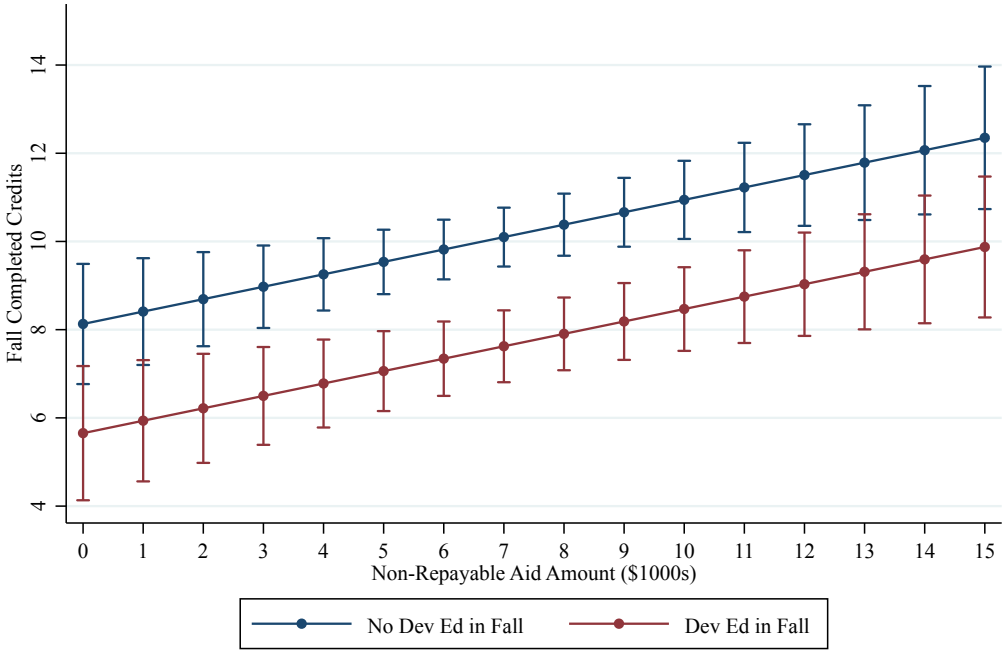
Note: robust standard error in parentheses. Race reference group is White. Age reference group is > 24. Program reference group is Health Sciences.
Significance: *p<0.1; **p<0.05; ***p<0.01

Figure 5.2

Attempted and Completed Credits by Aid Amount and Developmental Status



c. Completed Credits by Dev Ed Status and Non-Repayable Aid



d. Completed Credits by Dev Ed Status and Self-Help Aid

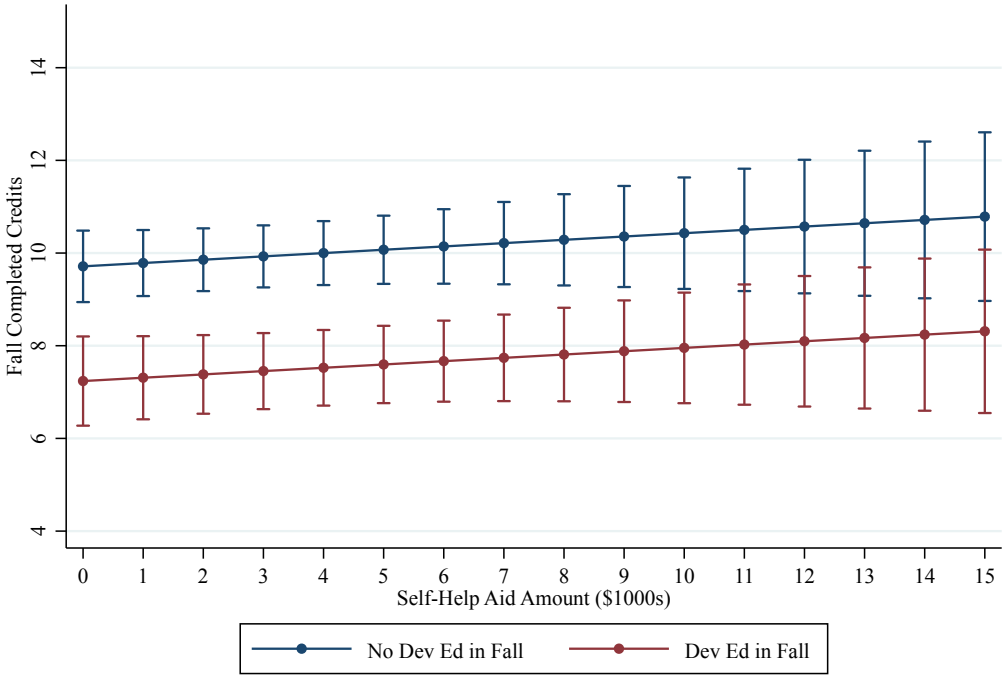
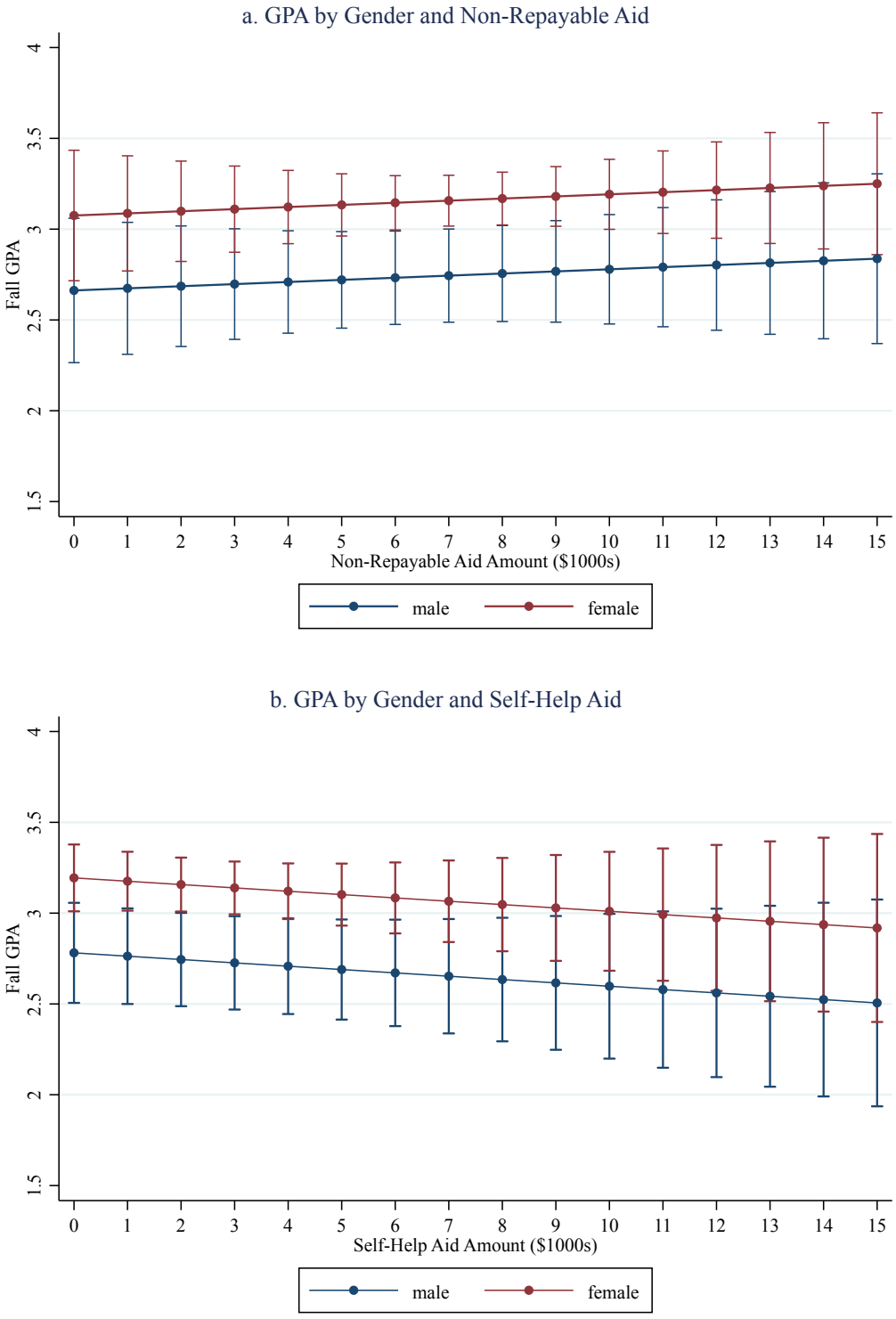


Figure 5.3

Grade Point Average by Aid Amount and Gender



I used logistic regression to test the hypothesis that students' self-efficacy beliefs are positively related to their early persistence in college. This method was chosen due to the binary nature of the outcome (Long, 1997; Long & Freese, 2006; Rodriguez et al., 2018). The results of a restricted and unrestricted model are reported in Table 5.4. To assess the relative fit of each model, I conducted a likelihood ratio test to explore whether there were statistically significant differences between the two models. The results indicate that the models are independent at the 0.10-level (LR $X^2 = 6.50$, df = 3); therefore, the additional variables in the unrestricted model (Model 2) provide a modest improvement in fit to the data compared to Model 1. To further investigate this claim, I calculated scalar measures of logistic model fit for nested models (e.g., Akaike's Information Criterion [AIC] and Bayesian Information Criterion [BIC]) as recommended by Long and Freese (2006). The results of these tests are mixed: as compared to the restricted model, the AIC value for the unrestricted model is slightly lower, which suggests that Model 2 is the better-fitting model. However, the BIC value for the unrestricted model is higher than the BIC value for Model 1 (see Table 5.4). In this case, the BIC value suggests that the restricted model is the better fitting model. In the paragraphs that follow, I interpret the findings of the unrestricted model (Model 2) given the conceptual importance of these course-related variables to the outcome of persistence.

Given the results of the unrestricted model, the findings of this study do not support the hypothesis that students' self-efficacy beliefs are positively related to early persistence in college. Other characteristics and factors, however, do contribute significantly to the model. For example, the odds of persisting from first to second semester were 60 percent lower for female students as compared to their male counterparts ($p < 0.05$). Persistence odds were 73 percent lower for low-income students as determined by their eligibility for the federal Pell Grant, as

compared to students who were not eligible to receive this need-based funding ($p < 0.10$). These are meaningful differences that warrant further investigation.

Apart from the number of credits a student attempted in the fall semester, the only factors that had a positive and significant relationship with persistence were those that measure students' financial aid for college. For every $1,000 increase in non-repayable or scholarship aid, students' odds of persisting from first to second semester increased by 19 percent. The pattern held for self-help aid: for every $1,000 increase in self-help aid students' odds of persisting from first to second semester increased by 17 percent.

To further illustrate the effect of financial aid on students' persistence probabilities, I plot students' predicted probability of persisting by the amount of non-repayable and self-help aid received (see Figure 5.5, a-b), and by other important characteristics (e.g., race/ethnicity, gender, income, and developmental education status; see Figure 5.6, a-h). For female and low-income students, specifically, the gap in persistence narrowed somewhat as aid amounts increased. For example, the estimated probability that a female student who received $1,000 in non-repayable aid persists from fall to winter is 0.51. The estimated probability that a male student who received this same non-repayable aid amount persists is 0.65. For a female student who received $15,000 in non-repayable aid, the predicted probability of persistence is 0.83. For the male student at this same aid level, the predicted probability is 0.90, or nearly a tenth of a point higher as compared to his female peer.

The persistence gap is slightly more pronounced at the lower end of the non-repayable aid scale for low-income students. For example, low-income students who received $1,000 in non-repayable aid had a predicted probability of persisting from fall to winter of 0.49. For students who are not low-income but who also received $1,000 in nonrepayable aid, their

predicted probability of persistence is 0.70, which is nearly a fifth of a pointer higher than their low-income peers. If these same two groups of students received $15,000 in nonrepayable aid, the gap in predicted persistence is reduced to roughly a tenth of a point.

Table 5.4

Estimated Coefficients for a Logistic Regression Model Predicting Fall to Winter Persistence; Reported in Odds Ratios

	Model 1 Odds ratios	Model 2 Odds ratios
General Self-Efficacy	1.80	0.53
	(0.73)	(0.52)
Black	0.60	0.75
	(0.40)	(0.53)
Other Non-Whites	3.31	4.22**
	(2.52)	(2.93)
Female	0.30**	0.40**
	(0.14)	(0.19)
Age <=19	1.26	0.78
	(1.08)	(0.70)
Age 20-24	0.57	0.44
	(0.50)	(0.39)
Low Income Family	0.20**	0.27*
	(0.14)	(0.19)
Live in County	1.69	1.89
	(0.76)	(0.88)
Business and Computer Technology	0.66	1.01
	(0.36)	(0.54)
Human Services	0.42	0.51
	(0.26)	(0.31)
Liberal Arts	1.76	2.20
	(1.07)	(1.36)
Science, Engineering, Math	1.75	1.83
	(1.31)	(1.52)
Dev Ed Class in Fall	0.62	0.85
	(0.34)	(0.45)
Non-Repayable aid ($1000s)	1.25***	1.19***
	(0.09)	(0.09)
Self-Help Aid ($1000s)	1.19**	1.17**
	(0.08)	(0.08)
College-level Math in Fall		1.06
		(0.58)
College-level English in Fall		0.65
		(0.35)
Fall Attempted Credits		1.24**
		(0.11)
Observations	185	185
Final Log-Likelihood	-84.35	-81.10
Pseudo R-Squared	0.25	0.27
AIC	202.70	202.20
BIC	257.45	266.61

Note: robust standard error in parentheses. Race/ethnicity reference group is White. Age reference group is > 24. Program reference group is Health Sciences.
Significance: *p<0.1; **p<0.05; ***p<0.01

Figure 5.4

Fall to Winter Persistence by Aid Amount

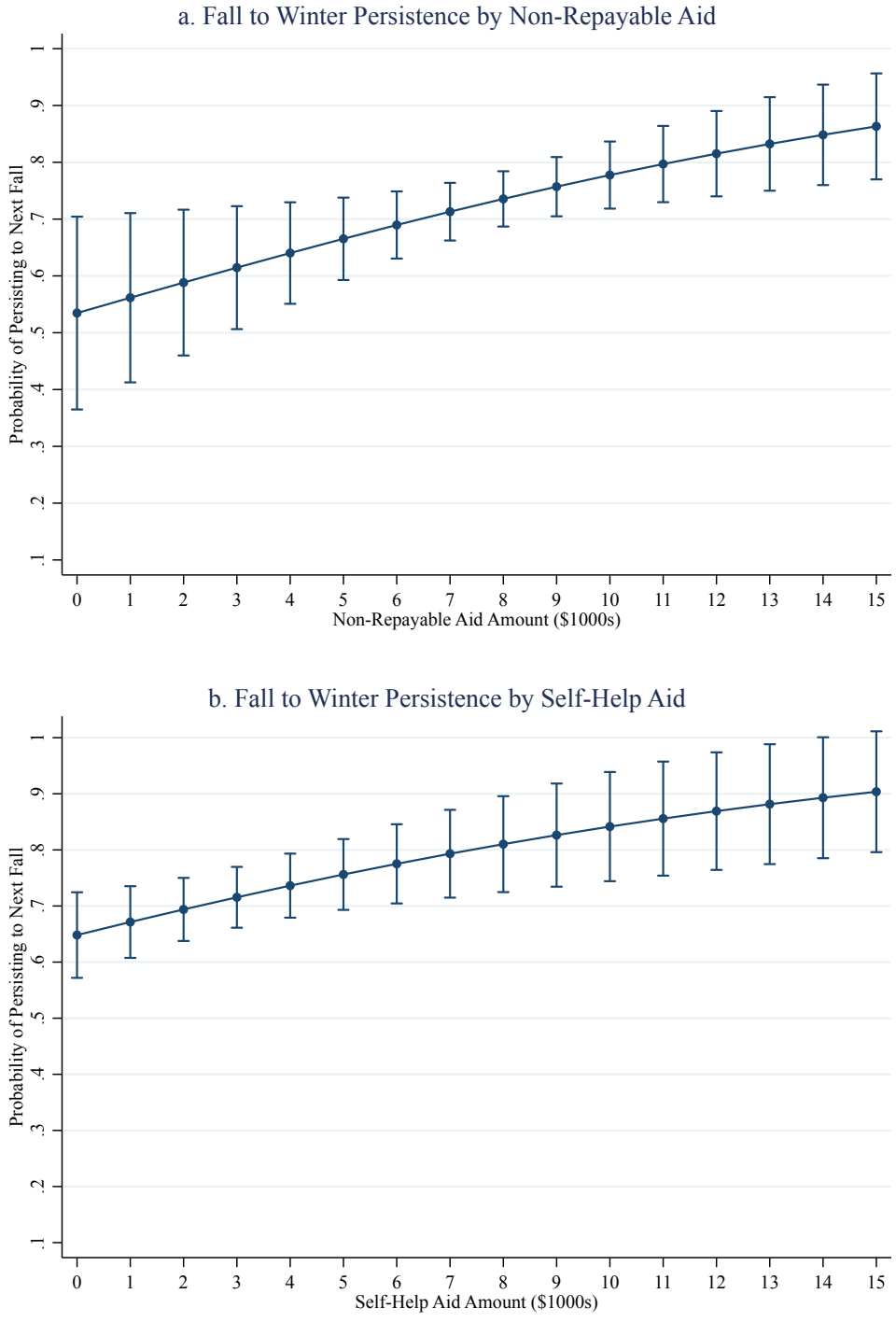
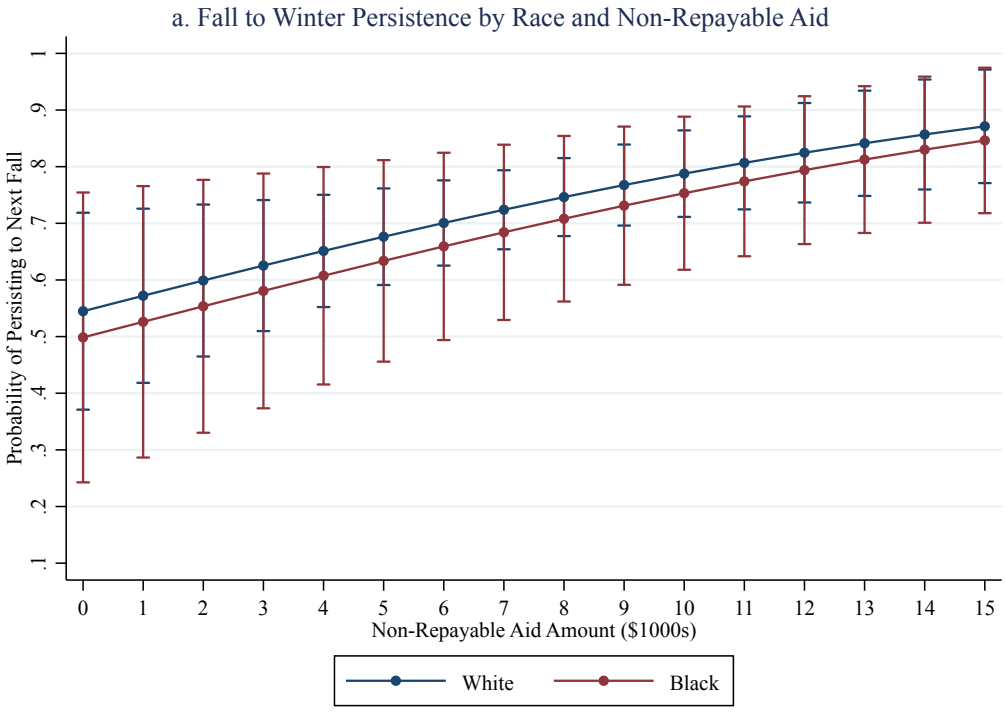
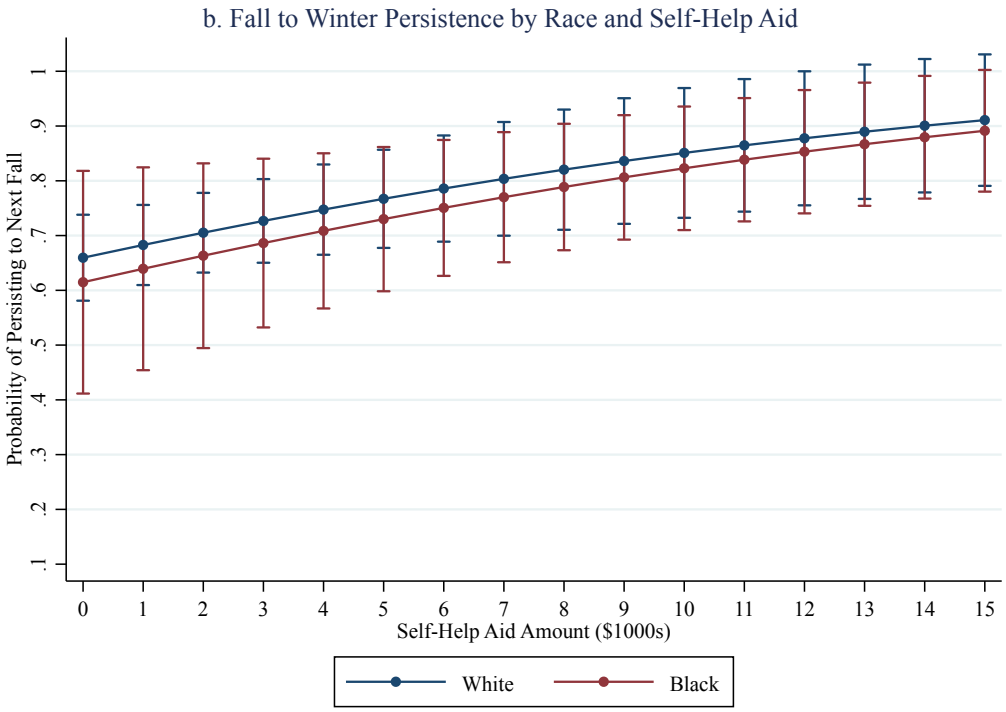


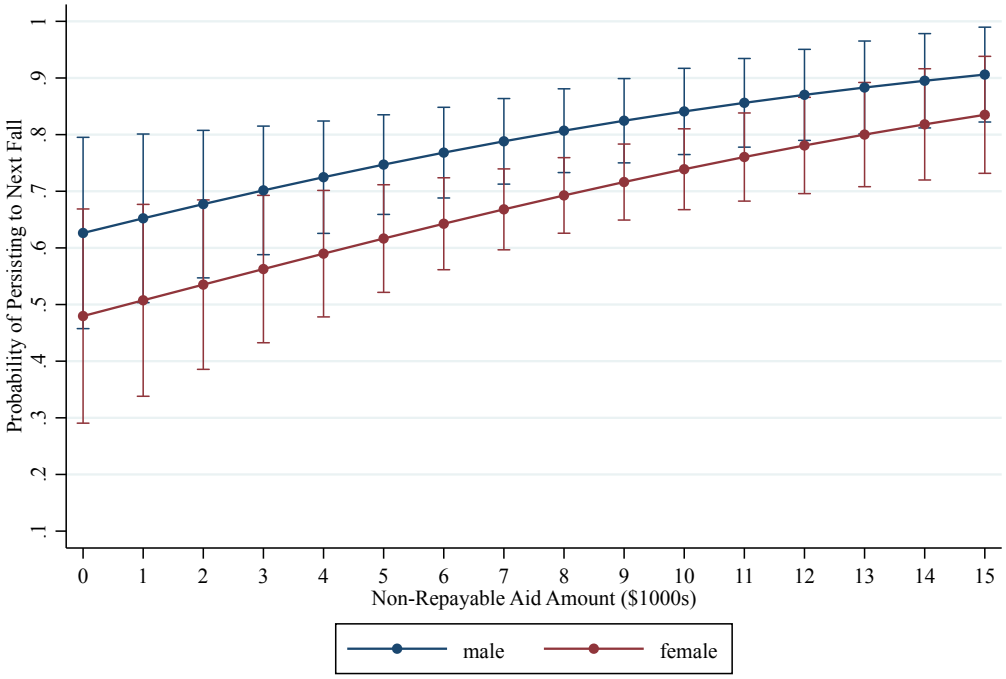
Figure 5.5

Fall to Winter Persistence by Aid Amount and Race, Gender, Income, and Developmental Status

