ADDRESSING THE USE OF COACHING OF DEVELOPMENTAL EDUCATION STUDENTS TO INCREASE RETENTION RATES

by

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A dissertation submitted to Johns Hopkins University in conformity with the requirements for the degree of Doctor of Education.

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Abstract

Students selected for developmental education courses achieve lower than average completion rates within community colleges. Coaching programs that help these students navigate the college environment can improve student academic performance and retention. Using data from a coaching program at a mid-sized community college, this mixed-methods study of developmental education students in the program investigated the relationship between coaching, academic performance, self-efficacy, and retention. Student retention, term GPA, attempted versus completed credits, and perceptions of self-efficacy, goal-setting influence on retention were explored. Results of the Chi Square test revealed a significant difference between groups, in favor of the treatment group. While no significant difference was found between attempted versus completed credits or for GPA, students in the coaching program, overall, had higher GPAs than those who were in the control group. Students and coaches also held the perception that student self-efficacy increased, that goal setting was an important part of coaching, and finding students the right resources, active listening, asking powerful questions, and controlling for bias were helpful in building the coach-student relationship. New themes emerged that has implications for future research: (1) coaching influence on academic success markers such as GPA and credit accumulation; (2) coaching influence on grit, self-efficacy and self-advocacy and the elements of the coaching relationship that influence these factors; (3) coach characteristics, motivation and connection to student; (4) influence of coaching session length and frequency on students outcomes; (5) elements of coach training that influence outcomes; (6) benefits of the coaching relationship to the coach.

Dissertation Adviser: Dr. Wendy Drexler
# Signatures

## Dissertation Approval Form

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Executive Summary

According to the National Center for Education Statistics (2020), approximately 68% of community college students take at least one developmental education course within six years of initial admittance. Created to help students become college-ready, these courses in reading, writing, and mathematics provide the foundation for progressing to college-level coursework. Adelman (2006) notes that based on ACT results only 29% of students meet the reading and math benchmarks for college. As such, developmental education courses serve as a key element for getting students college ready. At the same time, students who take these courses finish their developmental education sequence at an average of 20% nationally (Complete College America, 2021). According to the Center for the Analysis of Postsecondary Readiness (CAPR), only 29% of developmental education students who start at a community college complete their associates or bachelor’s degree (CAPR, 2021). Consequently, more than 60% of students who start out in developmental education are delayed from or never achieve a college-level credential.

The cost of not completing a degree to students, their families, and their communities may be difficult to estimate, but several states have assessed their direct cost of developmental education as surpassing 100 million dollars annually (Gallard & Albritton, 2010; Kelly & Schneider, 2012; Martorell & McFarlin, 2011). The most recent national estimate puts the cost at about 1.3 billion dollars (Pretlow & Wathington, 2012). This admittedly costly problem has fueled much research and remains a significant problem in higher education. Within current practice, consultants have worked to help institutions resolve the challenges faced by students in developmental education courses but have struggled to accurately diagnose the problem because of the broad potential
drivers of the issue. Any analysis of the low completion rates for students in
developmental education must consider the entire learning ecosystem.

Student characteristics, parental support, instructor knowledge, institution
approach, and curriculum all play pivotal roles in perpetuating this significant problem. Through the lens of ecological systems theory, system-related factors within community
colleges should be explored to determine the barriers students face. Investigating the role
of faculty and administration in eliminating these barriers may provide a roadmap to
improving developmental education course pass rates. The lack of a cohesive system of
support for students in developmental education courses combined with their limited
academic skills, low self-efficacy, and lack of parental expertise (Achinstein et al., 2015;
Bahr, 2008; Cox, 2015; Martorell & McFarlin, 2011; Parker et al., 2010; Strayhorn,
2013; 2014) meaningfully contribute to their low completion rates. As an important
component of students’ microsystem (Bronfenbrenner, 1992; Neal & Neal, 2013),
institutions must provide students help to increase their skills as they navigate the
complexities of their college experience. As such, programs that help students navigate
the college environment serve as a viable solution for improving student degree
completion rates (Bettinger & Baker, 2014; Crisp & Cruz, 2010; Hodges, Payne, & Dietz,

These programs can take many forms, from courses dedicated to teaching students
how to be successful in college (Cho & Mechur Karp, 2013; Poarch, 2015; Wilmer,
2008) to coaching (Bettinger & Baker, 2011; Bland, 2003; Brigman & Campbell, 2003;
Sweeney, 2010). While several solutions show promise, coaching support has been
shown to increase persistence rates in students selected for developmental education
courses and provides a viable means for institutions to increase persistence rates for underprepared students (Gallard & Albritton, 2010; Kolenovic & Linderman, 2013; Scrivener, Weiss, Ratledge, & Rudd, 2015; Smith-Jaggars et al., 2014; Young & Ley, 2003; Zachry & Schneider, 2010). Students in developmental education courses can overcome the challenges they face with dedicated support focused on their persistence. Self-efficacy and grit provide a foundation that students can build on to help them meet their academic goals. Coaches can facilitate building these skills through goal setting and active monitoring of progress. By introducing goal-supported coaching to help students build self-efficacy and grit skills, institutions can help students create a more productive ecosystem for their academic success.

This study, conducted from March 2021 to April 2021 examined the influence of the coaching program on student retention and academic success markers for developmental education students. The study focused on exploring the difference in key academic markers for these developmental education students who attended a Mid-Atlantic Community College (MCC) between the fall 2019 to spring 2020 semesters and compared academic markers between the treatment and comparison groups over these two consecutive semesters. The analysis included data from 110 developmental education students who attended MCC in fall 2019; 55 of these students completed the coaching program and 55 did not.

With over 900 coaches active in academic settings today (Pisarik & Blankenship, 2019), the influence of coaching on retention remains a significant question for educators. This study found that students who were coached were more likely to progress academically than students who were not coached. While some studies have explored the
relationship between coaching and retention, currently there is a dearth of research about the influence of coaching on retention for developmental education students. This study fills a gap in current research and shows that coaching support increases retention for developmental education students. Beyond coaching influence on retention, it also suggests potential avenues for future research: (1) coaching influence on academic success markers such as GPA and credit accumulation; (2) coaching influence on grit, self-efficacy and self-advocacy and the elements of the coaching relationship that influence these factors; (3) coach characteristics, motivation and connection to student; (4) influence of coaching session length and frequency on students outcomes; (5) elements of coach training that influence outcomes; (6) benefits of the coaching relationship to the coach. With less than 50% of students completing their college education on time (NCES, 2021), coaching remains a viable option for practitioners looking to improve the retention rates for developmental education students in the college setting.
Chapter 1

Introduction of the Problem of Practice

According to the National Center for Education Statistics (2020), approximately 68% of community college students take at least one developmental education course within six years of initial admittance. Created to help students become college-ready, these courses in reading, writing, and mathematics provide the foundation for progressing to college-level coursework. Adelman (2006) notes that based on ACT results only 29% of students meet the reading and math benchmarks for college. As such, developmental education courses serve as a key element for getting students college ready. At the same time, students who take these courses finish their developmental education sequence at an average of 20% nationally (Complete College America, 2021). According to the Center for the Analysis of Postsecondary Readiness (CAPR), only 29% of developmental education students who start at a community college complete their associates or bachelor’s degree (CAPR, 2021). Consequently, more than 60% of students who start out in developmental education are delayed from or never achieve a college-level credential.

The cost of not completing a degree to students, their families, and their communities may be difficult to estimate, but several states have assessed their direct cost of developmental education as surpassing 100 million dollars annually (Gallard & Albritton, 2010; Kelly & Schneider, 2012; Martorell & McFarlin, 2011). The most recent national estimate puts the cost at about 1.3 billion dollars (Pretlow & Wathington, 2012). This admittedly costly problem has fueled much research and remains a significant problem in higher education. Within current practice, consultants have worked to help institutions resolve the challenges faced by students in developmental education courses
but have struggled to accurately diagnose the problem because of the broad potential drivers of the issue. Any analysis of the low completion rates for students in developmental education must consider the entire learning ecosystem.

Understanding the factors that have led to these low completion rates requires an exploration of the interaction of multiple elements that touch the student: schools, teachers, families, communities, and government policy. Bronfenbrenner’s (1992) ecological systems theory suggests that the individual’s interactions with these elements of her environment shapes her. While Bronfenbrenner (1992) saw the interaction of these parts of the environment as overlapping circles, Neal and Neal (2013) explore the idea that these areas of our human context remain more nested than networked. As such, the individual is at the center of the surrounding concentric circles of the system, and all parts of the system impact all elements of the individual’s life. While much research has been done in the area of developmental education (Bahr, 2008; Parker, 2020; Smith-Jaggers & Bickerstaff, 2018; Smith-Jaggars et al., 2014; Turk, 2021), most of that research has been focused on one or two or three aspects. Some researchers point to student-instructor interaction, others to the self-regulating habits of developmental education students, and some identify family support. Placing the student in the center and identifying several aspects that impact her ability to succeed, highlights the underlying causes and a potential intervention.

A review of current literature reveals that key contributing factors related to this issue stem from micro and macro level factors. At the micro level, ethnicity, socio-economic status, and generational status in college impact college readiness (Strayhorn, 2014). Also, significant gaps in student self-beliefs and self-efficacy further exacerbate
the issue (Achinstein, Curry, & Ogawa, 2015; Bahr, 2008; Cox, 2015; Martorell & McFarlin, 2011; Parker, Bustillos, & Behringer, 2010; Strayhorn, 2013; 2014). At the other end of the spectrum, instructors often lack the required teaching focus and training to support these students (Fike, 2009). At the macro level colleges lack the student-focused learning ecosystem needed to support developmental education students and the instructors who teach them. Beginning with student-level characteristics and building to explore more system-wide issues, this review of existing literature provides a guide to the root causes of low developmental education course completion rates.

Low completion rates for developmental courses, especially for low-income, first generation, African-American and Hispanic students, continues to be a significant issue facing community colleges today (Brickman, Alfaro, & Weimer, 2013; Jenkins & Rodriguez, 2013; Mokher & Park-Gaghan, 2020; Terenzini et al., 1996; VanOra, 2019). Community colleges, instructors, students, and communities have not been able to resolve this issue successfully. Without successful completion of these courses, students remain under-prepared for college and unable to advance to complete their degrees and begin the careers that help provide them a better life.

**Effects of Inequality in Education**

The impact of inequality in education on the college readiness for specific ethnic and socio-economic groups remains central to the issue of college readiness. Factors within the macrosystem, exosystem, mesosystem, and microsystem (Bronfenbrenner, 1992; Neal & Neal, 2013) have contributed to the challenges many groups face as they navigate their lives. African-American, Hispanic, and American-Indian students experience bias and inequality in the education system (Bravo, 2020; Downey et al.,
2004; Gamoran & Long, 2007), and these unequal inputs have led to unequal outputs. Downey, et al. (2004), for example, found that, within the school year, African American students experienced more significant reading gap increases compared to their White counterparts. Gamoran and Long (2006), writing almost 40 years after the Coleman report, noted that inequality in education remains a fundamental issue today. Not surprisingly, first-generation, low socioeconomic status, African-American and Hispanic students are most frequently categorized as under-prepared for college (Adelman, 2004; An, 2013; Chen & Carroll, 2005; Crisp & Delgado, 2014; Strayhorn, 2014). These subgroups of students are less likely to go to college, and then, once in college, are less likely to complete their credential (Strayhorn, 2014; Mokher & Park-Gaghan, 2021). The preponderance of these students in developmental education courses should be noted in any discussion of the available literature because issues of racism and classism pervade our society and bleed into our school system. These system-wide challenges contribute to the over-representation of the main sub-groups in developmental education courses. Students in these sub-groups are not uniform in their characteristics, and these characteristics provide insight into the challenges they face in successfully completing their developmental education sequencing.

**Student Characteristics**

At the core of the ecosystem, the individual developmental education student encounters significant barriers to completing their education due to factors in the microsystem related to family, community and schools (Bronfenbrenner, 1992; Neal & Neal, 2013).
Limited Knowledge of College Systems

To navigate the college environment, students need a basic understanding of higher education. While middle-income families tend to possess this knowledge (Bailey et al., 2005; Benken et al., 2015; Lareau, 2015;), low-income students often struggle because of their lack of knowledge in this critical area. In a 20-year study of middle-income and low-income families, Lareau (2011) found that low-income students often lack the cultural knowledge to navigate the college environment successfully. Beginning in 1990, Lareau conducted a multidimensional study that included observations of 31 children in elementary school classrooms and interviews with their parents. She continued to observe them over the course of 20 years, checking in with them finally in 2014. In an update to her original report Lareau (2015) provides insight into three student stories: two working-class students (Tara Carroll and Nick Evans) and one middle-class student (Stacey Marshall). Tara and Stacey’s stories demonstrate the challenges of limited knowledge of college systems most closely. She notes that while Stacey made several mistakes in her medical college career, under the guidance of her mother, roadblocks represented opportunities to find new pathways through the system. In the end, though Stacey did not go to medical school, she eventually earned a Ph.D. in education (Lareau, 2015). In many ways, Tara had a similar experience to Stacey in her first year of college. She struggled to keep the 75% average she needed for her nursing program, but when she missed it by a few points, she accepted the school's decision to remove her from the program. Unlike Stacey, who just changed her focus from medical school to education, Tara continued to struggle towards a nursing degree and acquired significant debt. Tara often noted to the author that she felt uncomfortable and out of
place during her time in college. Tara also did not seem aware that she could reach out to her instructors for help. Like Tara, Nick was from a low-income background, but he found a mentor during high school who stayed with him through college to help him navigate through challenges he faced. This mentor helped him identify when he needed help and advocate for himself during his college career (Lareau, 2015).

Other researchers have arrived at similar findings. Bachman (2013) found that low-income students were typically uncomfortable asking for help as they viewed developmental education and sometimes even attending college as something shameful. Part of the discomfort these students experience likely stems from a college culture that seems to marginalize them. Urciuoli (2014) found that students who are not considered the ideal student can often feel marginalized in the university setting. Overall, these findings suggest that low-income developmental education students may not persist because of the inability to understand and fully connect with their college experience.

First generation students tend to also be low-income students (Chen & Carroll, 2005; Crisp & Taggart, 2013; Parker, et al., 2014; Strayhorn, 2014). For example, in Lareau's (2015) study, Stacey's parents were college graduates while Tara's parents had not completed high school. Moreover, first-generation students do not exhibit the requisite academic behaviors that engender success (Strayhorn, 2014). Drawing data from the Education Longitudinal Study (2002), Strayhorn (2014) explored predictors of college readiness for 15,000 students across 750 high schools. Strayhorn, director of the Center for Higher Education Enterprise at Ohio State University, identified high school GPA, 12th grade NAEP standardized mathematics scores, and 12th grade highest mathematics level as principal measures of college readiness. As seen in much of the
research currently available on college readiness (An, 2013; Bailey, 2009; Crisp & Delgado, 2014), Strayhorn concluded that under-represented students finish high school less prepared for college than non-minority and high-SES students. Moreover, first-generation students performed worse than their peers on all tests reviewed. Similar to Lareau (2015), Strayhorn found that low-SES and minority students expressed that they felt unprepared for college more than their counterparts. Strayhorn identified this lack of confidence in their preparation level as a primary challenge for these students.

**Lack of College Success Skills**

Beyond limited confidence, students in developmental education courses also have gaps in college success skills. Students who lack study skills, college system expertise, grit, self-efficacy, and self-regulatory behaviors persist at lower rates than students who possess these skills (Deil-Amen & Rosenbaum, 2002; Di Tommaso, 2010; Lareau, 2015; Moore, 2007; Strayhorn, 2013; 2014; Terenzini et al., 1996). Drawing on interviews with 22 students, Barbatis (2010) sought to understand the mindset of developmental education students who had been included in a learning community at an urban community college. The sample included six graduates, 12 persisters, and four dropouts. Barbatis (2010) identified three types of elements that impacted student performance. Students who entered college with a sense of responsibility, had a sense of their ethnic self and faith, and were goal-oriented, resourceful, and determined, persisted at the highest rates.

Arguably, much of the research on student characteristics is qualitative in nature, and so each study has limited generalizability. At the same time, the findings of these individual studies closely align, suggesting that they are reflective of overarching trends
and patterns. Deil-Amen (2002), Bachman (2013), Abate-Vaughn (2009), and Moss (2014) for example, all interviewed students to explore their approach to their academic life, and all came to the conclusion that developmental education students lacked understanding of how to navigate the physical college environment, were often unaware of the expectations of their professors, failed to request help from their instructors, and often failed to recognize the impact of their decisions on their goal of graduation. These factors suggest that these students lack strong self-efficacy, self-advocacy, and grit. Self-efficacy refers to an individual’s belief that they can influence their outcomes (Bandura, 1977). Self-advocacy refers to an individual's ability to present their viewpoint to improve their results (Daly-Cano et al., 2015). Grit or perseverance refers to an individual’s urge to continue to strive toward goals, despite trying circumstances (Duckworth et al., 2007). Gaps in these areas serve as significant barriers to success for students.

Studies completed by Strayhorn (2014), Moore (2007) and Bettinger (2014) broaden support for the conclusion that developmental education students struggle to bridge gaps in key skill areas. Findings from these quantitative studies confirmed that women, African American, Hispanic, Native American, first generation and low-income students had less self-efficacy and grit when compared to their peers. From a sample of 524 first year developmental students, 68 non-developmental education students, and 29 honors students at the General College at the Twin Cities campus of the University of Minnesota, Moore (2007) gauged metacognitive skills, resilience, time management abilities, and self-regulatory skills to determine the elements that could indicate students require an academic intervention. Moore (2007) used the Motivated Strategies for
Learning Questionnaire (MSLQ) and Rotter Scale Questionnaire (RSQ) to determine whether students possessed the identified skills and found that overall developmental education students scored lower on all identified measures than their counterparts. Given that the sample of developmental education students Moore (2007) captured was considerably larger than the sample of the regularly admitted and honors students, the findings may be more generalizable for developmental education students as than it is for regularly admitted or honor students. Still, this study underscores the lack of key college-success skills in developmental education students.

Using the Collegiate Assessment of Academic Proficiency (CAAP), Terenzini et al. (1996) reviewed survey results for 3,840 students from the National Study of Student Learning (NSSL). They analyzed responses to questions related to student background, college goals, their approach to learning and academic outcomes. The initial survey, CAAP, captured responses during the first semester of the students’ college experience and the second, NSSL, captured results one academic year later. Based on a conceptual model that included elements of triadic reciprocality, where student outcomes are thought to be the result of the interaction of coursework, environment, pre-college skills, and classroom experience, Terenzini et al. (1996) attempted to identify how these elements differ for first generation students. The authors reviewed survey results from the NSSL and concluded that, when compared to other students, first-generation low-income students experienced challenges with critical thinking skills, ambitions, family support, and peer and teacher networks. Further, limited self-efficacy and self-regulatory skills repress the ability of these students to succeed in their developmental courses and their college career as a whole.
Parent Support and Knowledge

Low self-efficacy does not represent the only challenge these students face. These students’ weak academic success skills may stem from challenges parents/families may have in providing support and guidance. The microsystem includes interactions with parents and families (Bronfenbrenner, 1992; Neal & Neal, 2013). Factors such as relationships with friends and parents play a significant role in student outcomes (Barbatis, 2010). Parents of first-generation students often lack the level of understanding of higher education needed to help their children work through the complexities of their academic path (Lareau, 2015; Mangual-Figueroa, 2011). These students struggle to find mentorship and guidance from their parents and this lack of support deters their ability to progress academically (Di Tommaso, 2010). Lareau (2015) provides very convincing examples of how parents impact the ability of students to effectively manage their college career. Her most poignant example comes from two students who faced challenges in the first semester of college. While Stacey's mother intervened and gave her clear direction that allowed her to re-bound, Tara's mom who had not completed high school could not provide the same guidance. In addition to a lack of understanding of college and financial parental support, students also struggle to access academic advice and coaching; this in turn negatively impacts student ability to persist through challenges in their college careers (Achinstein et al., 2015; Calcagno et al., 2008; Chen & Carroll, 2005; Di Tommaso, 2010; G. Li, 2003; Mangual-Figueroa, 2011; Strayhorn, 2014).