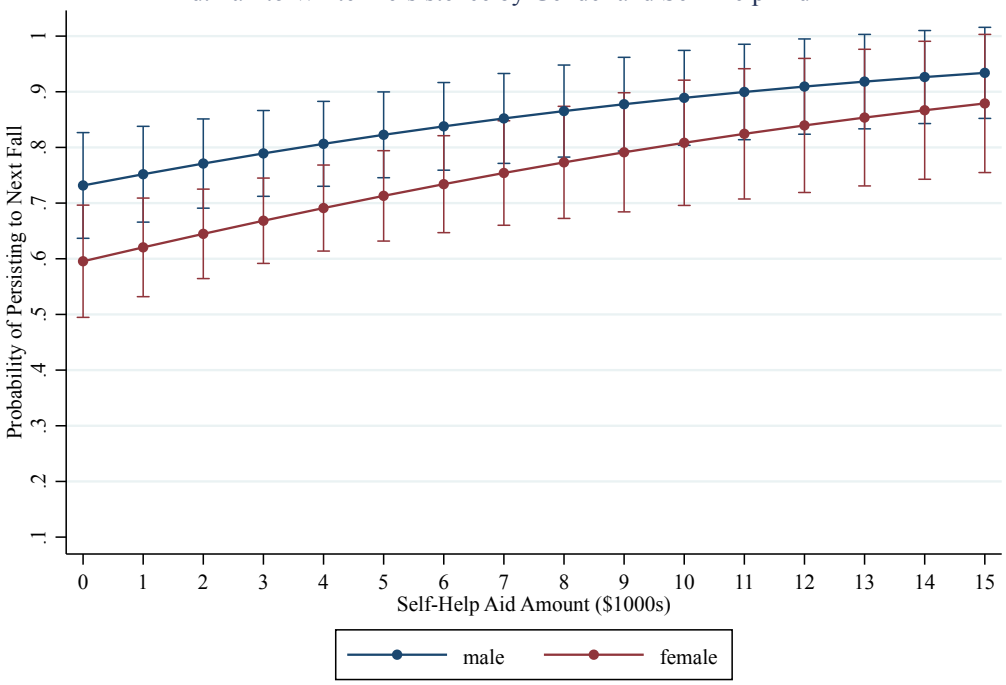




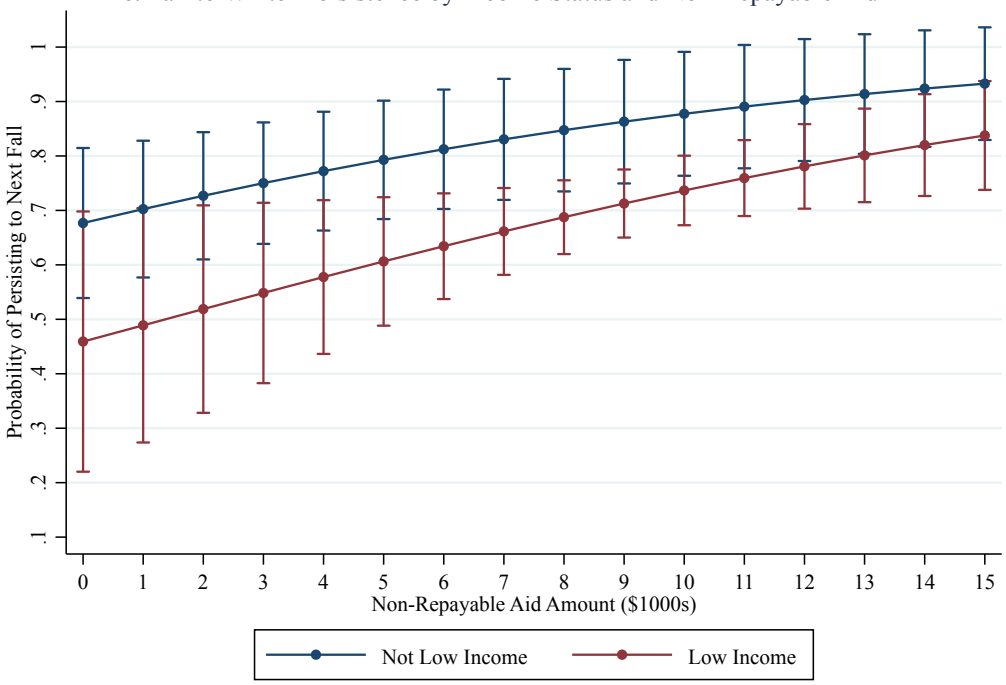
c. Fall to Winter Persistence by Gender and Non-Repayable Aid



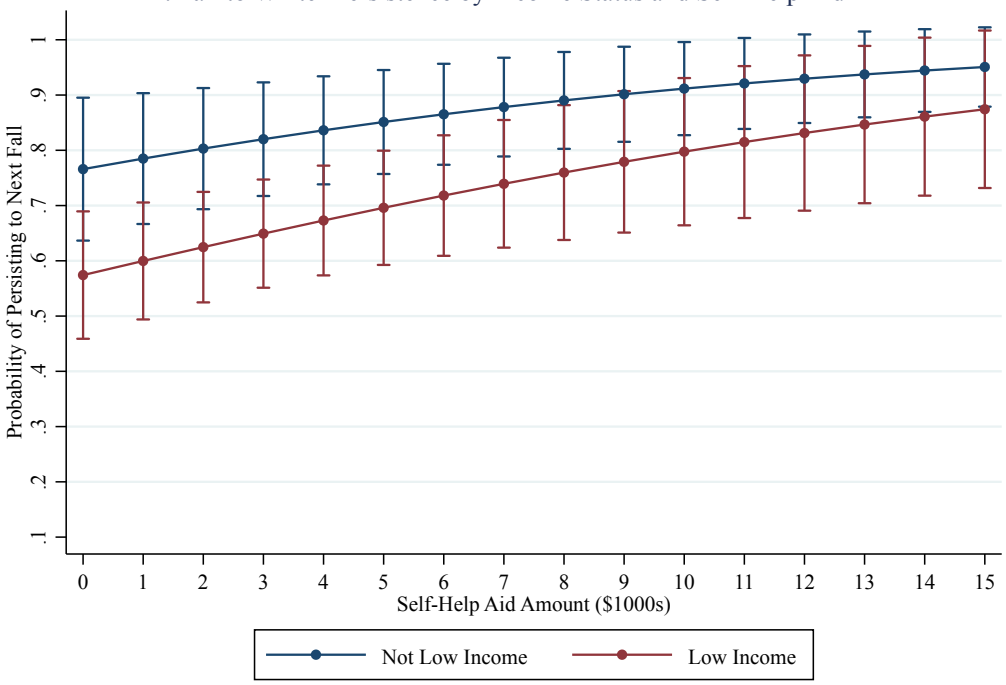
d. Fall to Winter Persistence by Gender and Self-Help Aid



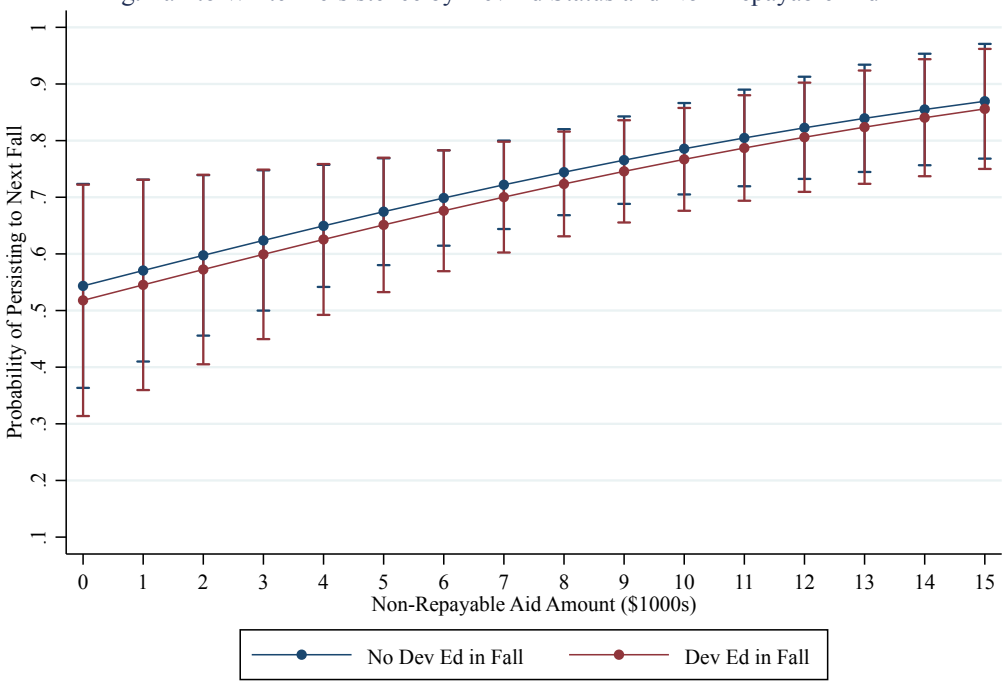
e. Fall to Winter Persistence by Income Status and Non-Repayable Aid



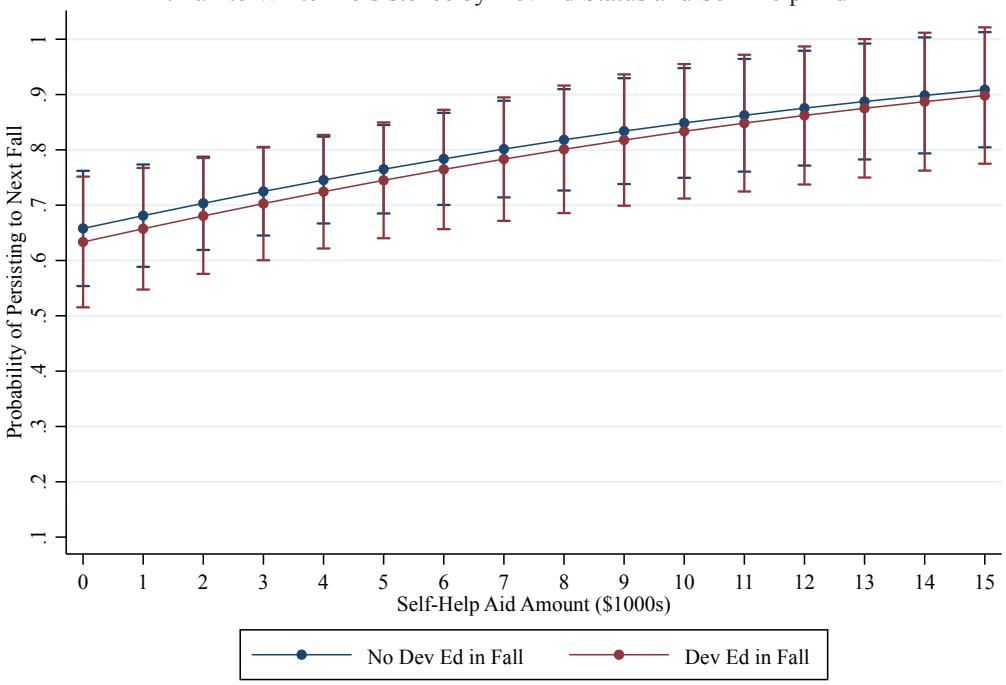
f. Fall to Winter Persistence by Income Status and Self-Help Aid



g. Fall to Winter Persistence by Dev Ed Status and Non-Repayable Aid



h. Fall to Winter Persistence by Dev Ed Status and Self-Help Aid



Summary

In this chapter, I used survey and administrative data to explore whether there was a meaningful relationship between students' self-efficacy beliefs upon entry to the college and their academic performance in their first year of enrollment. The results did not reveal a significant relationship between self-efficacy and (1) attempted or completed credits in students' first semester and (2) persistence from first to second semester; however, there was a slightly significant effect of self-efficacy on students' first-semester GPA. Specifically, for every one-point increase in self-efficacy, students experienced an increase in GPA of 0.25 points on average, significant at the 0.1-level. While these findings should be interpreted with caution due to a limited sample size that did not fully reflect the identities and characteristics represented by the broader population of students at MCC, they indicate that other factors—such as students' demographic characteristics or socioeconomic circumstance at the time of entry—may be more influential on students' academic progression in the community college than their academic self-efficacy beliefs upon entry.

Social Cognitive Career Theory (SCCT) (Lent et al., 1994; 2002) can perhaps help to explain these null findings. While Lent et al. (1994; 2002) posit that self-efficacy, as an expression of one's personal agency, has a direct causal path to performance attainment, they also say it is mediated by several factors—such as academic and career goals and subgoals—that are not directly represented in these models. As explained by Lent et al. (1994, 2002), goals are an individual's expression of their commitment to achieving in a chosen area and are mediated by interests. In this setting, academic goals may pertain to the major that a student hopes to pursue, or knowledge and skills that they hope to attain. Career goals could relate to the profession that they aspire to, one that aligns with their personal interests, skills, and talents. The

non-cognitive skills that students must use to identify and persist toward their goals are challenging to capture using quantitative data and may be difficult to represent using quantitative methods alone.

In my model, students' choice of pathway or meta-major is used as a proxy measure for students' academic and career goals. The descriptive results presented in this chapter—that analyzed student's self-efficacy score by pathway selection—revealed descriptive differences that suggest a need for further exploration. For example, students in the Liberal Arts pathway ($n = 40$) held lower levels of self-efficacy than students enrolled in any other pathway. Regression results showed that students in the Liberal Arts pathway also attempted fewer credits, on average, than students in the Health Sciences pathway ($p < 0.05$). Unfortunately, a limited sample size and cross-sectional nature of the dataset precluded further analyses. More data, perhaps collected from multiple institutions and over multiple years, would be needed to explore whether there is a direct relationship between self-efficacy and students' choice of pathway or whether there are meaningful differences in experiences and outcomes by student's pathway selection. These exploratory data suggest that a relationship between students' self-efficacy early in college and their pathway choice is plausible. They also indicate that students in some pathways may experience unique barriers to persistence that are worthy of further investigation.

The quantitative finding that academic self-efficacy had a moderate, positive, and statistically significant effect on first-term GPA is consistent with Fagioli et al.'s (2020) findings in their study of the role of non-cognitive variables to community college student success. In their study, Fagioli et al. (2020) explored whether non-cognitive variables, such as students' sense of self-efficacy, could be used to predict key persistence milestones and outcomes in college. The purpose of their study was to explore whether non-cognitive variables could be used

by institutions to identify students in need of academic support. Using data from two community colleges in California, the authors observed a statistically significant relationship between first-term GPA and students' academic self-efficacy, though they did not find a meaningful relationship between this non-cognitive variable and any other academic outcome in their model (i.e., persistence to second term, persistence to fourth term, cumulative GPA). From these findings, the authors concluded that noncognitive variables, including academic self-efficacy, were of limited practical utility in predicting community college student success. They acknowledged, however, that research to explore "more refined measures of potential behavioral mediators" was warranted (Fagioli et al., 2020, p. 758).

I contend, and the quantitative findings support, that the relationship between self-efficacy and community college students' first-term GPA should not be overlooked in pursuit of other statistical relationships that span students' academic experience. Rather, more research is needed to explore whether students' self-efficacy predicts their choice of pathway—a choice that is consequential and informs students' overall momentum in college. In the chapters that follow, I begin this exploration by using qualitative data to understand students' choice goals early in college. This responds to Fagioli et al.'s (2020) call for further research that explores more refined potential behavior mediators, such as students' choice goals, with their academic persistence and need for targeted institutional supports.

Finally, while my study did not reveal self-efficacy to be a meaningful predictor of students' long-term academic outcomes, other variables did contribute significantly to the models. Variables measuring students' demographic characteristics, such as race/ethnicity, gender, low-income and developmental education status warrant attention. Based on study results, Black students attempted and completed significantly fewer credits than their White

counterparts, when other factors are controlled for in the models. Black students also experienced a first-semester GPA that was a half-point lower than their White peers, all else equal ($p < 0.05$). Female students attempted significantly fewer credits yet had a first-semester GPA that was nearly a half-point higher than their peers who identified as male, all else equal. Despite earning higher GPAs than their male counterparts, females had significantly lower chances of persisting from first to second semester. Low-income students attempted and completed significantly fewer credits than their peers who were not low-income and were less likely to persist from first to second semester.

Differential findings by students' demographic characteristics may reflect "structural organizational factors that have historically impacted community college students' performance and outcomes" (Gonzalez et al., 2021, p. 12). These organizational factors may include the community college's open access commitment that ensures that any student has an entry point to higher education regardless of preparation, aspirations, and identities (Bragg, 2012). For community colleges to bridge the gap between access and improved educational outcomes, these findings suggest a need for practitioners to evaluate whether there exists a just and equitable distribution of programs and services (Bragg, 2012; Dowd, 2005). The distribution of resources and services within and across programs contributes to the opportunity structures (Lent et al. 1994, 2002) that are both understood and experienced by students. These structures may have a differential impact on students 'academic outcomes relative to their aspirations.

The quantitative results also highlight the role of financial aid in supporting student persistence, particularly for low-income students. For every $1,000 of non-repayable or scholarship aid a student received, students' odds of persisting from first to second semester increased by 19 percent. Figure 5.5-e shows how the persistence gap for students by income-

status is reduced by nearly half as the non-repayable aid scale increases from $0-$15,000. These findings illustrate the important role of non-repayable scholarship aid in supporting students' forward-progress within the curriculum and in lessening persistence gaps, particularly for low-income students. There are several possible explanations for why this may be. For example, research has shown that low-income students are more likely to hold a job during college than their peers, reducing the time available to study or engage with faculty and peers on campus (Broton et al., 2016). Students who receive scholarship aid may be able to reduce the hours they need to work, thus increasing their time to engage with their academic and professional training. Students who receive aid may be more equipped to handle unexpected financial emergencies that threaten their ability to afford the costs of college. Moreover, these additional resources may help them to address basic needs such as food and housing that are critical to students' ability to learn and persist in college (Goldrick-Rab, 2018). Finally, students who receive scholarship and other forms of non-repayable aid may experience a psychological benefit in knowing that there are resources provided to help them manage the costs of college.

In the next chapter, I present the qualitative findings on how students relate their academic and career goals with their experiences navigating the structures and supports introduced by the community college.

Chapter 6 Qualitative Strand

The primary objective of this study is to explore how students develop their academic and career interests in a community college that has implemented aspects of the guided pathways framework. In this chapter, I use student interview data to unpack how students perceive their curricular experiences and whether and how they relate these experiences to their goals or aspirations related to their chosen program of study. In the following paragraphs, I present the central findings related to this question: *How do students relate their curricular experiences to their academic and career aspirations?* This analysis introduces the student voice and perspective on how the structures and supports of the college inform students' academic and career decision-making early in their college experience.

In total, 16 students participated in in-person, semi-structured interviews that took place in Spring 2020. In these conversations, I engaged students in conversation about their personal background and experiences, as well as their interests, experiences, and interactions in college that informed or were related to their choice of program of study (the interview protocol is provided in Appendix B). Given the focus of this study on students' academic and career aspirations, I asked students to share with me their goals as a student and for their future.

The data generated through these conversations resulted in four areas related to their goals from which prominent themes emerged. The first theme related to how students spoke to their college aspirations as they pertained to their academic and career pursuits, which I named Aspirational Steppingstones. Within this thematic area, students addressed whether and how students connected the need to complete a credential or transfer to another institution with their

broader ambitions, and how students connected their career aspirations with interests or experiences that preceded their enrollment in the college. This thematic area also included the desire of some students to continue figuring out whether their articulated goals were well-suited to their interests and needs. Finally, some students spoke to the grade point average that they hoped to earn and maintain throughout college. The second theme captured how students spoke about the role of advisors, faculty, and other instructional staff in supporting and, in some cases, directing students in how to approach decisions related to their choice of program of study. I named this theme Curricular Advising, Support, and Direction. The third theme identified the types of choice behavior described by students, or strategies used to identify, explore, or rationalize a program choice, named Choice Strategies. Finally, the fourth theme, referred to as Barriers to the Choice Process, addressed how students spoke about perceived barriers to realizing their academic and career aspirations. In Table 6.1, I summarize how students described academic- and career-related aspirations, advising support, strategies for navigating the choice process, and barriers to progress within their chosen pathway.

Table 6.1

Themes Related to Students' Aspirations and Related Curricular Experiences

Themes	Sub-themes	Codes and Subcodes
Aspirational Steppingstones	• Completion is a necessary step toward personal or career fulfillment • Transfer necessitates a focus on credits, time, and cost • Students connect career aspirations with interests that developed before their enrollment at MCC • Students set goals to "figure it out" • Students set specific grade targets	Aspirations • *Short-term completion goal* • *Short-term transfer goal* • *Short-term credit goal* • *Achieve grades* • *Long-term career goal* • *"Figure it out"* • *Personal fulfillment* • *Practical fulfillment*
Curricular Advising, Support, and Direction	• Advisors get students "geared" for a chosen academic or career pathway • Advisors work backwards from students' long-term goals to make program paths transparent and accessible • Advisors redirect students within the curriculum when their interests do not align with the college's programmatic options • Faculty and instructors share professional insights with students in ways that help students evaluate academic and career choices	Advising support • *Advisor-directed course and program selection* • *Paced and forward-looking* • *Flexible options* • *Helpful and knowing* • *Redirection* Instructional support • *Professional insight* • *Personal support* • *Accessible and understanding*

Table 6.1 (continued)

Themes	Sub-themes	Codes and Subcodes
Choice Strategies	• Students seek out confirmation of their academic and career choices through early practical or hands-on experiences • Students are knowledgeable of job and salary outcomes related to their interests; students in transfer pathways are aware that not all credits are transferrable • Students are knowledgeable of the various pathways related to their chosen area of interest and expressed comfort in knowing they could pivot if necessary • Students often credit a family member with inspiring their program choice	Early exposure • *Professional* • *Practical and hands on* • *Demonstration* Expected outcomes • *Demand* • *Salary* • *Transfer outcomes* Search for options • *Multiple career options within pathway* • *General pathway* Personal connection • *Enjoyment* • *Personal or family history*
Barriers to the Choice Process	• Students express worry about making an academic or career choice • Some students perceive the structured approach to advising as being overly prescriptive; they are bothered by a perceived lack of programmatic options • Some students struggle to make an academic or career choice due to a lack of programmatic options related to their interests • Students speak openly about their struggles in math	Choice anxiety • *Wrong choice* • *Fear of negative perceptions related to being undecided* Perceived lack of agency over the choice process and/or options Lack of clear pathway • *Initial program interest not offered by college* • *Stress or difficulty around program choice due to lack of pathway* Math struggle

Aspirational Steppingstones

Given the emphasis of this study on students' academic and career interests and aspirations, each participant was asked to discuss their goals in college or for their career. Students tended to identify academic milestones or "steppingstones" as academic goals they were striving to reach. Some students spoke about their hopes to find themselves in a career that provided personal or practical fulfillment over the course of their life.

Completion As a Necessary Step Toward Personal or Career Fulfillment

Students spoke about their desire to complete a college degree, either at the community college or at a four-year college or university. For most students, the goal of graduating from college was linked to a broader ambition that connected to their values and drive for personal or practical fulfillment. For Aaliya, her goal of completing not just an associate degree but ultimately a bachelor's degree felt predestined, as though it wasn't a choice but a necessary course for her life. She situated this goal within her identity as a first-generation college student:

> Ever since I was little, I've never really given myself a choice. I've always seen myself going to college… my family members have gone to college, but they've never finished one year of it, and so I definitely see myself finishing at least a bachelor's degree. I don't know why, but I've never seen myself getting just an associate.

When asked about other goals related to her college experience, Aaliya said she could not express any at that time. For her, the goal of completion seemed to guide all others.

Other students, like Kaelah and Calem, linked their goal of finishing their degree with other college-related ambitions, such as their desire to achieve high grades in their coursework or graduate debt free. Kaelah, for instance, expressed how her drive to earn her credential with honors was inspired by her capacity to achieve as demonstrated by her performance in high school, as well as her parents' legacy and example as alumni of Momentum Community College (MCC). "I would love to graduate with honors… I'd love to follow in my mom and dad's

footsteps." While her parents inspired her own drive to succeed, she connected her desire to complete with her own journey to reach personal fulfillment. As she envisioned her life after completion, she explained, "I'd just basically graduate with honors and be happy with my degree, be happy that I got something that I wanted." She continued to explain how this vision connected to her broader career aspirations. Happiness for her meant she would "get the job that the degree is for… just do what I really want to do with the degree."

Calem was clear that he was striving to earn a degree without accruing any college-related debt. "I have a chance and I really want to do it. I have a chance to get out of here basically debt free." Like Kaelah, Calem's goal was inspired in part by his parents' experience. "I've seen my parents struggle with debt their entire life." His grandparents, however, are the ones who he credited with putting this goal within reach. Calem explained, "I really am grateful for my grandparents, they have agreed to pay 50 percent of my tuition here." Also, like Kaelah, Calem was able to connect his completion goal to a broader vision for himself:

> I see myself graduating from here with the associate. And just simply finding a job that not only meets what I can do, but also at the same time meets what I want. And hopefully I'm able to pick and choose what I want, because this degree, like I said, it's very much in need. So that's kind of what I'm hoping for.

Calem shared that he wanted to be hired upon graduation but would be open to further schooling if it was desired and funded by his employer.

Joline was pursuing her nursing degree in the hopes that she could work at a children's hospital one day. For her, completion was the first step toward making that goal a reality. "It's not *if* I get my nursing degree, it's *when* I get my nursing degree." She spoke decisively and with passion: "I'm going to go work at a children's hospital. I love kids." She described her education as a necessary step in achieving her professional ambitions, as well as a chosen pathway to

another life in another place, another home. “I’m not going to live here. I’m moving out of state. I like it hot, and I have family in almost every single state.”

Joline was not the only one who hoped her degree would take her to a new place. Tanya and Jenai shared similar sentiments about being open to finding work outside of the state after completing their degree. Tanya was unsure of where she might land geographically after finishing her degree, yet she rested on the knowledge that she had family and support systems in multiple states should she decide to make a move. Jenai shared a vision for graduating and living in Arizona. She would be employed in her chosen profession of vascular sonography and would perhaps pursue a bachelor’s degree in that area “a few years down the road.” Before setting her sights on additional schooling, she wanted to experience the profession “and see if that’s really what I was there for.”

Susanne and Amos spoke very practically about the need to complete their credential. Susanne was clear, however, that her goal was to earn a bachelor’s degree in software engineering. She expressed some worry about this goal because “obviously MCC doesn’t offer that,” so at that time she was focused on finishing her associate degree. Amos, who was studying to be a police officer, put it simply: “Graduate, that’s one goal. Just get the best out of my education, the best out of the experience I have here.” He felt more confident about the steps after earning his degree: “I plan on just going straight into the police academy because I’m 19 now. So, I’ll be 20, almost 21 by the time I graduate and you need to be 21 to be a police officer. So, I’m probably going to go straight into the police academy.” For Amos, his future seemed set.

Transfer Necessitates a Focus on Credits, Time, and Cost

Students whose ambition was to transfer to a four-year college or university tended to touch upon the need to earn specific credits; transfer within a specific timeframe; or acquire

scholarship funds to cover the cost of tuition, fees, and living expenses. Philippa, who initially entered MCC to earn the credentials necessary to be an early childhood educator, now found herself in the Liberal Arts pathway working toward psychology credits. She planned to transfer to a four-year regional university and said her goal at MCC was to earn her "core credits." She explained, "I want to get through some writing classes, just get through all sorts of credits before I transfer." While she had yet to settle on a transfer destination, she expressed confidence that she had the information she needed to transfer successfully.

Tanya articulated a clear goal of transferring out of MCC in two years. Implicit in her goal was an understanding that transfer can sometimes extend students' educational journey in unnecessary or unwanted ways: "I don't want to prolong it for two and a half, three years. I want to go full-time, get it done in two years, be out of MCC. It's pretty much my goal right now." When she was choosing a college or university, she had her eye on a regional four-year college, but she recalled having a difficult time justifying the cost of living on campus when her grandparents lived only 30 minutes away. As a result, she settled on MCC:

> I decided I would just come here, get my associate, and then with the program that MCC has, fill the requirements to get an associate in criminal justice and then transfer over and finish my bachelor's.

When pushed on whether earning her associate degree fit within this broader goal of transfer, she said, no, "the associate degree isn't necessarily important to me." Like others, she saw the two-year credential as "a steppingstone to get to where I need to be."

In contrast to the other students, Tessa's transfer intent was present but less clear. Like Philippa, Tessa had hoped to pursue a career in education but chose nursing after learning that an education pathway was not offered within the college's curriculum. Tessa shared that she was still learning about the various career options offered within the nursing program, which was a

second-admission program that students applied to after completing their first year of coursework. She expressed a desire to enter the program early and to explore program fit through an internship at an area hospital where "the credits transfer back" to MCC. She said that the internship was an important part of her journey: "I see myself being in the field, in a hospital…so I know that this is what I want to do, dip my toes and everything." Throughout the conversation, she alluded to a desire to transfer, though she expressed some concern that she may struggle to do so efficiently. When speaking about her transfer prospects, she shared:

> I believe I can. I know when I wanted to transfer for the winter program, I looked to see where my credits could transfer… they don't transfer to a lot of places. So that's the thing about MCC. If you decide not to get a degree, a lot of your credits don't go out.

She connected her concern about experiencing future hurdles in college with her desire to get into the field to explore her career choice:

> As far as the program goes, I think I'm gonna come into more bumps… I know as soon as I slip up on something I will beat myself up and let myself know, 'You're kidding yourself, you can't do this.' No motivation, no ambition, no confidence. It just drains out. So I want to keep myself positive and interactive. That's why I want to get in the field."

While she credited her family for her motivation to succeed in college, she said she was pushing herself to find her own confidence: "I have to help myself before anybody else can help me."

Zeke, on the other hand, led with confidence about his intent to transfer after a year of enrollment at MCC. "Fall, I'll be at [regional university] almost definitely." Like Calem, he expressed a goal to be free of any college-related debt and shared that he was working two jobs to "pay for gas and then to pay for college later on." While he did not speak to the additional costs of a four-year university, he confessed to searching for "tons of scholarships." For him, transfer was his path to the "university experience."

Students Connect Career Aspirations with Interests That Developed Before Their Enrollment at MCC

Students who shared long-term career aspirations often revealed that their choices were informed by interests that developed over the course of their lives. Amos, for example, said he "always had an interest in law enforcement." His dad was the captain of the local fire department, and he joined a local cadet program that was run by the county Sheriff's office. Through the program, he was exposed to the daily life of an officer through "ride-alongs" and other experiential learning opportunities.

Tanya was pursuing a degree in criminal justice, which provided training to be a parole officer and, according to Tanya, integrated "criminal justice, criminology, psychology, and social work." For her, earning a degree in this area would be "fulfilling a life-long dream," a dream that was once her mother's. Tanya was clear on the program requirements and could identify the four-year university that would confer a credential in this area. She said that since MCC did not offer a program in criminal justice, and therefore she was pursuing an Associate of Arts with the goal of transferring to an institution that offered that degree.

Karli and Scott were both in the graphic design program with the intent to transfer. Karli's choice was informed by her proclivity for art and hands-on activities: "I've always been more artistic." She spoke in detail about where her degree would take her:

> I want to apply it to, hopefully, signing up through record labels, designing for artists, specifically Christian contemporary artists because there's a lot of new ones that are coming out and they're always looking for graphic designers. That's actually a really, really growing industry.

While Scott was not as sure as Karli about his choice of program, the interests that drew him to it also stemmed from a life-long passion. Scott was part of a gaming community that he first joined in high school and helped to foster at MCC. He explained that gaming was something that he had

enjoyed since childhood: “I can’t see anything better for me to do.” Ultimately, he was working toward a profession as a “game designer or game development,” but said MCC “doesn’t offer any of that.” Still, he hoped that a degree in graphic design would prepare him to work in a gaming company someday.

Students Set Goals to “Figure It Out”

Students were aware that there was an expectation for them to choose a career pathway. This translated into a goal for some, which was communicated as a desire to “figure it out.” Aaliya spoke to this directly:

> I felt really pressured because when I came here to enroll for my classes, they told me to pick a field and I didn’t want to do general studies just because I felt like if I did that, I still wouldn’t know what I wanted to do and it wouldn’t push me to figure it out… so I picked radiography.

When asked about her goal as a student she said, “A really big goal is just figuring out what I want to do because I don’t know if I want to do radiology.” She continued, “I only picked it because it made a lot of money.” When asked about her goal as an MCC student, Susanne said similarly, “I guess figure out… where I want to go.” For now, that process of discovery included earning an associate at MCC. For Tanya, who was focused on transferring within a two-year timeline, her primary focus was to make it to her four-year destination and “figure it out.”

Students Set Specific Grade Targets

Students articulated specific GPAs that they were striving to achieve. Aaliya, who said she was figuring out her specific career interests, aimed for a 3.5 GPA because this would earn her a “good scholarship” for transfer. She hung a “goal sheet” in her room to remind her to strive daily toward achieving high grades. Overall, students communicated high ambitions for themselves. Jenai said she was working toward a 4.0 GPA and currently held a 3.7. She seemed content with that. Thomas was working toward a 3.7 GPA. Karli said, “My current goal right

now is to finish off the semester with nothing lower than a 3.0 because I want my grades to stay up." Kaelah had a goal to "graduate with honors," offering an example of how students connected their broader ambitions to their desire to earn passing or high grades.

Corrine was able to put words to where her grade-related goals fit within a longer-term vision for herself. When explaining the GPA that she was working toward, she said, "I was going to say a four-point, but that's striving, so 3.5 is my main goal so I'll be able to move on." She articulated other "mini goals" such as "making sure I wake up for class, making sure that I'm doing everything I need to, so I can be able to have that next step of my next goal." She was focused on how individual actions kept her on a path toward achieving the big goals that she held for herself.

Curricular Advising, Support, and Direction

Each student shared their experience choosing a program of study. They identified the various program options they considered when making their choice of program of study, the information they used to weigh different options, and interactions that were particularly helpful or challenging throughout the choice process. While sharing their story, students provided personal insight into how the college helped students make this pivotal choice throughout the institutional onboarding process. Students' perspectives were often shaped by the people in the community college whose job it was to guide student interests and curricular experiences: advisors and instructional faculty and staff. In this section, I focus on the activities of advisors and instructional faculty and staff whom students described as being supportive of their forward momentum toward their academic and career goals.

Advisors Get Students "Geared" for a Chosen Academic or Career Pathway

Students found advisors to be generally prepared for their initial meeting, having already done the work of researching students' interests and course options for their first semester. Zeke described feeling understood by his advisor:

> I told him what I needed, and he fully comprehends what I need and he knows that I'm here doing classes and I'm here more as a fallback because it's free and he gets that. He understands.

Zeke found himself returning to his advisor for insight into transfer options, individual course selection, and the pros and cons of whether to take classes online versus in-person. In each of those interactions, Zeke described his advisor as presenting options in ways that were connected to his unique motivations and strengths.

Amos said that his advisor got him "geared" for college by helping him to clarify program definitions. Initially, he was interested in criminal justice, yet the college's pathway that related most closely to this area was law enforcement. They discussed this distinction, looked at his [high] grades in high school, and touched upon his individual approach to learning, which he described as "kinesthetic" and "hands-on and visual." He said he delved further into exploring and naming his own learning style in his gateway seminar.

Several students shared that their advisor had presented them with course options relative to the pathway that each selected upon entry to the college. Karli said that she told her advisor she was working toward an Associate of Arts degree, after which she "was set." Based on this information, her advisor was able to provide her for a complete schedule for her first two semesters of classes, which consisted mostly of general education coursework. Kaelah described a similar experience: "She sat with me and my dad and she planned the courses for me, she gave

me a nice little list of stuff that I should do before I transferred." Kaelah described the interaction with her advisor in a positive light:

> She… was very understanding of the stuff that I was going through at the time. And about the process of getting my classes set up for the first semester, it was really easy because she made it really easy.

Tab, who was taking general education courses alongside coursework in the electrician program, said that his advisor proactively placed him into business classes in case one day he wanted to start his own business. In describing the interaction with his advisor, he said: "They were like, 'We're gonna put you into these business classes while you're taking this electrical program.'" He shared that this proactive approach to advising and scheduling gave him confidence in his future: "If one day I come up with this huge idea like, 'Wow, I want to start an electrical business.'…that helps me a lot."

Many students spoke of being assigned to advisors who advised students within specific pathways. While this seemed to be the general approach to advising, Tab and Aaliya, who were student-athletes, worked with advisors who were assigned to them due to their affiliation with the baseball and running teams. Tab explained that his advisor was also the assistant coach for the softball team and "student advisor for sports." During their initial meeting, Tab described speaking with his advisor about course planning, along with graduation requirements and his baseball schedule. Aaliya said that her advisor worked with her to create a course schedule that would allow for her to balance her academics with her cross-country schedule. She said that her advisor placed her in classes that "weren't that hard, so that way I wouldn't be spending a whole bunch of time on that." Balancing her coursework in this way helped her to "do the work and still have time for cross-country." She said that once cross-country season was over she "took hard classes so that way I would have more time." Like Tab, she was taking specialized courses

alongside general credits, although she expressed feeling pressure about whether this approach would lock her into a specific career area that she may choose to move away from in the future: "Since I didn't pick general studies, I was already taking classes for radiography, and then I was like, what if I changed my mind?" She said she was aware that most of her credits would transfer to a general pathway, though a faculty member had told her "some don't." It was unclear whether Aaliya's concerns about her course choices were related to her uncertainty about her choice or to an advising approach that aimed to move her into a structured area of the curriculum before she had fully settled upon her choice.

Students shared a general sentiment that advisors were working in a structured manner that tended to reinforce their own interests. For example, Thomas, who was in the Liberal Arts pathway, described multiple interactions with his advisor. In these meetings, Thomas described an interaction where advisors presented programmatic and course options but left the ultimate decision about program choice to students themselves: "They just keep telling me the things that I can do, and then they let me choose." Through several interactions with his advisor, Thomas had left feeling supported yet ultimately in charge of his own decisions: "We're the ones that are creating our future, but they're also supporting us at the same time. So they're sticking with us, our words, so that's kinda helpful." Thomas described meeting with his advisor several times to discuss issues ranging from course selection, transfer, and study abroad possibilities.

Jenai, who was also working to narrow her career interests, described her advisor as being "the person who really helped me put everything together." She said that once she shared her initial interests her advisor laid out clear steps that helped to validate her own interests:

> She was like, 'Well you need to do this and this, and then it will be the outcome of this.' And then she gave me different options with different programs and stuff, so she was another person that really helped to validate what I really wanted to do in my career.

Jenai said that her advisor checked in with her "about every three months" to see how she was doing and whether she continued to feel satisfied with her chosen path.

Advisors Work Backward from Students' Long-Term Goals to Make Program Paths Transparent and Accessible

Students spoke of meeting with advisors several times over the course of the year. Initial meetings were focused on course registration within their pathway for the first semester, and subsequent meetings were used to plan the courses students needed to earn a credential or to transfer successfully. Jenai described this long-term approach to course planning:

> When I came in for my orientation, we sat down together and we went over the classes, and then the next year… actually, we went to the next year with it too. [My advisor] was like, 'Well, your projected graduation date is 2021.' So that really helped a lot.

Jenai expressed feeling appreciative of having her complete academic schedule in hand, and connected her positive feelings toward having this information with her motivations to succeed:

> It actually felt very good, and it pushes you to do better and work hard on it… You know it's right there; you just have to keep working and keep going. You can't stop, you've got to keep going on because it's right there, because it's not long, only two years. It's not long at all.

Jenai seemed to draw confidence from the support she received from her advisor who aimed to connect her interests to a program area in ways that were forward-looking and actionable.

Students who held transfer goals described an effort made by advisors to present four-year transfer options in a manner that allowed for comparison and credit evaluation. Zeke spoke to this in detail:

> I said, 'Look, I'm interested in transferring. I'm still interested in computer science but I'm not sure yet.' By the time I came into my meeting with him, he had three transfer agreements and all the classes that transferred from MCC to [three different four-year universities]. He had them laid out on three different sheets of paper, he had highlights on everything that was relevant. So he had done a lot of work for me before I even got there.

Like Jenai, Zeke remained unsure about the exact program he would end up in or what his chosen career area would be. Yet, he expressed a feeling that his advisor understood him in a way that connected to his personal motivations.

Advisors Redirect Students Within the Curriculum When Their Interests Do Not Align with the College's Programmatic Options

Some students described interactions with advisors that were intended to steer students away from program options that were not formally offered by the college. Instead, they were directed toward other programmatic options that were offered by the college and were somewhat related to students' initial interests upon entry. Often these options led to stronger prospects of gainful employment than the pathway initially envisioned by the student. Philippa related a frank discussion with her advisor upon entry to the college. She said that when she shared her intent to pursue a credential for early childhood education, a choice informed in part by her experience working at a daycare center, her advisor offered feedback on her choice:

> I talked with my counselor about it, my [advisor], and she said, 'Well, you can't really make much money doing that,' so I'm like, 'Yeah, you're right.' So, I looked into it more and decided not to go that route.'

Philippa's story demonstrated the influential role of advisors in directing students' academic and career choices, and how simple statements at a critical moment in students' decision-making process can have the power to override tangible experiences in the field. Philippa was quick to agree with her advisors' perspective, though she indicated that she spent some time searching for confirming and disconfirming evidence. Philippa said that her advisor responded positively to her suggestion that a major in Psychology would allow her to fulfill her "life purpose to help people" and said, "I could totally see you doing that, and we have a program here that you could transfer." When asked about how the conversation made her feel, she said, "A little

overwhelmed because there are so many options out there… I'm horrible at making decisions and choices."

While Philippa was redirected toward an option that was related to her initial career interest, Tanya described a choice that was stark in contrast. Initially, she entered with an interest in history, though her thought process revealed her predisposition to justify this choice based on the career options that she believed to be possible in her community:

> There was a possibility of me going into history but it wasn't really a viable option. Just because if I were to go into a history degree, I would want to be a historian or something… In [name of city], the culture isn't really there for that. So, I'd either have to move out of state, move to a bigger city, which I'm not opposed to… Even then, there's really no guarantee because there's so many people who are already waiting with their history degrees trying to find something in that field. I feel like it's a lot tougher to get into versus correctional officers and everything. They're in need because… people are going to keep going to prison. So, they're needed.

When asked if she checked these assumptions with her advisor, she said yes, "I did talk to her about it, and she did warn me about that, which I already knew is that it's kind of a hard one to get into." She said this discussion with her advisor proved to be pivotal in helping her make her choice of program of study: "She did warn me about [the challenge of finding employment in an area related to history], and that's when I ultimately decided I'm going to continue with what I wanted to do since I was younger, criminal justice." Her advisor's warning about the difficulty of securing employment in an area related to history redirected her away from her interest in science and toward a path that she believed would offer strong employment and earnings potential. Tanya explained why her advisor's warning about the employment and earnings potential of a history degree held sway: "I can't just sit at home, have my mom, dad support me, it wasn't really an option. They struggle enough as it is… I kinda looked at job stability."

Faculty and Instructors Share Professional Insights with Students in Ways That Help Students Evaluate Academic and Career Choices

Given the focus of this study on students' academic and career choices early in their college experience, I did not ask questions about students' interactions with faculty or instructional staff that pertained to their classroom learning in a systematic way. However, as students talked about their choice of program of study, many touched upon the role of faculty and instructors in introducing them to specialized academic and career areas. Students spoke of how faculty and instructors shared personal and professional insights that they had gained through direct experience in a chosen area. Many students expressed increased confidence in their academic and career choices due to information and insights shared by program faculty and instructors, and discussed how these insights helped them to evaluate their program choice.

Tanya shared that in addition to the information provided by her advisor, her criminology instructor, who was also a warden assistant at an area prison, was influential in her program choice. She explained:

> Instead of him just pretty much lecturing what came out of the book, he would be like, 'Okay, this is how they're used firsthand,' which I really loved… In order to be a parole officer you have to acknowledge that sometimes there might be iffy situations where you might feel endangered and everything and just things like that, and I was like, I would be really good for this job and I'm really interested in it, so I was like, 'Well, let's pursue that.'

Tanya's instructor's insights about the day-to-day activities of a parole officer gave Tanya a sense of the strengths and sacrifices required to be successful in the profession. She communicated a sense of confidence about her choice, which was bolstered by the feeling that she would be well-equipped for the requirements of the job.

Zeke shared that he, too, would seek out his instructor's advice relative to his major choice. As he navigated various specialties in the math department, he would reach out to his

professors with specific questions about what to expect in each area. Zeke described asking, "What would it be like if I went into college and did this, or what would I be looking at for jobs if I did this?" Zeke found his professors to welcome these conversations: "They have the knowledge of what you'd be looking at and they're more than happy to share it with you."

While Zeke sought out this information, Calem shared that his cybersecurity professor, who was also chair of the department, taught his courses in a way that demonstrated practical knowledge. Calem said that this approach helped him feel as though his interest could develop into something practical and real. He explained:

> The cybersecurity program, it's always something that was interesting to me, but I hadn't really had much time or any way to really practice it myself. So it was still, the concept was still relatively new to me. And so just simply being able to watch him demonstrate what he's capable of, it just kind of blew all of us away.

In addition to demonstrating specific skills, Calem said his instructor would share the value of certain skills to employers. According to Calem, he would say, "If you were to go into a job, this [skill] would basically get you almost hired immediately." Calem said that this suggestion, paired with his own sense that his skills were increasing, was "a confidence booster immediately."

Choice Strategies

As students described their experiences choosing a program of study, students touched upon behaviors or strategies that helped them make their decision or that brought comfort with the choice made. In essence, these strategies were used to navigate the choice architecture or decision-making context offered by the college (Thaler & Sunstein, 2008; 2021). These behaviors or choice strategies included efforts to engage with their choice through practical exposure, explore the range of outcomes that could result from their choice, and understand the

range of options still left for them to choose from as they considered specialty areas within their pathway.

Students Seek Out Confirmation of Their Academic and Career Choices Through Early Practical or Hands-On Experiences

As students spoke about their program choice, several students—especially those engaged in areas of the curriculum that offer practical training—spoke to the importance of engaging in hands-on activities early in their college experience. They shared how these experiential learning activities exposed them to practical areas of knowledge that would be needed in their chosen professional areas. Students spoke to how these learning experiences increased their proficiency and skills in ways that affected their confidence in their academic and career choice.

Tab, who was working toward becoming an electrician, spoke with a sense of understanding about the curricular requirements and scaffolding:

> So, last semester, we would do a lot of labs and everything… wiring different kinds of stuff and everything, and now it's more of the math portion of what we need to know, just to get those equations right, to get the electricity following through.

In addition to helping him contextualize his learning in math and other related areas, hands-on experiences gave him confidence in his ability to do the work:

> So, my electrical class, one of my electrical classes in the first semester… we had to wire this light bulb, which I had never done before… So, I had no idea how to do it and everything, but the guy taught me how to do it step by step by step by step, and it's difficult to do, but I got it pretty easily, so that boosted my confidence quite a bit.

For Tab, strategic advising, a structured curriculum, and early hands-on experiences interacted in ways that supported his progress.

Calem, who spoke in depth about his professor's classroom leadership and demonstrations, said that hands-on activities that were practically-oriented gave him a sense of how far his skills had progressed. He shared an example:

> Most computers run on Windows 10 nowadays. I can put Windows 10 on maybe 10 computers at the same time. And have them all up and running within 20-30 minutes. That's a huge improvement from what I was able to do. Because really, I didn't even really know much about the Windows operating system before, and just being able to know I've learned so much in such a short amount of time, that's a good confidence booster.

When speaking about his future, he led by saying that he desired a job that was fulfilling and explained that this job was likely in cybersecurity. His early program experiences that centered hands-on, practical learning, supported this goal.

Students Are Knowledgeable of Job and Salary Outcomes Related to Their Interests; Students in Transfer Pathways are Aware That Not All Credits Are Transferrable

Many students spoke with ease about their prospects of securing gainful employment in their chosen areas. Some spoke of feeling discouraged to pursue specific career areas due to poor employment prospects. Students described seeking out employment and earnings data independently and sometimes with the assistance of advisors, instructors, or trusted family or friends. This information was used to support their decisions and to evaluate whether they were striving at their desired level.

Amos, Tab, and Calem spoke to the impact of knowing that they were pursuing careers in areas that were needed and growing. Amos said that from employment data he learned that police officers are retiring in high numbers. This trend was understood to be promising for his career prospects: "So when I'm ready to go join, I'll probably get a spot because they're gonna need me." He also looked at salary data and noticed some variation in earnings, information he is

using to determine where he'll seek employment. Tab expressed confidence in his career choice due to local demand:

> Electrical always interested me, and then once I saw it was in high demand and people are begging other people to come and join, I was like, 'Yea, I might as well, make decent money and do something I love to do.

Calem shared an awareness of global trends in employment that supported his growing confidence about his employment prospects in cybersecurity. Of technology, he said, "It's a growing field, and as of right now it's very much in demand." He said this information is "another reason I'm trying to go into it because it's almost like you're guaranteed a job, especially if you know what you're doing." He credited MCC with helping him to learn and "showcase" necessary skills.