Parental first-hand experience and therefore understanding of college provides a necessary foundation for families to know how to help their students. Without this knowledge, parents struggle to support their children. Mangual-Figueora (2011)
conducted a 23-month study of Mexican families of differing immigration statuses. Through a close analysis of the homework routines of two undocumented Mexican households, Mangual Figueroa (2011) found that parents and students alike did not understand the triggers to improve their success in the education system. For example, in the first family, the son had poor citizenship (behavioral) grades in school. Neither he nor his mother could quite tell what this meant. Finally, the young boy stated: "I don't go on the citizenship line" (Mangual Figueroa, 2011, p. 270). To him, citizenship meant that he was an outsider wherever he went. In the second family, the mother noted that her son has several D grades. Despite having the same number of D grades as the last time, her son insisted that he was improving. His mother insisted he would fail the class, and, like most undocumented immigrants, he would end up washing toilets. She acknowledged that without doing his homework he would not achieve his success, but she did not know how to help him accomplish his homework task. This helplessness in the face of student challenges leads to inaction, especially when the student’s cultural background is not taken into consideration.

Achinstein et al. (2015) suggest that parents and students must find a safe place to learn how to learn the necessary skills for college success. Using data from Urban College Academy (UCA) as a focused case study, Achinstein et al. (2015) explored the outcomes of a relabeling program for Latino students at a high school in California. The practice involves discrediting negative Latino images, affirming Latino culture while providing tools for navigating majority culture, and encouraging improved academic behaviors in students. Achinstein (2015) found that while 44% of UCA students did not persist in their education at UCA, 93% of students in the program graduated and went on
to enroll in college. Achinstein et al. (2015) found that the principal complication of this program lay in tension between the balance of acquiring majority cultural understanding while maintaining a high Latino cultural identity. A key component of the program involved educating not just students but parents on the importance of certain academic behaviors. As parents’ knowledge increased, student academic behavior and self-efficacy improved. Closely linked to improved self-efficacy, student ambition rises, given appropriate mentorship (Di Tommaso, 2010). Improved parental knowledge should come with increased ability to mentor and guide students (Achinstein et al., 2015). Without these factors, students struggle to meet their academic goals.

**Instructor Role and Training**

Given the lack of core learning competencies among developmental education students, it stands to reason instructors have a significant gap to overcome in the classroom. Instructors, as key actors in the microsystem (Bronfenbrenner, 1992; Neal & Neal, 2013), play a fundamental role in student success. In a study focused on assessing instructional quality for students in developmental algebra courses, Chingos (2016) found that student completion varied based on several instructor factors, including education, full-time status, and experience. Bahr (2008) analyzed data from 190,777 students across 107 Californian community colleges and found that academic intervention by instructors served to improve student success outcomes for developmental education students. At the same time, instructors often do not have the requisite training or even focus on helping students bridge that gap (Fike, 2009; Jenkins & Rodriguez, 2013; Young & Ley, 2003). In a study of two expert development education teachers in the classroom, Young and Ley (2003) sought to understand how instructors can support the improvement student
self-efficacy skills. The researchers logged 758 classroom interfaces in developmental mathematics and study skills courses and noted that the mathematics instructors had 62 missed opportunities to encourage student self-efficacy, while study skills instructors had 88 missed opportunities. Young and Ley (2003) defined those opportunities where students displayed some level of self-efficacy. As such, Young and Ley concluded that though some reinforcement of self-regulatory behavior occurred, instructors did not include this as an integral and formal part of their interactions with students. Admittedly, the small sample size and the qualitative nature of the study demand replication to understand the generalizability of the findings further. Still, these results suggest that instructors may not be focused on addressing behaviors of developmental students. Since developmental education students often have limited metacognitive skills (Noble et al., 2015; Strayhorn, 2014), teacher interactions should likely include some focus with guiding students towards building these skills. Without supports to bolster these weaknesses, student success can be challenged, and persistence rates can falter.

Part of the challenge lies in the role of the college professor in American higher education. With much of the focus on research rather than teaching in four-year colleges, instructors are not incentivized to prioritize teaching (Meyer, 2012). This lack of focus on teaching may explain the lack of motivation for instructors to obtain teaching credentials and advanced teacher training to support student learning outcomes. Moreover, it remains unclear whether professors see their role as part coach and advisor (Fike, 2009; Galbraith & James, 2004). Fike (2009) surveyed interest in pursuing developmental education degree programs among developmental education instructors in the community college setting. Though 89% of 614 developmental education teachers surveyed indicated that
obtaining a credential in developmental education would help them better support their students, only 23% indicated interest in receiving a graduate degree in this area. Overall, only 33% of the 614 instructors surveyed had a master's degree or higher in any discipline. The lack of graduate education in developmental education coupled with the limited interest of professors to pursue further training suggests that instructors do not view skill-building as an essential element of their role. This is especially troubling given that targeted academic support through customized instruction, tutoring, and academic advising plays a critical role in developmental education outcomes (Bahr, 2008; Bremer et al., 2013; Calcagno et al., 2008; Gallard & Albritton, 2010).

More knowledgeable faculty seems directly related to better outcomes for students. Based on student-specific data from the National Education Longitudinal Study of 1988 and school-level data from the Integrated Postsecondary Education Data System (IPEDS), Calcagno et al. (2008) found that institutions that serve large numbers of minority and disadvantaged students and have a high proportion of part-time faculty also have lower completion rates for students. The authors, all researchers at the Community College Research Center at Columbia University, used descriptive statistics to compare characteristics of institutions and students to determine the institutional factors that positively and negatively impacted student outcomes. Positive results were defined as any degree or certificate obtained or transferred to a 4-year college within six years of admission. Student characteristics such as race, gender, age, and socio-economic status were assessed for 2,196 students. These factors were then compared to institution characteristics, including faculty education and resourcing. Student to instructor ratio as well as instructor level of education significantly impacted student learning outcomes. In
the end, community colleges with large numbers of part-time faculty, who were often not as formally educated as full-time faculty, typically had lower student success rates than their peers. As such, lack of adequate instructor support represents a critical contributing factor related to student underperformance.

**Role of High School and College Curriculum**

Beyond the characteristics of students, the level of parental support, the level of instructor expertise, and the institutional resources, the content of developmental education warrants further review. High schools play an important role in preparing students for college in the students’ microsystem (Bronfenbrenner, 1992; Neal & Neal, 2013). Some researchers highlight the lack of agreement and synergy between what is considered college-ready in high school and what colleges see as college ready (An, 2013; Cox, 2015; Hoyt & Sorensen, 2001). Drawing on data from the Education Longitudinal Study (2002), Strayhorn (2014) explored predictors of college readiness for 15,000 students across 750 high schools. Strayhorn, the director of the Center for Higher Education Enterprise at Ohio State University, identified high school GPA, 12th grade NAEP standardized math scores, and 12th grade highest math level as principal measures of college readiness and used independent sample t-tests and ANOVA to complete his analysis. Strayhorn (2014) found that high schools did not adequately prepare underrepresented groups in our society. He noted that despite having completed high school, less than 50% of students met the college readiness standards of their college of choice. Hoyt and Sorensen (2001) reviewed data from entering freshman at an urban state college and found that despite having taken and successfully passed college level mathematics and English in high school, 50% of students were placed into developmental
mathematics and 30% were placed into developmental English. The authors captured academic preparation of 3,765 entering freshmen from two high school districts. Hoyt and Sorensen (2001) identified students' highest level of English and mathematics and compared the results of their COMPASS or ACT exams. Using logistic regression analysis, the authors evaluated several other variables to determine the impact on placement, including gender and ethnicity. Although results did indicate that students who took college-level mathematics and English in high school had higher ACT and COMPASS scores compared to students who did not take these courses; ultimately, half of these students placed in developmental mathematics and one-third placed in developmental English. Hoyt and Sorensen (2001) concluded that more collaboration or synergy between local high schools and colleges in mathematics and English curricula. Also, they posit that intervention may be most useful in middle school when the foundation for high school begins, instead of delaying efforts until high school. This lack of synergy between the level of high school college preparation and the college readiness standards set by institutions of higher learning decreases student likelihood to achieve college readiness by their first semester of college.

Hoyt and Sorenson (2001) and Strayhorn (2014) used standardized tests as part of their core research methodology even though standardized testing has not proven entirely successful in placing students in developmental education (James, 2006; Pinkerton, 2010). Using binary logistic regression analysis, Pinkerton (2010) sought to identify student outcomes of those either placed in or out of developmental education by a slim margin. Drawing from the Standard Error Measurement of the reading portion of the COMPASS test, Pinkerton analyzed data from one Texas community college and found
that students could be grouped into three categories: students who were not placed into developmental education reading courses, students who completed developmental education, and students who did not persist in their developmental education course sequence (three courses were optional). Results indicated that for students who completed developmental reading courses later continued at higher rates than students who had not been placed in developmental education or had opted out of completing their reading developmental education courses. This study suggests that additional research on how placement tests are administered is required. The single cut-off number does not take into account the complexity of determining how ready a student is for college work and remains a flawed predictor of student readiness. Placement of students in the appropriate developmental sequence directly impacts their willingness and ability to complete their developmental education sequence on time (Scott-Clayton & Rodriguez, 2014).

Once a student begins developmental education coursework the classes often have little connection to their program of study and their life overall (Calcagno et al., 2007; Smith-Jaggars et al., 2014). When more traditional modes of instruction are substituted with accelerated, applied-learning approaches, student results do improve (Hodara & Jaggars-Smith, 2014). Smith-Jaggers et al. (2014) reviewed the accelerated programs at three community colleges and found that the contextualized nature of the curriculum led to pass rates that were at times 28% above the traditional developmental education programs. In this study, Smith-Jaggers et al. (2014) observed three accelerated learning programs: FastStart Mathematics at the Community College of Denver, Reading/Writing Acceleration at Chabot College, and ALP (accelerated learning) at Community College of Baltimore County. FastStart combined two of the developmental courses per semester.
Students had longer blocks of time for lecture because the courses were still three credits each. At Chabot, the two developmental education English courses are combined into one semester and the credits reduced from eight to four. The course focused on helping students practice the same kinds of assignments they would have in college-level English. Instead of teaching all aspects of grammar, the course focused on grammar needed to complete a given college-level exercise. At the Community College of Baltimore County, students who tested into the highest level of developmental writing were co-enrolled in a college-level English 101 course and co-enrolled in a particular ALP section of developmental writing taught by the same instructor. Since the idea is to surround the ALP students with college-ready writing students as well, the ratio of ALP to English 101 students had to remain small. Only eight ALP students were allowed to enroll in the English 101 course. Similar to FastTrack, the ALP course focused on providing skills to ensure success on English 101 assignments. The authors note that it remains unclear if it was the accelerated curriculum or the applied approach that resulted in better academic outcomes, although they suggest the applied approach had an impact (Smith-Jaggers et al., 2014). Still, it is likely that the applied approach impacted the outcomes for these students.

Using propensity score matching to determine the sole impact of ALP while accounting for any confounding variables, the authors found that over a 3-year period FastStart students were 11 percentage points more likely to complete college-level mathematics than their peers; Chabot students were 17% more likely to complete college-level English and ALP students were 28% more likely to complete college-level English (Hodara & Jaggars, 2014). The authors theorize that this is because of the layers of
support for faculty and students that were available within the programs. Even when formal mechanisms did not exist, student services advisors tended to provide additional guidance to these students. They concluded that accelerated models should be paired with academic and affective supports to ensure the highest levels of achievement. Moreover, since students self-selected into these courses based on whether they thought they could “handle” the courses, some consideration should be given to the bias of the samples reviewed. It is hard to explore course content without connecting back to the role of the instructor. Indeed, it must be noted that both FastTrack and the ALP program provide faculty professional development. FastTrack students are also assigned a case manager who advises them on time requirements and monitors them throughout the program. These programs include elements of constructivist and situated learning theory as a framework. Students are pushed to lead the learning experience, and their questions are often mirrored back to them to help them construct their learning experience in the most applied format possible. As such, any discussion of course content must be linked to the role of the instructor and level of training (Fike, 2009).

Cox (2015) of Simon Fraser University, set out to understand how teaching and learning occur in the developmental classroom with the goal of understanding the impact on student outcomes. Using teacher interviews, curriculum material, and classroom observations in six classrooms across two urban community colleges, Cox (2015) explored the inner workings of teaching developmental mathematics. Each college approached developmental mathematics in a specific manner. At College A, students were required to pair the developmental mathematics courses with developmental English or first-year experience course, with either a counselor or peer tutor assigned to each
cohort. Students were placed in new lab facilities and instructors were given instruction on the technology available. The program did not include formal collaboration across instructors as it related to curriculum re-design and instructors improved their approach based on experience. College X involved an innovative math curriculum; courses were taught outside of the college’s mathematics department and faculty. The two professors involved collaborated on the design of a mathematics course that included a co-created guidebook for classroom activities and testing. As with College A, students had to pair the course with developmental English or a student success course, and instructional support was provided to the student in the form of advisers focused on the unique approach to the mathematics course. Ultimately, pass rates for the courses in College X ranged from 76% to 90% whereas pass rates in College A ranged from 50% to 70%. Overall, students in College X were more likely to move ahead through developmental mathematics. The small sample size and the qualitative nature of the study, indicate that results cannot be generalized to all developmental education students. At the same time, Cox’s findings speak to the impact of course content, instructor approach, and structure on student outcomes.

In addition to the content and structure of developmental education courses, enrollment pathways and milestones have proven key to student persistence. Many students fail to complete their developmental courses in the sequence recommended and often lack a clear understanding of how these courses fit into their career goals (Bahr, 2008; Bailey, 2009; Cho & Mechur Karp, 2013). To determine the impact of postponing beginning developmental education courses past the first semester, Fike and Fike (2012) reviewed the grade point averages of 3,476 first time in college (FTIC) students at a
private urban southwestern university. Of these students, 25% did not require developmental mathematics at first enrollment. Of the 75% of students who needed some level of developmental education, 33% enrolled in the first semester, and 42% deferred admission to the university. Using multiple regression analysis, the authors were able to connect fall grade point average and first-semester mathematics status. Students who took developmental mathematics in their first semester maintained a higher GPA than students who delayed taking developmental mathematics. This finding suggests that mathematics skills may serve as an important variable in impacting student progression. According to the National Center for Education Statistics (2015), many students are still taking their developmental education courses well into their sixth year of college. This delay negatively impacts student outcomes in developmental education coursework and may explain low completion rates for these courses.

Beyond academic skills, underprepared students may struggle with the social and intellectual challenges associated with managing their college career (Wilson & Lowry, 2016). In a study of one pathways program that involved the collaboration of a two-year institution and a four-year institution, Wilson and Lowry (2016) found that by providing a summer bridge program to underprepared students that focused on building academic, social and intellectual skills, grades and reported self-confidence improved.

**Institutional Approach and Resources**

Given that institutions control factors like course sequencing and instructor performance, it is worth considering whether institutions themselves impact completion rates. Decisions on what courses students are offered are often be made at the institutional level, and the role of instructors has been molded by the institutions they
serve (Meyer & Evans, 2003). As schools focus more on the research element of the professorship, less investment may be placed on teaching students (Meyer, 2012; Meyer & Evans, 2003; Raab & Adam, 2005). Though community colleges are less concerned about research, instructor advancement is often linked to teaching load, longevity, and professional development, not to student performance (Fugate & Amey, 2016; Jacoby, 2006). At the same time, developmental education courses can increase a student’s required credits for graduation by up to 24 credits. It is possible that the incremental tuition revenue from these courses may serve as a motivator to place students in these classes and, as such, increase revenue per student. Moreover, in about 15 states, public funding is tied to the number of enrolled students and not to the number of students who complete their programs of study (Hillman, 2020). Arguably, institutions are highly motivated to increase enrollments but may not be as motivated to ensure completions. Though 35 states have moved to funding community colleges based on the number of completions, other states focus on enrollments in calculating funding. Despite the relevant nature of these issues, little research is available on the economic motivators of colleges as it relates to developmental education. It is even harder to show through rigorous academic study how these institutional factors impact student completion rates in developmental education sequences.

What does seem clear is that investment in enabling services serves to improve student persistence (Bremer et al., 2013). Through an examination of data from three community colleges in three separate states, Bremer et al., (2013) found two major institutional factors that played a role in developmental education outcomes: financial aid and tutoring. Calcagno et al. (2008) found that investing in full-time faculty increased
students’ likelihood of achievement. Also, investment in targeted tutoring served to increase developmental education student pass rates by 16%, based on findings from one Florida college (Gallard & Albritton, 2010). Both Bahr (2008) and Bettinger (2013) found that academic advising and coaching served to improve student results significantly. Still investment in these areas remains difficult (Gallard & Albritton, 2010), especially for schools with largest populations of developmental education students (Calcagno et al., 2008). In some cases, these investments can also take the form of technology, an area often under-resourced in many community colleges (Martirosyan, et al., 2016). For example, based on an analysis of survey data from 70 faculty members across two and four-year colleges in Texas, Martirosyan et al. (2016) found that when technology could further support the learning in developmental education courses, faculty were often under-trained, and students were not given the right supports to use the technology.

In addition to the lack of investment in support services for students, the lack of robust student success courses prior to beginning developmental education courses may have a substantial impact on student outcomes in developmental education courses. Cho and Mechur Karp (2013), from the Community College Research Center at Columbia University, investigated the influence of student success courses in first-year credit accrual as well as persistence to the second year. The sample included 14,807 students who were enrolled in a student success course in the Virginia Community College System. Of these students, 62% were also enrolled in developmental education courses at the same time. Logistic regression analyses revealed that students in student success courses acquired 10% more credits than their counterparts and were 6% more likely to
persist to their second year. Moreover, students in developmental mathematics education courses saw increased likelihood of college credit achievement in their first year of college. The results of this study indicate that there is a strong need for these types of courses, especially in high-risk populations such as developmental education students (Cho & Mechur Karp, 2013). The lack of mandatory student success courses on college campuses may partially explain lowered persistence rates.

**Conclusion**

While low developmental education completion continues to challenge higher education, focusing on central issues may help resolve this socially and economically costly issue. Student characteristics, parental support, instructor knowledge, institution approach, and curriculum all play pivotal roles in perpetuating this significant problem. Through the lens of ecological systems theory (Bronfenbrenner, 1992; Neal & Neal, 2013), system-related factors within community colleges should be explored to determine the barriers students face. Investigating the role of faculty and administration in eliminating these barriers may provide a roadmap to improving developmental education course pass rates.
Chapter 2

Needs Assessment Study

The needs assessment study explored the processes and systems at two community colleges to map the student journey from application to graduation. At each community college, interviews with admissions, financial aid, student accounts, academic advising, and faculty revealed the details for each step of the student lifecycle with a focus on identifying gaps in processes that may lead to student attrition. Last, data from the customer relationship management system, application system, and student information system showed the points in the student funnel where attrition was the highest.

Research Design

Given the explorative nature of the needs assessment and the in-depth nature of the data required, a qualitative approach using case studies was used to address the research questions for the study. Two institutions were selected based on availability within the student researcher’s current practice: both schools were exploring a possible partnership with For Profit Organization (FPO) to improve their enrollment and completion numbers. The case study approach allowed for a full exploration of the system at each school so that underlying factors could be uncovered.

Context of Study

The study focused on assessing two two-year public institutions for their ability to support the completion needs of students. As the lead consultant at FPO, the investigator led the assessment of the completion challenges at each of these institutions. FPO does not allow for full disclosure of the instruments used in the study, as such, there are
limitations to sharing all the questions asked in interviews and focus groups. Information included in this chapter has been approved for distribution by FPO leadership. No additional information has been approved at this time.