Other students were focused on the expected earnings within their chosen field and associated sub-fields. For example, Joline shared that she was initially interested in a career as a medical assistant after learning about the need for workers in this area. She was deterred, however, after looking up salary information and even meeting someone who was currently employed as a medical assistant. She quoted the expected earnings in this profession to be about "$30,000 a year." Joline went on to say, "that's not enough for me. I want to strive higher than that. I want to be able to put money aside, travel, buy extravagant gifts for my family when they came down to it." For her, this judgment came down to her own standards for her life: "I just wanna be able to say that I didn't lower my standards, like, took the easy way out."

Aaliya expressed a similar sentiment for herself when describing her process of comparing outcomes between a career in psychology and radiology:

> Psychology, there was pretty good salaries there. It wasn't exactly like what I would want to make, just because my mom had a lot of financial troubles when we were growing up, so I don't want to put myself in the position where I could have troubles.

Not only did Aaliya not want to have troubles, but she also wanted to thrive: "I want to go as far as I can with it and be as high up as I can." For this reason, she chose radiology, because she could envision opportunities for advancement within the field and made her choice "because the salary was way higher."

While most students indicated that employment and earnings data were influential in their decision-making, one student said it did not hold sway with her. Tessa, who was studying to be a nurse, said that she referenced employment data to "just see what's the outcome that I'll go and I'll get a job." When speaking of salary information, she expressed the belief that pursuing a career based on her internal motivations was a stronger predictor of success than prioritizing external factors such as projected earnings:

> If I'm working on something I love, of course, I'll probably be making a wealthy wage and everything… so I'll enjoy going to work. I'll enjoy getting up every single day and sitting there and helping who I'm helping and being around who I'm around. So the salary just never really mattered to me.

Still, she expressed some knowledge of what to expect in her chosen area. When asked what it meant to be a nursing student, she said "It makes me feel like [an] adult, like this is really something I'm going to do for the rest of my life." She then declared, "I'm going to make a living salary off of this. I'm going to have to live off of this." Tessa seemed confident that her chosen path would lead her to an independent and full life.

Students are Knowledgeable of the Various Pathways Related to Their Chosen Area of Interest and Expressed Comfort in Knowing They Could Pivot if Necessary

As students spoke about their chosen pathway, many highlighted the various career alternatives that remained viable career options. Tessa had evaluated her choice through this lens. She expressed confidence that choosing a general area such as nursing would lead her to a career area that fulfilled her need to help people through her work, while giving her time to

choose an area of specialty. “There are different options, I could take different routes, just take the prereqs and then I can choose.” Her perception of the flexible options offered within her pathway made her more comfortable about making a pathway choice early in her college experience: “As long as I picked the basics, I didn’t have to be more specific because I’m real indecisive. I didn’t want to change my major 110 times… This works out perfectly for me.”

Aaliya, who was also in the health pathway, chose radiography so she could help others without needing to provide direct patient care. Within radiography, she was still exploring various specialty areas:

> With radiography, there’s a ton you can do. You can be an MRI Technologist, you can be a CT technologist. So you can help people with X-rays and stuff, figure out what’s wrong with them and how to treat them… I could still be helping people but not have to deal with the hard parts of it.

Like Aaliya, Tanya expressed feeling as though there were career options embedded with her program. She expressed feeling as though having choices to still make took the pressure off making a more general academic and career choice. She explained, “Criminal justice is an umbrella-ed term for so many things that it’s really helping me choose that, just because there are still so many options.” Both Aaliya and Tanya expressed comfort in knowing that they could pivot within their pathway as they acquired skills and confidence.

Students Often Credit a Family Tie with Inspiring Their Program Choice

As students spoke of their program choice, several shared how family members played a role in inspiring their program choice. For example, Joline said that she had reached out to her cousin who was a nurse in Tennessee early in her choice process. Her cousin related her experience in the profession, saying, “[Nurses] make a lot of money… You might have to go [to college] for two, four years, but it’s worth it because the money is going to be there at the end of

the day." Joline said that when she had this conversation, her cousin's insights "didn't mean anything to me at that point." She then went on to say:

> But then I was kinda thinking about it over the next two months, and I said, 'I need to go back to nursing, that's what I said I was coming here for. I'm not gonna change it just because I feel like it's gonna be hard.'

Tanya and Zach also described the influential role of a family member on their program choice. Tanya said she was striving to reach her mother's unfulfilled dream of becoming a parole officer. Zach related, "I wanna following in my dad's footsteps and be a business owner." He shared experience working for his dad at different points in his life, and perhaps drew confidence that he could do similar work by learning from his example. He said, "I think I could be successful opening up a firm that does data analysis or accounting with the right set of people."

Barriers to the Choice Process

As students discussed how they approached their choice of pathway, some disclosed barriers that they experienced as they navigated this important decision early in their college experience. For some, these barriers were internally derived, while others were introduced through their interactions with curricular structures imposed by the college.

Students Express Worry About Making an Academic or Career Choice

Students spoke to the pressure of choosing a program of study upon enrollment. Aaliya disclosed that she was required to choose a pathway when she made her initial course selections. She chose radiography rather than general studies so that she was in a pathway that she felt would lead her to a practical and tangible result. She expressed concern, however, that she remained unsure about her selection: "I was super frustrated because since I didn't pick general studies, I was already taking classes for radiography, and then I was like, "What if I changed my mind?"

While Tanya shared that while she did not feel pressure to make her pathway choice, she expressed concern that she was choosing "the wrong degree." For her, this would be a costly mistake: "I am terrified of choosing the wrong one and then spending thousands of dollars I don't have to go back and redo everything on top of paying for what I already did." Thomas also expressed concern with his choice of general studies, saying that he struggled with feeling undecided about his future. He was motivated to find a career that he could stick with and said that this desire contributed to his feelings of uncertainty:

> It's just like the sense that I want to be able to do something where I can actually stay with that, stay with that job for several years, and not want to leave. And that's something I think that makes me stop and think, 'I don't know if I really want to do this. I don't really know.'

He connected his concerns with his perceived struggle to choose a program of study: "That's what makes me undecided… I don't want to do something I don't want to do." For Thomas and others, their anxiety about their academic and career choice seemed to present itself as its own barrier to their progression and ultimate success in college. The requirement to choose a program of study upon entry to the college likely contributed to these feelings of anxiety for Tanya and Thomas, though neither student connected their concerns with this requirement as Aaliya had done.

Some Students Perceive the Structured Approach to Advising as Being Overly Prescriptive; They Are Bothered by a Perceived Lack of Options

While most students expressed being satisfied with their advisor's approach, Tessa shared her concern about whether her advisor created space for her to express agency throughout the choice process. She described negative interactions with her advisor that seemed to contribute to this feeling: "When I came up here to do my classes and orientation… she gave me more of a 'These are the classes you need, these are the classes that you have to take, I'm going to do this

for you.'" Tessa resented this approach: "I just wish my [advisor] gave me more of an option. I felt like she gave me classes and then it was like, that's it." She did say that her advisor asked her if her scheduled looked "Okay," but said her inexperience as a college student left her unprepared to respond effectively: "Of course, me coming here, my first time in college, I'm like 'Yeah, this looks fine.'" Tessa said that she approached her advisor with concerns about one of her courses, and felt her advisor failed to address them: "I'm talking to her about the math class and she's just saying nothing. She has nothing to say. She doesn't even know what to say." While this interaction still frustrated her, Tessa indicated that her relationship with her advisor had improved over time. She said that she had proactively consulted with her about an upcoming course and said, "She listens now."

Some Students Struggle to Make an Academic or Career Choice Due to A Lack Of Programmatic Options Related To Their Interests

Students expressed concern that the academic and career pathways offered by the college did not connect with their interests upon initial enrollment or would require them to transfer to fulfill their career aspirations. When faced with a lack of options related to their academic and career interests, some students made a different choice entirely, while others pursued a general degree and planned to specialize after transferring to a four-year institution. For example, Philippa entered MCC intending to pursue a degree in early childhood education. When told by her advisor that "we don't have the early education program here," she explored other options. She expressed an interest in Psychology and, according to Philippa, was received with positive feedback. Her advisor shared, "I could totally see you doing that, and we have a program here that you could transfer." Ultimately, Philippa chose this path and hoped to "work with younger kids because there's a lot of people out there that need someone to talk to."

Tanya and Scott both acknowledged misalignment between the curriculum and their career interests but were pursuing their goals despite these limitations. For example, Tanya was intent on earning her degree in criminal justice with the goal of becoming a parole officer. MCC did not offer a degree in criminal justice, though Tanya had worked with her advisor to map out a course trajectory between MCC and a regional four-year university that would allow her to earn her bachelor's degree in that area. At MCC, she was earning general credits and would specialize upon transfer. She explained that the need to devise such a plan arose from a misalignment between the two- and four-year curriculum:

> So, to get a bachelor's…for criminal justice I would have to take five additional classes that I wouldn't need to transfer for [MCC's] associate degree, so that would just be a waste of money. So pretty much what [my advisor] said was, take all the courses that I need to transfer while staying in my Associate of Arts.

Scott, on the other hand, knew that transfer was a possibility for him but was hesitant to commit to this path. Instead, he was enrolled in the graphic design program, which seemed like the surest bet to help him toward his goal of working in game design. He perceived his struggle to choose a program stemmed from the limitations of the curriculum:

> Choosing a major here is extremely hard for me because, like I said, I want to be a game designer or game developer, that's where I want to go. This college doesn't offer any of that. So I spent the entire summer thinking about what I need to do or what major I need to go. So in the end I was either going to do associate in arts and then transfer, or I was going to do graphic design and get a graphic design degree, which would still be good in a gaming company.

Both Tanya and Scott seemed aware of the challenges that the structure of the curriculum imposed on their choice process and were open about their need to grapple with the realities of the options that did exist.

Thomas, who was undecided about his program interests, was focused on transferring his credits to a four-year university. He was realistic about his options: "They don't have bachelor's

degrees here, but you can get them through [a four-year university] and stuff like that."[13] He expressed an interest in environmental science, but questioned his ability in that area, saying "I don't know, there's more of a science to that." At the time, he was committed to earning general credits with the encouragement of his advisor, who said, "take some classes you might be interested in and then see if that's what you want to keep doing, if those classes work well." For Thomas, his choice of program of study was obscured by his sense that his ultimate goal was to earn the bachelor's degree rather than the associate degree conferred by MCC.

Students Speak Openly About Their Struggles in Math.

As students spoke of their choice of program of study, or their early experiences in the program itself, many touched upon their anxiety about the need to take a math course to fulfill program requirements or challenges experienced in their math courses so far. Tessa, for example, described creating a pros and cons list when she chose her program of study and said that whether she wanted to take "a bunch of math classes" was a point of consideration. She chose nursing because it was "the best fit" for her but said that she had to work through issues of confidence related to whether she would persist through her math prerequisites. She said, "Even when I took the math class, I was like, 'I'm going to change my major next semester. I can't do this math.'" Her internal struggle led her to question her choice of program. She asked herself, "Do I want to be a nurse this bad, is this my passion? Is this what I want to do, where I have to push this hard to get through?" She did push through, however, and found confidence in her ability to succeed even when things were tough. She explained, "When the grades came out, and I had seen I had passed the class, I'm like, 'Okay. Well, maybe, I was working hard. Maybe I can

[13] MCC offers a Bachelor of Science in Energy Systems Management.

do this. I'm doubting myself.'" She progressed through an important aspect of the curriculum—one she had viewed as a hurdle yet now experienced as a personal achievement.

Summary

The qualitative strand of analysis revealed four themes related to students' aspirations and curricular experiences in college. To situate these findings, I return to the central assumptions of SCCT. Consistent with social cognitive theory, SCCT conceives of the academic choice process in context, placing value on the role of individual attributes (i.e., internal cognitive and affective states and characteristics), individual behavior, and environmental factors on the choice process. Lent et al. (2002) posit that these factors "operate as interlocking mechanisms that affect one another bidirectionally" (p. 261). This is important in part due to the theory's emphasis on individuals'—in this case, students'—role as agents of the academic and career choice process. When connecting this theory to guided pathways, a new framework emerges that requires scholars and practitioners to remain attentive to students' agency, beliefs, and actions, while also acknowledging the important role of curricular structures and supports in guiding student s' academic and career choice and overall success.

The first theme, aspirational steppingstones, related to how students identified academic milestones as goals that they were striving to reach. Students spoke to the need to complete their credentials, transfer successfully to a four-year college, and earn high grades. Students' tendency to identify discrete academic outcomes as goals perhaps reflects how students have internalized the institutional approach to equate academic momentum with students' short-term course, gateway, and programmatic outcomes (Jenkins et al., 2018a; Jenkins & Bailey, 2017; Wang, 2017). This may occur in part due to the guided pathways approach that encourages colleges to consider students' academic and career goals and then redesign programs and support services in

ways that align with these goals (Bailey et al., 2015). A narrow interpretation of this approach could result in the narrow assumption that students' end goals encompass only those that are institutionally derived.

Students' tendency to express academic milestones as personal goals may also reflect how new most students were to their program area. Many had yet to delve into specialized curricular matters and largely relied on inputs from advisors and faculty to inform their academic and career choices. Additional time and exposure in their program area may present opportunities for students to familiarize themselves with their program area and receive feedback in ways that reinforces their choice or inspires further reflection. Positive feedback may result in students extending their goals beyond academic performance measures toward those that speak to longer-term career aspirations (Lent et al., 1994; 2002). While most students focused on short-term academic milestones when expressing their goals, some students spoke to career interests or skills they had held for a long time. Others viewed their curricular experiences as opportunities to "figure out" long-term interests and career aspirations.

The second theme highlighted the ways that staff, instructors, and faculty advised and supported students through their academic and career decision-making process. Advisors used students' goal commitments upon enrollment as a tool by which to organize and present complete course schedules. Students found this approach to be generally supportive of their decision-making process, saying that advisors got them "geared" and ready to navigate the curricular requirements. Students described how advisors would present students with complete academic plans, laying out the steps and timelines associated with completing their degree. For transfer students, they presented course options that would articulate to a few four-year institutions from which students could choose. Students' reflections on their advising experience

aligned with an approach—the Ask-Connect-Inspire-Plan framework—that emerged from the practices of community colleges that use the guided pathways framework to inform their onboarding experience (Jenkins & Lahr, 2022). Institutions that adopt this approach inquire about students interests and aspirations and then—after connecting them with course taking options that align with their interests—present complete academic plans that students can follow through to completion. Returning to SCCT, efforts by the community college to support students' academic and career decision-making in an engaged and critical manner were perceived constructively by some students, contributing to the "contextual affordances" of the curricular environment (Lent et al., 2002, p. 274). This suggests that the structures of the environment were designed and delivered in ways that students perceived to be supportive of their success.

Student reflections on curricular advising, direction, and supports also highlighted how advisors operating in a highly structured environment provided feedback to students about whether their interests aligned with the programs offered by the college or would likely to lead to healthy employment outcomes. Students shared how they interpreted this advice, sometimes using it to redirect or change their interests upon entry to the college. This finding warrants further investigation and highlights how organizational efforts that span institutions and aim to support overall improvements to student outcomes can have the unintended effect of limiting some students' agency as they grapple with their goals and interests in context.

The third theme captured different strategies that students described as helping them to explore their program of study and assess their choice. Students spoke of the importance of hands-on learning experiences that exposed them to the practical aspects of their program area. They sought out information about employment projections and earnings, which they used to

support their decisions or evaluate whether they were striving at their desired level. They also spoke to the professional options that were available to them within their broad area of study, drawing comfort from the idea that choices about their future career possibilities were yet to be made. Students' choice strategies, when viewed alongside the three central mechanisms of SCCT—self-efficacy beliefs, outcome expectations, and goal representations—highlight the highly interactive and engaged process of developing interests that evolve into goals and life outcomes. Students form beliefs about their ability to achieve in certain areas, assess outcomes that would stem from achievement in those areas, and establish goals to maintain their own steady progress toward achievement in those areas. Students' strategies, or behaviors used to explore their academic and career interests in the community college can be understood as ways that students expressed agency within a structured curricular environment. They employ these strategies in ways that—intentionally or not—inform their beliefs, expectations, and goals in college.

The fourth theme identified barriers that students experienced on their way to making their academic and career choice. These included feelings of anxiety related to the pressure to choose a program of study early in their academic career, perceived lack of agency over the choice process, a lack of a clear programmatic options offered by the community college that aligned with their interests, and concerns about math requirements. These barriers may point to areas where institutional structures created through the college's engagement with the guided pathways framework have the potential to introduce consequences—unintended or not—that may limit the overall effectiveness of the reform. For example, students who were undecided about their program area may view the structured nature of the curriculum and/or approach to advising as overly restrictive. A structured curriculum and advising process, paired with rules

about when and how students declare a program of study, may be perceived by some students as limiting their ability to explore interests and express agency over the choice process. This perception was particularly acute for students who were less decided about their program of study upon entry to college. From the perspective of the institution, students' negative perceptions of the institutional structures and supports could reflect an unintended consequence of the guided pathways reform: overemphasizing the role (and importance) of external environmental factors on the academic and career choice process, thus limiting the role of students in being agents of their own development.

These findings clarify how students approached their choice of program of study in community college that offered students clear yet limited transfer and career pathways. While the academic and career choice process is informed by a complex array of factors related to students' sociocultural context and identities, these findings shed light on how students expressed their goals within the curricular context and interacted with the structures and supports of the college in ways that informed their academic and career choices and long-term success.

Chapter 7 Combining Strands

In this mixed methods case study, I used a convergent parallel design (Creswell & Plano Clark, 2018) to explore how students made academic and career decisions in a guided pathways community college. In this design, the quantitative and qualitative data are analyzed separately, after which point the results of each strand are merged for the purpose of understanding the findings in light of the two analyses used. According to Creswell and Plano Clark (2018), the intent of this design is to "bring together the strengths and weaknesses of quantitative and qualitative methods" (p. 68). An overarching goal of a mixed methods analysis is to put forth a more complete understanding of the research question than could be achieved from one type of data alone.

In this chapter, I merged the quantitative and qualitative results, specifically students' self-efficacy and decidedness scores with the student interview data on students' aspirations and curricular experiences in the community college, to answer the third research sub-question: *What patterns are revealed from merging the qualitative data about students' aspirations and curricular experiences in the community college with quantitative data measuring students' self-efficacy and decidedness about their choice of program of study?* I conducted this analysis within four quadrants generated at the student-level using students' self-efficacy and decidedness scores (see Table 3.2 for a visual depiction of students' quadrant placement). Using quantitative scores to create four descriptive groupings allowed for an examination of within-case variation, generating an understanding of whether and how the findings within each group supported or diverged from the results of the qualitative and quantitative strands. For each group, I conducted

a thematic analysis to see what themes emerged for each group of students with reference to the overall themes identified as part of the qualitative strand of analysis. In this two-step process, I coded students' interview transcripts *without* reference to their self-efficacy and decidedness scores (and therefore, quadrant placement). I then conducted second-cycle coding for each transcript with respect to their quadrant placement, yet never with reference to the name of the student. This allowed for aspirational and curricular themes to emerge from students' perceptions of the community college, reported at the organizational level. This analytic approach allowed me to explore the interactionist nature of the conceptual model, as presented in Chapter Two.

Throughout this stage of analysis process, I remained mindful of how my own experiences, identities, and biases could influence how I interpret students' data relative to each quadrant (Peshkin, 1988). I was focused throughout the process on interpreting students' self-efficacy and decidedness scores not as innate qualities but rather as complex and malleable characteristics that were reflective of students' unique purposes for pursuing a college education, their backgrounds, and experiences before and during college. Importantly, for the purposes of this study, I interpreted students' self-efficacy scores as a lens by which to understand their motivations relative to their academic and career interests and goals (Lent et al., 1994; 2002). By examining the data with this understanding, I gained insight into the variation with how students expressed their academic and career goals; how they engaged with advisors, staff, and faculty within their program areas; and how they navigated structural elements of the college curriculum with respect to their academic and career goals. The themes that emerged for each quadrant are listed in Table 7.1.

Table 7.1

Aspirational and Curricular Themes by Quadrant

Self-efficacy

Decidedness

Quadrant II: High self-efficacy, low decidedness about program of study

Aspirational	Curricular
• Students set specific and high-grade targets. • Students identified career goals that were broad while speaking to the need to consider specialized career options within that broad area. • Students internalized program missions relative to personal goals. • Students expressed a need to "figure it out." • Students experienced pressure related to choosing a pathway. • Students expressed being committed to their choice, even aspects of the choice that remained unknown.	• Advisors laid out course and program options within the context of long-term goals. • Students expressed a lack of agency throughout the advising and registration process. • Students spoke of faculty who had supported them on their pathway. • Students placed varying degrees of importance on the role of employment data in their decision-making process.

Quadrant I: High self-efficacy, high decidedness about program of study

Aspirational	Curricular
• Students found connections to their program choice through long-term interests. • Students experienced personal fulfillment from engagement in their chosen area. • Students held high standards for their envisioned futures.	• Advisors got students "geared" for their program. • Faculty and instructors provided support and encouragement to students. • Students envisioned positive employment outcomes.

Quadrant III: Low self-efficacy, high decidedness about program of study

Aspirational	Curricular
• Students held personal goals for completion. • Students were at various stages of commitment to transfer plans. • Students described a perceived misalignment between their goals upon entry and the curricular offerings of the college. • Students adjusted their career goals after confronting the structure of the curriculum. • Students exhibited choice anxiety.	• Students connected advisors' concerns with their own decisions to pursue alternate career paths. • Students spoke of how faculty and instructors perceived of struggle and how they advised students to navigate challenges that they would experience in their academic and career pursuits.

Quadrant IV: Low self-efficacy, low decidedness about program of study

Aspirational	Curricular
• Students focused on degree completion. • Students pursued goals that could not be fulfilled by enrollment in the community college alone. • Students expressed a desire to find employment that provided personal fulfillment.	• Advisors got students "geared" to earn credits that would transfer in a general pathway. • Students spoke of faculty who had supported them on their pathway, though the strength of those relationships were mixed. • Students were informed about employment data relative to their academic and career choices.

Quadrant I: High Self-Efficacy, High Decidedness About a Program of Study

Students in the first quadrant had self-efficacy composite scores that ranged from 4.75 to 4.88 out of a possible five points. For decidedness about their program of study, each student scored five out of a possible five points. Their pathway selection included Human Services; Science, Engineering, and Mathematics; Health Sciences; and Skilled Trades and Agriculture. (Students in the Business and Computer Technology and Liberal Arts pathways were not represented among this group). The quantitative data for self-efficacy and decidedness, as well as students' pathway, gender, and race/ethnicity are reported in Table 7.2.

Table 7.2

Quadrant I: Self-Efficacy, Decidedness, and Individual Characteristics

Name	*Self-Efficacy (reverse)*	*Decided-ness (reverse)*	*Pathway*	*Sex*	*Race/Ethnicity*
Amos	4.88	5.00	Human Services	Male	White
Corrine	4.75	5.00	Science, Engineering, and Mathematics	Female	Black
Joline	4.88	5.00	Health Sciences	Female	Black
Tab	4.88	5.00	Skilled Trades and Agriculture	Male	White

Note: Survey questions are measured using a five-item reverse Likert scale: 5=strongly agree, 4=somewhat agree, 3=neither agree nor disagree, 2=somewhat disagree, and 1=strongly disagree.

Aspirational Momentum

Students who demonstrated high levels of self-efficacy and decidedness about their program of study expressed how their interests had developed over time, often prior to their enrollment in college. Students in this group spoke to feelings of joy or pleasure experienced when they engaged in specific practices associated with their chosen areas. Some students expressed a sense of satisfaction in knowing that their chosen area of study could lead to a profession that would allow them to help others through their work.

Theme 1: Students Found Connections to Their Program Choice Through Long-Term Interests. Amos and Corrine identified a personal connection to their chosen area of study and explained how it had developed over time, long before either student had enrolled at Momentum Community College (MCC). Amos, for example, said that he had held an interest in law enforcement since he was a young child. This interest motivated him to join the local fire department in high school. Through his volunteer experience, and now his coursework at MCC, he had come to understand that he enjoyed all aspects of the work, even the routine and sometimes mundane. He described his long-term and continued connection to the work:

> So, my entire life, I wanted to be in law enforcement, and when I joined the fire department, I wanted to be going to law enforcement even more because I saw what they did. Then I joined the program, so it's not always like it is on TV. So, we learn about the boring stuff, too. It's not all police chases and all that stuff. But, I mean, for some people that can kind of push them away from it, [but] it kinda brought me closer.

Corrinne had a similar, long-term connection to her chosen area of study, which was personal in nature. At a young age, she was diagnosed with a benign tumor that led her to connect her interest in hands-on activities with possible medical careers. "I already knew I wanted to be an engineer when I was little (. …) with the benign tumor, it helped me because… it just broadened my own mindset about it." She spoke with specificity about her long-term ambition of being a biomedical engineer "that deals with prosthetic limbs and the way our body works."