The first institution was Urban Community College (UCC). UCC provides technical credentials, general education programs, experiential and cooperative education, and workforce development to students in a major city. UCC’s student population includes approximately 11,000 students, and 83% of the student population assessed requires developmental education coursework. All entering students take a placement exam prior to enrollment to determine their level of preparation for college-level courses in reading, writing, and mathematics. Depending on their scores on the placement examinations, students may take up to six developmental education courses, with two required for each category. Community colleges measure on-time graduation as graduating within three years of starting at the college. The average three-year graduation rates stand at 28%. UCC is based in a large urban environment and 42% of students do not identify as Caucasian.

Based in a small rural community, the second community college, Rural Community College (RCC) enrolls 3,200 students. As with UCC, students are required to take a placement test prior to enrollment, and the result of this test determines the need for developmental education courses. RCC also includes reading, writing, and mathematics courses, with up to two courses in reading and writing, and three courses in mathematics. Average three-year graduation rate for students stands at 56%. About 11% of RCC’s students require developmental education courses.

Method and Procedure
This needs analysis provides a guide to the root causes of low developmental education course completion rates within the college system in the United States, with a particular focus on two community colleges. Since the learning ecosystem within colleges plays an integral role in the student’s progression, this needs assessment addresses three primary questions about the college environment:

RQ1: What systems-related factors exist within institutions that hinder student success in developmental education courses?

RQ2: What systems-related factors exist within institutions that support student success in developmental education courses?

RQ3: How do faculty and administration engage in solving challenges for developmental education students?

Participants

To capture the full student lifecycle, participants from both case studies included representatives across all major functions at each college. Participants were invited by their school leadership to participate based on their availability. UCC had a staff of approximately 300, but at the time of the study it was hard to determine the total number of full-time staff due to on-going labor challenges. Forty faculty and staff participated in the study. Of these 40 faculty and staff, 25 were women and 15 were men. Of all participants, eight had achieved their doctoral credential at the time of the study. RCC staff included 140 full-time administrators and faculty and a varying number of part-time staff. More than two-thirds of instructors were full-time. Of the 140 staff members, 27 participated in the study; five had a doctoral-level education, and all had at least a master's degree. Fourteen of the participants were female, and 13 were male.
Participants were full-time employees for each function of the individual departments within the colleges. These units included: human resources, finance, financial aid, student accounts, veteran's affairs, academic advising, developmental education, distance learning, dual enrollment, academic faculty, institutional effectiveness, admissions, marketing, registrar, learning center and information technology.

**Measures**

Focus groups and semi-structured interviews were used to meet the goals and objectives of the study. Focus groups questions explored the processes and systems-level support provided by the functions within each college. Follow-up interviews sought to further investigate major themes raised in the focus groups. An analysis of data on retention and completion was used to triangulate the results of the focus groups and interviews. Due to variance in definitions for major constructs across colleges, this study sought to use standard definitions to allow for comparisons across colleges. Appendix A includes definitions and sources of data for each of the key variables analyzed. Of note,
the terms developmental education and remedial education are used interchangeably in the research, and among participants. For this study, the term developmental education is the main term used. Appendix A provides indicators and definitions of the terms used.

**Procedure**

The procedure used included three major phases, beginning with initial virtual interviews with key executives at the institutions, followed by on-campus focus groups and interviews with support staff and students on campus, and ending with a presentation to campus stakeholders to gather feedback and validate themes found.

**Data Collection.** Focus groups and interviews were conducted virtually and face to face over a two-month period to ascertain key support gaps for students within these colleges. As such, all departments that impact the student life cycle were included in these discussions. Both institutions requested these studies as a means of helping them understand and address the service gaps within their respective institutions.

**Phase One.** Each study began with virtual interviews with senior executives at each college. Initial discussions focused on five key themes:

- review of the approach and processes associated with the study;
- key motivators for completing the study;
- current organizational structure of the college;
- participants for on-campus focus group and interviews;
- objectives of the needs assessment.

In addition to these initial questions, data on the student funnel over three years separated by developmental and non-developmental education students were requested. The student funnel may be defined as the data stream that captures the movement of
prospective students from interest to graduation. This provides a measure of student progress from inquiry to graduation and provides a view into the level of student at each stage. This information included:

- applications to the institution;
- number of students who took the placement exam;
- number of students who placed in each level of developmental education;
- number of students who did not place into developmental education;
- number of students who enrolled at the college at each level of developmental education;
- number of students who enrolled in non-developmental education courses;
- number of students who persisted from fall to spring of a given enrollment period by level if developmental education;
- number of students retained fall to fall of an enrollment period by level of developmental education;
- number of students who graduated or transferred to a four-year college within three years of initial enrollment.

**Phase Two:** The second phase of the study involved an on-campus visit of two or more days, where interviews and focus groups were conducted with faculty and administration. On the first day of the on-campus visit, the study process was shared with all participants, and initial questions were addressed. Once this step was complete, the on-campus event began with a focus group, which ranged from two to three hours in length. This focus group included unstructured questions, based on soliciting information on current processes within the institution. During the focus group, participant
information was used to draw a map on a whiteboard. Any unanswered questions were marked for later review during the interviews. Since FPO has not granted permission to disclose the full interview protocol, a sampling of the questions included in the focus groups is provided below:

1. How do prospective students’ express interest in the college? Do they use email, phone, any other methods?
2. Once the prospective student inquires, who communicates with the student?
3. Is this communication documented electronically?
4. Who tracks this information?

Once focus group activities concluded, the second step included interviews with human resources, finance, financial aid, student accounts, veteran's affairs, academic advising, developmental education, distance learning, dual enrollment, academic faculty, institutional effectiveness, admissions, marketing, registrar, learning center and information technology. Though these individuals were included in the focus group, they were also included in interviews by department to allow for more in-depth discussion. Per FPO requirements, only some of the questions asked during these interviews are provided below:

1. How many people make up your department?
2. How many communicate with prospective and current students?
3. Based on the discussions in the earlier focus group, you indicated that [insert focus group finding], can you provide additional detail on the reasons for this?
4. What systems do you use to capture student information?
**Phase Three:** At the conclusion of the on-campus event, all data from the student funnel, focus groups, and interviews were summarized and presented to the institution. Also, data from the National Center for Education Statistics (NCES), National Survey of Student Engagement (NSSE), and the Community College Survey of Student Engagement (CCSEE) were compared to findings from these interviews and focus groups. Major themes were outlined, and gaps in the processes supporting students were identified. For this needs assessment, data were coded using Microsoft Word. Notes from interviews and focus groups were documented in detail: participant feedback was captured verbatim as much as possible, with summarizing statements included when the pace of response increased. Where possible, respondents were asked to repeat statements not clearly heard, especially if multiple participants were speaking. Notes were compiled and reviewed at the end of each day to determine if follow-up clarification was needed and were divided into categories by department area: faculty, admissions, registrar, financial aid, student accounts, developmental education, advising, technology, dual enrollment, library, and student support services. Since bookstore information was only available for one of the schools reviewed, bookstore notes were excluded from the final data set. Once records were compiled, a complete read-through was conducted in an open coding exercise before identification of any categories. During this time, memos were taken to explore potential categories and themes. Notes were then placed into a table format, with one column dedicated to coding all information based on common themes. After completing the coding exercise, notes were sorted by common themes identified in the memos. Central themes were highlighted and synthesized.

**Results**
The Student Funnel

UCC’s current student funnel showed noteworthy losses from inquiry to graduation. Based on the data gathered there are two substantial fallouts of the student funnel. The first occurs after the online application is submitted: only 28% of applicants go on to complete the admission process within the recruitment period. The second occurs within the developmental education sub-funnel. This sub-funnel captures all students who completed their placement test, which students were required to take developmental education courses, and which students enrolled in developmental education courses in their first year. Table 2.3 captures the funnel data for both UCC and RCC. Based on the early fall 2010 cohort, full-time students who tested into developmental education had an overall 3-year graduation rate of 16%, with students required to take the entire suite of six developmental education courses having three-year graduation rates as low as 6%. Students who did not take developmental education courses had a 3-year graduation rate of 41%. At RCC findings were substantially different. No data existed on the number of student inquiries initiated or on the number of students who took the placement exam. Of the applicants accepted for a given year, only 46% of admitted applicants enroll in the semester admitted. Though it is unclear to what extent the placement exam contributed to this decline in the funnel, it may be inferred that the test itself presented a hurdle to the student. Full-time students had an overall 3-year graduation rate of 22%, and though 3-year graduation percentages differed for developmental education versus non-developmental education students, this difference was substantially smaller than UCC’s. At RCC, developmental student 3-year graduation rates stood at 42%, though students in the lowest reading courses complete at 3%. Non-
developmental education students have a 3-year completion rate of 58%. Overall, developmental education student 3-year completion rates remain lower than non-development education students at both schools. This low rate is consistent with results from the National Center for Education Statistics (NCES) Beginning Postsecondary Students Longitudinal Studies (BPS) which found that 24.8% of developmental education students complete attaining their degree in five years (2008).

Table 2.2

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<thead>
<tr>
<th>Student Funnel Area</th>
<th>UCC</th>
<th>RCC</th>
<th>NCES</th>
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<tbody>
<tr>
<td>Begin Application to Completed Application</td>
<td>65%</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Completed Application to Enrolled in Courses</td>
<td>28%</td>
<td>46%</td>
<td></td>
</tr>
<tr>
<td>3-year graduation rate</td>
<td>16%</td>
<td>42%</td>
<td></td>
</tr>
<tr>
<td>(developmental education students)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-year graduation rate</td>
<td>41%</td>
<td>58%</td>
<td>11.4%</td>
</tr>
<tr>
<td>(non-development education students)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5-year graduation rate</td>
<td>N/A</td>
<td>N/A</td>
<td>24.8%</td>
</tr>
<tr>
<td>(developmental education students)</td>
<td></td>
<td></td>
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</tr>
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</table>

System Challenges

Based on interviews, focus groups, and observations of administrators, three key themes emerged during coding: the fragmented nature of student support, lack of clear goals from administration at the institution, and inadequate use of data in decision-making by administration at both institutions.
**Student Support Service Challenges.** Based on interviews with the admissions team, financial aid, student accounts, registrar, and advising from both colleges, strong informal relationships exist with these closely connected departments. As the Director of Financial Aid at UCC stated “we get along well here. We are always talking [the Director of Student Accounts] and I” (Liane¹, interview, October 23, 2014). At UCC, the financial aid and student accounts teams often had to troubleshoot student challenges together and work to resolve technological challenges that impacted student financial matters. At RCC, the smaller size of the institution and the proximity in work environments led to a sense of closeness among the team. The president of RCC noted in interviews “we are a tight knit team” (Edward, interview, September 15, 2015). At the same time, more formal means of providing real-time feedback to each other was not available and so they had not formally documented collaborative processes around prospective and current students. For example, one member of the academic advising team at UCC reported that students regularly indicated that they “do not know how much the test will impact them when they take it” (Shay, interview, October 23, 2014), so they did not study or prepare. Despite having to interact with the admissions team as part of the application process, these students still failed to get this information because the advising team had not documented the need for the admissions team to share this information early in the process. At RCC, the academic advising team shared that financial constraints meant that they had only two full-time academic advisors and one part-time academic advisor to support 3,200 students. This meant that they could not ensure that all students received

¹ All names referenced are pseudonyms
much-needed academic advising. One of the advisors at RCC noted that “the line of
students would be around the office to see an advisor at the beginning of the semester”
and “we work a lot after hours to help our students” (Jackson, interview, September 16,
2015).

At UCC, students who required developmental education sequences when starting
their college program were labeled as ‘pre-admit’ students, whereas students who tested
out of developmental education were labeled as ‘full-admit’ students. While the ‘pre-
admit’ advisors are trained in intrusive advising and currently support about 80% of the
student population, these ‘pre-admit’ advisors only worked with students until they
completed their developmental sequence. ‘Pre-admit’ advisors were considered supports
only for developmental education students, and, upon completion of their developmental
education sequence, students were placed with a ‘full-admit’ advisor. Students in this
‘pre-admit’ category were limited in the courses they could take, since most college-level
courses required completion of the developmental education sequence they had been
placed into. This meant that students in this status were primarily enrolled in
developmental education courses in their first year.

The Director of Academic Advising at UCC could not provide any data to clarify
how many students are supported by the advising center and how many choose not to use
its resources. There are also no data on how students who use the advising center have
performed versus those who do not. ‘Full admit’ advisors may or may not have training
in intrusive advising, which is a framework that requires monitoring of student progress
and proactively initiating contact with the student to provide support. These advisors
were all current faculty members. This group supports 20% of students. As with ‘pre-
admit’ advisors, very little data exists on how many students are supported, how they are supported and how processes can be improved. In contrast to UCC, RCC did not separate their advisors by developmental education versus non-development education students. Students were considered fully admitted at acceptance, despite the level of developmental education needed. To improve persistence from the first to the second semester, RCC instituted mandatory advising for incoming freshmen who had a 2.5 or lower GPA. While this was a new initiative and they only had one year of data, advisors stated that their results had been positive. They were not able to quantify the level of improvement because the student information system could not output all incoming freshmen who had a 2.5 GPA. The admissions team had manually selected the students for advising in the previous year and no data were added to the student information system as part of this process. UCC and RCC's differing approach to admitting developmental education students remain an interesting area of difference. Bachman (2012) found that developmental education students might feel a sense of stigma associated with the designation. Several members of the focus group and individuals in interviews pre-admit advisors were called ‘downstairs advisors’ while full admit advisors were called ‘upstairs advisors.’ UCC's labels of ‘pre-admit’ versus ‘full admit’ and ‘downstairs’ versus ‘upstairs’ the provision of separate academic advising services for these students may underscore the stigma for these students.

Since about 80% of the students are placed in the ‘pre-admit’ category at UCC at the time of entry, most students must transition from their initial advisor to their academic division advisor within their major of choice during their tenure at UCC. Currently, pre-admit advisors inform students of this, but there is no formal hand-off of
the student to their full admit advisor. This is further impaired by the fact that while pre-admit advisors are required to use a customer relationship management system (CRM), full admit advisors are not obligated to use this system. Both advising teams are part of the Advising Council which meets during each semester to discuss overarching advising issues. Still, the difference in how advisors are trained, the limited use of the CRM amongst the full admit advisors, and the lack of a warm hand-off between advisors could lead to a very jarring transition for students.

Though RCC did not segment advising groups, departmental silos were evident across both colleges. Faculty and staff shared on several occasions that the lack of clear cross-department goals and an inadequate use of data remained the issue. Interestingly, faculty and staff felt that their processes were student-centered. At the same time, once their processes were mapped on the whiteboard during focus groups, the team acknowledged that several processes at both schools “worked against students” (RCC team, focus group, September 15, 2015). One strong example of this is evidenced by how the placement test was administered at both RCC and UCC. There was no comprehensive cross-department strategy to ensure that applicants were aware of how the test was used, were provided adequate preparation to take the test, nor was there a process to advise them proactively after the test. The marketing teams did not minimize test anxiety with appropriate language on the website, the admissions teams did not employ any specific measures to guide students toward the placement test boot camp or preparation courses, and the advising team did not have a calling strategy to ensure students had clear guidance on the impact of the test on their college career. Though test preparation practices often have small impact on test scores (Ryan et al., 1998; Briggs, 2012), these
small gains can decrease the number of developmental education courses students need to take. Further, Klem et al. (2004) note that building connections with students early in their engagement can lead to stronger levels of academic achievement, including improved test scores.

Challenges with student support service areas within RCC and UCC present a potential cause for lower completion rates for developmental education students. Data from the NCES, NSEE, and CCSSE identify the impact of institutional factors on student outcomes. These studies reveal that enabling services such as financial aid, career counseling, academic advising and childcare most acutely affect student persistence. Data from the 2015 CCSSE study reveal that 60% of developmental education students provide care to a dependent during their time as students with approximately 22% provide more than 30 hours of care a week (CCSSE, 2015). Fifty percent of developmental education students also indicated that college-provided childcare remains relevant to them, with 22% noting it as paramount. More than half indicated that peer or other tutoring and skills were instrumental to their college experience. Ultimately, financial aid advising rates stood out as the most important factor overall: 70% of developmental education students stated it remains fundamental to their success (CCSSE, 2015). This is supported by data from the NSSE (2015), which captured that 60% of students indicated that they were worried about financial challenges. The student stress about financial matters showed a high correlation with the degree of education of the student's parents: students whose parents did not have a bachelor's degree scored three to nine points higher on the stress scale than students whose parents had completed a bachelor's degree or greater (NSSE, 2015).
Clarity of System-Wide Quantifiable Goals and Objectives. Although both schools had overarching strategic initiatives and executive leadership presented a stated enrollment goal for each semester, there are no quantifiable department-level goals that supported student retention rates. For example, though UCC had been required to provide a clear completion agenda targeted at developmental education students, one year after its creation, each department was still unclear as to how they would contribute to the achievement of this plan. The Dean of Arts and Science at UCC shared that though they were proud to have come together as a college to build the completion agenda, it had not been costed or resourced, so they did not know how to execute on it. The Executive Vice President at UCC took it one step further and shared "we have a lot of great ideas…but we are not good at execution here" (Tianna, interview, October 23, 2014). At RCC their completion strategies were haphazard, with each faculty member pursuing their ideas as to how to improve student outcomes. For example, some of the developmental mathematics faculty had started using an alternative developmental mathematics teaching model, while some of the English instructors were trying a co-requisite model. Other instructors would send their students to the writing center if they started falling behind. Though some of these ideas met with improved student completion rates, they were not adopted outside of these faculty member classrooms because there was no system in place to measure and share results and apply best practices to other courses. The net effect is that the path toward accomplishing improved student outcomes for developmental education students remained haphazard.

Efficient use of Data. In addition to a lack of clear goals, both institutions failed to leverage data to guide decision-making. This is not to say that both schools did not
collect data. Due to the efforts of UCC’s and RCC’s Information Technology Team and the Research and Institutional Effectiveness departments data surrounding their student funnels was provided to the lead investigator. The data were divided into each admission and enrollment step students undertook to determine what steps led to the most significant student loss. For example, the number of students who applied to the institution was compared to the number of students who took the placement test, and the number who took the placement test was compared to the number who started classes. This review of data informed which elements of the admission and enrollment process needed further evaluation. During interviews with departments, it became clear that despite the challenges with enrollment and completion, this scrutiny of the student pipeline had not been completed before. Most college staff were unaware of what data existed, how data were being used or even how to verify the accuracy of the data they were collecting. At UCC, the Director of Financial Aid noted that data is not always collected before implementing new ideas because “we don’t have the money” (Lianne, interview, October 23, 2014) This presented a challenge for her when UCC experimented with a six-term year instead of a four-term year. This change required modifications to the student information system that had not been enacted due to financial and human resource constraints. As such, processing financial aid became a challenge for her team. Since 60% of students use financial aid at UCC, the inability to receive assistance in time to start school could conceivably prevent a student from beginning or continuing in a given semester. These challenges with using data to guide decision-making suggest that both colleges will have difficulty identifying the programs, processes, and policies will best support students and ensure stronger completion rates.
Conclusion

UCC and RCC both demonstrated a systemic lack of cohesive student support services structures, limited use of data to guide decisions, and a lack of clear goals. The lack of a cohesive system of support for students in developmental education courses combined with their limited academic skills, low self-efficacy, and lack of parental expertise (Achinstein et al., 2015; Bahr, 2008; Cox, 2015; Martorell & McFarlin, 2011; Parker et al., 2010; Strayhorn, 2013; 2014) meaningfully contribute to their low completion rates. As an important component of students’ microsystem (Bronfenbrenner, 1992; Neal & Neal, 2013), institutions must provide students help to increase their skills as they navigate the complexities of their college experience.
Chapter 3

Students placed in developmental education courses begin their college experience challenged to navigate the college environment due to limited academic success skills (Pusey-Reid et al., 2021; Strayhorn, 2014; Uretsky et al., 2019; Yadusky et al., 2020). To progress to their credential of choice, these students may require a combination of academic advising (Bahr, 2008; Gallard & Albritton, 2010; Jenkins & Rodriguez, 2013; Groh, 2016; Hatch & Garcia, 2017), embedded tutoring (Bachman, 2013; Perin, 2010; Russ, 2017; Vick & Robles-Piña, 2015), or career pathway mapping (Bettinger & Baker, 2014; Bremer et al., 2013; Calcagno et al., 2008b; Chung et al., 2021) to successfully progress to their desired college credential.

Further compounding the problem, these students and their parents often lack the knowledge of school systems to understand and advocate for their needs (Achinstein et al., 2015; Figueroa, 2011; Hodara et al., 2018; Lareau, 2003, 2015; Natow et al., 2019; Park et al., 2017; Yadusky et al., 2020). Moreover, based on the needs assessment results provided in chapter two, institutions are challenged by inherent issues with providing cohesive student supports, limited ability to analyze data, and often have unclear goals related to student completion. These institutional and student factors combined, serve to limit academic success for developmental education students. Programs that help students navigate the college environment serve as a viable solution for improving student completion rates (Armour, 2021; Bettinger & Baker, 2014; Crisp & Cruz, 2010; Cruz et al., 2021; Dalton & Crosby, 2014; Hodges, Payne, & Dietz, 2014; Pechac & Slantcheva-Durst, 2021; Warner et al., 2018).
These programs can take many forms, from courses dedicated to teaching students how to be successful in college (Hamann et al., 2021; Hatch & Bohlig, 2015; Hatch-Tocaimaza et al., 2020; Hesser & Gregory, 2016) to more individualized interventions where college staff serve as guides and mentors to students in formal coaching programs (Alzen et al., 2021; Capstick et al., 2019; Grabsch et al., 2020; Groh, 2016; Rodriguez Ott et al., 2020).

**Coaching Background and Framework**

In 2019, the Coaching in Higher Education Consortium (CHEC) estimated that there were about 938 coaching programs in the United States across some 874 colleges and universities, with the most common nomenclature for these coaches being ‘academic coach’ or ‘success coach’ (Pisarik & Blankenship, 2019). CHEC defined coaching as building relationships with students to increase their “agency, self-understanding, growth, effectiveness, and persistence within the realm of education” (Pisarik & Blankenship, 2019, pp 20). These coaches are different from academic advisor or tutors. Their focus is the whole student in the context of the academic setting. As such, they act as mentors and guides to students to help them navigate their college career as they build their ability to persist.

Over the last decade, the success of mentorship and sponsorship programs in improving academic outcomes has increased the popularity of coaching programs (Barnett, 1995; Crisp & Cruz, 2010; Galbraith & James, 2010; Hodges et al., 2014). In an academic setting, the coaching relationship typically has the goal of improving the student’s academic outcomes, but the relationship serves to help the student in and outside of the school context (Alzen et al., 2021; Capstick et al., 2019; Sepulveda et al.,
Coaching can manifest in different ways, but at the core, it ensures students have consistent contact with someone who provides guidance on how to make progress toward his or her academic goals. Coaches can serve as role models to guide students toward attitudes and behaviors that ultimately improve student persistence. To build this relationship, coaches rely on techniques such as active listening and questioning they seek to better understand the student and create connection (Lubin, 2013; Weger et al., 2014). This sense of connection is further facilitated by dialogue that is student-led, supportive, and judgement-free (Parker et al., 2011).

Coaches also need to have strong knowledge of the college resources available to students on campus. In a study of 15 community colleges in the mid-west using a coaching program, Pechac and Slantcheva-Durst (2021) found that the most common topics discussed in coaching sessions were referrals to campus resources, academic planning, and goal setting. Based on current research, most coaching programs feature these elements (Alzen et al., 2021; Armour, 2021; Groh, 2016; Sepulveda et al., 2019).

In terms of length, and frequency of coaching sessions, some new studies have been done to determine the optimal length and number of coaching sessions for a given year. Alzen et al. (2021) found a positive but weak correlation between number of coaching sessions and retention and concluded the six sessions per semester seemed optimal. Rodriguez Ott, et al. (2020) determined that two sessions a semester were enough to yield positive results on retention. On the other hand, in perhaps the largest coaching study to date, Abt Associates (2015) found that coaches typically had 4 to 12 coaching sessions a year and spent 25 to 45 minutes in each session.

**Coaching Support and Student Behavior**
Despite the plethora of coaching programs, empirical research on its influence on academic outcomes is limited. Much of the research available focuses on student perceptions of the influence of coaching on their behavior and their lives. Hodges et al. (2014) reviewed data from two mentoring programs for students in developmental mathematics at a Texas community college: an on-campus mentoring program and an eSponsor program for students. Both programs were mentorship programs, with the modality being the primary difference between the programs: one was on-campus and other (eSponsor) allowed for virtual mentoring. Students in the eSponsor program were offered an eSponsor to help them with questions and concerns or serve as a guide in their college experience. Students were called protègés and matched based on similarities in characteristics to their eSponsor. Students reported increased confidence in their ability to navigate their college environment irrespective of modality (Hodges et al., 2014). Central to their experience was the fact that their mentors helped them advocate for their college needs and helped them learn to interact more effectively with their professors. For developmental education students, these were essential elements of mentorship. Programs that allow students to see role models they can pattern their behaviors after could provide the needed support for students to build strong self-advocacy skills. While tutors, academic advisors, and coaches can become mentors to students over time, offering students the option to have someone outside of their college context to share challenges and model their behaviors represents an essential component for some developmental education students. As Lareau (2015), Bachman (2013), and Urciuoli (2014) point out, academically struggling students have difficulty finding a sense of belonging in school. Mentorship can help students feel more connected in their college environment, and by so
doing, increase their willingness to engage with faculty and staff when they encounter difficulties.

Hodges et al.’s (2014) findings also connect to Di Tomaso’s (2010) work with developmental students. Drawing on classroom observations and interviews with four faculty members and 20 students from diverse backgrounds, Di Tommaso (2010), used a socio-cultural model to explore non-cognitive variables that impact developmental education student outcomes. Students were asked to explain factors that influenced their learning journey and built their academic confidence. Elements described by students could be grouped in categories: situational factors such as financial challenges and campus facilities and socio-affective factors which included a sense of self-worth and ambition. Ultimately, students who had role models described the impact based on socio-affective factors and indicated that they had increased self-confidence and self-direction. The authors concluded that interventions for at-risk students should include a deeper understanding of factors that build confidence, such as mentorship. Admittedly, DiTommaso’s small sample size and the qualitative nature of the study indicate that results cannot be generalized to all students in developmental education courses. Still, her in-depth discussions with these students shine a light on the benefits of role models in empowering students.

Role models may be especially crucial for low-income first-generation students since these students often lack the expert parental support to help them navigate their education (Crisp & Nora, 2009; Lareau, 2015; Strayhorn, 2014). Using data from Urban College Academy (UCA) as a focused case study, Achinstein et al. (2015) explored the outcomes to relabeling Latino students and what complications may exist for such
programs. Achinstein et al. (2015) selected UCA using snowball sampling based on location, re-labeling program, and state funding. Relabeling involved re-socializing students who would not be considered college-destined as college-bound. The practice involves discrediting negative Latino images, affirming Latino culture while providing tools for navigating majority culture, weaving Latino culture and family to support student effort, and developing improved academic behaviors in students. Researchers conducted interviews, focus groups, and observations of students, parents, and teachers included in the program. Of the students who completed the program, 93% went on to enroll in college. It must be noted that 44% of students did not complete the program. Nonetheless, given that none of these students were considered college-bound, the fact that more than half went on to college is promising. Interestingly, Achinstein et al. (2015) found that the principal complication of this program lay in tension between the balance of acquiring a new cultural understanding while maintaining a high Latino cultural identity. Lareau (2015) noted a similar challenge. She studied blue-collar and middle-income families over the course of 20 years and found that when blue-collar students succeeded, they noted a sense of loss for some of their culture, even as they adopted white-collar values. Coaches who support underrepresented students should understand that this tension may arise for students and should remain open to dialogue with students on this subject.

**Coaching and Grit Skills**

Beyond improvements in advocacy behavior, coaching can also impact grit levels for students. Grit refers to students’ ability to keep working towards their goals despite the barriers and challenges that present themselves (Duckworth et al., 2007; Duckworth
& Quinn, 2009). Sometimes referred to as coping skills, grit skills have been linked to student ability to persist; students with higher levels of grit persist at higher rates than those with lower levels of grit (Devonport & Lane, 2006; Duckworth et al., 2007; Klem & Connell, 2004; Strayhorn, 2013). As such, coaching support should include a focus on building this ability by helping students overcome barriers. In cases where coaches reinforce grit behavior, significant persistence gains are often made. While some research has shown the link between athletic coaching and grit (Braun, 2021; Scharneck, 2017; Tedesqui & Young, 2019), little research has been done to determine the influence of coaching on academic grit levels. At the same time, a few studies have served to draw a direct link between coaching and grit levels in students.

In a randomized experiment where student coaching was applied to the experimental group (8,049 students) and not applied to the control group (5,506 students), Bettinger and Baker (2014) found that students who had a coach persisted at higher rates than students who did not. Moreover, even after they no longer had a coach, students in the experimental group continued to do better than students in the control group. Bettinger and Baker (2014) studied the work of InsideTrack, a for-profit coaching service that focused on improving student retention by helping them overcome both academic and non-academic challenges. Both the treatment and control groups represented balanced samples, with no significant differences in demographic characteristics. Student persistence and retention were tracked at six months, 12 months, 18 months, and 24 months. Completion rates for degrees for both groups were also assessed to determine progress. Retention rates for the treatment groups increased by 9% to 12%, and this increase held even after students had stopped undergoing coaching. At
24 months, retention rates for the treatment group were 15% higher than the control group. Bettinger and Baker (2014) noted that the key to the success of the InsideTrack coaching effort was the counseling element that coaches used. Counseling involved guiding students through barriers related to their academic progress and directing them to appropriate resources. Providing this guidance to students with lower levels of grit can help them successfully overcome challenges, and, by so doing, increase their levels of grit.

Often underprepared students need strong perseverance abilities because their barriers may be more challenging than their peers (An, 2013; Bailey, 2009; Crisp & Delgado, 2014). African-American, Hispanic and Native American students are typically overrepresented in developmental education courses, and these groups experience bias and inequality in the school system to a greater extent than other groups (Downey et al., 2004; Gamoran & Long, 2007). Strayhorn (2014) concluded that under-represented students finish high school less prepared for college than non-minority and high-SES students. Given these factors, the support provided by coaches can be critical. InsideTrack’s coaches’ ability to counteract barriers by counseling students through barriers can be extended to help students build their grit, self-efficacy, and advocacy skills to overcome these obstacles. While most schools offer some form of student support, very few opportunities exist for students to have these supports provided as principal to their college path. Typically, students are provided these supports only if they reach out proactively for help or are labeled as failing. In the first case, the complexity of navigating the college structure can be prohibitive when they do seek help. In the second case, by the time they have been placed on academic probation it is often too late to
improve outcomes. Coaches can bridge this gap with active monitoring and specific feedback points for students.

In a more focused study, Strayhorn (2014) set out to answer two principal questions: (a) How does grit impact Black male college performance? and (b) After controlling for specific variables, does grit add predictive validity for student performance? Drawing on a sample of 140 Black full-time male students at a predominantly White public institution, Strayhorn measured their grit level using the Short Grit Scale developed by Duckworth et al. (2009) and had students self-report grades. To ensure that non-racial variables did not confound the results, Strayhorn controlled for age, year in school, international status, athlete status, transfer status, fraternity membership, educational aspirations, American College Test (ACT) score, and self-reported high school grade point average. Using bivariate correlations, the author found that Black males with higher levels of grit had higher grades in college, higher grades in high school and higher ACT scores. This heightened academic achievement was the case even after accounting for other variables. Most important, Strayhorn (2014) found that levels of grit were highly responsive to institution efforts; academic advisers and school counselors focused on training student on the consistency of effort instead of talent saw improved grit levels in participants. This improvement in grit due to institution intervention aligns closely with findings by Bettinger and Baker (2011) and Duckworth (2009): if coaches actively target student grit levels by focusing on consistent effort, student grit levels will improve.
Coaching and Self-Efficacy

Closely related to grit is the concept of self-efficacy. Self-efficacy refers to how much an individual believes in her ability to impact outcomes (Bandura, 1977). Bandura and Cervone (1983) found that setting clear goals and providing ongoing feedback can increase self-efficacy and Margolis and Maccabe (2016) note that reinforcing goal-oriented behavior can increase student self-efficacy over time. Self-efficacy has been linked to student success and several studies have shown that building these skills improves persistence rates in students (Köseoglu, 2015; Moore, 2007; Ross, 1992; Scherbaum et al., 2006; Wernersbach, Crowley, Bates, Rosenthal, Carol, 2014).

One example of this comes from City University of New York’s (CUNY) Accelerated Study in Associate Programs (ASAP), Kolenovic and Linderman (2013) found that providing students with financial help, embedded tutoring, accelerated courses, academic advising, and monitoring as part of their developmental sequencing doubled graduation rates. The ASAP program required students to complete all elements of the intervention, and they received on-going monitoring to ensure they completed all necessary activities. Students were held accountable by the program leaders to their goals and were provided additional support if they experienced difficulty meeting the requirements of the program. Overall, student credit accrual rate, transfer rate, speed to graduation, and eventual graduation rate increased significantly. Using regression analysis, Kolenovic and Linderman (2013) identified academic advising as core to success, with supporting services likes tutoring and financial help as complements. The ASAP program allowed students to have an individualized support plan that included academic and non-academic help (Kolenovic & Linderman, 2013; Scrivener et al., 2015).
Academic advisers functioned much like coaches, helping students remain focused on the actions needed to reach their end goal. Admittedly, Kolenovic and Linderman (2013) did not measure self-efficacy, but the structure of the program included opportunities to reinforce behaviors that helped them to achieve goals.

Smith-Jaggers et al. (2014) also investigated CUNY’s ASAP program, along with two other accelerated learning programs and aligned with Kolenovic and Linderman (2013) in their findings. Smith-Jaggers et al. (2014) concluded that accelerated models should be paired with academic and affective supports to ensure the highest levels of achievement. The two additional accelerated programs mirrored many of the aspects of CUNY’s ASAP program: FastStart Mathematics at the Community College of Denver, Reading/Writing Acceleration at Chabot College and ALP (accelerated learning) at Community College of Baltimore County. As with the ASAP program at CUNY, FastStart students were also assigned someone who monitored them throughout the program and advised them on managing their college experience. Results from Smith-Jaggers et al. (2014) study indicated graduation rates up to 28% higher than students who were not in the program. Beyond providing wrap-around student supports ASAP, ALP, and FastStart also modified the manner of instructing students significantly. Operating from a constructivist (Ertmer & Newby, 2008) approach, instructors were trained to support student-led learning to build student self-efficacy. Instruction involved student-led problem-solving, with a primary focus on connecting teaching material to student backgrounds and building strong instructor and student networks (Booth et al., 2014; Kolenovic & Linderman, 2013; Smith-Jaggars et al., 2014). These instructional practices mirrored coaching support that encouraged students to practice their self-efficacy, grit,
and self-advocacy skills. By placing the student at the center of the learning and coaching experience, these programs pushed students to acknowledge their ability to solve the challenges they faced in their academic and non-academic college experiences.

Moreover, coaching can improve student perception of self (Abdulla, 2017; Wilson & Lowry, 2016). In a study of 23 students who participated in a pathways program to improve the academic outcomes of underprepared students, Wilson and Lowry (2016) found that 97% students who received coaching reported that this was the most important factor in influencing their outcomes. These students reported increased understanding of study habits and self-management, better connection to the institution and their peers, improved understanding of college processes, and increased confidence in their ability to manage their college career.

Even more compelling, results from the Developmental Education Demonstration Project (DEDP) reveal that student success skill building remains fundamental to any effort to improve the outcomes of developmental education students. Texas implemented the DEDP across all public institutions in that state in an attempt to turn the tide of declining graduation rates. Using data from 3,594 students across 306 community colleges in Texas, Booth et al. (2014) found that student performance in these programs improved due to three themes: redesigned curriculum and instruction, ongoing faculty and staff professional development and training, and academic and student success skill-building and school policy changes. Faculty and staff had to be retrained to ensure that they worked together to solve student challenges. Students were instructed on areas like study habits and time management, and policies were redesigned to improve student progression. Students were pushed to work with each other in a problem-based learning
environment and were rewarded for taking risks to solve challenges. Administrators and staff worked to minimize barriers for students, allowing them to achieve small successes that empowered them to believe in their ability to meet their goals. In one example, administrators reviewed the data and found that students who did not register early were 15 percent more likely to drop than those who registered early or on time. To support early registration, administrators within the schools studied changed their registration deadlines to fall at least ten days before classes starting. These system-wide changes have begun to improve the outcomes for students. Most promising, some historically underrepresented groups are completing at 21 percentage points higher than before the DEDP programs. Coaching programs reinforcing behaviors positively impact student goal setting behavior can improve self-efficacy for students, and, by extension, improve student persistence.

**Goal Setting as the Foundation for Coaching**

Goal setting underpins any effort to improve self-efficacy and grit (Chang, 2016). Goal setting has been shown to improve performance, processes, and levels of individual advancement (Bowman et al., 2015; Wolff et al., 2019; Lefdahl-Davis et al., 2018; Personal et al., 2014). In their seminal work, Bandura and Cervone (1983) found that combining goal setting with consistent feedback can have a positive impact on self-efficacy and ultimately goal attainment. Moreover, specific, measurable, attainable, realistic, and time-based (SMART) goals have been shown to be highly effective over time (Booth et al., 2014; Davis & Carman, 2010; Jaramillo et al., 2013; Scrivener et al., 2015). During the implementation of the ASAP, DEDP, ALP, and FastStart programs, college leadership set retention and persistence goals measured and tracked throughout
the course of these programs (Booth et al., 2014; Kolenovic & Lindeman, 2013; Scrivener et al., 2015; Smith-Jaggars et al., 2014). Martin et al. (2014) conducted a qualitative study at a large state community college using interviews with staff and former students who had successfully completed college. These students were interviewed individually and participated in two focus groups on campus. Discussions focused on what elements impacted their ability to complete their developmental education courses and finish their degrees. Students identified goal setting as a critical component to helping achieve their degrees, with these goals most often related to career or personal achievement (Martin et al., 2014). In addition to assisting them in aligning their actions with their identified goals, the act of setting these goals served to empower them. Each completed course became a significant achievement and helped them stay the course. Setting defined SMART goals (Doran, 1981) can lead to improved outcomes for students and coaches. Though several studies have captured the impact of goal setting on behavior, most of it remains in the field of management. Little is available on goal setting and developmental education.

Goals informed by clear data can provide a powerful means of improving learning outcomes for these students (Bettinger & Baker, 2014; Crisp & Cruz, 2010; Hodges et al., 2014; Lefdahl-Davis et al., 2018; Wolff et al., 2019). Coaches can identify risks before they become significant barriers and work with students to solve challenges early. Using data from 28 underprepared students with difficulties in reading at Salt Lake Community College, Capps (2012) found that the use of early alert systems improved students’ persistence. Using detailed interviews, Capps (2012) ascertained the elements that most impacted student outcomes. Capps (2012) recommended the early identification of
student challenges as pivotal in improving student outcomes. Since administration had a stated goal of improving retention, at the beginning of each semester university administration sent a formal email communication to faculty requesting that any student who appeared in personal or academic distress be referred to an adviser for support. Faculty responded based on the institution’s goals and shared this data back with administration consistently. In interviews, students stated that these proactive efforts served to keep them from dropping out when they faced issues. The net result led to earlier intervention for students and all 28 students persisted with their degrees. This approach was similar to ASAP, DEDP, ALP, and FastStart programs which set institution-wide student level goals and used data to track and intervene to ensure that students remained on the path to completion.