Theme 2: Students Experienced Personal Fulfillment from Engagement in Their Chosen Area. Students spoke of the intrinsic benefit they derived from pursuing their interests. Amos exemplified this by speaking both about the pleasures experienced from learning and the potential to serve others through his profession. He said simply, "I just like helping people. It makes me feel good." Corrinne expressed similar satisfaction with being able to connect her work to helping others, specifically, children: "I love kids… It's not if I get my nursing degree,

[it's] when I get my nursing degree. I'm going to work at a Children's Hospital. I love kids." She connected her passion for working with children with her drive to earn her degree.

Theme 3: Students Held High Standards for Their Envisioned Futures. Joline and Tab spoke about the quality of life that they strove to achieve through their chosen educational and career paths. While each expressed this goal through a different lens, both communicated their wish to see their hard work pay off in terms of future returns to their education and training. Joline, for example, focused on future earnings. When entering MCC, she initially considered pursuing a career as a medical assistant but soon learned the average salary for professionals in this area and decided to switch her focus toward a Bachelor of Science in Nursing. She explained:

> I see myself with a BSN… $30,000 a year, that's not enough for me. I want to strive higher than that. I want to be able to put money aside, travel, buy extravagant gifts for my family… I just want to be able to say that I didn't lower my standards, like, took the easy way out.

While Joline was focused on professional outcomes, Tab was less clear about the area of work he would be in. His focus was on working toward a productive future for himself and his family. He expressed a clear picture of his future goals:

> I can see myself working with everything with a family and a house, a decent house and everything, so it's nice. I'm focused on the future more of like… What I need to do for my future rather than not thinking about my future at all. So I've been thinking about what I need to do to get a house, what I need to do to get a good job, and all that stuff.

While he did not speak with clarity about a specific academic or career area, he expressed a sense of determination to achieve in college, both academically and as an athlete. He shared his personal goals to graduate with honors and take the baseball team to the state tournament.

Curricular Momentum

Students who exhibited high self-efficacy and high decidedness about their program of study described interactions with advisors that were focused on gaining the tools necessary to begin making progress immediately in their chosen pathway. They focused on the ways that faculty provided support and encouragement that were tailored to their personal interests and ambitions.

Theme 4: Advisors Got Students "Geared" for Their Program. As students spoke of their interactions with advising staff, they detailed a simple process that centered around course selection relative to their chosen pathway. Amos described this interaction: "They got me geared." He left his advising meeting feeling prepared for the steps necessary to pursue his interest in law enforcement. Tab, who entered the college with an interest in electrical engineering, explained to his advisor what he wanted to do and said she encouraged him to enroll in general education courses and one electrical class per semester. He appreciated this approach: "I'm getting my gen ed classes done and my electrical class going through, which is really nice."

Theme 5: Faculty and Instructors Provided Support and Encouragement to Students. Students in this group highlighted positive experiences with faculty and instructors in their program. Amos spoke of a law enforcement officer who had been assigned to his program. When speaking of their relationship, he said, "We're more friends now. So, she was my advisor for the program, and we've just grown closer and closer." When speaking of the role she and others like her fulfill he said, "They teach us. So, they're like teachers but they're not teachers. They're just there to support you. They give you information that's helped them in their lives and they try to help you avoid the mistakes they've made." Tab also spoke of the helpful nature of faculty: "If you need help with anything, they're like instantly right on it." Like Amos, he related

how faculty shared information about their own career interests in ways that brought him "comfort." Faculty also reviewed his course selections and reminded him that if he chose to transfer, he would only be "wasting [his] money on maybe one or two classes."

While Joline did not recount all positive experiences with faculty, she said that there was one teacher whom she connected with on a personal level. While explaining what this meant to her, she said,

> She understood you. She told us her life story and how hard it was and whatnot, and then she just wanted to be better, like push up to… not push us to our limits but make sure she knew what we were doing. She just wanted us to succeed when it came to writing in her class. And I love writing, so she made it fun.

In addition to providing her with academic support and encouragement, Joline shared that this faculty member supported her personally when she was ending a relationship and had encouraged her to "vent" when needed, in-person or by email.

While Corrine did not speak of a direct experience interacting with faculty, she reflected on how the collaborative nature of the math program faculty partially motivated her to want to continue her coursework at MCC. She said, "I want to take all my Calcs here because I know the teachers and the teachers are helpful. I don't want to learn it somewhere else because the teachers here, they have a connection, and they know how to… work with each other to help us." She said that this makes her feel good because "they're working to make me better."

Theme 6: Students Envisioned Positive Employment Outcomes. Students spoke about their expected employment outcomes with a sense of hope and satisfaction. Amos felt confident that he would find a job in law enforcement, in part because of his understanding of employment trends. He explained that demand for police officers was expected to increase in the next few years: "I'll probably get a spot because they need me." Of the electrical trades, Tab said that it was an area of "high demand." He continued, "People are begging other people to come and

join." If he chose this path, he expected to be financially stable and satisfied. He said he would make "decent money doing something I love to do." Corrine and Joline shared that they had researched expected earnings for their chosen area. Based on this information, Corrine said she expected to "have a very good living." Joline credited this information with helping her make her choice. She referenced the earning data saying, "I think it's at least $60,0000 a year to $67,000. That's a lot of money for me. That's a good pay for me to start off with." With the encouragement of her grandmother, who pushed her to find this information, she decided to pursue nursing because it offered the standard of living that she felt she deserved.

Quadrant II: High Self-Efficacy, Low Decidedness About a Program of Study

Students in the second quadrant had self-efficacy composite scores that ranged from 4.75 to 5.00 out of a possible five points. Their composite scores for decidedness about their program of study were low and ranged from 2.00 to 2.50 out of a possible five points. Three out of the four students in this group were enrolled in the Health Sciences pathway. One student had chosen Business and Computer Technology for their program pathway. Therefore, program pathways not represented among this group included Human Services; Liberal Arts; Science, Engineering, and Math; and Skilled Trades. Regarding sex, three students identified as female, and one identified as male. Students' self-efficacy and decidedness scores, as well as their chosen pathway, sex, and race/ethnicity, are reported in Table 7.3.

Table 7.3

Quadrant II: Self-Efficacy, Decidedness, and Individual Characteristics

Name	*Self-Efficacy (reverse)*	*Decided-ness (reverse)*	*Pathway*	*Sex*	*Race/Ethnicity*
Aaliya	4.75	2.00	Health Sciences	Female	Hispanic
Jenai	4.75	2.50	Health Sciences	Female	White, Black
Tessa	5.00	2.00	Health Sciences	Female	White
Zeke	4.75	2.50	Business and Computer Technology	Male	White

Note: Survey questions are measured using a five-item reverse Likert scale: 5=strongly agree, 4=somewhat agree, 3=neither agree nor disagree, 2=somewhat disagree, and 1=strongly disagree.

Aspirational Momentum

Students in this group established specific grades that they were striving to achieve. They could speak to broad employment areas that they were striving toward and were able to communicate a separate goal for creating clarity around the exact profession that was well-suited to their interests and needs.

Theme 7: Students Set Specific and High Grade Targets. When speaking of their aspirations for college, students in this group focused on grades. Aaliya, for example, kept this goal present at all times: "I have a goal sheet in my room and I wrote down at least a 3.5 GPA because there's Phi Beta Kappa here and I can get a good scholarship to go to [regional state college] with that one." Jenai aimed even higher: "I guess another goal I have is to be a 4.0 student here, be a valedictorian out here." Zeke also strove to keep what he calls the "four-point."

Theme 8: Students Identified Career Goals That Were Broad While Speaking about the Need to Consider Specialized Career Options Within That Broad Area. When speaking of their career ambitions, students were able to express broad interests, but quickly pivoted to their process for narrowing their choice to a specific career within that broad area. Jenai said that

she was pursuing a career in sonography and would continue to decide whether she would specialize in vascular or cardiac sonography. She relied on her instructor's guidance and drew from her family's medical history to make her choice. Tessa was working toward her degree in nursing but says she had yet to decide whether she would focus on pediatric nursing or mental healthcare. She expressed comfort in knowing she would be able to narrow her focus later in her educational process. Zeke was using the programmatic requirements to help him choose his area of focus. According to him, he was "basically balancing between accounting and data science because I realize that if I do statistics, I'm going to be stuck at [regional state college] an extra year because of the math I have to take." To help him make his choice, he credited employment demand: "I know I want to do something with data and I also know I want to have job security, so that's where accounting comes in because accounting is basically a guaranteed job somewhere." Aaliya expressed some struggle in making her choice, having entered with an interest in majoring in psychology before she switched to nursing. She had since "stuck with radiology" out of fear about the rigor of the nursing program, saying she understood it to be "really hard." While she seemed less confident in her choice, she was using the information available to her to narrow her interests upon entry to the college.

Theme 9: Students Internalized Program Missions Relative to Personal Goals.

Students conveyed a sense of mission for their field and connected it to a desire to strive and succeed. When speaking of sonography, Jenai stated, "We all have a mission. And the mission for us is to be a well, caring, outgoing sonographer that's going to make sure our patients [needs] are met." According to Jenai, this purpose aligned with a goal to be "the best we can be." For Jenai, she articulated a personal goal to be "outgoing." She explained: "I tend to be shy and not very social, so I took a basic speech class here and it kinda put me on the right path to becoming

more social and be able to talk to people." She continued, "I think being here with all the diversity of people, I think I'll have a better chance of being more of an outgoing person." Of the nursing field, Tessa said, "To be a nursing student means to have ambition. You have to have that push, that drive, because… the program is hard." Tessa wanted to continue to better herself through her academics and her future profession, sharing her personal goal to "not need other people to give me that confidence, just to get it within myself because I won't always have everybody else and everyone else won't always be there for me." For Tessa, her self-efficacy or belief in her ability to persist towards her nursing degree was a necessary component of navigating college successfully.

Theme 10: Students Expressed a Need to Figure It Out. Students in this group were clear that while they were making initial choices intended to lead them down a defined program path, they remained committed to figuring out what they wanted to do in their careers. Aaliya spoke to this directly: "So, I want to figure out for sure what I want to do." Jenai and Tessa spoke about how they saw their initial years in the workforce as pivotal steps toward confirming or disconfirming their career ambitions. For Jenai, experience in the field was a necessary step to deciding if she wanted to seek additional education and training that would be necessary for career advancement:

> [I see myself] having a family, getting married, and doing vascular sonography […] and then it was in my mind that I wanted to go back to school, maybe a few years down the road to get a bachelor's in vascular sonography. But I don't want to do that until I actually get into my career and see if that's really what I was there for."

Like Jenai, Tessa saw the first few years of her career as an opportunity to gain a deeper and more practical understanding of her career choice. She explained:

> I see myself being in a hospital. Know where I want to be, but at least being hands-on in the program. I still might now like what I have to go through because I'm not going to be

> at the top automatically, but I just see myself being in the field… so I know this is what I want to do, dip my toes in there and everything.

For her, early career exposure was part of the learning process required to figure out how well her choice was suited to her long-term interests and needs. Students expressed the need to assert their own agency over the process of developing their true interests and expertise.

Theme 11: Students Experienced Pressure Related to Choosing a Pathway. Aaliya spoke of feeling "really pressured" throughout the enrollment process. She explained that college staff, presumably advisors, directed her to "pick a field." She acknowledged that while general studies was an option, she did not want to choose it. When speaking of this tension, she said, "I felt like if I did that, I still wouldn't know what I wanted to do and it wouldn't push me to figure it out." Aaliya's statement suggested that she perceived there to be a bias in the curriculum toward programs that were career oriented (as opposed to academically oriented). It also indicated that Aaliya was looking to the curriculum to guide her own preferences. When reflecting on her program choice of radiography, she expressed some concern: "Since I didn't pick general studies, I was already taking classes for radiography, and then I was like, 'What if I changed my mind?'"

Theme 12: Students Expressed Being Committed To Their Choice, Even Aspects of the Choice that Remained Unknown. Tessa, who came to college interested in education and ultimately chose nursing as a career pathway, expressed being personally committed to her initial choice. She told herself, "I'm putting my faith into this, like, I'm gonna go all the way with it whether I like it or not." When speaking of her choice, she spoke in the negative as though she was expecting to disconfirm her choice. Of her courses thus far, she said, "I haven't really disliked it, and I haven't had too many classes where we talk about the nursing program specifically." She seemed to understand that the second admit process, which was a core

component of the nursing program, remained a factor in her experience and outcomes: “I haven’t really got in it yet.” Yet, even without complete information about where the program would ultimately take her, Tessa seemed confident about her choice and committed to sticking to it.

Curricular Momentum.

Students who exhibited high self-efficacy and low decidedness about their program of study spoke about how their advisors presented course and programmatic options to them in a format that allowed for comparison. They spoke of how their advisors situated their course options within the context of a program, oftentimes working backward from students’ long-term completion or transfer goals. Some students experienced the advising process as supportive and responsive to their interests, while others felt frustrated by the structured nature of the process. They spoke of how their interactions with faculty informed their future course choices.

Theme 13: Advisors Laid Out Course and Program Options Within the Context of Long-Term Goals. When students in this group described their interactions with advisors, they spoke of how their advisors laid out the programmatic offerings in ways that helped them to compare and choose. Jenai described this approach positively: “She gave me different options and different programs and stuff, so she was another person that really helped me validate what I really wanted to do in my career.” Jenai said that her advisor laid out options for her in ways that made the steps required for completion clear and transparent. Working together, she and her advisor laid out a course schedule that spanned two years and would set her up to fulfill her graduation requirements within that timeframe. This process made her projected graduation date explicit. Jenai said that having this information motivated her to “do better and work hard.” When reflecting on her projected timeline, she expressed how it helped her to move forward within her program “because it’s not long, only two years. It’s not long at all.”

Zeke viewed enrollment and registration as an easy process, though he entered with a sense of what to expect because his mother was an employee of the college. He shared his intent to transfer in his initial advising appointment. At their next meeting, his advisor laid out three transfer agreements and the associated coursework for each. Zeke appreciated this proactive approach, interpreting it as another example of how his advisor understood his motivations and interests: "He fully comprehends what I need and he knows that I'm here doing classes and I'm here more as a fallback because it's free and he gets that, he understands."

Theme 14: Students Expressed Having Little Agency Throughout the Advising and Registration Process. Tessa found herself exploring nursing as a possible program choice after learning that a pathway to prepare educators was not offered explicitly by the college. While reflecting on an interaction with her advisor about her program choice, she found herself feeling "bothered" by how her advisor approached her decision. Tessa explained, "She gave me more of (….) a, 'these are the classes you need; these are the classes that you have to take; I'm gonna do this for you.' It wasn't 'Would you like this or this?'" Tessa's frustration with her advising experience seemed to be compounded by a challenging experience she had in a math class in her first semester. She connected this experience to what she perceived to be her advisor's failure to provide an alternative option to this class. She acknowledged, however, that she was aware of the need to pass certain math courses to be admitted to the nursing program. Still, of her experience with the advising process related to course selection, she said, "You take what you [need to] take. You can't complain."

Theme 15: Students Spoke of Faculty Who Had Supported Them on Their Pathway. Students reflected on the ways that faculty provided them with support as they navigated their chosen program pathways. Jenai spoke in detail about her experience getting to know her

instructors in the sonography program. She said they helped her to "get a better understanding of what it was and helped me pick what I wanted to do." Zeke, who held hopes to transfer, said that he planned to take higher-level math classes at MCC so that he could benefit from the care shown by faculty for students. When describing instructors at the college, he revealed his preference for their teaching approach as compared to what he felt he might experience from instructors at a four-year university: "The instructors care way more and they work with you a lot better." He went on to say, "They are as supportive of you as you need them to be." Tessa shared both positive and negative interactions she had experienced with instructors. She spoke appreciatively of her seminar instructor, explaining that she took the time to get to know Tessa on a personal level and encouraged her to follow through with her interest in mental health. Tessa said that she told her, "Don't be nervous. Go for what you want to go for, especially if you're not looking at the salary aspect." Tessa found this advice to be personally affirming: "She understands where I was coming from, the position I was in. It was just really helpful."

Theme 16: Students Placed Varying Degrees of Importance on the Role of Employment Data in Their Decision-Making Process. Students discussed the role that employment data had in making an informed pathway selection. Aaliya said earnings data had a significant impact on her decision, saying she "only picked [radiography] because it made a lot of money." Jenai explained that projected job openings in the sonography field helped her to establish confidence in her choice. Tessa, on the other hand, indicated that she was leery of relying on employment data when making her academic and career choice. She explained, "If I go where the most money is, I might be miserable, but I might be rich. It's not going to solve everything; it's only going to go so far." She placed importance on finding work that would bring her enjoyment.

Quadrant III: Low Self-Efficacy, High Decidedness About a Program of Study

Students in the third quadrant had self-efficacy composite scores that ranged from 2.88 to 4.00 out of a possible five points. Each student in this quadrant had a composite score for decidedness about their program of study that was five out of five points. Two students were enrolled in the Business and Computer Technology pathway and two students were enrolled in the Liberal Arts pathway. The Health Sciences; Human Services; Science, Engineering, and Mathematics; and Skilled Trades pathways were not represented among this group. Students' self-efficacy and decidedness scores, as well as their chosen pathway, sex, and race/ethnicity are reported in Table 7.4.

Table 7.4

Quadrant III: Self-Efficacy, Decidedness, and Individual Characteristics

Name	*Self-Efficacy (reverse)*	*Decided-ness (reverse)*	*Pathway*	*Sex*	*Race/Ethnicity*
Calem	3.88	5.00	Business and Computer Technology	Male	White
Kaelah	2.88	5.00	Liberal Arts	Female	White
Karli	4.00	5.00	Liberal Arts	Female	White
Susanne	4.00	5.00	Business and Computer Technology	Female	White

Note: Survey questions are measured using a five-item reverse Likert scale: 5=strongly agree, 4=somewhat agree, 3=neither agree nor disagree, 2=somewhat disagree, and 1=strongly disagree.

Aspirational Momentum

Students who exhibited low self-efficacy and high decidedness about their choice of program of study were focused on completion as a necessary milestone. Students in this group grappled with how to persist toward their goals when their interest was not a part of the formal college curriculum. They expressed a desire to find future employment that fulfilled their personal desires.

Theme 17: Students Focused on Degree Completion. When speaking of their goals, students spoke of the need to earn a credential at the college. Calem could envision this future: "I see myself graduating here with the associate." Moreover, he expressed the desire to graduate debt-free because, as he said, "I've seen my parents struggle with debt their entire life." Kaelah said, "I would love to graduate with honors." Susanne held a completion goal but expressed some hesitancy in her ability to achieve it: "I think I want to finish my associate here (. …) I wasn't too confident that I was actually going to follow through with this when I started."

Theme 18: Students Pursued Goals That Could Not Be Fulfilled by Enrollment in The Community College Alone. Students in this group held academic or career goals that could only be partially fulfilled at MCC. They shared how they planned to achieve these goals through the transfer process or by enrolling in another community college to earn specific credits. For example, Kaelah envisioned working with children as a teacher, though she said she could fall back into "working at a daycare or owning a daycare." She had struggled with how to pursue this path as MCC did not offer a program in education and advised students who were interested in teaching to earn general course credits that could transfer to a four-year university. She said, "I was thinking maybe I shouldn't go into the education department or anything, and I should probably stick to something that they have here. But I realized it's not what I wanted." For her, transferring to a four-year university was necessary to achieve her goals. She said her "dream college" was out-of-state but shared that she might prefer to enroll in a nearby regional four-year public: "I'll just stay in [town] until I feel fully comfortable to leave."

Susanne discussed transfer plans because of her goal to earn a bachelor's degree. For her, the missing pathway was to the four-year degree. She said, "I want a bachelor's. I know that. I just don't know where. And I think that stresses me out a lot just because obviously [MCC]

doesn't offer that." She identified the timeline for earning a credential, expressing her commitment to work through the necessary challenges to reach her goal: "I hope to have my bachelor's degree within the next five years at least (. …) It's technically four years, but I'm doing summer classes too, full-time."

Karli, on the other hand, had settled into a pathway offered by the college, but held a goal to earn her certificate in American Sign Language (ASL). She had internalized this goal and felt it would support her future employability: "I want to know ASL completely… they always need signers or interpreters." While this program was not offered by MCC, she had identified a community college in the state that offered it. She planned to take summer courses in sign language at the area community college, which would allow her to progress toward this goal while maintaining her full-time enrollment at MCC for the purposes of financial aid.

Theme 19: Students Expressed a Desire to Find Employment That Provided Personal Fulfillment. When speaking of their envisioned futures, two students—Calem and Kaelah—spoke to the desire to find jobs that allowed them to apply their skills in ways that brought personal fulfillment. Calem said he hoped to find "a job that, well, not only meets what I can do, but at the same time meets what I want." He hoped that his education would empower him to be in control of his future career decisions. He said, "Hopefully I'm able to choose what I want, because this degree, like I said, it's very much in need." Kaelah shared the desire to find employment in an area she desired. She described what she hoped would result from reaching her goals: "I'd just basically graduate with honors and be happy with my degree, be happy that I got something I wanted."

Curricular Momentum

Students who reported low self-efficacy and high decidedness about their program of study spoke of the efforts of their advisors to set them up with courses that would transfer efficiently. They spoke of how faculty and instructors provided them with personal support, though they shared both positive and negative interactions with faculty with respect to teaching and learning. They were knowledgeable of employment outcomes in each of their chosen areas.

Theme 20: Advisors Got Students Geared to Earn Credits That Would Transfer in a General Pathway. When relating their experiences working with advisors, students described how their advisors offered a set course schedule that consisted of general credits that would likely transfer, even if a student switched pathways. Karli said that she enrolled in general education coursework at the recommendation of her advisor. After explaining to her advisor that she was planning to earn an associate degree, her advisor got to work. Karli said she "set up all my classes, and my first two semesters. They were pretty much gen ed classes so it would have worked if I did switch." Kaelah and Susanne, who both planned to transfer, described a similar experience. Kaelah shared working with her advisor: "She sat with me and my dad and she planned the courses for me. She gave me a nice little list and stuff that I should do before I transferred." Kaelah shared with her advisor the four-year institutions she hoped to transfer to, after which her advisor told her it would be a "good choice" and shared "another option" for her to consider. Susanne recounted the process and her feelings toward the approach: "he [her advisor] pretty much had a schedule set for me, which I thought was interesting because I hadn't spoken to him before." She found his approach to be supportive, describing her advisor as "probably the most helpful person I've talked to here." She trusted his advice: "He really knows

what he's talking about. Because he knows that I want to transfer and he's like (…), 'I know it's two years out, but start looking now.'"

When Calem first enrolled in MCC, he entered as a high school student through a program that allowed him to earn his high school diploma at the same time he earned credits toward his associate degree. He was no longer enrolled through this program, but still recounted his initial advising experiences when entering as a high school student. Like the others in this group, he said his advisor offered him a list of general education courses that would "count toward whatever degree you're interested in." In his experience, the role of advisors was to "mainly focus on just simply preparing you for classes."

Theme 21: Students Spoke of Faculty Who Had Supported Them on Their Pathway, Though the Strength of Those Relationships Were Mixed. When speaking of faculty and instructors, students shared interactions in which the instructor took time to provide support on personal matters and choices. Karli would meet with her psychology instructor after class and talk about her relationship with her partner and "how it was affecting schooling." These conversations, outside of class time hours, helped her stay focused on her education: "She would help me with school. Just positive support." Kaelah also described a positive experience with her psychology instructor, saying that she would encourage her to "go through with what I was planning."

Calem and Susanne both spoke about the role of their program director in helping them to forge a connection with an academic or career area. Calem spoke at length about his program director who was also his course instructor, describing what he viewed as an overwhelmingly positive relationship. In class, Calem said that his instructor would encourage students to share why they were interested in the program and what experience they brought to the program.

Calem said that this discussion helped students create connections to each other and the work: "If you're able to find that common ground with somebody, it's a lot easier to connect." Calem shared how this person would openly share the marketability of skills acquired through coursework. He said that his instructor might say, "if you were to go into a job, this would basically get you hired immediately." Calem found this information to be a "confidence booster" from which he drew motivation for continued learning.

Susanne also spoke of her program director, though she shared mixed feelings about their interactions. Susanne said she was enrolled in multiple classes with this person, scheduled back-to-back, which allowed her to spend time with her between classes. While they connected on a personal level, Susanne admitted to struggling with her teaching style. Susanne said she shared this feedback with her instructor, saying about her teaching, "The way you're doing it isn't working for me." Susanne felt this form of honesty strained their relationship: "I think that made her a little uncomfortable, like she was about in tears." Susanne said she struggled with where to go for help apart from this instructor: "I don't really even know how to go about meeting anybody else. You know what I mean? Like, there's no like, meet the faculty kind of thing, not that I'm aware of anyhow." She seemed to understand the importance of this relationship and was unsure about how to approach it moving forward.

Theme 23: Students Were Informed About Employment Data Relative to Their Academic and Career Choices. Calem and Susanne drew confidence from the demand for workers in their chosen career areas. Calem said that demand for employees trained in computing or related technology fields is growing and reiterated his belief that he would be "guaranteed a job." He connected his future employment prospects to his educational journey at MCC: "So far at [MCC], I have already learned so much more than I have ever before and I'm

able to just showcase those skills." Susanne focused on future projected earnings for software engineers, her area of career interest. She shared a specific starting salary range: "the average salary starting out for a software engineering is $108,000 a year, and the high end is $140,000." Kaelah could not cite specific data but said of openings in her area: "job availability is going down, and it's exceedingly going down." She did not expand on how this affected her confidence in her choice.

Quadrant IV: Low Self-Efficacy, Low Decidedness About a Program of Study

Students in the fourth quadrant had self-efficacy composite scores that ranged from 2.88 to 4.00 out of a possible five points. Composite scores for decidedness about a program of study ranged from 1.50 to 2.50 out of a possible five points. Two students were enrolled in the Liberal Arts pathway and two students reported their pathway selection as "undecided." Among students in this quadrant, the Business and Computer Technology; Health Sciences; Human Services; Science, Engineering, and Mathematics; and Skilled Trades pathways were not represented. Students' self-efficacy and decidedness scores, as well as their chosen pathway, sex and race/ethnicity are reported in Table 7.5.

Table 7.5

Quadrant IV: Self-Efficacy, Decidedness, and Individual Characteristics

Name	*Self-Efficacy (reverse)*	*Decided-ness (reverse)*	*Pathway*	*Sex*	*Race/Ethnicity*
Philippa	2.88	2.50	Liberal Arts	Female	White
Scott	3.50	2.50	Liberal Arts	Male	White, Filipino
Tanya	4.00	2.00	Undecided	Female	White
Thomas	3.88	1.50	Undecided	Male	Some other race

Note: Survey questions are measured using a five-item reverse Likert scale: 5=strongly agree, 4=somewhat agree, 3=neither agree nor disagree, 2=somewhat disagree, and 1=strongly disagree.

Aspirational Momentum

Students who reported low self-efficacy and low decidedness about their choice of program of study were focused on completion as a goal, though each had considered transferring to a four-year university as an option or necessity to fulfill their long-term aspirations. Students described a perceived misalignment between their interests and the programmatic options offered by the college. They described changing or adapting their career goals to adjust to the realities of the curriculum offered by MCC. They expressed concerns of being perceived as undecided or making the wrong choice about their program of study.

Theme 24: Students Held Personal Goals for Completion. When students spoke of their career aspirations, they prefaced their goals with a commitment to first earn their degree. Philippa said, "I want to get my degree and I want to maybe work as a school counselor or something with kids." Tanya identified a need to earn her degree prior to transfer: "I see myself getting my associate degree here, transferring to [a four-year university] and then once I graduate from [four-year university] I might stay up on that area." Scott envisioned his future as a college graduate: "See, once I have a degree, and then I also have IT certifications that I already have down on my belt…" He struggled to put words to what his career would look like after that point, explaining, "A lot of it is unknown territory, so I don't have to delve into it at this time."

Theme 25: Students Were at Various Stages of Commitment to Transfer Plans. Philippa demonstrated a high level of commitment to her transfer plan. She spoke of her long-term goals to "become a counselor" and connected it to her course-taking strategy to "get through some writing classes, just to get all sorts of credits before I transfer." Tanya shared her goal to earn her associate degree prior to transfer and identified her transfer destination by name. She described her associate degree as "a stepping-stone to get to where I need to be." Thomas

admitted to needing to still figure out his plans around transfer but credited MCC with providing a pathway to transfer. He said, “I feel like even though it’s a community college… I feel like it actually does mean something because you can transfer to a lot of these schools, you can do a lot of these things.” Scott, on the other hand, no longer considered pursuing his associate of arts degree and then transferring to a four-year institution to specialize in game art. He had since committed to the graphic design program, which he described as “the shorter option.” Scott seemed to have foreclosed on the possibility of transferring to a four-year institution.

Theme 26: Students Described a Perceived Misalignment Between Their Goals Upon Entry and the Curricular Offerings of the College. Philippa was advised upon entry that her goal to be an early childhood educator could not be fulfilled by the college alone. Her advisor shared this in a direct manner: “We don’t have the early education program here.” Scott, who was interested in game design and development, said of MCC, “This college doesn’t offer any of that.” Tanya was working toward earning a bachelor’s degree in criminal justice but said that, according to MCC, she is “not in the criminal justice program… but I am working toward it.” Thomas hoped to earn a bachelor’s degree but settled on earning an associate degree, at least prior to transferring to a university: “They don’t have a bachelor’s degree here, but you can get that through [a four-year university].” He said at MCC, he chose to “stay with the associate.”

Theme 27: Students Adjusted Their Career Goals After Confronting the Structure of the Curriculum. Philippa had always wanted to be an early childhood educator but in addition to being told that the pathway was not offered by the college, her advisor shared, “you can’t really make much money doing that.” Philippa said her advisor “supported me about it” but also communicated the obstacles she would face if she chose that path. When Philippa suggested an interest in psychology, her advisor encouraged her, saying, “We have a program here that you

could transfer… to another college." Philippa chose to pursue that goal and seemed motivated by the idea that she could work with children. She explained:

> I hate therapy for myself, but I love talking to other people about it, and I've had quite a few friends with mental health problems, and I've helped them through a lot (. …) So, I figure maybe that's my life purpose to help people, and I could even focus on younger kids.

Like Philippa, Scott demonstrated a passion which, in his case, was for game design. After learning that the college did not offer a program related to that area, he said he "spent the entire summer thinking about what I need to do or what major I need." He identified a transfer option that would offer a bachelor's degree in game design, but he spoke in the past tense when discussing this option: "I was gonna do the associate in arts [and] then transfer to [the university] for game art." For him, transfer felt like erasing much of the progress he had already made: "It'd be like starting over but you have all the classes that you did take already." At MCC, he "just chose the closest thing," which was to major in graphic design.

Theme 28: Students Exhibited Choice Anxiety. Students described the difficult process of moving toward a program decision early in their college experience. Thomas had concerns about being perceived as undecided by others and the negative feelings that stemmed from that concern: "It feels like I'm less, but not… What I mean by that is I'm undecided and I feel like… I feel like I'm behind just a bit and because other people already know what they want." Tanya spoke for students generally: "They're terrified of choosing the wrong degree." This fear stemmed in part from her concern that following a structured academic and career path limited her ability to complete her degree in a timely and affordable way should she become unsatisfied with her choice. She described this possibility: "You get two months before you graduate and you're like, 'Shit, I really don't like what I'm doing. Well, now I have to go start all over and waste all this money to redo everything.'"

Curricular Momentum

Students spoke of how their advisors indicated concern about pursuing some academic or career interests. They connected the perspectives shared by their advisors with their own decisions to pursue alternate career paths. They spoke to their perceptions of how faculty and instructors' expressed views related to the role of struggle in students' development, or how students should approach decisions or challenges that they were bound to experience during their time in college. When describing their hopes for the future, students spoke in a general way without specific reference to expected employment outcomes.

Theme 29: Students Connected Advisors Concerns with Their Own Decisions to Pursue Alternate Career Paths. When describing her initial goals to work at a daycare, Philippa led with the fact that she had entered with prior experience working in a daycare setting. She placed value on this experience: "I started working at a daycare, which was something that was really big in my life." Yet, even with prior experience, she still found the perspective of her advisor about the limited earnings potential in this area to be persuasive. When her advisor shared, "You can't make much money doing that," Philippa said she agreed and then switched her career path: "So I'm like, 'Yeah, you're right' So I looked into it more and decided not to go that route."

Tanya also connected the concerns of her advisor with her academic and career decision. She entered college with an interest in history, which she shared with her advisor. Of this conversation, Tanya said, "I did talk to her about it, and she did warn me about that." Of her employment prospects in this area, she said, "It's kind of a hard one to get into. I would have to look into going to maybe New York where it's like a bigger population, more interests in history,

or more interest in museums." She went on to say, "that's when ultimately I decided I'm going to continue with what I wanted to do since I was younger, criminal justice."

Theme 30: Students Spoke of How Faculty and Instructors Perceived of Struggle and How They Advised Students to Navigate Challenges That They Would Experience in Their Academic and Career Pursuits. When Thomas spoke of faculty and instructors, he tended to focus on the motivational support they provided, including how they advised students to manage challenging experiences. When speaking of his seminar instructor, Thomas said, "I think he taught a lot of things about growth mindset versus fixed mindset and just like the different things that can help you, like the resources that can help you at these colleges, especially this one." When speaking of a faculty advisor, Thomas shared, "He helped me with just kind of being yourself in a way and like staying true to your thoughts, like sometimes, staying true to your gut." This may be a way that instructors addressed the need for students to maintain positive self-efficacy beliefs in college, while simultaneously managing personal challenges that presented themselves as barriers to persistence.

Scott shared how math faculty communicated their approach to teaching and learning. He explained, "Their thing is that they will let us struggle. And they've explained this to us. The only way to get better at math is to struggle." Scott expressed being unsure about the effectiveness of this approach: "I think that's a debatable topic." While he seemed to disagree with their pedagogical approach, he recalled one of his math instructors being particularly in tune with his personal needs:

> I will say the main teacher, she is a wonderful person. Like, when I was stuck and my grades were getting low because of the worksheets, she sent me a little note in the mail saying, 'Get better, and you're doing better in class,' stuff like that. So that stuff helps a lot.

This example demonstrated that while Scott's instructors communicated to students that struggle was a part of the learning process, they also viewed their role as providing positive encouragement and support at critical moments and in subtle ways.

Emergent Patterns Across Quadrants of Self-efficacy and Decidedness

The mixed findings provided an opportunity to analyze students' interview data relative to their quantitative measures of self-efficacy and decidedness about their program choice. Students' self-efficacy and decidedness were only two of many factors that can be assumed to affect how students approach their choice of program of study. Indeed, the quantitative strand of analysis highlights how students' race/ethnicity, gender identity, socioeconomic status, and academic preparedness at entry informed their early outcomes in college. The purpose of the mixed analysis was not to elevate the role of self-efficacy relative to other individual level characteristics. Instead, due in part to its theoretical importance within the context of academic and career decision-making, it was my intent to use it as a lens to explore variation in how students experienced the academic and career choice process in a community college that has a structured curricular environment. By examining the variation by which students experience the curricular offerings and supports of the college, along with the characteristics that may partially explain differential outcomes, institutional leaders can consider how curricular structures can be improved in ways that address systematic inequities.

In this strand of analysis, I focus on individual factors (i.e., students' choice goals) and organizational factors (i.e., advising supports and structures) that emerged through the interview process. This analytic approach stems from the primary research question and is intended to support an anti-deficit framework (Harper, 2010) that explores the ways that institutions can cultivate students' connections with curricular areas related to students' interests. Moreover, this

within-case analysis allows for an examination of how students' aspirations and curricular experiences varied by their self-reported self-efficacy and decidedness about their program choice, allowing for a mixed methodological approach that supports theory building (Alevesson & Karreman, 2011). As with the quantitative and qualitative strands of analysis, I used SCCT (Lent et al., 1994; 2002) to aid in the interpretation of findings. I report patterns shared by Quadrants I and II as students in these groups shared high self-efficacy scores; separately, I reported patterns shared by students in Quadrants III and IV due the low self-efficacy scores exhibited by students across each of these two groups.

Students in Quadrants I and II reported self-efficacy scores that were at the high end of Chen et al.'s (2001) eight-item new general self-efficacy scale. As shown in Table 7.1, students across these groups shared how their program choice connected to long-term interests and ambitions. They expressed how they experienced personal fulfillment from their academic engagement. Students who performed high on the self-efficacy scale and were less decided about their program choice, as indicated through their survey responses, spoke to the need to figure out whether their program choice was right for them. Some students shared the pressure they felt when making their pathway choice. Others described feeling committed to their programmatic choice, including aspects of that choice that remained unknown. When speaking of their curricular experiences, students spoke about how advisors prepared them to engage and progress within their chosen pathway, or shared whole program plans that strengthened their understanding of the timeline and steps to completion. One student diverged from the others, saying how the approach of her advisor left her feeling as though she was not able to make her own choices or voice her interests and concerns in ways that would be heard. Students across both groups spoke about the role of employment data on their choice of program of study,

though they placed varying degrees of importance on its role in their decision-making process. These findings reveal how students engaged with curricular supports and structures and gathered information, such as employment and earnings data, in ways that informed their choice of program of study. While students were required by the college to choose a program upon entry—and some expressed feeling pressure from this requirement—they were able to view their choice within a broader process of figuring out their interests and used the curricular structures and supports to guide them.

Students in Quadrants III and IV had self-efficacy scores that ranged from 2.88 to 4.0 in a five-point Likert scale. Students across these groups consistently spoke to their personal goal of earning a credential in the community college or doing so upon transfer. Their chosen pathways were predominantly transfer-oriented, and students were at various degrees of articulating and/or committing to transfer plans. Students who reported lower-self-efficacy scores but who were more decided about their program of study spoke to the ways that advising staff oriented them to transfer pathways. They identified faculty who had provided them with personal support and encouragement and referenced using employment data to inform their choices. Students in Quadrant IV, who also reported being less decided about their program of study, described how the community college's curriculum did not fully align with their interests upon entry to college. They spoke of adjusting their goals, sometimes after receiving guidance from their advisors that the college did not offer programs related to their interests, or that the career that they hoped to pursue would not result in sufficiently high earnings. Students in these groups articulated career aspirations yet seemed to struggle in connect these visions with the practical requirements of the college curriculum. Those who succeed in connecting their aspirations with a transfer-oriented

pathways exhibited some doubts in their ability to navigate the necessary steps to earning a credential.

In Chapter 8, I discuss the meaning of the quantitative, qualitative, and mixed findings in the relation to the overarching research question: *How do students develop their academic and career interests in a community college that is using the guided pathways framework to inform college-wide changes?* I conclude with recommendations for research and practice.

Chapter 8 Discussion

Community colleges across the country are making changes to programmatic structures and processes through an organized effort to simplify institutional contexts in ways that help more students succeed. These efforts are informed by a framework, known as guided pathways, that addresses four areas of practice: (1) clarifying program pathways and mapping them to students' education and career goals; (2) helping students choose and enter a pathway, (3) support student progress within a pathway; and (4) assessing student learning within a pathway (Bailey et al., 2015; CCRC, 2021; Jenkins et al., 2018). In this study, I focused on the second area of practice—helping students choose and enter a pathway—and explored how students make academic and career decisions in a community college that has made changes to curricular structures and supports in line with the recommendations of the guided pathways framework. I focused on the academic and career choice process due to its centrality to the theory of change that informs the guided pathways framework (Bailey et al., 2015), as well as its importance in ensuring that more students actualize their academic and career goals through a community college education.

In this mixed methods case study, I explored the following research question: *How do students develop their academic and career interests in a community college that is using the guided pathways framework to inform college-wide changes?* The following sub-questions inform my response to this broader question:

- What is the relationship, if any, between students' self-efficacy beliefs and their outcomes in their first year of enrollment in a guided pathways community college?

- How do students relate their curricular experiences to their academic and career aspirations?
- What patterns are revealed from merging the qualitative data about students' aspirations and curricular experiences in the community college with quantitative data measuring students' self-efficacy and decidedness about their choice of program of study?

This study benefits from a rich dataset collected from a community college that was an early adopter of the guided pathways framework as part of its institutional change effort. In addition to institutional data, I used interviews and survey data measuring students' self-efficacy early in college and decidedness about their program choice. This mixed dataset allowed for a comprehensive exploration of the primary research question that centered on students' voices about how their goals are expressed and actualized within the community college context. The mixed methods case study approach explored how students' aspirations, experiences, and outcomes varied across levels of self-efficacy and decidedness about their program choice early in college. By centering the student voice while focusing on how students perceived and experienced the curricular context, I was able to explore variation in how students experienced an institution-wide structural reform such as guided pathways. It is my hope that this approach offers a way forward for researchers who seek to explore the equity implications of the guided pathways model, especially for historically marginalized student populations in higher education such as first-generation students, low-income students, and students of color.

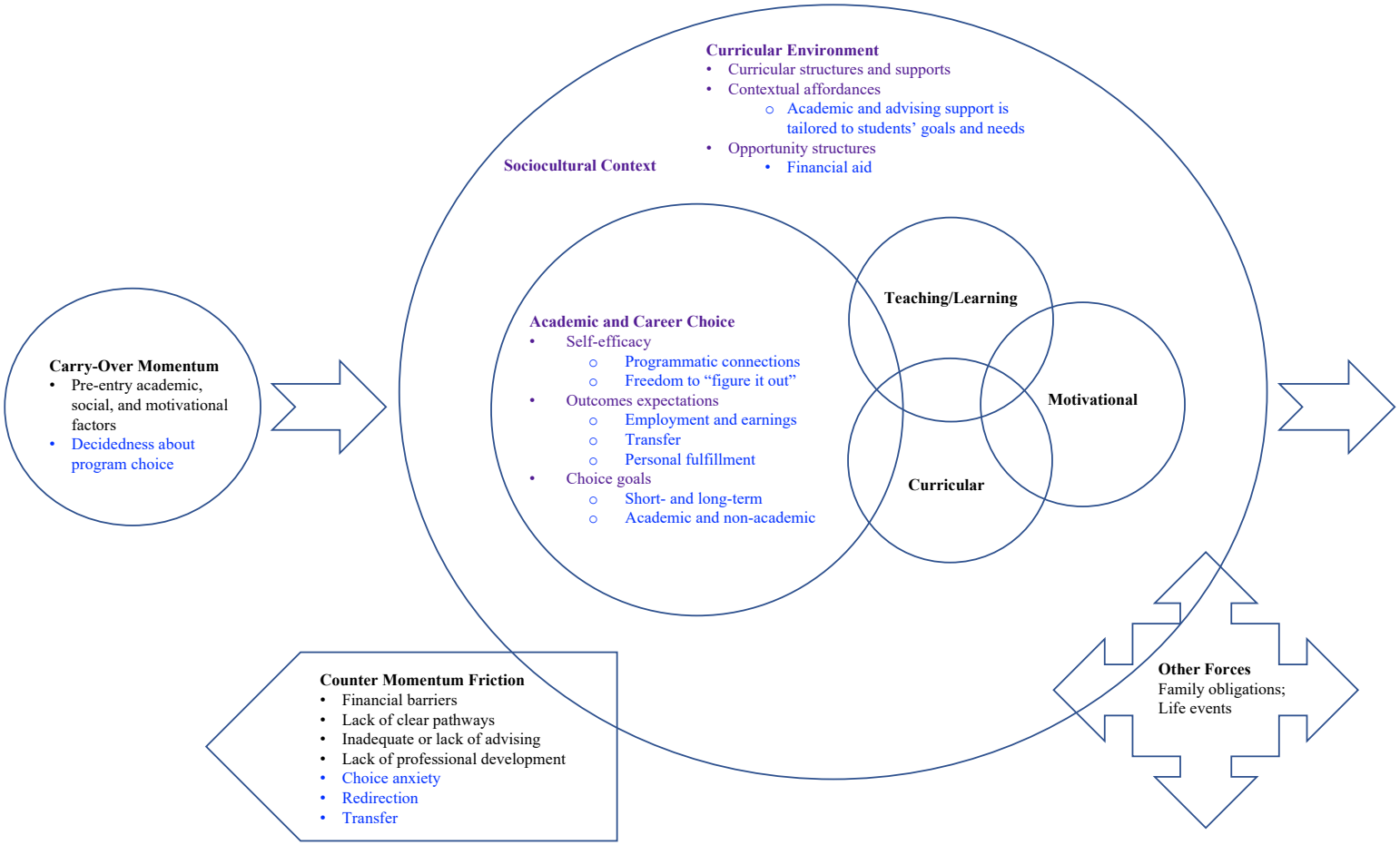
In the next section, I will present a new model of academic and career choice momentum for community college success, which draws from my analysis of the study findings. Following the presentation of a new conceptual framework is a discussion and study implications for research and practice.

Conceptualizing Academic and Career Choice in the Community College

A new model of academic and career choice momentum for community college success is presented in Figure 8.1. This model stems from my analysis of the study data, which includes the quantitative, qualitative, and mixed strands of analysis. It reflects central findings that emerged at each stage of analysis and highlights central mechanisms for how students make academic and career choices in a highly structured and supportive curricular environment. It also highlights barriers that students experience as they navigate toward their academic and career aspirations.

Figure 8.1

Model of Academic and Career Choice Momentum for Community College Success



I situated my analysis in a community college that was actively using the guided pathways framework to inform institution-wide changes to the college curriculum. Therefore, this model should apply to other institutions that have made changes to curricular structures in similar ways prescribed by this model. Such changes include redesigning academic programs within conceptually or practically similar groups of meta-majors and ensuring that programs are offered in ways that are transparent, accessible, and reflective of students' academic and career goals. From the institutional perspective, the pathways offered should also lead to credentials of value and offer embedded student support services designed to help students achieve their goals.

To frame my analysis, I drew from Lent et al.'s (1994; 2002) Social Cognitive Career Theory (SCCT). This theory allowed me to remain receptive to the effects of the greater sociocultural context that informs the conditions in which students make academic and career decisions. As applied to a guided pathways community college, this means that as scholars and practitioners consider the tangible structures and supports of the college, they must also consider whether and how students of various backgrounds and identities perceive these curricular structures relative to their own goals. In considering the institutional culture and context, we must also reflect on the greater sociocultural forces that are present and thus affecting students' opportunities and motivations to succeed.

This new model is adapted from Wang's (2017) theoretical model of momentum for community college success. In constructing this model, Wang intended to provide a framework for educators to consider how to "help students build momentum" (p. 290) toward achieving positive community college outcomes. Importantly, a central assumption of her model is that academic and career momentum is "malleable and can be collectively built by students and the community colleges they attend" (p. 291). This assumption guides this new model, which is used

to explore whether and how students' academic and career decisions, in combination with their perceptions and experiences navigating the curricular context, contribute to students' forward momentum in college. I extended Wang's model by adding a fourth domain of momentum, *Academic and Career Choice,* which allowed me to explore how students' socio-cognitive beliefs relative to their academic and career interests contributed to their academic and career momentum. Additionally, I made explicit the role of the curricular environment as it relates to students' academic and career momentum. In the paragraphs that follow I present my findings relative to the *Academic and Career Choice* and *Curricular Environment* domains. I also speak to findings that I interpreted as relating most closely with the *Carry-Over Momentum* and *Counter Momentum Friction* domains.

Academic and Career Choice

Drawing from Lent et al.'s (1997; 2002) SCCT, I posited that three socio-cognitive constructs—self-efficacy, outcome expectations, and choice goals—guide how students experience the academic and career choice process early in college. Central propositions drawn from the SCCT model as applied to my research questions are that student's self-efficacy beliefs and outcome expectations, both as they relate to their own academic and career prospects, affect their interest development, goal formation, and academic and career achievement over time. As posited by Lent et al. (1994; 2002), these constructs are bi-directional and therefore affect each other in tandem. In this section, I reflect on how the findings of this study speak to each of these individual constructs and what the findings might mean for how these constructs operate collectively.

Self-efficacy. Self-efficacy, as defined by Lent et al. (1994; 2002), is an individual's belief about their ability to persist toward their chosen goals. The authors situated this construct

within a socio-cognitive framework, which contributed to their view that self-efficacy is not a psychological trait or personal characteristic but rather a "dynamic set of self-beliefs that are specific to particular performance domains and that interact complexly with other person, behavior, and contextual factors" (Lent et al., 1994, p. 83). Conceptualized in this way, self-efficacy can be viewed as a malleable force that contributes to students' academic and career momentum.

I explored the role of this construct in guiding students' academic and career choice process across each strand of analysis. In the quantitative strand, I found that students' average self-efficacy score did not contribute significantly to my models. Unfortunately, a small sample size precluded me from conducting subgroup analyses by students' choice of program of study. While descriptive analyses suggest a possible relationship between students' self-efficacy and their choice of program of study, this hypothesis remains untested.

Across the qualitative and mixed strands of analysis, I was able to use students' quantitative measures of self-efficacy to explore variation in students' perceptions and experiences relative to their aspirations and curricular experiences in the community college. As I considered the themes that emerged through the analysis, I reflected on those that may be informed by students' self-efficacy beliefs. Through my analysis, I observed students with higher levels of self-efficacy to share *programmatic connections* with various program elements such as mission, practice areas, and program faculty and staff.