The use of data to help coaches determine student progress towards goals remains fundamental to building student self-efficacy and grit in underprepared students. Without a clear understanding of where the student is academically, coaches cannot provide insight into the steps students should take to reach their intended goal. Based on the case studies conducted during the needs assessment, insight into data specific to the student may often be unavailable to support staff and the students themselves due to technology limitations or departmental restrictions. For example, the student support team may not have full access to the student financial and academic data because data may be restricted by the financial aid office or the registrar. The ability to proactively identify challenges remains crucial to helping students overcome them. Despite the urgency of this need, institutions often do not share enough data with students about the fastest path to their preferred credential. Using data from the Achieving the Dream initiative, Bailey et al.’s
(2010) seminal work on developmental education sequencing showed that fewer than half of underprepared students complete their sequence of developmental education courses; 20% of those who were referred to math and 40% who were placed into reading complete one developmental education course during the first three years of after placement. Bailey et al. (2010) go on to posit that this is primarily due to the difficulty students have in navigating the required courses to complete a degree. Often students cannot determine what courses lead to their credential and what courses do not. Moreover, they fail to connect the material in developmental education courses to their intended credential. Bailey et al. (2010) imply that using data to determine how they are progressing helps students create a more streamlined path to graduation.

Pathway creation has long been associated with strong learning outcomes for developmental education (Alssid et al., 2005; Calcagno et al., 2007; Jenkins & Cho, 2013; O'Banion, 2011). Jenkins and Cho (2013) explored the use of guided pathways in fast-tracking student academic progress. Noting that students often have several options, but very little guidance, Jenkins and Cho (2013) point to three elements that bolster student academic achievement: ensuring that academic programs have clear steps that show student progress to completion, contextualizing developmental education so that it contributes to each step of the student's educational journey, and providing advising to these students that support these steps. Jenkins and Cho (2013) reviewed results from Florida State University, Arizona State University, Valencia College, and Queensborough Community College, all of which provided degree major maps or guided pathways to students. Jenkins and Cho (2013) noted significant improvements in completion rates and credit accumulation for developmental education students in these institutions. Notably,
CUNY’s ASAP program also provided students with guided pathways to completion, which likely contributed to the doubling of their graduation rates (Jenkins & Cho, 2013; Kolenovic & Linderman, 2013; Scrivener et al., 2015).

In another study of 35,046 students, each first time in college and seeking to complete a degree, Calcagno et al. (2007) also explored the impact of creating enrollment pathways on student performance. These pathways were customized to the student’s real-world needs; including acquiring skills to obtain specific jobs or overcome developmental education requirements to enter the career program of choice. Along the way, students were guided to connect each milestone on the pathway in the context of how that milestone brought them closer to their goal. Using longitudinal data collected for 17 terms, Calcagno et al. (2007) found that obtaining 20 credits or achieving 50% of their program increased persistence rates for traditional and non-traditional students.

**Coaching and Retention for At Risk Students**

While there is currently no published empirical data on the influence of academic coaching on the academic markers and retention rate for developmental education students specifically, a few recent studies have explored the link between coaching and retention for at risk students. Results from these studies have been somewhat mixed.

Pechac and Slantcheva-Durst (2021) looked at data from 5,808 students from 15 community colleges engaged in a coaching program to determine the program’s influence on academic success. Using a nonexperimental quantitative design based on descriptive, correlational, and blocked stepwise regression methods, Pechac and Slantcheva-Durst (2021) sought to determine the coaching approach used by the program, the relationship between coaching and credit hour completion; and whether student characteristics, the
frequency, topics and modes of contact between student and coach could be used to predict credit completion. The results of the study indicated that one-on-one in person contact, discussing time management in the first session and then academic planning, not needing developmental education, and meeting frequently were among the 28 variables that had positive relationship with credit hour completion. Of note, the two strongest positive relationships to credit hour completion were enrollment status and attending medium sized rural institution. Being African American/Black or Hispanic, attending a medium or large urban school, and having a low socio-economic status had a strong negative correlation to credit hour completion. In terms of predicting credit hour completion, enrollment status and frequency of contact with a coach surfaced as a positive predictor variables. The negative predictor variables were African-American/Black, low income, and Hispanic/Latino. Ultimately, the study found that 31.5% of the variance in credit hour completion can be explained by student demographics, community college characteristics, and coaching factors such as frequency of coaching sessions, topics discussed, and mode of contact. Student characteristics explained 24% of the variance, institutional characteristics accounted for 2.7% of the variance, while coaching explained 4.8% (Pechac and Slantcheva-Durst, 2021).

This result aligns with findings from Sepulveda et al. (2019) who explored the influence of a coaching intervention on first year students who were considering leaving during their first four to six weeks of school. Using an experimental design, where the control group included 45 participants and the treatment group included 46, the study explored the difference in GPA and retention for the two groups. The study found no significant difference in retention or GPA between coached and non-coached groups. Of
note, the treatment included only three coaching sessions for the year and only 12 (26\%) of the 46 students in the treatment group met with their coaching three or more times for the year. The low level of fidelity and the limited number of coaching sessions could explain the study findings in relation to the influence of coaching on GPA and retention.

Other studies found that coaching itself had a material effect on student academic performance, and ultimately retention. Capstick et al. (2019), Sepulveda et al. (2019), Rodriguez Ott et al., (2020), and Alzen et al. (2021) explored the influence of coaching on students on academic probation. Capstick et al. (2019) used ANOVA and multiple regression analyses to compare results from coached and non-coached groups as it related to retention, GPA and credit accumulation. The study was conducted at a university located in a high poverty area, where 40\% of the students were African American or Hispanic. Using a sample of 743 coached and 234 non-coached students with less than a 2.0 GPA, Capstick et al. (2019) found that participation in coaching increased student retention by 18\% and term GPA by 24\%. Of note, despite the plethora of factors that can influence retention (Pratt et al., 2019; Glazier et al., 2019; Hamann et al., 2021; Westrick et al., 2020), Capstick et al. (2019) determined that socio economic status and age were also significant predictors of retention in coached and non-coached groups. Overall, the study demonstrated that providing coaching to at-risk student can improve academic outcomes and serve to bolster retention rates.

Capstick et al.’s (2019) findings are in line with more recent studies. Using fall 2017 to spring 2019 data from an academic coaching program at a college of liberal arts within a mid-sized university, Alzen et al. (2021) sought to answer two primary questions. The first was how coaching influenced student outcomes and the second was
to assess how exposure or dosage influenced outcomes. Students were invited to join the coaching program when their GPA dropped below 2.0. Of the 1,678 students invited to join the program between fall 2017 and spring 2019, 526 accepted the invitation. Of those who participated, 275 completed at least three sessions (completers), while 251 completed less than three sessions (participants). After controlling for factors such as gender, race, income, and first-generation status, shown to have strong correlations with retention, Alzen et al. (2021) found that students who had participated in or completed coaching had a higher GPA in their coaching term: participants’ GPA increased 0.3 points and completers’ GPA increased by 0.5 points. Results were similar for retention, with participants being 10% more likely to enroll in the semester after coaching and completers being 15% more likely to enroll. The study found that these differences in GPA and retention were statistically significant. Alzen et al. (2021) also concluded that while there was a positive correlation between the number of coaching sessions as it related to both GPA and retention, the correlation was relatively weak (0.21 and 0.15 respectively).

In a follow-up to the to the Bettinger and Baker (2014) study on the Inside Track coaching program, Rodriguez Ott et al. (2020) also sought to explore the relationship of coaching and coaching intensity with academic achievement. The study was based on a quasi-experimental design that explored the influence of coaching on academic achievement markers, specifically across two institutions supported by Inside Track. Academic markers selected included total credits in first year of enrollment, average credits earned per semester, total credits earned by fall 2017, and cumulative GPA. The treatment group consisted of 699 students who were selected for coaching because they
were new students to the degree programs at the two institutions that *Inside Track* had been contracted to support. The comparison group included 627 students who were new students at the same institutions who were in degree programs *Inside Track* did not support. Using pairwise comparisons across groups, the researchers found that the treatment group performed better than the comparison group across all academic achievement markers except credit accumulation in the first year of enrollment. Interestingly, the study found that students who met with coaches two or more times during the semester achieved more credits in their first year, more credits in individual semesters, higher credit accumulation over time, and had higher cumulative GPAs.

Capstick et al. (2019), Alzen et al. (2021), and Rodriguez Ott et al. (2020) all found that coaching increased the retention rates of students who participated. Coaches in these programs served as mentors who helped their students overcome barriers, find the resources they needed, and plan their academic path.

**Conclusion**

Supporting students in developmental education courses requires a multifaceted approach. Programs to improve the persistence and retention of these students often focus on academic elements; courses are restructured, added or removed to help students progress. Bronfenbrenner (1992) and Neal and Neal (2013) argue that several elements of each system impact students as they navigate their college careers. Students in developmental education courses can overcome the challenges they face with dedicated support focused on their persistence. Self-efficacy and grit provide a foundation that students can build on to help them meet their academic goals. Coaches can facilitate building these skills through goal setting and active monitoring of progress. By
introducing goal-supported coaching to help students build self-efficacy and grit, institutions can help students create a more productive ecosystem for their academic success.
Chapter 4

Intervention Design: Method and Procedure

This chapter addresses the use of coaching support in improving retention rates for students selected for developmental education sequences. Ecological systems theory suggests that one of the major elements that affect student outcomes relates to the interaction they have with their community and the interaction of that community with other elements of the ecosystem (Bronfenbrenner, 1992; Neal & Neal, 2013). One way to provide support in the college setting is through coaches, sponsors, and mentors. Coaching supported by goal setting has shown to have a positive impact on student performance when coaches serve as mentors and guides (Alzen et al., 2021; Armour, 2021; Bettinger & Baker, 2011; Bettinger & Baker, 2014; Capstick et al., 2019; Groh, 2016; Robinson & Gahagan, 2010).

A sequential embedded design approach to evaluate the outcome and processes of a coaching program was used. Participants in the treatment group were matched to a comparison group and fall 2019 to spring 2020 retention data on these two groups were analyzed. Moreover, interviews were conducted with a subset of the coaches and students from the matched group to explore the elements of the coaching that influenced retention and to determine the level of fidelity within the program.

Context

This study was conducted at a mid-sized community college (MCC)\(^2\) in Maryland that supports more than 14,000 credit-seeking students. About half of these students use

\(^2\) All references to the institution were changed to a pseudonym
financial aid in some form. MCC’s coaching program has existed for 15 years and currently has about 130 students enrolled. Approximately 70% of students in MCC’s coaching program are developmental education students (MCC, 2021).

Coaches in MCC’s program were full-time or part-time employees of MCC who volunteered to support a student for a given semester. Coaches were required to commit at least one hour a week to their coaching student. Students and coaches were randomly matched, though in some cases, specific matches were made when students had specialized needs. Coaches could not currently be teaching their coaching student.

Training for coaches involved three coaching modules online and one 90 minute in-person training session provided at the time they signed up to be coaches. Coaches received training in active listening, controlling for bias asking powerful questions that stimulate discussion and connection, goal setting and knowledge of college resources available. Referrals to campus resources are fundamental element of the coaching relationship (Lehan et al., 2018; Pechac & Slantcheva-Durst, 2021). Similarly, active listening, questioning, goal setting, and judgement-free dialogue have been found to support relationship development in coaching programs (Alzen et al., 2021; Barnett, 1995; Groh, 2016; Jaramillo et al., 2013; Robinson & Gahagan, 2010; Sepulveda et al., 2019; Tudor, 2018; Weger et al., 2014).

Active listening involves remaining silent when the other person is speaking, reflecting what was said to the speaker and then following up with clarifying questions where needed (Weger et al., 2014). Controlling for bias involves being conscious of implicit bias and focusing on solving the problem while suspending judgement (Groh, 2016). The use of powerful questions involves asking questions that require description
and explanation in the answers so that students probe into their own motivations and behaviors during their responses (Barnett, 1995; Frisby & Martin, 2010; Scull et al., 2020).

Coaches were encouraged to set SMART goals (Doran, 1981). Goal setting has been shown to improve student retention (Chang & Lorenzi, 2016; Chung et al., 2021; Jaramillo et al., 2013). Finally, directing students to the optimal student support resources for their needs have improved student academic progress and retention (Bachman, 2013; Bettinger & Long, 2009; Lareau, 2015). The training was meant to provide tools for coaches as they worked to build connection with their student as they served as guides towards clearly defined goals. These topics were documented in a binder and provided to the coach for later reference as well.

Students were required to apply to join the coaching program each semester. Applicants were encouraged to apply during orientation. The coaching program staff also visited classrooms in the first semester to increase awareness and encourage students to apply. During the application process, students were required to include their education goals. Coaches were trained to review these goals with their student and confirm or clarify where needed. Coaches were required to log each interaction with their student in a handwritten coaching log.

In 2018, MCC’s retention rate for students in developmental education courses ranged from 31% to 47%, depending on the cohort (MCC, 2019).

Research Questions

The research questions for this study included:
RQ1: What is the effect of a coaching intervention on retention for college students placed in developmental education courses?

RQ2: What is the effect of a coaching intervention on term GPA for college students selected for developmental education courses?

RQ3: What is the effect of a coaching intervention on term attempted versus completed credits for college students selected for developmental education courses?

RQ4: To what extent did frequency of coaching sessions influence student retention?

RQ5: To what extent does length of coaching session influence student retention?

RQ6: To what extent does goal setting influence student retention?

RQ7: To what extent did coaches support students in line with the coaching techniques from their training?

RQ8: What are student perceptions of goal setting and its influence on self-efficacy and grit?

RQ9: What are the perceptions of coaches and students on the influence of the coaching intervention on student retention?

**Research Design**

This key research questions in this study focus on how coaching could improve retention rates for developmental education students. Based on a pragmatist worldview (Creswell & Clark, 2011) the significance of the problem to the field and the urgency to develop practical solutions served as the guiding stance for the study. As such, an embedded design (Creswell & Clark, 2011) mixed method approach was used. The
chosen design allowed for the concurrent collection and analysis of quantitative and qualitative data, with the qualitative data providing supplemental insights into the output of the quantitative analysis. The primary research questions related to whether coaching and goal setting influence retention were answered using a quantitative approach. Questions related to the specific coaching techniques that influence retention required a qualitative approach. The quantitative data provided answers to research questions related to measuring the difference in retention, GPA for coached students, and the difference between attempted and completed credits for coached versus non-coached groups. The qualitative data supported answers to questions related to exposure to the training and participant responsiveness to the treatment. The results of the qualitative elements of the study provided insight into what factors within the coaching intervention influenced retention. Mixing the quantitative and qualitative data occurred when fidelity of implementation was explored.

**Definition of Fidelity of Implementation.** Fidelity of implementation refers to how well the actual implementation of program or treatment aligned to the intended implementation (Dusenbury et al., 2003). As indicated in Table 4.1, four of the five tenets for fidelity of implementation (Dane & Schneider, 1998; Dusenbury et al., 2003; Nelson et al., 2012) were used to assess the proposed intervention. Determining the boundaries of high and low fidelity of implementation presents a challenge due to the complexity involved (Holliday, 2014). Holliday (2014) points out that defining low and high fidelity should begin with setting a standard against which the implementation can be measured. High and low standards were set for each fidelity indicator in this study.

**Indicators of Fidelity of Implementation**
As provided in Table 4.1, three indicators for fidelity were used: exposure/dose, quality, and participant responsiveness. The first indicator was exposure or dosage. This indicator refers to whether coaches practiced all elements from their training over the course of the semester and to how much of each element of coaching was done by coaches. The source of data for this indicator was the coaching database. Coaching sessions were all documented in each coach’s coaching log and log summaries were compiled in the coaching database. The coaching database included data on student name, coach assigned, goals the student had set, number of meetings and the total coaching hours.

The second indicator relates to the quality or how well the coaches implemented all elements of the training. Last, participant responsiveness refers to how well coaches and students responded to the coaching, including perceptions of effectiveness. The source of data for the quality and participant responsiveness was the coach and student interviews conducted over a four-week period.

Table 4.1

*Data Collection Matrix*

<table>
<thead>
<tr>
<th>Fidelity Indicator</th>
<th>Data Sources</th>
<th>Data Collection Tool</th>
<th>Frequency</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure/Dose</td>
<td>Coaches</td>
<td>Coaching Database</td>
<td>End of Semester</td>
<td>Study team members</td>
</tr>
<tr>
<td>Quality</td>
<td>Coaches and Students</td>
<td>Coach and Student Interviews</td>
<td>End of Semester</td>
<td>Study team members</td>
</tr>
<tr>
<td>Participant Responsiveness</td>
<td>Coaches and Students</td>
<td>Coach and Student Interviews</td>
<td>End of Semester</td>
<td>Study team members</td>
</tr>
</tbody>
</table>
**Exposure/Dosage.** Exposure in the program was defined at two levels. The first refers to the number of completed coaching sessions. Based on current coaching models in use, coaches and students should have connection points between two and six times per semester (Alzen et al., 2021; Parker et al., 2015; Rodriguez Ott et al., 2020; Sepulveda et al., 2019). After factoring for the first week of school, fall break, and exam weeks, there were 12 possible weeks that coaches could meet with students. For exposure, high coaching fidelity was determined by nine or more documented coaching sessions with each student per semester, medium fidelity was set at six to eight sessions per semester and low fidelity was set at five or less sessions per semester.

The second element of exposure of the treatment refers to the length of coaching sessions that the coaches completed with their assigned student. This was captured in the coaching database. Coaches were trained to complete one hour of coaching per week with their students. This was in line with similar coaching programs (Abdulla, 2017; Abt Associates, 2015; Bettinger & Baker, 2014). As such, in terms of exposure, coaching sessions that were 45 minutes or longer were considered high-fidelity for exposure, medium fidelity was set at 30 to 44 minutes and low fidelity was set at less than 30 minutes.

**Quality.** As part of their training, coaches were taught active listening techniques, ways of controlling for bias, the importance of asking powerful questions that stimulate discussion and connection, how to set effective goals, and the importance of sharing the resources available with students (Abt Associates, 2015; Alzen et al., 2021; 2015; Parker et al., 2011; Pechac & Slantcheva-Durst, 2021). Recruitment focused on obtaining interviews with 10 coaches and 10 students in the coaching program. Coaches and
students were asked to share which of these techniques were used in their coaching sessions. Of the techniques used, students were then asked to estimate the frequency at which each technique was used. Estimated use of two or more techniques more than twice a month was seen as high fidelity in terms of quality; whereas coaching that included two or less techniques and/or demonstrated these techniques less than twice a month, were considered low fidelity.

**Participant Responsiveness.** Coaches and students in the program were recruited for interviews to assess their perceptions of the effectiveness of the coaching techniques in improving retention. Assessing perceptions of effectiveness provided further insight into which elements of coaching both coaches and students thought were useful. It also provided some insight as to why coaches or students applied the program with high or low fidelity. For example, coaches may adapt their approach from what was provided in their training if they believe they have found more effective ways to improve their students’ skills. This kind of adaptation, while it may lead to low fidelity of implementation, provides helpful insight into possible gaps in the implementation plan itself (O'Donnell, 2008) and could present a helpful means of clarifying the most productive activities of the intervention.

**Method**

This section provides details on the coaches and students involved in the program and the procedures to conduct the study.

**Participants**

To determine influence of coaching on retention, term credits and GPA, the population of students in the treatment group included all 149 students who had applied
or enrolled in the coaching program in fall of 2019. Of these students, 38 never met with their coach and 22 dropped out of the program prior to the end of the semester. Of the remaining 89 students who completed the program, 74 were students who had been placed in developmental education courses. Data for the 149 students enrolled in coaching in fall of 2019 and data for 149 randomly selected non-coached students who were also enrolled in fall of 2019 were downloaded to a Microsoft Excel table and assigned an ID number from one to 298. The non-coached students were selected using simple random sampling in the MCC student information system (SIS). All non-developmental education students were removed from the full data set. Of the students who had applied or enrolled in the coaching program, all students who had not completed their coaching program were removed. As such, the treatment group initially included all 74 developmental education students in the coaching program. Using case-control matching in SPSS for age, gender, race, fulltime versus part-time status and cumulative GPA as the matching variables, 55 students from the comparison group and 55 students from the treatment group were matched and comprised the final participants for the study.

To capture results for frequency and length of coaching sessions, as well as frequency of goal setting conversations between student and coach, 12 randomly selected coach session summaries from 11 coaches who coached during the fall 2019 semester were pulled from the coaching database for review.

To determine how closely coaches aligned to the training and to determine perceptions of coaching influence on self-efficacy, grit, and retention, interviews were conducted with coaches and students in the treatment group. The coaching program director sent separate email invitations to students and coaches in the coaching program.
Only one reminder was sent to each group. Two students and four coaches responded to the request and were interviewed within a four-week period.

**Instrumentation**

The primary instruments used during this study were the questionnaires developed to guide semi-structured interviews with students and coaches to assess the training provided to coaching and the fidelity of implementation. Student interviews focused primarily on how they responded to the coaching program, including what factors influenced their relationship with their coach and how coaching influenced or did not influence their behavior, academic performance, and decision to remain enrolled (Appendix C). The coach interviews included data on student exposure to the training, coach perspective on the effectiveness of the training they received and insight into what modifications if any they may have made to their coaching approach (Appendix E).

Of note, at the time of data collection, it was not possible to conduct a pre-test for self-efficacy and grit for coached students as students had already begun their coaching experience at the time of the study. In addition, interviews were used to assess students for self-efficacy using Chen et al.’s (2001) New General Self-Efficacy Scale (NGSE). Since students from the comparison group were not available for interviews, the scale was not applied to non-coached students.

**Data Collection**

Most of the data for the study was provided by the MCC student information system (SIS). The MCC SIS provided anonymized data on developmental education requirements, retention from fall 2019 to spring 2020, age, gender, race, full-time/part-time status, term attempted credits, term completed credits, cumulative GPA, cumulative
attempted credits, cumulative completed credits, cumulative GPA, and coaching status. These data addressed the research questions on the influence of the coaching program on academic outcomes of developmental education students. These data were requested from the MCC team. The team downloaded the data to Microsoft Excel and sent the data securely through Vitru to the student researcher. The data were then downloaded to Apple iCloud and the original file erased from Vitru.

In addition to the SIS, the MCC coaching database held data on coaching logs for the treatment group. The MCC Program Director downloaded 12 randomly selected log summaries from the database of coaches and students who completed the coaching program in fall 2019. Data from coaching logs for 12 randomly selected coaches were downloaded to Excel and housed on Apple iCloud. To allow for triangulation with the results of the interviews, these data were not anonymized but instead kept confidential to the student researcher and the MCC Program Director. Once the interview results were matched to the coaching log summary, the names of students and coaches were replaced with pseudonyms to allow for increased anonymity for participants. Of these 12 coaches, all 12 had students enrolled in fall 2019 and spring 2020. The coaching logs were used to capture student interactions in relation to three primary areas (i) length of session; (ii) frequency of sessions; and (iii) frequency of goal discussions between coach and student.

Interviews were 60 minutes long and consisted of 16 possible questions for students and 10 possible questions for coaches. The interview protocol for the student interviews is provided in Appendix B and the interview protocol for coaches is provided Appendix C. Coach and student interview results were captured through note-taking in an online field journal in Apple iCloud.
Data Management

Data on the 298 students were downloaded from the MCC SIS into Microsoft Excel and anonymized by removing student identification numbers and replacing them with a number from 1 to 298. Data from 12 coaching logs was downloaded into Microsoft Excel. Data from the coaching logs and from the MCC SIS were encrypted through Virtru and sent via email link from MCC to the student researcher. The link to this data was set to expire after four days. All data were downloaded from Virtru to Apple iCloud Drive. The quantitative data uploaded to SPSS for analysis and the qualitative data from the coaching logs was entered into Microsoft Word for analysis. Student and coach interview notes were documented in an online field journal. All information was housed in Apple iCloud, with access only available to the student researcher. Once students self-selected to be interviewed, the coaching database summary was reviewed to determine if interviewee coaching session summaries were included in the database summary. Interviewees were then matched to data to their coaching logs and names from interviews and coaching database were replaced with pseudonyms to allow for increased anonymity for participants.

Data Analysis

Data analysis consisted of two types of evaluations: outcome and process evaluation. The analysis for the outcome evaluation focused on data related to whether coaching influenced fall to spring retention, completed credits, and GPA. The process evaluation component focused on evaluating the fidelity of implementation in the areas of exposure/dosage, and participant responsiveness. It included assessment of the coaching logs and interview results, and retention rates from the SIS.
Control case matching was used to develop the treatment and comparison groups. Age, gender, race, full-time versus part-time status, and cumulative GPA were assigned as the control variables since research indicates that these factors influence retention rates in developmental education students (Bettinger & Baker, 2014; Capstick et al., 2019; McFarland et al., 2019). The use of these controls in this design provided insight into how much of the difference in retention rates for coach and non-coached groups was due to the coaching treatment alone and not the control variables. Determining the influence of these control variables is of particular importance in non-equivalent group comparisons (Shadish, et al., 2011; Schutt, 2015). Using the available treatment and comparison group data, a chi-square test was used to compare distributions of treatment and comparison groups as it relates to retention. The chi-square test was selected because the goal was to compare the sample to the population, and the retention data were nominal (O’Leary, 2014). Data for term GPA and attempted versus completed credits yield ratio was assessed to determine whether the distributions were normal by using the empirical rule (O’Leary, 2014). Upon determining that 99.7% of the data fell within three standard deviations of the mean, an independent samples t-test was used to compare means between treatment and comparison group as it relates to their term GPA and the term completed credits for each group. Levene’s test for equality of variances across groups was used to assess whether the homogeneity of the data across groups.

Data from the coaching database was reviewed and incomplete entries removed. Of the 12 entries from 11 coaches, one had no data on time spent coaching and one did not complete the coaching, so these two entries were removed. The final list in the database included 11 coach entries from 10 coaches. For these 10 entries, the number of
sessions per coach and the mean length of these sessions were calculated. The coaching database data were used to determine how much time coaches spent with students and at what frequency. While data on coaching database included data on what goals were discussed over the course of the semester, individual session notes were not available.

To complete the process evaluation element of the study, interviews were conducted with coaches and students. Moreover, data from the coaching database was analyzed for frequency and length of sessions.

Interviews were conducted with coaches to determine whether coaches used techniques provided in the training to build relationships and share resources. Interview notes were organized by question, coded using Microsoft Word and codes were then placed into six pre-determined themes (O’Leary, 2014). These pre-determined themes corresponded to the five areas of training coaches received: active listening, powerful questions, monitoring for bias, avoiding judgement, goal setting, and resource-sharing (Alzen et al., 2021; Barnett, 1995; Groh, 2016; Jaramillo et al., 2013; Lehan et al., 2018; Pechac & Slantcheva-Durst, 2021; Robinson & Gahagan, 2010; Sepulveda et al., 2019; Tudor, 2018; Weger et al., 2014). To determine student and coach perceptions of coaching on retention, self-efficacy and grit, interview notes were reviewed, and responses were categorized into emergent themes as it related to student self-efficacy behaviors captured in the New General Self-Efficacy Scale (Chen e. al, 2001). Notes from the interviews were also assessed to determine student and coach feedback on how much they thought coaching influenced student retention.

**Effect Size**
Since no pre-test could be conducted for the coaching supports, it was hard to ascertain whether the change in persistence is the standard level of change that would have occurred without the treatment; or whether the change was large enough to have practical significance. The use of a comparison group in the study allowed mitigating this challenge as it provided the opportunity to compare the results of the treatment group to a similar group that did not receive the treatment (Shadish et al., 2002). Validity and generalizability of the results can be further increased by setting a standard from previous research for effect size and selecting a sample greater than the minimum required to limit Type I or Type II errors from occurring.

Effect size represents a means of assessing the practical significance of an outcome based on the target population and stakeholder (Hill et al., 2008; Rossi et al., 2003; Shadish et al., 2002). Effect benchmarks were taken into consideration in regards to normative expectations for change in the coaching field, as well as policy-relevant performance gaps (Hill et al., 2008). In a quasi-experimental study where a comparison group of non-coached students was compared to treatment groups of coached students, Bettinger and Baker (2014) assessed the results of providing coaching support to undergraduate students. The coaching service evaluated, InsideTrack, used a similar model to the proposed intervention. As with the current program intervention, coaches supported undergraduate students from the moment of enrollment. Though their target population was not limited to developmental education students, at the 99% confidence level ($p = .01$), they found a medium effect size of .52, which represented an increase in the retention rate of 12% over the non-coached group (Bettinger & Baker, 2014). Bettinger and Baker (2014) used the standardized mean difference method to determine
the effect size of coaching supports after six months, 12 months, 18 months, 24 months and at then after the students had completed their degrees.

Since the current study focused on retention from fall to spring, the 6-month benchmark is most relevant for comparison. Given the effect size of .52, a type I error rate of .050, and a type II error rate of .20 (power = .80), the total sample size needed was 116, with 58 assigned to the treatment ($N_1$) and 58 assigned to the control group ($N_0$). This sample size was not possible within the current practice, since the final sample size for both groups was 110 students ($N_{treatment} = 55, N_{control} = 55$) This sample size and effect size should limit a type I error to less than 5% and a type II error to less than 20% which aligns with conventional error rates (Rossi et al., 2003) and the effect size and power statistic used by Bettinger and Baker (2014). Using effect size to evaluate the outcome of the study helps mitigate the limited number of control variables used in the matching process.

**Procedure**

The population of 149 students who were enrolled in coaching in fall of 2019 and a randomly selected group of 149 non-coached students who also attended MCC in fall of 2019 were downloaded to Microsoft Excel. Data were anonymized, with student names replaced with identification numbers. Coaching status in fall 2019 and spring 2020, developmental education status, retention status from fall 2019 to spring 2020, age, gender, race and ethnicity, full-time and part-time status, developmental courses needed, term attempted credits, term completed credits, term GPA, cumulative attempted credits, cumulative completed credits, and cumulative GPA were included as part of the data set. The resulting dataset included 110 cases, 55 of which were in the coached group and 55
in the non-coached group. This data set was saved in a folder in Apple iCloud that only the student researcher had access to. The file was uploaded to SPSS and control case matching was used in the Data menu. Cases were matched for age, gender, full-time or part-time status, cumulative GPA, and cumulative credits. The matched data were downloaded to Microsoft Excel saved as a new file. This new file included only the treatment and matched groups.

The dataset with matched and treatment groups was uploaded to SPSS and a chi-square test run to compare the difference in distributions in fall to spring retention rates between the treatment and matched groups. Then, an independent samples t-test was used to determine the difference between the matched and treatment groups as it relates to term completed credits and term GPA. The results of both tests were logged by the student researcher. These quantitative elements of the study provided responses to the outcomes of the coaching intervention as it related to retention. Since the sample size for the coached and non-coached groups did not meet the threshold of 58 cases per group, effect size could not be calculated.

The process evaluation began after the treatment group had been selected. Data from the coaching database on 10 coaches was used to determine the influence of dosage of coaching sessions and adherence to goal setting on student retention. The MCC team sent the coaching database data through securely through Vitru and the data were then downloaded to Microsoft Excel by the student researcher. In Microsoft Excel, coaches were organized by number of coaching sessions. Coaches with more than nine sessions were placed into the high-fidelity category, coaches with six to eight sessions per
semester were placed in the medium fidelity category, and coaches with five or less sessions were placed in the low fidelity category.

To assess exposure or dosage, time spent in coaching sessions was calculated for each coach and coaches were placed into three fidelity categories as it related to exposure. The high fidelity group included coaches who had logged a mean time of 45 minutes per session, the medium fidelity group included coaches who had logged 30 to 44 minutes per session and the low fidelity group included coaches who provided less than 40 minutes of coaching per week.

Once the exposure indicators of fidelity were noted, the quality indicator analysis began. Given that goal setting was a key element of coaching, the coaching database was reviewed to assess frequency of goal setting discussion and retention. Students and coaches included in the coaching database were cross-referenced to students and coaches that were interviewed.

Coaches and students who were enrolled in the program were recruited via email by the Program Director over a four-week period. Students in the treatment group and the coaches who supported them were emailed to request permission for an interview. The students and coaches who gave their permission received a follow-up calendar invitation for a one-hour interview via Zoom and a consent form. The interviews took place during a four-week period. Coaches were not made aware that the interview involved assessing the adherence to the training provided and situation questions were used to prevent coaches from trying to provide the ‘right’ answer. Notes from the student and coach interviews were captured in a corresponding Microsoft Word field journal saved in Apple iCloud and only the student researcher had access to these files. Once the interviews of
students and coaches were completed, the results were coded to provide answers to the research questions related to process and outcome. The field notes were used to determine how much coaches adhered to the coach training provided using the training topics as the pre-determined themes: active listening techniques, powerful questions, monitoring for bias, avoiding judgement techniques, goal setting, and resource sharing. Responses were highlighted in colors that corresponded to each theme and summarized for each coach to determine the number of instances and the perceived frequency with which the coaches practiced these techniques.

The final element of the process analysis included perceptions of students and coaches of the coaching treatment. Using the field notes captured in Microsoft Word, coach responses to questions to determine the influence of coaching on retention, self-efficacy, and grit behavior.

**Conclusion and Summary Matrix**

This intervention tested the influence of coaching on retention for students in developmental education courses. The matrix provided in Table 4.2 captures the research questions for the study and the proximal outcomes, variables, and data sources for each question.

Table 4.2

<table>
<thead>
<tr>
<th>Summary Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Question</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>RQ1: What is the effect of a coaching intervention on retention for college students selected for developmental education courses?</th>
<th>Fall -to-spring retention rates</th>
<th>MCC student information system</th>
<th>Chi-square test to compare distributions of treatment and comparison group as it relates to retention.</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ2: What is the effect of a coaching intervention on term and first term GPA for college students selected for developmental education courses?</td>
<td>First Term GPA</td>
<td>MCC student information system</td>
<td>Independent samples t-test to compare means between treatment and comparison group as it relates to their first term GPA in College.</td>
</tr>
<tr>
<td>RQ3: What is the effect of a coaching intervention on term completed credits for college students selected for developmental education courses?</td>
<td>Difference between attempted and completed credits</td>
<td>MCC student information system</td>
<td>Independent samples t-test to compare means of treatment and comparison group as it relates to the difference in term completed credits for each group.</td>
</tr>
<tr>
<td>RQ4: To what extent did frequency of coaching sessions influence student retention?</td>
<td>Number of coaching sessions</td>
<td>Coaching database</td>
<td>Coaching logs were used to determine low and high fidelity boundaries. A chi-square test was used to determine the differences in retention between groups.</td>
</tr>
<tr>
<td>RQ5: To what extent did goal setting influence student retention?</td>
<td>Goal discussion notations in coaching logs</td>
<td>Coaching database</td>
<td>Coaching logs were used to capture the frequency of goal discussions. A chi-square test was used to determine the relationship between frequency of discussion and retention within the treatment group.</td>
</tr>
<tr>
<td>RQ6: To what extent did length of coaching session influence student retention?</td>
<td>Coaching sessions alignment with coaching training protocol</td>
<td>Coaching database MCC student information system</td>
<td>Coaching logs were used to determine how much time each coach spent with the student each week. A chi-square test was used to determine the differences in retention between groups that received 40 minutes or more (high level of fidelity) and the group who received less than 40 minutes (low level of fidelity).</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>RQ7: To what extent did coaches support students in line with the coaching techniques from the training?</td>
<td>Coach and student interviews</td>
<td>Interview notes coded into pre-determined theme aligned with training: active listening, powerful questions, monitoring for bias, avoiding judgement, and resource-sharing. Coaches who practiced two or more of these techniques were placed in the high fidelity group and coaches with less than two techniques were considered the low fidelity group.</td>
<td></td>
</tr>
<tr>
<td>RQ8: What were student perceptions of goal setting and its impact on self-efficacy and grit?</td>
<td>Coach and student interviews</td>
<td>Used coach and student interview questions to capture common themes of student beliefs on goal setting, self-efficacy and grit.</td>
<td></td>
</tr>
<tr>
<td>RQ9: What are the perceptions of coaches and students on the coaching intervention on student retention?</td>
<td>Coach and student interviews</td>
<td>Interview notes were used capture perceptions of effectiveness of coaching as it related to student retention.</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 5

Findings, Discussion, and Implications for Practice

This chapter captures the findings of the study conducted from March 2021 to April 2021 that examined the influence of a coaching program on student retention and academic success markers for developmental education students. The study explored the differences in retention rate and key academic success markers between a group of coached and a group of non-coached developmental education students who attended at a mid-sized urban community college (MCC) in fall of 2019. The analysis included data from 110 developmental education students who attended MCC in fall 2019; 55 of these students completed the coaching program and 55 did not.

Students who did not already have a coach prior to the fall 2019 semester, were encouraged to apply to the coaching program at the start of fall 2019. All students were assigned a coach by the end of the first week of fall 2019. Coaches included full-time and part-time faculty and staff of MCC and received 90-minutes of in-person and three modules of online training prior to becoming coaches. This training included techniques for active listening, controlling for bias, goal setting, asking powerful questions and knowledge of student resources available.

Research Questions

The results of the study are categorized by research question.

RQ1: What is the effect of a coaching intervention on retention for college students placed in developmental education courses?

RQ2: What is the effect of a coaching intervention on term GPA for college students selected for developmental education courses?
RQ3: What is the effect of a coaching intervention on term attempted versus completed credits for college students selected for developmental education courses?

RQ4: To what extent did frequency of coaching sessions influence student retention?

RQ5: To what extent does length of coaching session influence student retention?

RQ6: To what extent did goal setting influence student retention?

RQ7: To what extent did coaches support students in line with their training?

RQ8: What are student perceptions of goal setting and its influence on self-efficacy and grit?

RQ9: What are the perceptions of coaches and students on the influence of the coaching intervention on student retention?

Effect of Coaching on Retention, Term GPA and Term Attempted versus Completed

Data from the MCC SIS provided the impetus for the response to the first three research questions of the study. The coached group included students who had completed their full coaching commitment for the semester by meeting and staying in contact with their coach at least once every two weeks through to the end of the semester. Student retention was measured by whether students completed their fall 2019 and spring 2020 semesters.

Control Variables

Prior to the analysis of the control variables, equivalence for age, gender, race, fulltime versus part-time status and cumulative GPA across the treatment and control
groups were determined. Prior to control case matching, average age for the control group (n = 74) was 24 and average age for the comparison group (n=74) was 27. In terms of gender, 30% of the treatment group was male and 70% was female, while 26% of the control group was male and 74% was female. Average cumulative GPA stood at 2.76 for the treatment group and 2.48 for the control group. Forty-seven percent of the treatment group was studying in a full-time status, while 53% were studying part-time. For the control group, 50% were studying full-time and 50% was part-time. While the variance across the control and treatment groups were not very large, case control matching results were able improve the matching between groups. Table 5.1 shows that after matching, both groups were equally matched for race, gender, average cumulative GPA, and full-time versus part-time status. The average after for students in the control group was 26, while the average age for the treatment group was 25.

Table 5.1

Post-Control Case Matching Results for Treatment and Comparison Groups

<table>
<thead>
<tr>
<th>Needed Developmental Education</th>
<th>Treatment</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Age</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td>Average Cumulative GPA</td>
<td>2.6</td>
<td>2.6</td>
</tr>
<tr>
<td>Male</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>39</td>
</tr>
<tr>
<td>Full-time</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>Part-time</td>
<td>27</td>
<td>27</td>
</tr>
<tr>
<td>Asian</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Black</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>White</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Hispanic</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Two or more races</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>
Retention

The first research question, “What is the effect of a coaching intervention on retention for college students placed in developmental education courses?” revealed that of the 55 developmental education students in the treatment group, 87% ($n = 48$) of students were retained, whereas 71% ($n = 39$) in the comparison group were retained. A Chi-Square test was performed on the two groups and results indicated a significant association between coaching and retention ($p=.04$). Coaching influenced retention, with more students in the coaching group being retained than the non-coached group. This supports the findings of Alzen et al. (2021), Capstick et al. (2019) and Rodriguez Ott et al. (2020) who found that coaching increased student persistence and academic outcomes.