For example, Jenai, who performed in the upper quartile of the self-efficacy scale, described feeling connected to the mission of her program area. She described the mission of sonography to be "a well, caring, outgoing sonographer that's going to make sure our patients' [needs] are met." This description suggested that she viewed herself within the mission and felt

connected with its stated purpose. Amos and Corrine, who similarly performed in the upper quartile of self-efficacy, expressed how their choice of program of study was informed by their positive connections to the practical elements of their chosen profession. Amos described having an interest in law enforcement since his youth and was compelled to engage in all aspects of the work, "even the boring stuff." Corrine described feeling connected to her aspiration to be a biomedical engineer due to her proclivity for hands-on work.

Other students described experiencing positive connections with instructional faculty and staff within their program area, both on academic and personal levels. For example, when describing the role of instructional staff in his chosen area, Amos said, "So they're like teachers but they're not teachers. They're just there to support you." Tab similarly shared, "If you need help with anything, they're like instantly right on it." Jenai described her program staff as being engaged with exposing her to the various programmatic and career pathways that were embedded within her chosen area of sonography. She said that they helped her to "get a better understanding of what it was and helped me pick what I wanted to do." Zeke, who planned to transfer, valued the teaching approach of math faculty at the college: "They are as supportive of you as you need them to be." Tanya was an outlier to this group, scoring in the lower quartile on the self-efficacy scale. However, she also described feeling connected to her choice to become a parole officer due to reflection inspired by her instructor's willingness to share his own practical experiences. She said, "Instead of him just pretty much lecturing what came out of the book, he would be like, 'Okay, this is how they're used firsthand.'" His lessons and personal reflections helped her to determine that she would be a good fit for the job. In general, students who exhibited higher levels of self-efficacy described these types of programmatic connections.

Students who scored high on the self-efficacy scale yet low on the decidedness scale were apt to describe their intent to *figure out* where their interests and aptitudes lie relative to their program choice. Aaliya said her "big goal" as a student was "just figuring out what I want to do because I don't know if I want to do radiology." Students shared similar strategies or ways to approach figuring out their true interests. For example, Tessa and Jenai viewed practical experience as an essential component of figuring out a career specialty. Tessa envisioned herself in a hospital so she could "dip my toes in there and everything." Jenai said she needed to "get into my career and see if that's really what I was there for" before she committed to further education in her field. Tab and Calem, who both scored high on the self-efficacy scale, sought out confirmation of their program choice through practical, hands-on learning activities. Given that students who expressed a desire to learn through practical application of knowledge reported high self-efficacy scores, I theorize that positive beliefs about their college-going prospects contributed to their motivations to learn through applied applications of program content. It is possible that practically-oriented pathways support students in feeling more confident about their program choice, perhaps due to the relative ease in which students could envision future outcomes. They may have experienced positive motivation due to their need to acquire practical skills required for employment.

Overall, these findings suggest that students' feelings and expressions of positive connections to their choice of program of study were facilitated in some way by their self-efficacy beliefs towards college. For students who were less sure about their academic and career interests, they perhaps relied on their self-efficacy to make a choice and then commit to exploring their interests as they figured out their ultimate career path. Subthemes that contributed to these findings cut across three of the four themes presented in Table 6.1, including aspirational

stepping stones (e.g., students connect career aspirations with interests that developed before their enrollment at MCC; students set goals to "figure it out"); curricular advising, support, and direction (e.g., faculty and instructors share professional insights with students in ways that help students evaluate academic and career choices); and choice strategies (e.g., students seek out confirmation of their academic and career choices through early practical and hands-on experiences). These findings cut across person, contextual, and behavioral factors, lending support to Lent et al.'s (1994; 2002) claim that self-efficacy operates as a dynamic set of self-beliefs across each of these domains.

Outcome expectations. Across the qualitative findings, students shared their expectations of their employment and earnings prospects, transfer perceptions and prospects, and life outcomes. Lent et al. (1994; 2002) posit that these expectations ground students in their effort and provide motivation necessary for students to identify, organize, and actualize progress towards their goals.

With respect to employment data, students were knowledgeable of both employment and earnings projections. Students shared that they had gathered this information on their own, with the help of trusted family members, or as part of their Seminar in Life Pathways course that was designed to help students choose a program of study. Students who scored high on the self-efficacy scale and who were also relatively decided about their choice of program referenced these data when describing the positive future that they envisioned for themselves. For example, Amos and Tab spoke to the need for trained professionals in each of their areas, with Amos sharing, "I'll probably get a spot because they need me." Tab said, "People are begging other people to come and join." Each drew confidence from the employment data. Students in the upper quadrant of self-efficacy and decidedness were similarly familiar with their expected

earnings, with Joline revealing that she had used this information to identify her specialty within Health Sciences.

Students who performed in the lower quartile of the self-efficacy scale yet who were fairly decided about their program choice also spoke in detail about employment data. Calem, for example, said that he would be "guaranteed a job" due to the need for workers in technology fields. In contrast, students who scored high on the self-efficacy scale and low on the decidedness scale referenced these data but placed varying degrees of importance on the role this information played in their decision-making process. Aaliya indicated that it held great weight: "I only picked [radiography] because it made a lot of money." Alternatively, Tessa expressed being skeptical of the role of employment and earnings information in her choice process. She said, "If I go where the most money is, I might be miserable, but I might be rich. It's not going to solve everything." These findings suggest that employment information was particularly helpful for students who felt confident in their academic and career choice. This may be explained in part by the role that employment information had in helping students envision positive future outcomes in their chosen area. Employment and earnings data seemed to be of lesser utility for students who were undecided or unsure of their program choice. For these students, these data were a tool to help narrow in on their program choice, rather than one that provided a window into their future.

Students who had chosen or found themselves navigating a transfer pathway shared unique insights. Students indicated that enrollment in the community college was necessary to get them to where they wanted to go, viewing their educational pathway as a practical pursuit. As Tanya shared, the community college education was "a steppingstone to where I need to be." The community college allowed them to advance their educational progress, while staying close

to home or managing excessive costs. Students who were in transfer pathways tended to focus on short-term goals that would be necessary to achieve on their way toward transfer. This short-term focus was perhaps related to a need to feel in command of the steps required to advance towards their educational and career goals. Across students in the qualitative sample, students in transfer pathways performed lower on the self-efficacy scale than students in career-oriented pathways. Lower levels of self-efficacy among these students could be related to their concern about their abilities to navigate the hurdles presented by transfer. Another theory is that transfer is not an outcome that students seek or that confers value to students. Often, it is not a step that they actively choose to navigate. Rather, it is a hurdle that presents itself to students who choose to enter the community college in search of an academic or career aspiration that requires a credential not offered by the community college alone.

Across the interviews, some students spoke to where they imagined their academic and career choice would take them in life. Students who spoke to attaining life fulfillment did not all score high in self-efficacy; some were low in self-efficacy and high in decidedness about their choice. Calem and Kaelah were both examples of this. When Calem spoke to the expectations he held for his future, he said he saw himself earning at least the associate degree. From there, he envisioned a future that aligned with his personal interests and needs by "just simply finding a job that, well, not only meets what I can do, but also at the same time meets what I want." Similarly, Kaelah said she planned to follow in her parents' footsteps, graduate with honors, and "be happy that I got something I wanted." For them—students who possibly lacked confidence in their college-going abilities—it is possible that the structured pathways offered by the college paired with the personalized approach to advising helped them to both envision and take steps towards a future that they wanted.

Choice goals. As students spoke to their academic and career goals in college, they iterated between speaking of those that were short- and long-term in focus, and those that were academic and non-academic in nature. As Lent et al. (1994, 2002) explain, goals are how people express their commitment to persist in their chosen area of interest. Shorter-term milestones are also cognitive tools that can be used to plan and progress towards long-term goals. As individuals achieve progress, they can experience psychological benefits that provide motivation necessary for long-term success.

Most students in the sample spoke of their commitment to maintain a high-grade point average (GPA). Several shared that they had not achieved success in high school, yet they believed that they could do so in their MCC coursework. Corrine provided the best example of how she used academic goal setting to motivate and organize her own success. She said she was aiming for a 3.5 GPA so that she would "be able to move on." To achieve this GPA, she set other "mini goals" such as "making sure I wake up for class, making sure that I'm doing everything I need to, so I can be able to have that next step of my next goal." In this framework, short- and long-term goals were the connective tissue that supported her agency and actions in pursuit of her future ambitions for herself.

While most of the goals articulated by students were academically oriented, others spoke to the types of activities students hoped to engage in through their work or the rewards they hoped to receive through their eventual success. Joline, who was committed to earning her nursing degree, knew she wanted to work in a children's hospital. This was the pathway that would allow her to work with children. Her goals were also connected to earning a living that would allow her to provide for herself and her family. She said, "I want to be able to put money aside, travel, buy extravagant gifts for my family." Tab envisioned the house that he wanted to

provide for his family. In setting his goals, he worked backwards from "what I need to do to get a house, what I need to do to get a good job, and all that stuff." Both Joline and Tab held high levels of self-efficacy and decidedness about their program of study.

Self-efficacy, outcome expectations, and choice goals as collective constructs. In this study, I measured students' self-efficacy as they entered college and then used this measure to (1) explore the relationship between self-efficacy and early outcomes in college, (2) sample students who exhibited high and low values on this measure, and (3) infer what their relative degrees of self-efficacy meant for their experience navigating the academic and career choice process. I focused on this measure due to Lent et al.'s claim that self-efficacy was a central mechanism in how individuals expressed agency in academic and career contexts. Through the interview process, I was able to gather insights into how this construct interacted with students' outcome expectations relative to their program choice, as well as their short- and long-term goals. From the data, I explored how students' outcome expectations and goal expressions varied by the level of self-efficacy that they expressed. This analysis provided evidence in support of a central proposition of my conceptual model, derived from SCCT and listed below (the full set of propositions are listed on p. 34): *Self-efficacy beliefs and outcome expectations relative to students' academic or career pathway affect students' short- and long-term goals, both directly and indirectly through their interests.*

I found students who performed higher on the self-efficacy scale tended to express outcome expectations and choice goals differently than those on the lower end of the self-efficacy scale. Students who held high self-efficacy used employment data to express positive employment futures. In contrast, they used earnings data to narrow in on the career specialty that would support this future. Students in this category tended to be in career pathways;

alternatively, students with lower self-efficacy were clustered in transfer pathways. They focused on shorter-term academic milestones or "steppingstones" perhaps to ground their progress and draw motivation required to navigate the additional hurdle of transferring to a four-year institution. The variation in findings across quadrants of self-efficacy and decidedness suggest how self-efficacy, outcome expectations, and choice goals—the three central socio-cognitive constructs presented in the *Academic and Career Choice* domain—operated in relationship with one another. Conceptualized as malleable constructs, each has the potential to affect the other, thus changing over time as students progress through the curriculum. Collectively, they operate together in ways that allow for students to express agency over the choice process, which in turn provides direction and motivation necessary to navigate the structures of the curricular environment in ways that are aligned with their interests and needs.

A conceptual model that views self-efficacy as a malleable and interactive construct is well-suited to a choice process that is emergent and develops over time. For example, for most students, the precise path to achieve one's goals is not fully within grasp, even when a desired future can be envisioned. Callard (2018) theorizes that for the aspirant, the short- and long-term outcomes necessary to achieve one's goals only become clear as progress is made. As individuals navigate toward their goals, they experience tension between values or perspectives once held and those that are necessary to acquire for practical reasons. Callard (2017, 2018), a philosopher and ethicist who has developed a theory of aspiration, states that this value loss and acquisition is part of a learning process that aspirants experience as rational agents when all other academic, social, and motivational factors are constant. Central to this claim is the idea that the individual remains the agent or rational decisionmaker that guides their own future—a claim that

transfers to an educational environment in which the student should be empowered to make academic and career choices that positively affect their personal well-being and happiness.

Importantly, as a rational agent, and particularly in the context of education, the aspirant must remain committed to her own change and success. Callard (2017) explains,

> There is some space between a condition in which other people are rightly in charge of your agency and development, and a condition in which you know what's good for you. For the aspirant, learning what is good for herself is her own work. (p. 14)

As with any learning process, the student must be committed to her long-term goals over time. Decision points, such as choosing a program of study, are "best understood as climactic moments embedded in a longer transformative journey, marking neither its beginning nor its end" (Callard, 2018, p. 63). As exhibited in the *Model of Academic and Career Choice Momentum for Community College Success,* students' academic, social, and motivational conditions prior to entry to college affect whether and how they are able to access the role of aspirant.

Within the community college context, the choice of academic or career pathway is an inflection point in students' journey through the curriculum, one that directs students toward prescribed areas of the curriculum. This can be an empowering decision that students direct while navigating the appropriate curricular structures and supports, or it can be a first step in a "cooling-out process" (Clark, 1960) in which curricular structures redirect students away from their aspirations toward goals that are more likely to be achieved. Community college practitioners can ensure that the academic and career choice process is an empowering learning experience for students by centering students' own beliefs about their likelihood for success (i.e., self-efficacy and outcome expectations) and goals within the advising process, ensuring that their views are addressed by the curricular structures presented to support their progress. Moreover, practitioners can and should ensure that curricular structures are designed in ways that address

systemic inequities and barriers that prevent some students from experiencing agency in the academic and career choice process.

Curricular Environment

In the new model of academic and career choice momentum for community college success, I made explicit the role of the curricular environment on students' academic and career momentum. Throughout my analysis, I explored this domain through an interactionist model that sought to capture students' perceptions of the curricular structures and processes they experienced as they navigated their first year of college. In this new model, the curricular influences encompass the physical, cultural, material, and social features of the environment that a student experiences throughout their time in college. Within this domain I introduce two new constructs drawn from SCCT: (1) contextual affordances and (2) opportunity structures. Contextual affordances are students' perceptions of the resources being offered by the institution that are supportive or conflicting with their own goals. Opportunity structures are the institutional resources and influences that are designed to support students in achieving their goals while addressing equity gaps.

The intent of my study is not to explore this area of the model fully; rather, it is to reveal the underlying process by which students make academic and career decisions in context. This domain remains ripe for research, though my analysis of students' experience and progress in a guided pathways community college provide some important insights.

Contextual affordances. Throughout the interview process, students shared deep reflections on the onboarding and advising process offered by the college. Students shared an overwhelming satisfaction with the advising services they received. Zeke shared how his advisor understood his motivation in college, and Amos shared the process by which his advisor got him

"geared" to progress in his chosen area. One student reflected negatively on her experience with her advisor but shared that their relationship had since been repaired. Students described common approaches to advising, such as working backward from students' completion goals to lay out a full course schedule. Jenai shared how this approach to advising motivated her to work hard and persist, even in the face of challenges: "You can't stop, you've got to keep going on because it's right there, because it's not long, only two years. It's not long at all."

In the mixed strand of analysis, I was able to explore differences in students' perceptions of their advising experiences within quadrants of self-efficacy beliefs and program decidedness. For example, students who scored in the upper quartile of self-efficacy and decidedness spoke to how their advisors got them "geared" for their program. Students who scored in the upper quartile of self-efficacy and the lower quartile of decidedness described how advisors laid out course and program options so students could make easy comparisons. Students who exhibited low self-efficacy and high decidedness spoke to how their advisors supported them in transfer pathways. Finally, students who scored in the lower quartiles of self-efficacy and decidedness often spoke of being redirected within the curriculum.

When considered together, these findings suggest that MCC made efforts to tailor advising to students' academic and career goals, while also accounting for their personal needs. The institution embedded advising within a pathways framework by offering students with a consistent and reliable person to engage with and who held knowledge specific to their chosen program area. In general, students shared a positive view of their interactions with their advisors, though students who were less decided about their program choice or who were in transfer pathways still expressed concern about needing to choose a pathway in their first semester in college. While these perceptions are not a reflection of the quality of advising students received,

they do suggest that community colleges can do more to tailor additional support to students who are unsure of their academic and career interests upon entry to college or who select a general education pathway.

Opportunity structures. The quantitative strand of analysis highlighted the important role of financial aid, particularly non-repayable or scholarship aid, in supporting student persistence toward key academic and career milestones. Within the quantitative sample, for every $1,000 of non-repayable aid a student received, students' odds of persisting from first to second semester increased by 19 percent. Non-repayable aid was also shown to lessen persistence gaps, particularly for students on the lower end of the income scale. These findings highlight how financial aid is a primary mechanism by which institutions offer students support that builds momentum as they navigate toward their goals. Non-repayable aid is a critical resource that provides low-income students with the means necessary to manage the uncertainty presented by the rising costs of college. It also can provide students with the confidence that they can manage financial surprises that arise and put their academic pursuits at risk. While it was unclear across the strands of analysis whether and how MCC had made changes to financial aid services as part of the guided pathways reform effort, the quantitative findings highlight the important role of financial aid in supporting student success and equity. Financial aid is a single example of an opportunity structure that should be considered within the guided pathways framework. Scholars, practitioners, and others familiar with the guided pathways model may wish to consider whether and how other opportunity structures can be considered within a guided pathways framework, and what role they have in supporting strong and improved outcomes, particularly for marginalized student populations.

Counter Momentum Friction

In my analysis, I focused on factors that emerged as being supportive of students' forward-momentum towards their chosen goals. This analytic framing is in line with the approach presented by Wang (2017) in her theoretical model of momentum for community college success. As I conducted this analysis, positive factors emerged. To strengthen the validity of these findings, I searched for disconfirming cases including barriers that students identified as contributing negatively to their self-efficacy beliefs in college or persistence outcomes. The identified barriers included students' choice anxiety about choosing a program; redirection or being advised or nudged toward an alternate program path than one initially envisioned by the student upon entry to college; and the need to transfer to achieve personal and programmatic goals or milestones. These barriers were most salient for students who exhibited low levels of self-efficacy or decidedness about their program of study. I address each barrier in greater detail in the paragraphs that follow.

Choice anxiety. Students who reported being unsure about their choice of program of study shared negative perceptions of the requirement to choose a program of study upon entry to college or concerns about how their choice of general studies would be perceived by others. Aaliya shared how the combination of feeling pressure to choose and concerns that choosing general studies "wouldn't push [her] to figure it out" led her to select a career-oriented pathway.

Students who chose the Liberal Arts pathway tended to be clustered in the lower end of the decidedness scale. While these students did not necessarily speak of their anxiety about choosing a program generally, they shared reflections on how choosing the Liberal Arts pathway was the equivalent to not choosing at all. Embedded within this pathway is the associate in general studies, described by the college as a degree for students who "want to plan their own

program of study not defined by a specific job or career." The concerns expressed by students in the Liberal Arts pathway suggest that students may not feel they have the adequate supports needed to devise their own program of study early in their college experience. These findings also indicate a potential bias among students and others within the academic community away from the Liberal Arts pathway and towards those that are vocationally oriented. Lastly, these concerns may express a lack of agency experienced by these students within the choice process. It is possible that they felt the Liberal Arts pathway was presented as a default option rather than a choice that they actively selected due to their own interests and goals.

Redirection. Students who connected concerns shared by their advisors with their decision to choose an alternative pathway to the one envisioned upon entry were in the lower quadrant of self-efficacy and decidedness. This finding suggests that redirection, which I describe as being moved away from one pathway selection and towards another, may operate as a barrier to momentum for some students. In each of the two cases, students did not describe being redirected because of their advisor's assessment of their capabilities or aptitudes for curricular matter—an action that would be equivalent to "cooling out" students from programs (Clark, 1960). Rather, advisors were seen as redirecting students towards pathways that were formally offered by the college or would lead to higher levels of employability and earnings than would be expected from their initial pathway of interest. By providing students with information paired with advice, advisors can support students in choosing pathways that lead to positive long-term outcomes. However, these findings suggest that students who find themselves in an area that is new or unexpected could benefit from additional supports designed to acclimate them to their program and find connection in ways that may increase their self-efficacy towards college.

Transfer. As discussed earlier in this chapter, students in the sample who selected transfer pathways exhibited lower levels of self-efficacy as compared to others. While I am unable to fully explain why this may be, I can use the model to offer possible explanations. Through the lens of self-efficacy, transfer is not a programmatic requirement that students feel connection to, nor an opportunity to figure out their interests relative to their pathway choice. As an outcome, it is one often associated with negative expectations. Within the framework offered by the construct "choice goals," transferring from a two-year to a four-year institution is more likely to present itself as a stepping-stone rather than a goal for which achievement aligns with students' interests and needs. That is, transfer is not a goal per se, but an interim step in between students and their intended pursuits. Transfer students' negative orientation to these constructs suggests that students are not experiencing feelings of agency that contribute to positive momentum within a chosen pathway. Efforts to support students' self-efficacy beliefs, outcome expectations, and choice goals within transfer-oriented pathways may be needed to support improved transfer outcomes.

Carry-Over Momentum

Wang's original model of momentum conceptualizes momentum as a continuum that is affected by factors that exhibit themselves through the identities and experiences that students bring with them to college. Wang (2017) says that "pre-entry momentum can be obtained through dual enrollment experiences that may motivate two-year college attendees to achieve greater academic momentum. Students may bring carry-over momentum from high school, life, and work experiences" (p. 289). She continues:

> Carry-over momentum reflects students' prior experiences and backgrounds in the academic, social, and motivational contexts, and provides a foundation that can be further developed. In a sense, these background factors, as well as beliefs and attitudes students

> hold, including aspirations and mindsets, are also assets that instructors, advisors, and institutions can tap into in the momentum-building process. (p. 289)

In this text, Wang addresses the aspirations that students bring with them to college. In this study, while I was unable to capture students' aspirations prior to entering college, I did inquire about students' decidedness about their program choice in their first semester through survey questions. The construct derived from these questions was used as both a sampling mechanism and inference lens in this study. Using students' decidedness about their choice of program of study upon entry to college enabled me to explore variation in how students perceived and experienced the structures of the community college. As applied to the new model of academic and career choice momentum for community college success, I contend that students' decidedness about their program choice upon entry to college contributed to how students navigated the choice process as agents of their own success. This "decidedness" construct is likely informed by students' backgrounds and experiences as they relate to their academic, social, and motivational contexts, as posited by Wang. I was unable to explore students' early outcomes and persistence in college by demographic characteristics, pathway selection, or decidedness due to a limited dataset. This presents itself as an opportunity for further study, using the conceptual framework that emerged from this research as lens for analysis. Such research would contribute to our shared understanding of how to improve outcome equity in community colleges, especially those who are applying the guided pathways framework to their institutional context.

Study Implications

This mixed methods case study explores how students develop their academic and career interests in a community college that has made changes to curricular structures and supports in ways prescribed by the guided pathways framework. This study benefits from a rich dataset that

spans students' first year of enrollment in college. Survey data allow for an examination of whether socio-cognitive constructs—such as self-efficacy—inform how students navigate the academic and career choice process with agency and in ways informed by their sociocultural context. Administrative data offered key variables related to students' demographic information, choice of program of study upon entry to college, and academic outcomes across students' first year of enrollment in the community college. Qualitative interview data introduced students' voice and perspective on how they expressed their aspirations relative to the structures and supports introduced by the curricular environment. Together, these data provided a complex view into how community college students develop their academic and career interests in context. From this mixed methods analysis I offer recommendations for research and practice.

Implications for Research

More than 450 community colleges across the country are using the guided pathways framework to motivate institutional reform efforts (Brown et al., 2022; Jenkins et al., 2021). As more institutions apply guided pathways to their institutional context, scholars will look for ways to deepen our understanding of the efficacy of these reforms. Scholars should also continue to examine whether and how the guided pathways framework can help community colleges to enhance student learning, eliminate opportunity gaps within and across program areas, and improve overall student success. The following research areas may provide scholars with their own path forward. Each addresses the role of the curricular environment within a model of academic and career choice momentum for community college success.

Curricular structures and supports. Guided pathways is an institutional reform framework that has piqued the interest of scholars and practitioners alike due in part to the number of community colleges actively using the model to inform institution-wide changes.

Strong uptake of the model may be due in part to the compelling case put forth by Bailey et al. (2015) for why community colleges are struggling to support more students in completing a credential of value. The authors argue that community colleges are challenged by the need to deliver against multiple missions while meeting the diversity of student interests and needs. Efforts to clarify the programmatic offerings of the college, and to require students to choose a pathway upon entry to college, will allow for institutions to support students in making steady progress towards their goals in a transparent and planful manner. This case, supported by concepts drawn from decision theory, has captured the imagination and ambitions of many responsible for leading community college change efforts. However, the question remains about how we evaluate the guided pathways model within and across institutional contexts in ways that enhance our understanding of what works, while keep community college leaders, faculty, and staff at the table in ways that inspire continued progress on behalf of the institutions and students they serve.

Implementation fidelity (Hulleman et al., 2013) studies could present a way forward for community colleges already engaged with the guided pathway framework. Implementation fidelity studies examine "the extent to which the program, as designed, was actually implemented" (Hulleman et al., 2013, p. 7). Within this framework, studies could be designed to explore whether and how students are choosing programs that are personally enriching and professionally fulfilling. Drawing from recent practice literature, the Ask-Connect-Inspire-Plan framework (Jenkins & Lahr, 2022) could be used as a synthesis of best practices around helping students navigate the academic and career choice process. For example, the Ask-Connect-Inspire-Plan framework outlines structures and processes intended to help students (1) explore academic and career interests and programs, (2) gain experiences in programs relevant to

students' long-term academic and career interests, and (3) engage in long-term academic and career planning, all within the guided pathways framework. Implementation studies could be designed to examine whether and how community colleges are changing practices across these areas in ways consistent with guided pathways design principles.

By studying the implementation fidelity of the guided pathways reform in context, scholars can engage practitioners as partners in the research process. This engagement can help enhance our understanding of how onboarding and advising structures can support more students in making sound academic and career choices. Practitioners may also benefit from the research process through reflection aimed to support their growth and offer a shared understanding of how the guided pathways framework affects practice within and across programmatic areas. Moreover, implementation studies can provide space for scholars and practitioners to further explore whether practices implemented as part of the guided pathways reform affect students differently, and whether any unintended consequences emerged that warrant further investigation. This nuanced and engaged approach to evaluation is needed if institutions are to tailor their practices to the needs of historically underserved students who view community colleges as the entry point to postsecondary opportunity.

Contextual affordances. Once more, contextual affordances are students' perceptions of the resources being offered by the institution that are supportive or conflicting with their own goals. In their article examining college and career alignment, D'Amico et al. (2019) present a framework for how to capture students' perceptions about whether the structures and supports that make up the college's curricular context are meeting the needs of students. The authors used the concept of career capital (DeFillippi & Arthur, 1994; Inskson & Arthur, 2001) to construct a survey instrument that measured students' reasons for college enrollment (knowing why),

knowledge and skills about navigating college (knowing how), and support networks (knowing whom). These data were used to measure college and career alignment, or "the connections between a community college student's academic journey and their career experiences and plans" (D'Amico et al., 2001, p. 62). When applied to a guided pathways community college, this survey would allow for students' perceptions of program fit to be explored within and across meta-majors. Exploring variation in students' perceptions and experiences at this level of granularity would be helpful for community colleges seeking to strengthen the "contextual affordances" offered within each pathway, thus supporting more equitable experiences and outcomes for students. This line of inquiry would also present an opportunity to assess whether programs identified as "high-opportunity" (Fink & Jenkins, 2020; Jenkins et al., 2021, p. 3) by institutions align with those that are deemed high-opportunity by students.

As researchers explore how institutions are implementing aspects of the guided pathways framework, they should focus on how students interact with structures, processes, and faculty and staff of the college in ways that affect their agency relative to their academic and career decisions. Qualitative interviews could be designed in ways to elicit from students how they might react to different advising scenarios. These scenarios can be designed as traditional, one-on-one advising experiences that take a developmental approach, and can also explore the efficacy of e-advising models that can supplement traditional models and reach students at scale (Karp, 2013). By exploring how students' agency interacts with the structures and supports imposed by their curricular environment, colleges can better understand how to foster students' academic and career interests in ways that support their role as the aspirant, "committed to her own change and success" (Callard, 2017, p. 14).

Opportunity structures. Community colleges have been described as network organizations (Alfred, 1998), meaning their curricular structures can be conceptualized as spanning the organization and ideally intersecting with those offered by external organizations who serve students in complementary ways. Alfred (1998) argued that applying the network organization concept to community college redesign would allow for institutions to be more adept in meeting students' ever-changing needs. More specifically, this framework could assist scholars and practitioners in reflecting on how structures and supports of the community college complement and extend those offered by external entities who are ideally viewed as partners in ensuring students' academic and career success. It would also highlight where structures or supports were lacking or poorly aligned with K-12 schools, baccalaureate institutions, employers, and others, thus creating friction or diverting students away from their goals.

Future research should consider how the internal structures of the community college intersect with those offered by high school and career-technical education partners, baccalaureate institutions, and regional employers. Scholars may ask: What structures are in place to support all students in entering the community college academically prepared and informed about their academic and career interests? How does the community college address gaps in understanding the range and depth of academic and career opportunities upon entry and throughout students' time in college? What structures are in place to support students' smooth academic and career transition upon completion? What more can be done—either by the community college or in partnership with K-12 schools, baccalaureate institutions, and employers—to ensure that all students feel supported in choosing a program of study that engages their authentic interests and aspirations? The goal of this analysis should be to identify the structural influences that, as Lent

et al. (2002) describe, “affect people’s ability or willingness to transform their career interests into goals and their goals into actions” (p. 275).

This line of inquiry necessitates a focus on the educational process that underlies students’ academic and career progression. Such an analysis would require longitudinal data collected at the student-level that captures students’ identities, characteristics, and academic milestones by program of study. As Schudde et al. (2020) suggest, programmatic data can allow for analysis of students’ progress within and across programmatic stages, allowing for an examination of where, how, for whom, and why programmatic switching occurs. For example, Holzer and Xu (2021) demonstrated how this can be done using longitudinal data for a cohort of community college students in Kentucky. Such methods of analysis could be applied to other state and system settings. Researchers can also explore whether this analysis could be supported by data share agreements with external partners, allowing for an exploration of where and how segregation by major occurs even prior to entry to college.

Implications for Practice

This mixed methods case study uses multiple perspectives and analytic approaches to reveal how community college administrators, faculty, and staff, are using the guided pathways framework to point to structural changes required to better support students throughout the academic and career choice process. The findings of this study highlight practice areas that community colleges can continue to address as part of their commitment to ensure that more students are empowered to pursue academic and career passions that align with their interests, talents, and curiosities.

Choice strategies. The findings of this study support a domain of *Academic and Career Choice* that encompasses the socio-cognitive factors that students employ when making pathway

decisions with agency. Students' self-efficacy beliefs towards college are situated within this domain. While the quantitative findings of this study did not reveal students' self-efficacy to have a statistically significant relationship with early academic outcomes, the mixed strand of analysis did reveal differences in how students expressed their academic and career goals and navigated the academic and advising structures of the college by level of self-efficacy and decidedness about their program choice. Students also used employment and earnings information to strengthen their confidence in their choice of program. Their confidence in their choice was similarly rooted in the degree of knowledge they had about the steps needed to successfully transfer or the likelihood that their career choice would help them lead financially secure and fulfilling lives. As students spoke of their goals, they focused on short-term milestones needed to persist in their chosen pathway, while expressing the envisioned future that they hoped to achieve. Students' goals relative to engagement in their pathway were academic and non-academic in nature. The findings of this study support the idea that these constructs—self-efficacy, outcome expectations, and choice goals—operate together in ways that support students' expressions of agency over the academic and career choice process.

As community colleges increase the structures and supports offered to students through use of the guided pathways framework, there is an opportunity to consider how advisors and instructors within students' chosen pathways can support students' reflection in each area of the *Academic and Career Choice* domain. This may include inquiry into whether and how students experience connections to their program that are motivating, or whether they are in the process of figuring out their area of specialty within a broad programmatic area. Advisors and instructors within students' pathway can also guide students through short- and long-term goal setting exercises within their program area and in forming data-driven expectations about their

likelihood of achieving these goals. These conversations should also create space for students to identify barriers to the choice process, such as those identified by study participants. These include feelings of pressure and anxiety about the choice process itself, being redirected or nudged towards a different program path than the one initially envisioned upon entry to college, or navigating the curricular and psychological hurdles presented by the transfer process. By taking a proactive advising and support role in each of these areas, community colleges can better support students in navigating the structures and supports of the college with agency and ultimately, with success.

Faculty and staff that develop onboarding processes should also consider how to ask students about their feelings of decidedness about their pathway choice. This question can be built into initial advising meetings or administered through survey instruments, such as the one administered for the purposes of this study. Collecting information about students' confidence in their pathway choice at entry offers important insights that faculty and staff can use to better support students in successfully navigating the structures and supports of the college.

Tailored and targeted supports for students across a scale of decidedness. When focusing on students' decidedness about their program of study, a typology of students emerges. This typology is informed by the aspirational and curricular themes that emerged in the quadrant analysis presented in Chapter 7. Students who were relatively decided about their program choice were grouped in Quadrant I. Students who were still in the process of figuring out their program specialty within their chosen pathway were clustered in Quadrant II. Students who were relatively undecided about their program choice or who had chosen Liberal Arts as their pathway were grouped in Quadrants III and IV. The typology that emerged represents different categories

of decidedness that could be used by advisors and instructors to tailor and target support within students' chosen pathways.

Implicit within this tailored and targeted approach to advising is that advisors are embedded within pathways. Using information about students' decidedness about their pathway choice, advisors and program staff can create opportunities that span students' program timeline and address where they are in the choice process. For example, students who are in the process of identifying their area of specialty within a broad career area may benefit from applied learning opportunities or conversations with instructors or other individuals who hold experience in their area of interest. Students who are enrolled in general studies pathway may benefit from learning about program learning outcomes and how those connect to their personal backgrounds, interests, and aspirations. Approaching advising for general education students through a learning framework can help students gain confidence in their choice and identify ways to further explore their interests relative to key academic milestones and intended outcomes. Finally, students who are undecided or relatively unsure about their pathway choice may benefit from additional advising support. This should be done in a way that does not introduce stigma around students' lack of certainty, but rather provides resources and comfort around continuing the academic and career choice process across their first year in college. Community colleges seeking to develop tailored and targeted approaches to student advising within a pathways design may need to provide additional professional development opportunities to advisors. Like Momentum Community College (MCC), they may also need to invest in additional advising staff to ensure manageable and effective caseloads.

Community colleges using the guided pathways framework to redesign student advising can look to the examples offered by Walters State Community College, where advising staff

work directly with students within general education pathways to establish academic and career goals (Jenkins et al., 2018). In addition to goal setting, advising staff could support ongoing academic and career exploration for students who elect general studies majors; these supports should be offered to students at strategic program milestones including successful transfer or completion. Southern State Community College, Owens Community College, and Sinclair Community College in Ohio are recognized for targeting additional advising resources to students who are undecided about their academic and career path (Jenkins et al., 2017a). Practice examples and insights offered by these colleges and others may point the way for other community colleges applying the guided pathways framework to their own context.

Centering students' voices in any institutional change process. The potential of the guided pathways framework to support meaningful increases in student success comes in part from the intent of the framework to inspire institution-wide change. Reform at scale requires engagement from all parts of the college. Administrators, faculty, and staff must work together to redesign structures and supports that are consistent with those prescribed by the framework and appropriate to each institution's context. Guided pathways reforms also require meaningful investments in things like information system upgrades, faculty and staff development, convenings, and increased instructional costs to support curricular changes inspired by the framework (Jenkins et al., 2020). This sustained commitment and investment is intended to center and support students' success.

While students themselves may not be able to advise or provide input on all aspects of the redesign process, the academic and career choice process may be an area where students can reflect on where and how community colleges can better support them in making these pivotal choices. Students should be included in the redesign effort in ways that center their perspectives

and needs. Efforts should be made to ensure that students' diverse perspectives are offered, including those of student parents, students of color, and first-generation students among others. Building opportunities for student input into the redesign process—perhaps using elements of this study as a guide—can support equitable outcomes for students and a greater return on investment for institutions.

Conclusion

This study offers a new conceptual framework that can be used to center students' academic and career decision-making within institutional change processes informed by the guided pathways framework. This study benefits from an innovative research design that explores the interaction between the community college's curricular environment and student's socio-cognitive beliefs informed by their academic and career interests. Using survey, administrative, and interview data, I employed a mixed methods case study analysis of how students make academic and career choices in a guided pathways community college. This exploratory analysis charts the way for scholars who wish to explore how community colleges can better meet the diverse needs and interests of students through an academic and career choice process that is student-led and institution-guided. The findings present opportunities for further research into the role of the curricular environment on students' academic and career momentum. They also offer a framework for how advisors and other program staff can activate student agency in the academic and career choice process, while assessing whether and how students may need targeted or tailored support to increase confidence and certainty in their decision. Overall, the conceptual model offers a path forward for scholars and practitioners seeking to support students' academic and career success through continued engagement with the guided pathways framework.

Appendices

Appendix A: Student Survey

Introduction

This survey is about the beliefs, perceptions, and goals of students at *Momentum Community College*. Your responses will support research about students' academic experiences in the community college, and help MCC understand how to better address students' academic and career needs in college. All students enrolled in Seminar in Life Pathways in Fall 2019 will be invited to participate.

Taking part in this research project is voluntary. You do not have to participate and you may skip any question or exit the survey at any time. If you choose not to participate in the study, there will be no penalty to you. The researchers will keep the information collected about you for research purposes unless you ask us to delete it from our records. If the researchers have already used your information in a research analysis it will not be possible to remove your information.

[consent will be at the beginning of the survey]

Screening

1. What is your age as of your last birthday?

2. As of today, are you currently enrolled as a high school student, in addition to being enrolled in the community college?
   A. ◯ Yes
   B. ◯ No

Academic and career interests and goals

3. Students have many different plans for what they hope to achieve in college. Which of the following outcomes most accurately reflects your plans?
   A. ☐ I plan to earn a certificate that leads directly to a job.
   B. ☐ I plan to earn an associate degree and then move directly into a job.
   C. ☐ I plan to earn an associate degree and then transfer to a four-year institution.
   D. ☐ I do not plan to earn a degree.
   E. ☐ I prefer not to answer this question.

4. At this college, my chosen Pathway is
   A. ◯ Business and Computer Technology
   B. ◯ Health Sciences

C. ○ Human Services
D. ○ Liberal Arts
E. ○ Science, Engineering, and Mathematics
F. ○ Skilled Trades and Agriculture
G. ○ I haven't yet chosen a Pathway.
H. ○ I'm unsure what a Pathway is.
I. ○ I prefer not to answer this question.

5. Within my Pathway, my program of study is
[drop-down options are dependent upon respondents answer to question 9]

6. It is easy for me to choose a program of study.
   A. ○ Very easy
   B. ○ Somewhat easy
   C. ○ Neither easy nor difficult
   D. ○ Somewhat difficult
   E. ○ Very difficult
   F. ○ I prefer not to answer this question.

7. I plan to stay in this program of study throughout my time as a student at this college.
   A. ○ Yes, I plan to stay in this program of study.
   B. ○ No, I don't plan to stay in this program of study; I need to make a change.
   C. ○ I'm still deciding if I'll stay in this program of study.
   D. ○ I haven't yet chosen a program of study.
   E. ○ I prefer not to answer this question.

8. I am confident that my choice of program of study is right for me.
   A. ○ Very confident
   B. ○ Somewhat confident
   C. ○ Neither confident nor not confident
   D. ○ Not too confident
   E. ○ Not at all confident
   F. ○ I prefer not to answer this question.

9. My program of study aligns with my interests.
   A. ○ Strongly aligns
   B. ○ Somewhat aligns

C. ○ Neither aligns nor misaligns
D. ○ Somewhat misaligns
E. ○ I prefer not to answer this question.

We are interested in learning more about your personal beliefs and expectations for yourself as a student. Please indicate the extent to which you agree with the following statements:

Beliefs about college

10. I will be able to achieve most of the goals that I have set for myself.
    A. ○ Strongly agree
    B. ○ Somewhat agree
    C. ○ Neither agree nor disagree
    D. ○ Somewhat disagree
    E. ○ Strongly disagree
    F. ○ I prefer not to answer this question.

11. When facing difficult tasks, I am certain that I will accomplish them.
    A. ○ Strongly agree
    B. ○ Somewhat agree
    C. ○ Neither agree nor disagree
    D. ○ Somewhat disagree
    E. ○ Strongly disagree
    F. ○ I prefer not to answer this question.

12. In general, I think that I can obtain outcomes that are important to me.
    A. ○ Strongly agree
    B. ○ Somewhat agree
    C. ○ Neither agree nor disagree
    D. ○ Somewhat disagree
    E. ○ Strongly disagree
    F. ○ I prefer not to answer this question.

13. I believe I can succeed at most anything to which I set my mind.
    A. ○ Strongly agree
    B. ○ Somewhat agree
    C. ○ Neither agree nor disagree
    D. ○ Somewhat disagree

E. ○ Strongly disagree
F. ○ I prefer not to answer this question.

14. I will be able to successfully overcome many challenges.
    A. ○ Strongly agree
    B. ○ Somewhat agree
    C. ○ Neither agree nor disagree
    D. ○ Somewhat disagree
    E. ○ Strongly disagree
    F. ○ I prefer not to answer this question.

15. I am confident that I can perform effectively on many different tasks.
    A. ○ Strongly agree
    B. ○ Somewhat agree
    C. ○ Neither agree nor disagree
    D. ○ Somewhat disagree
    E. ○ Strongly disagree
    F. ○ I prefer not to answer this question.

16. Compared to other people, I can do most tasks very well.
    A. ○ Strongly agree
    B. ○ Somewhat agree
    C. ○ Neither agree nor disagree
    D. ○ Somewhat disagree
    E. ○ Strongly disagree
    F. ○ I prefer not to answer this question.

17. Even when things are tough, I can perform quite well.
    A. ○ Strongly agree
    B. ○ Somewhat agree
    C. ○ Neither agree nor disagree
    D. ○ Somewhat disagree
    E. ○ Strongly disagree
    F. ○ I prefer not to answer this question.

Here, we are interested in learning about your beliefs and expectations for yourself in math, since it is a common experience for students to take math courses as part of their pathway requirements. Please indicate the extent to which you agree with the following statements:

18. I can do an excellent job on math tests.
    A. ○ Strongly agree
    B. ○ Somewhat agree
    C. ○ Neither agree nor disagree
    D. ○ Somewhat disagree
    E. ○ Strongly disagree
    F. ○ I prefer not to answer this question.

19. I can understand difficult math textbooks.
    A. ○ Strongly agree
    B. ○ Somewhat agree
    C. ○ Neither agree nor disagree
    D. ○ Somewhat disagree
    E. ○ Strongly disagree
    F. ○ I prefer not to answer this question.

20. I can understand difficult math classes.
    A. ○ Strongly agree
    B. ○ Somewhat agree
    C. ○ Neither agree nor disagree
    D. ○ Somewhat disagree
    E. ○ Strongly disagree
    F. ○ I prefer not to answer this question.

21. I can do an excellent job on math assignments.
    A. ○ Strongly agree
    B. ○ Somewhat agree
    C. ○ Neither agree nor disagree
    D. ○ Somewhat disagree
    E. ○ Strongly disagree
    F. ○ I prefer not to answer this question.

22. I can learn new math class skills.
    A. ○ Strongly agree

B. ○ Somewhat agree
C. ○ Neither agree nor disagree
D. ○ Somewhat disagree
E. ○ Strongly disagree
F. ○ I prefer not to answer this question.

Perceptions of the community college

Based on your experiences in college so far, please indicate the extent to which you agree with the following statements:

23. The community college is designed to help me identify my academic goals and interests in my first semester enrolled in college.
    A. ○ Strongly agree
    B. ○ Somewhat agree
    C. ○ Neither agree nor disagree
    D. ○ Somewhat disagree
    E. ○ Strongly disagree

24. Navigators and staff in the community college help me to address barriers that could prevent me from making progress toward my goals.
    A. ○ Strongly agree
    B. ○ Somewhat agree
    C. ○ Neither agree nor disagree
    D. ○ Somewhat disagree
    E. ○ Strongly disagree
    F. ○ I haven't yet met with a Navigator.
    G. ○ I'm unsure what a Navigator is.

25. Faculty are available to me.
    A. ○ Strongly agree
    B. ○ Somewhat agree
    C. ○ Neither agree nor disagree
    D. ○ Somewhat disagree
    E. ○ Strongly disagree

26. Faculty provide academic support that helps me succeed.
    A. ○ Strongly agree

B. ○ Somewhat agree
C. ○ Neither agree nor disagree
D. ○ Somewhat disagree
E. ○ Strongly disagree

27. Faculty care about my personal needs.
F. ○ Strongly agree
G. ○ Somewhat agree
H. ○ Neither agree nor disagree
I. ○ Somewhat disagree
J. ○ Strongly disagree

Demographics and other personal characteristics

28. What is your sex?
A. ○ Female
B. ○ Male

29. Are you of Hispanic, Latino, or Spanish origin?
A. ○ No, I am not of Hispanic, Latino, or Spanish origin.
B. ○ Yes, I am Mexican, Mexican American, or Chicano.
C. ○ Yes, I am Puerto Rican.
D. ○ Yes, I am Cuban.
E. ○ Yes, I am another Hispanic, Latino, or Spanish origin.

30. What race or races do you consider yourself to be? Please select 1 or more of these categories:
A. ○ White
B. ○ Black or African American
C. ○ American Indian or Alaska Native
D. ○ Chinese
E. ○ Filipino
F. ○ Asian Indian
G. ○ Vietnamese
H. ○ Korean
I. ○ Japanese
J. ○ Native Hawaiian
K. ○ Somoan

L. ○ Chamorro
M. ○ Some other race

31. Do you live on campus?
    A. ○ Yes, I currently live on campus.
    B. ○ No, I commute to campus.

32. Have you taken any online classes at [Momentum] community college?
    A. ○ Yes, I am currently taking an online class at the college.
    B. ○ Yes, I have previously taken an online class at the college.
    C. ○ No, I have never taken an online class at the college.

33. On a 4 point scale, what was your cumulative high school GPA?
    A. ○ 4.00+
    B. ○ 3.00-3.99
    C. ○ 2.00-2.99
    D. ○ 1.00-1.99
    E. ○ 0.00-0.99

We thank you for your time spent taking this survey. Your response has been recorded.

Appendix B: Student Semi-Structured Interviews

RQ1: How do students develop their academic and career interests in the community college?

> RQ1a: Is there a relationship between students' self-efficacy beliefs and their knowledge of the academic and career options available to them in the community college?
>
> RQ1b: How do students relate their learning experiences in the community college to their self-efficacy beliefs and academic and career goals?

Questions will be informed in part by survey findings and specific to each subgroup of interest. The subgroups include students who report (1) high levels of self-efficacy and high commitment to intended program of study, (2) high levels of self-efficacy and low commitment to intended program of study, (3) low levels of self-efficacy and high commitment to intended program of study, and (4) low levels of self-efficacy and low commitment to intended program of study.

- *Start by giving student gift card and asking them to complete the receipt.*
- *Move into briefing – what the study is about*
    - *First, thanks so much for meeting with me today.*
    - *When you completed the survey, I shared a little bit about the purpose of the study. I am hoping to understand more about how students in Momentum Community College choose a program of study, how you feel about the process of choosing a program of study, and how those feeling influence the decisions you make.*
    - *In this conversation I'm hoping to learn a bit more about you. Specifically, a bit more about your background, your experiences at Momentum Community College, your perceptions of the college, and feeling about the choices you are making the support you are receiving from instructors, Navigators, or other important people in your life.*
- *Confidentiality*
    - *Everything you share with me will remain confidential. All findings shared will be anonymous so that information can never be used to identify you.*
    - *Our conversation will be recorded today to make sure I capture it as accurately as possible. Is that ok with you?*

1) *First, I'm hoping to learn a little bit about you, starting with before you first enrolled as a student at Momentum Community College.* Let's think back to five years before you enrolled at MCC. Could you tell me about yourself during that time, maybe sharing some things about your family, neighborhood, or school life?

2) How did you come to enroll as a student at MCC?

3) What is an example of a goal you have for yourself as a MCC student? *[wait for response]* Are there other examples of goals you hold that could share?

4) *In this next section I'm going to focus on your experience choosing a program of study. I'm hoping to get a sense of how knowledgeable you feel about the program options available to you, what information was helpful to you as you make your choice and learn about experiences that may have been helpful or challenging for you.* First, could you share with me the details of how you chose your program of study?

5) Could you describe for me the different program options that you considered or are maybe still considering?

6) What are examples of information that is important to you as you make your decision?

7) Could you describe an experience or interaction with someone that was particularly helpful as you were making your choice? How about one that was particularly challenging?

8) I'm hoping to get a sense of what it means to be a [program of study] student. In this term, can you describe a typical week for me, including classes you attend people you meet with on campus?

9) As a JC student, how would you describe your confidence in yourself? What is an experience you've had in one of your classes that has affected your confidence, either good or bad?

10) Thinking of what you've shared with me today about your life prior to MCC and as a student, where do you see yourself going in the future?

11) Is there anything else you would like to share?

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