Table 5.2

<table>
<thead>
<tr>
<th>Needed Developmental Education</th>
<th>Fall 2019 to Spring 2020</th>
<th>Fall 2019 to Spring 2020</th>
<th>Row Total</th>
<th>Pearson Chi-Square Test $p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needed Developmental Education</td>
<td>Not Retained</td>
<td>Retained</td>
<td>Not Retained</td>
<td>Retained</td>
</tr>
<tr>
<td>Comparison Group</td>
<td>16</td>
<td>39</td>
<td>55</td>
<td>.04</td>
</tr>
<tr>
<td>Treatment Group</td>
<td>7</td>
<td>48</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>23</td>
<td>87</td>
<td>110</td>
<td></td>
</tr>
</tbody>
</table>

Of note, 13% ($n=7$) of coached students were not retained. Of these students who were coached for the full semester but did not remain at MCC, five had GPAs over 2.0 and of these five, three had a GPA over 3.0. Only one had accumulated more than the 60 credits for graduation. It may be possible that the students with GPAs over 3.0 transferred and the two students who did not have a GPA over 2.0 dropped out but no further data
was available about the students at the time of the study as they could not be contacted or tracked.

**Term GPA**

The second research question, “What is the effect of a coaching intervention on term GPA for college students selected for developmental education courses?” found that when term GPA was calculated for fall 2019, students in the treatment group had a higher mean term GPA than students in the comparison group, and that both groups were normally distributed with 99.7% of the data falling within three standard deviations of the mean. Levene’s test for equality of variance was then used to determine equality of variances across groups as it related to term GPA. Results of Levene’s test showed no significant difference between groups ($f = .226, p = .63$). Therefore, an independent samples t-test was conducted to determine the effect of coaching on term GPA. As opposed to the findings of Alzen et al., (2021), no significant difference was found between the coached ($n = 55, M = 2.43, SD = 1.19$) and non-coached ($n = 55, M = 2.39, SD = 1.13$) groups; $t (-0.150), p = 0.440$.

Table 5.3

**Fall 2019 GPA for Treatment and Comparison Groups**

<table>
<thead>
<tr>
<th>Needed Developmental Education</th>
<th>Students</th>
<th>Mean</th>
<th>Std Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison Group</td>
<td>55</td>
<td>2.39</td>
<td>1.13</td>
<td>0.15</td>
</tr>
<tr>
<td>Treatment Group</td>
<td>55</td>
<td>2.43</td>
<td>1.19</td>
<td>0.16</td>
</tr>
<tr>
<td>Total</td>
<td>110</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A review of the 55 students from the coached group revealed that almost half (45%) had a cumulative GPA above a 3.0 as compared to 20% of the students in the non-
coached group. Since 3.0 is often the minimum requirement for transfer to a four-year institution, this difference suggests that more students in the coached group were on a trajectory to be able to transfer than the non-coached group. This is important because successful completion of community college is considered graduating with a credential or transferring on to a four-year college.

**Attempted Versus Completed Credits**

The third research question, “What is the effect of a coaching intervention on term attempted versus completed credits for college students selected for developmental education courses?” was assessed by determining the difference between the number of attempted versus completed credits and calculated by deducting the number of completed credits in a term from the number of attempted credits in a term for the treatment and comparison groups. Results showed that the treatment group had a greater difference in attempted versus completed credits than the comparison group, and that both groups were normally distributed with 99.7% of the data falling within three standards deviations of the mean. Levene’s test for equality of variance was then used to determine equality of variances across groups as it related to attempted versus completed credits and no significant difference was found ($f = .001, p = .97$). As such, to determine whether there was a significant difference in cumulative credits for the coached and non-coached groups, an independent samples t-test was conducted. Results indicated a non-significant difference in cumulative credits between the treatment ($n = 55, M = 1.95, SD = 3.407$) and comparison group ($n = 55, M = 1.91, SD = 3.545$); $t (-.055), p = .478$. This is similar to the findings of Pechac and Slantcheva-Durst (2021) who concluded while coaching factors influenced credit hour completion, factors such as enrollment status, race and ethnicity,
and size of the institution were much stronger predictors of completion for at-risk students.

Table 5.4

*Fall 2019 Attempted Versus Completed Credits for Treatment and Comparison Groups*

<table>
<thead>
<tr>
<th>Needed Developmental Education</th>
<th>Students n</th>
<th>Mean n</th>
<th>Std Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison Group</td>
<td>55</td>
<td>1.91</td>
<td>3.545</td>
<td>.478</td>
</tr>
<tr>
<td>Treatment Group</td>
<td>55</td>
<td>1.95</td>
<td>3.407</td>
<td>.459</td>
</tr>
<tr>
<td>Total</td>
<td>110</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Coaching Frequency, Length of Sessions, Goal Setting Discussions and Retention**

Ten randomly selected coaching logs for students enrolled in coaching between fall 2019 and spring 2020 were analyzed for frequency of sessions per semester (\(M & Mo = 9\)), length of sessions (\(M = 45\) minutes; \(Mo = 60\) minutes) and number of instances of goal setting discussions. The student retention variable for each coach was reviewed to answer research questions four, five and six: “To what extent did frequency of coaching sessions influence student retention?,” “To what extent did length of coaching session influence student retention?,” and “To what extent did goal setting influence retention?”

After review, findings indicated that all students logged in the coaching database logged goals and were retained between fall 2019 and spring 2020. Data was not available on the 13% of students in the coached group who were not retained, and they had left the institution at the time of the study. As such, no additional quantitative analysis was conducted to answer research questions four, five and six.
**Interview Results: Codebook**

To complete the analysis of the interview notes captured in the four coaching and two student interviews, the key themes of **goal setting, college resources, powerful questions, active listening, and controlling for bias** were broken down into codes. A summary of the codes and their descriptions is provided below.

Table 5.5

**Interview Codebook Summary**

<table>
<thead>
<tr>
<th>Theme</th>
<th>Codes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal setting</td>
<td>goal, aim, objective, target</td>
<td>Interviewee references setting and/or following up on academic or personal goals as part of their coaching experience. Example: “while they both talk about goals, one…needs a sounding board.”</td>
</tr>
<tr>
<td>College resources</td>
<td>college resources student resources college resources student services financial aid resources student support services</td>
<td>Interviewee references student support services on campus as part of the value of coaching. Example: “recognizing when other resources [on campus] were needed.”</td>
</tr>
<tr>
<td>Powerful questions</td>
<td>conversation starters, training questions, and powerful questions</td>
<td>Interviewee references asking questions as a way of building relationship between coach and student. Example: “the training questions help you engage.”</td>
</tr>
<tr>
<td>Active Listening</td>
<td>listening, listener, student led/guided conversations sounding board</td>
<td>Interviewee references allowing the student to guide conversations and listening to support. Example: “listener not solver.”</td>
</tr>
</tbody>
</table>
Interview Theme: Goal Setting

A comparison of the students and coaches logged in the coaching database and the participant list for interviews revealed that all interview participants were logged in the database extract. As seen in Table 5.5, based on the coaching database extract determining personal/career goals, connecting to campus resources, and becoming more disciplined and organized were in the top five most frequently noted goals. Getting support encouragement and feedback, increasing my confidence and independence, and understanding my personal relationships were also popular among students. Of note, the most common goal selected by students referred to support, encouragement, and feedback.

Table 5.6

Distribution of Goals of Coached Students

<table>
<thead>
<tr>
<th>Goal</th>
<th>Number of Times Selected (n = 10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support, encouragement, feedback</td>
<td>9</td>
</tr>
<tr>
<td>Figure out personal/career goals</td>
<td>7</td>
</tr>
<tr>
<td>Connect to campus resources</td>
<td>7</td>
</tr>
<tr>
<td>Become more disciplined and organized</td>
<td>4</td>
</tr>
<tr>
<td>Understand American culture</td>
<td>3</td>
</tr>
</tbody>
</table>
Field notes from the interview were used to explore coach and student perceptions of the relationship between goal setting and retention, given that it was not possible to answer research question six “To what extent did goal setting influence retention?” by exploring the relationship between coaching and goal setting using the coaching database. The interview coded results field notes were reviewed to determine the prevalence of the goal setting theme among coaches and students. Codes for goal setting were goal, aim, and target.

Interviews suggested that goal setting was the foundation for helping the student progress. Both coaches and students described the goal setting and monitoring discussions as the fundamental element of the coaching sessions. Anna, a coach, noted that “when goals were set it pushed [the student] forward and gave them momentum” (Anna, interview, March 29, 2021). Maria, a coached student, recalled how her coach helped with planning her schedule and checked in to make sure she was progressing academically at the beginning of each coaching session. Sam’s coach worked with her on weekly goals and began each coaching session with a discussion of their weekly goals. These results are in line with much of the research on goal setting in the academic setting today (Capps, 2012; Jenkins and Cho, 2013; Wolff et al., 2019) that suggests setting clear goals can increase student progress and success.

---

3 All names mentioned are pseudonyms
Interestingly, while students and coaches expressed their common goal of ensuring academic progress and success, students often pointed to more socio-cultural goals. John’s student was not American and set a goal of increasing his understanding of American culture. Matthew noted that the student was always allowed to drive the goal discussions. He noted that “while they both talk about goals, one student knows what he wants but needs a sounding board…the younger student is unsure and confused on next steps and needs more guidance” (Matthew, interview, March 30, 2021).

**Fidelity of Implementation: Exposure/Dosage & Quality**

Data from the coaching logs and interviews were then used to answer research questions seven, “To what extend did coaches support students in line with their training?” focused on the exposure/dosage and quality. Research questions eight and nine, respectively, “What are the perceptions of goal setting and its influence of self-efficacy and grit?” and “What are the perceptions of coaches and students on the influence of coaching on student retention?” explored participant responsiveness indicator of fidelity.

**Exposure/Dosage**

Based on examples from other mentorship and coaching programs (Bettinger & Baker, 2014; Bettinger & Long, 2005), high fidelity as it related to exposure was set at nine or more sessions per semester, medium fidelity was set at six to eight sessions per semester, and low fidelity was set at five or less sessions per semester. Coaches were asked to meet with their student for one hour at least once a week during the semester. Based on the MCC fall 2019 Academic Calendar, after factoring for the first week of
school, exam weeks, and fall break, coaches had 12 weeks during which time they could meet with their students.

Data from the coaching log database revealed that coaches had formal coaching sessions every one to two weeks, with a mean meeting time of 46 minutes per session. Of the 10 coaching logs reviewed, eight coaches met with their student nine times or more during the semester, one coach met seven times and one coach met five times. Only one coach documented meeting with their student upwards of 12 times for the semester. Given that our boundary of high fidelity was set at nine meetings over the course of the semester, 80% of coaches met the high-fidelity threshold, 10% met the medium fidelity threshold and 10% met the low fidelity threshold.

Length of coaching sessions was used to denote the fidelity marker for exposure. The boundary for high fidelity was set at 45 minutes or more, medium fidelity was set at 30 to 44 minutes, and low fidelity was set at less than 30 minutes. The coaching log data revealed that the length of sessions averaged 46 minutes, with eight coaches spending 45 minutes or more with their student per session. Of the 10 coaching logs reviewed, eight met or exceeded the high-fidelity mark of 45 minutes, one met the mid-fidelity mark (38 minutes), and one met the low-fidelity mark (11 minutes). Eighty percent of coaches met the high fidelity threshold for the first part of the exposure indicator of fidelity. Of the coaches who met nine times or more during the semester, five met with their student for 45 minutes or more. As such, 50% of the coaching sessions documented in the coaching logs met the threshold for high fidelity as it related to exposure.

Rodriguez Ott et al.’s (2020) exploration of this area did find that students who met with coaches two or more times a year had higher credit accumulation than students
who did not. While data from this study was insufficient to explore the relationship between coaching exposure, academic performance and retention Rodriguez Ott et al.’s (2020) findings suggest that the relationship between coaching intensity and student outcomes should be explored further.

**Quality**

Four coaches and two students were interviewed over a four-week period to provide data on fidelity of implementation. Of the four coaches interviewed, all had been at MCC for more than five years and had worked at the institution full-time for most of their tenure there. Coaches worked in administration, as faculty, or in technical roles at the time of the interviews, and, except for one coach who had coached for more than 14 years, most had coached for five years or less.

*Table 5.7*

**Background of Interviewed Coaches**

<table>
<thead>
<tr>
<th>Name</th>
<th>Area of Work</th>
<th>Time at MCC</th>
<th>Time Coaching</th>
<th>Number of Students Coached during tenure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anna</td>
<td>Administration</td>
<td>15 years</td>
<td>5 years</td>
<td>3</td>
</tr>
<tr>
<td>John</td>
<td>Technical</td>
<td>6 years</td>
<td>1 year</td>
<td>1</td>
</tr>
<tr>
<td>Kimberly</td>
<td>Faculty</td>
<td>16 years</td>
<td>14 years</td>
<td>4</td>
</tr>
<tr>
<td>Matthew</td>
<td>Administration</td>
<td>10 years</td>
<td>3 years</td>
<td>2</td>
</tr>
</tbody>
</table>

The two interviewed students began their education in fall of 2019 and were working towards completing their degree within the next 18 months. Both students were non-traditional adult learners who came back to school after more than 10 years of work experience. Since both students were non-traditional students, their likelihood of
retention was higher (NCES, 2019). Both students had been coached for the last two years.

**Table 5.8**

*Background of Interviewed Students*

<table>
<thead>
<tr>
<th>Name</th>
<th>Area of Work</th>
<th>Time at MCC</th>
<th>Time being coached</th>
<th>Anticipated Graduation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maria</td>
<td>Cafeteria Worker</td>
<td>2 years</td>
<td>2 years</td>
<td>Fall 2021</td>
</tr>
<tr>
<td>Sam</td>
<td>Veteran</td>
<td>2 years</td>
<td>2 years</td>
<td>2022</td>
</tr>
</tbody>
</table>

All coaches had been trained in five key areas and were asked to use these tools during their coaching sessions: asking powerful questions, active listening, controlling for bias, goal setting, and sharing knowledge of college resources. These five areas represented the pre-determined themes used to categorize the resulting of field note coding. The high-fidelity marker for quality was set at referencing two or more themes and the low-fidelity indicator was set at referencing less than two themes. To assess the quality indicator, coaches were asked what elements of the training they used. If coaches could not point to any specific technique, they were then prompted with each of the five elements of the training and asked to share whether they found themselves using these consistently. Students were asked to share what factors of their coaching sessions contributed to the relationship they had with their coach. They were also prompted with each of the five elements of the training and asked how frequently they felt these elements were used in their coaching sessions. The most frequently used elements of training were knowledge of college resources and goal setting.

**Table 5.9**
Exposure and Quality Results for Interviewed Coaches

<table>
<thead>
<tr>
<th>Coach Name</th>
<th>Number of Meetings</th>
<th>Time Per Session</th>
<th>Elements of Training Used as noted in Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>John</td>
<td>9</td>
<td>57</td>
<td>College Resources, Goal Setting, Controlling for Bias</td>
</tr>
<tr>
<td>Anna</td>
<td>5</td>
<td>60</td>
<td>College Resources, Active Listening, Powerful Questions, Goal Setting</td>
</tr>
<tr>
<td>Matthew</td>
<td>Student 1: 11, Student 2: 13</td>
<td>Student 1: 11, Student 2: 14</td>
<td>Active Listening, College Resources, Goal Setting, Controlling for Bias</td>
</tr>
<tr>
<td>Kimberly</td>
<td>10</td>
<td>60</td>
<td>Goal Setting, Active Listening, Controlling for Bias, Powerful Questions, College Resources</td>
</tr>
</tbody>
</table>

**Interview Theme: College Resources**

When asked about the usefulness of their coach training, all coaches indicated that the information provided to them on college resources was very useful and that they used that aspect of their training frequently. The primary codes used for the theme of **college resources** were *student resources, college resources, student services,* and any references to specific campus services such as *financial aid.* Anna noted that “recognizing when other resources are needed…and giving them the ability to connect [with other college resources]” (Anna, interview, March 29, 2021) was essential to her success as a coach. Matthew describes “continuously referencing” (Matthew, interview, March 30, 2021) the binder for student resources over the course of his coaching tenure. This aligns to current research on coaching programs. Bettinger and Baker (2014), Capstick et al. (2019) and Alzen et al. (2021) note that providing students guidance on the college resources
available was a fundamental part of coaching programs. Moreover, Pechac and Slantcheva-Durst (2021) also found that the most often discussed topic in coaching sessions was college resources.

**Interview Theme: Powerful Questions**

In addition to college resources, the theme of powerful questions was cited by three of the four coaches as very helpful in helping begin the relationship with their student. Primary codes for this these were *conversation starters*, *training questions*, and *powerful questions*. Anna thought that “the biggest [element of the training] was the conversation starters…to get things going in the relationship” (Anna, interview, March 29, 2021). John noted that “when you are [a new coach], it is intimidating…the training questions help you engage [with your student]” (John, interview, March 30, 2021).

Overall, coaches noted that the powerful questions element of the training was heavily relied on when they are coaching a new student, but noted that as the relationship grew, they became less and less important. Interestingly, powerful questions have been used to help students become more aware of their behaviors and motivations so that they eventually improve their self-management skills (Barnett, 1995; Frisby & Martin, 2010; Scull et al., 2020). In this case, coaches felt that the use of powerful questions was more relevant to creating the initial connection between student and coach and less about increasing the student’s self-awareness and management skills.

**Interview Theme: Active Listening**

*Active listening* was another often-used element of the training, with three of the four coaches indicating that the guidance on active listening was useful. Primary codes for this theme were *listening*, *student led/guided conversations*, and *sounding board*.
Anna noted that she came into coaching with an “I want to save you approach” (Anna, interview, March 29, 2021), but quickly recognized the value of the training that encouraged her to be a “listener and not a solver” (Anna, interview, March 29, 2021). Coaches felt that this helped empower students and build their confidence over time. Kimberly, who has coached the longest, noted that in her early years of coaching, she did not follow this guidance from the training closely and would often feel like a “failure” (Kimberly, interview, March 31, 2021). Once she began to follow the training more closely, she said she concluded that “it’s not about my victory; it’s about their victory” (Kimberly, interview, March 31, 2021) and that helped her to focus more on listening than she initially did. While there is research available on the use of active listening to create a sense of connection and understanding during communication (Wegner et al., 2014; Groh, 2016), very little research exists on the use of active listening tools to do this between coaches and students. These data suggest that active listening can serve as a helpful communication tool within coaching in the academic context as well.

**Interview Theme: Controlling for Bias**

Linked to active listening was controlling for bias. The core codes for controlling for bias were sisterhood, no judgement/non-judgmental, judgement free, supported, empowered, and objective. This theme came out strongly in the interviews conducted with coaches and students. Sam described feeling intimidated at first because her coach was a faculty member but noted that “the intimidation factor went down quickly” (Sam, interview, April 3, 2021) and they developed a relationship that was very much “sisterhood-ish” (Sam, interview, April 3, 2021). When prompted with the question, “Did you feel supported or judged” both students immediately responded with
“supported” and “very supported.” Coaches pointed out that watching for their own biases allowed them to learn how to be better coaches, and, as Anna noted, this “empowered [her] students” (Anna, interview, March 29, 2021). Similarly, John described his coaching approach as all about “building the relationship – no judgement – you never know what they have been through or what they have done” (John, interview, March 29, 2021). This approach to mentorship, where students are provided a “judgement free” person to support their progress has been used to empower people to achieve their goals (Groh, 2016; Hodges et al., 2014).

**Participant Responsiveness**

**Self-Efficacy and Grit.** Research question eight “What are student perceptions of goal setting and its influence on self-efficacy and grit?” was then explored. Since goal setting was a fundamental element of coaching and set the foundation for coaches as they worked to guide students towards their identified academic outcomes, student self-efficacy scores were reviewed to determine the influence of goal setting on self-efficacy and by extension, grit. Grit and self-efficacy have been shown to have a strong positive correlation relationship (Alhadabi & Karpinski, 2019; Satish & Singh, 2020; Usher et al., 2018). As such, these improvements in self-efficacy suggest that student grit levels increased over time as well. Questions from the NGSE are included in within the interview protocols in Appendices B and C.

As part of the end of each interview, coached students were asked to respond to the eight questions used in the New General Self-Efficacy Scale (Chen et al., 2001). Since a pre-test could not be conducted and students in the comparison group were not made available for interviews, and students in the control group were not available for
interviews, the two coached students interviewed were prompted to think back to before they began coaching and asked how they would have responded to each question prior to be coached. Then, they were asked to answer what they would respond with today. The results of these responses are provided in Table 5.9. Responses from both students showed improvements in self-efficacy when comparing their pre-coached and post-coached responses. Given that students were asked to think back to assess their state of mind from two years prior, the fact that they were continuing coaching program students, and that no pre-test could be conducted, the percentage change in self-efficacy scores likely does not reflect actual influence of coaching on these students’ grit and self-efficacy. Instead, based on their responses, we may conclude that these students felt that they improved across all elements of the self-efficacy scale.

Table 5.10

<table>
<thead>
<tr>
<th>Interviewed Students Self-Efficacy Scores</th>
<th>Pre-coaching Score</th>
<th>Post Coaching Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maria</td>
<td>21</td>
<td>40</td>
</tr>
<tr>
<td>Sam</td>
<td>23</td>
<td>39</td>
</tr>
</tbody>
</table>

**Interview Theme: Self-Efficacy.** This improvement was also supported earlier in each student’s interview. For the theme of self-efficacy, primary codes were based on the NGSE and included confidence, overcoming challenges, achieve goals, optimistic about school, accomplish difficult/hard work. Maria noted that her previous experiences with school were not positive. She knew she had to go back to school to get a promotion, but no one had ever encouraged her or told her she could do it. She notes that eventually, it
was her son who “walked [her] into college and showed them [her qualifications] 23 years after [she] had completed high school” (Maria, interview, April 22, 2021). She points to several times in the semester when she got discouraged, citing how much younger most of the students were and how challenging it was staying up at night to complete assignments. Even the technology was at times a challenge. Through all of this, her coach, who was also “older like [her]” (Maria, interview, April 22, 2021) helped her troubleshoot her challenges and now she is on track to finish in 2021. She went on to point out that she was now ready for that promotion and was on the cusp of achieving her goals. Sam, who had retired from the United States Air Force, also came to college with much trepidation. She had attempted college before but had not been able to manage the work and had failed her courses. She was also struggling with Post Traumatic Stress Disorder (PTSD) and the stress of college threatened to make it worse. Her coach, who she describes as a woman who had the “right energy and great attitude who encouraged [me] to pursue [my] goals” (Sam, interview, May 3, 2021) helped her through her challenges. Same went on to state, “I am optimistic that I can do this. I am not worried about going back” (Sam, interview, May 3, 2021).

In addition to students, coaches were also asked at the end of each interview to comment on whether they felt that their respective students had improved on each element of the New General Self-Efficacy Scale (NGSE). All coaches responded that they had seen improvements in their student over time, though two coaches pointed out that when it came to item seven of the NGSE which dealt with comparing themselves to others, growth had been slower than the other areas for their student. In one case, John noted that his student had language issues and in the second case Kimberly pointed out
that her student was on the autism spectrum. Kimberly summarized her student’s progress by noting the changes in her coached student; “she became more confident over time…she used to question herself a lot” (Kimberly, interview, March 31, 2021). Other coaches noted that students became stronger advocates across campus for themselves and, as Anna described it developed “a sense of achievement” (Anna, interview, March 30, 2021).

**Perceptions of Coaching Influence on Retention**

Coach and student interviews were used to answer research question nine “What are the perceptions of coaches and students on the influence of the coaching intervention on student retention?.” The four coaches interviewed had coached 12 students combined. Of these 12, nine (75%) had either graduated, transferred to a four-year college, or was still enrolled at MCC. Field notes were coded for emergent themes and three clear themes emerged; three clear themes emerged to suggest that coaching influenced retention.

**Interview Theme: Accountability.** Responses that included the following codes were categorized into the theme of **accountability**: accountable, followed up on goals, accountability partner, and stay on track. John described the first as “holding [them] accountable” (John, interview, March 30, 2021) by following up on agreed upon goals. John provided an example where his student “fell short on a grade [because] he was getting to class late” (John, interview, March 30, 2021). He followed up with the student reminded him of his academic goals and pushed him to reference his schedule more often. Once the student began attending classes on time, his grade improved. Kimberly, who had a student on the autism spectrum, found that the student struggled with personal relationships, which was making it more challenging for her to navigate the college
system. At one point, Kimberly notes the student “wanted to withdraw because she could not understand how to connect with others on issues” (Kimberly, interview, March 31, 2021). Kimberly focused on teaching her boundaries and how to manage impulsivity. At the time of the interview, her student is in her final semester and on track to transferring to a four-year college. Students also described their coaches as accountability partners. Maria noted that due to the late nights required to finish her work, she would miss deadlines and projects. Sam pointed out that when her PTSD flared up, she almost withdrew as well. Ultimately, they both credited their coaches for helping them remain true to their goals of complete their work so that they could continue at MCC.

While much of the research today focuses specifically on goal setting and its influence on outcomes (Capps, 2012; Martin et al., 2014; Wolff et al., 2019), results from these interviews suggest that one of the key benefits of goal setting in coaching is that it allows coaches to leverage goals as a way to hold students accountable for clear academic and personal outcomes.

**Interview Theme: Finding the Right Resources.** Responses that included the following codes were categorized into the theme of **finding the right resources**: 

*leverage connections* and *campus resources*. All coaches pointed out that one of their fundamental roles was helping their students find the right resources needed to help them progress. In John’s case, his student was a non-American and had challenges finding the funding to pay for their education; “I had to leverage my connections to get him employed to help him get funded and get reimbursement” (John, interview, March 30, 2021).
Without the financial wherewithal, this student would not have been able to continue with their education. In Kimberly’s case, her student was “blowing up all the resources on campus” (Kimberly, interview, March 31, 2021) because the student had difficulty identifying types of issues campus resources could address for her. This had begun to strain the student’s relationships with key campus resources. In both cases, coaches stated that neither student would have been able to continue without being able to find the right resources to support their college career. These findings are in line with Pechac and Slantcheva-Durst (2021) found that the most often discussed topic in coaching sessions was college resources.

**Interview Theme: Connection to Coach.** Responses that included the following codes were categorized into the theme of **connection to coach:** *on my side, mentor, sense of connection, guide, sisterhood, cares for, in their corner, can vent to, trust, empower,* and *talk to.* By far the most cited reason that coaches and students felt that coaching was helpful in keeping students in college was the connection between coach and student. Anna stated that students stay in the program and in college because “coaching super useful [because they student knows] someone cares for them and is watching and supporting…somebody is invested in them – not because they have to but because they want to” (Anna, interview, March 29, 2021). John stated that the student “having someone in [their] corner and [their] side has made a difference” (John, interview, March 31, 2021). Kimberly noted that the student now has someone they can trust – “someone to vent to on how they feel” (Kimberly, interview, March 31, 2021). Matthew explained that “having someone to talk to and release some of the internal pressure increases [the student’s] focus on what they want to do” (Matthew, interview, March 30, 2021). This
was also echoed by the two students who were interviewed. Sam described the “sisterhood” (Sam, interview, May 5, 2021) between her and her coach, and Maria talked about the sense of belonging she felt when she was with her coach how they would “meet and just talk about life” (Maria, interview, April 22, 2021). Both students described instances where they would have left had it not been for the encouragement of their coach. These experiences suggested that the relationship between coach and student increased students’ sense of connection to their college experience, and ultimately helped them remain in their college programs. This area of relationship and connection to coach is not addressed in current literature, so this finding suggests that this in an area of coaching that should be further investigated in an academic setting.

**Discussion**

Bronfenbrenner (1992) and Neal and Neal (2013) both argue that teachers, families, communities, and government policies interact to influence an individual student’s progress. These social elements ultimately interact with the student in positive or negative ways. Coaches can serve as a positive element of the community and can aid in student academic progress and success (Armour, 2021; Bettinger & Baker, 2011; Bettinger & Baker, 2014; Bland, 2003; Brigman & Campbell, 2003; Crisp & Cruz, 2010; Cruz et al., 2021; Hodges et al., 2014; Ross, 1992; Sweeney, 2010; Tommaso, 2010).

The coaching program had the primary purpose of improving retention, transfer and graduation rates for students required to take developmental education as part of their academic path. To determine the influence of coaching support on achieving this purpose, a treatment and a comparison group was selected from students enrolled in 2019 and retention, term GPA, and the difference between the number of credits attempted and
what the student completed was used. In addition to these academic markers, the research questions focused on the experiences of coaches and students in the program to better understand the elements of coaching that have the most influence on the student so that current practice could be improved. Retention was defined as students who enrolled in fall 2019 who persisted to complete the spring 2020 semester.

**Coaching and Retention**

The study found that there was a significant difference ($p = .04$) in retention between coached and non-coached groups, with coaching significantly increasing retention rates for developmental education students. Eighty-seven percent ($n=48$) of the 55 students in the coached group were retained, while 71% ($n = 39$) of the non-coached group were retained. Of the 13% ($n=7$) of coached students who were not retained, five had GPAs over 2.0, and of these five, three had a GPA over 3.0. Only one had accumulated more than the 60 credits for graduation. It may be possible that some of these students with GPAs over 3.0 transferred to a four year college, that the two students who did not have a GPA over 2.0 dropped out, and the one student who had enough credits for completion graduated, but these conclusions could not be confirmed as additional data was not available about the students at the time of the study.

Though no significant difference was found between coached and non-coached groups for attempted versus completed credits and for term GPA, students in the treatment group did have a higher mean GPA than students in the comparison group and larger difference between attempted versus completed credits. Importantly more students in the coached group (45%) met the 3.0 standard for transfer to a four-year institution than the non-coached group (20%). In short, though coached students on average
completed fewer credits than they originally attempted, their GPA tended to be higher. One reason for this higher GPA could stem from coaches’ ability to connect students to resources and supports on campus. Navigating through to the right college resources for the student was an integral piece of coaching. Coaches found their training on college resources to be the most referenced during their coaching tenure. Researchers have noted that many students lack the skills to navigate through the college system (Bailey et al., Benken et al., 2015; 2005; Lareau, 2015). Since coaches at MCC served as the single point of reference and guide their students were able to overcome this gap and persist.

One of the key benefits to students of having parents and role models who understand the school system lies in the ability of these supports to help the student make decisions to lead to stronger academic outcomes and the improvement in student self-advocacy that accompanies this (Hodges et al., 2014; Lareau, 2015). Lareau (2015) provides one such example where a student, following the guidance of a parent her changed majors and dropped certain courses to maintain a GPA high enough to gain admission to graduate school. Coaches and students both noted that coaches often directed them to student support services. If students were struggling to maintain a passing grade in a course, academic and peer advisors might have provided guidance to drop courses with which they were struggling so they could maintain a stronger GPA. Further research is needed to determine the viability of this hypothesis.

Both students and coaches several times noted the importance of setting goals with the student because it allowed the coach to hold the student accountable when they encountered challenges. While the overarching goal of each student and coach was to complete their college degree of choice, a review of the coaching logs revealed varied
non-academic goals as well. The most cited goal of receiving support, encouragement and feedback suggests that students were most motivated to seek out coaching support to help them navigate challenges as they arose. Coaches and students both noted that having a strong supporter remained the keystone of the coaching relationship. Students noted the importance of having someone on their side—someone who was empathetic to their needs, with whom they can be open enough to vent their frustrations in a judgement-free zone. Tied to this emotional support was the idea of accountability. So, while students and coaches acknowledged the importance of this judgement-free zone, they also pointed to importance of having an accountability partner who could push the student to continuously strive towards stated goals. As such, though students felt a strong sense of kinship with their coaches, the fact that coaches also held them accountable to accomplishing their goals pushed these students to become increasingly self-reliant.

Lareau (2015), Bachman (2013) and Urciuoli (2014) all note that students who struggle academically often lack a sense of belonging in school and this can often lead them to give up their college careers. Students can often regard college as a foreign system that they cannot navigate or become part of because of (Cox, 2015; Pichon, 2015; Urciuoli, 2014). This can often be linked to academic success; students who are academically challenged cannot see themselves as part of the college because the college is really centered on the ideal of the academically strong student (Urciuoli, 2014). By creating a sense of connection between coach and student, the coaching program at MCC, helped students persist despite their struggles. The relationship between the student and the coach served as a connection point for students as they navigated their college career. One student described that her coach was in her age group, which made it easier for her
to feel comfortable being an older student. Another student described the sisterhood she found with her coach, after she left the armed forces and returned to school. The connection between coach and student serves as a key component in improving retention among developmental education students.

The connection between student and coach can foster self-confidence and self-advocacy. Coaches noted that part of the benefit of being a coach was seeing the growth in their students. Coaches and students called this self-confidence, empowerment, and becoming independent. Responses from all coaches and students suggested that student self-efficacy increased over time. When prompted with questions from the NGSE, students consistently noted improved scores on all points of the scale. This was further supported by the interviews with coaches where they reported growth in all questions from the scale as well. This growth in self-efficacy, self-advocacy, and grit provides an early indicator of academic success for students, as these three factors have been linked to higher retention rates in students (Alhadabi & Karpinski, 2019; Köseoglu, 2015; Satish & Singh, 2020; Usher et al., 2018).

**Coach Training and Benefits**

Coaches were initially trained on asking powerful questions, active listening, controlling for bias, and providing information about college resources. These elements of the training proved useful to coaches and students. The powerful questions helped coaches build the initial relationship with their student; active listening and controlling for bias training helped coaches foster the open, judgement-free zone that students credited for creating a deeper connection with their coaches; while the ability to guide students to the right resources was cited consistently as key to helping students progress.
This suggests the content provided in coach training was sufficient to build productive relationships with students. At the same time, interviews suggested three areas where it may be useful to modify training for coaches in future practice.

The first area refers to knowledge of overcoming cultural barriers. Two coaches who had non-American students and noted that one of their areas of focus was increasing their student’s understanding of American culture. One coach described his challenges with applying for federal student aid for the student because, based on the student’s home culture, the student could not ask his parents for the financial information to do this. This was a surprise to the coach, and, while he was able to accommodate his student by helping him find a job, he noted that this was a new experience for him. Another coach described having had three students for whom English was a second language as they had newly migrated to the U.S. These students struggled with feeling lonely and isolated, a fact made worse after the COVID-19 pandemic impacted the U.S. in spring of 2020. Kimberly, who had coached the longest, noted that one of the four students she coached never showed up because of the cultural stigma with coaching. A second student also had a cultural barrier with coaching, but they were able to overcome it and move forward with their relationship. Additional coach training on navigating cultural barriers may be useful to coaches and increase coach ability to build connection and meet the needs of their students.

A second potential area of training for coaching relates to dealing with students with mental or cognitive challenges. One coach had a student who was on the autism spectrum disorder (ASD) and, largely because of the coach’s academic training in psychology, she was able to support the student by helping create boundaries in their
relationship that pushed the student to become more independent over time. This is not to say that coaches should be trained in identifying these mental or cognitive challenges, but rather that sharing common signs of these issues will help coaches determine how to best guide their student.

One final area of review for coach training relates to the time spent with the student. During training, coaches were encouraged to meet with their student once a week for 45 minutes or more. High fidelity for exposure was set at nine sessions in a semester for 45 minutes in each session. Based on the coaching logs reviewed, only 50% of coaches met the standard for high fidelity. Though coaches varied greatly in the number and length of coaching sessions, coaches referenced contacting students via phone call or text between sessions. These connection points, which in some cases were daily, included words of encouragement, follow-up texts to check in on items discussed in coaching sessions and determine progress, and just general queries into how the student was feeling. Coaches stated that this approach developed organically as their relationship with the student progressed, and that they found these small connection points were highly effective in keeping students on track. This development suggested that while the length and frequency of formal coaching remains important, more frequent, shorter, focused communication points can serve as a substitute for longer, less frequent, formal coaching sessions.

Aside from themes related to training, one element that came through in every coach interview was the benefit of coaching to the coach. All coaches described a need to give back because either someone had helped them when they were struggling, or they had wanted help that never came when they were struggling personally and academically.
John noted, “…when I was growing up, I had a rough childhood and people helped me, so I wanted to help others” (John, interview, March 30, 2021). Kimberly pointed out:

I remember back in college and had a rocky start and lost my mind in college and had a 1.4 GPA and didn’t really know how to manage being in college. It would have been helpful to have someone to go to guide me. My parents were not on board with going to college. I tried several majors…could not talk to mom… my dad was supportive, but I could not find the level of support I needed. (Kimberly, interview, March 31, 2021)

Every coach mentioned the word reward or joy when asked why they coached. John noted that they coach because it “brings [them] joy…people who [coach] are special” (John, interview, March 30, 2021). Matthew described having a “coaching community” because coaches were able to learn from each other so that they could better support their student. The rewarding nature of coaching students as described by the coaches suggests that both student and coach benefit strongly from coaching experiences.

COVID-19 Pandemic

Since the study took place between fall of 2019 and spring 2020, the influence of COVID-19 pandemic on was referenced by both students and coaches. Moving all meetings to the virtual environment during the pandemic lockdown allowed for more consistency in meeting times as coach and student schedules became more static. In addition to more consistency in meeting times, meeting virtually allowed them both to “see a different side of each other” as they were able to see each other’s homes and gained more context for each other (Kimberly, interview, March 31, 2021).
In other cases, the pandemic increased student loneliness and fear. Anna pointed out that for her non-native English speakers, who already struggled with feeling isolated, the feeling of loneliness grew. Maria described still having a great relationship with her coach but missing “just having a drink with her” (Maria, interview, April 22, 2021). Sam described the challenges of being in online classes which she felt were not ideal for her. Her daughter’s daycare closed in March of 2020 because of the pandemic, and she was very afraid that she would fail. Though she completed the semester, she remembered thinking “I am a brick-and-mortar student…I failed online courses in the military” (Sam, interview, May 5, 2021). Ultimately, she found that she connected with her coach more frequently than previous semester because of her fears. Though all students were retained, both students and coaches felt that the pandemic led to an increased sense of loneliness and isolation for students.

**Limitations**

There were two key types of limitations to this study. The first stems from data available. Though the controls used in the study decreased the likelihood that other factors were affecting the retention rates of developmental education students, there are other factors that could have increased the efficacy of the study. For example, data on high school GPA, generation in college status and income serve as indicators of potential academic success and have strong correlations with retention rates, (Fowler & Boylan, 2010; Moore, 2004; Pruett & Absher, 2015; Wernersbach et al., 2014), but these data were not available for the current population of students.

In addition, while data in the coaching database included data on what goals were discussed over the course of the semester, individual session notes were not available.
Since the coaching sessions occurred in fall of 2019, the student researcher could not directly observe coaching sessions. For this reason, individual session notes on the coaching sessions would have provided the strongest alternative means to determining the efficacy of the coaching sessions. Unfortunately, since coaching sessions occurred in fall 2019, the hand-written coaching logs were no longer available for analysis at the time of the study. So, while data on coaching database included data on what goals were discussed over the course of the semester, individual session notes were not available. This fact did not allow for an in-depth exploration of how well coaches adhered to their training on goal setting. Moreover, since all students included in the coaching log were retained and the number of logs was limited, it was not possible to analyze whether there was a relationship between frequency and length of session and retention.

While the interviews served to mitigate this limitation, during the study, despite reminders, only four coaches and two students responded to the request for interviews over the four-week period of recruitment. Given that there were 89 coaching students and about 30 coaches in the program in fall of 2019, the data collected during the interviews was limited in its ability to reflect the spectrum of perceptions across students and coaches.

The second type of limitation stems of challenges inherent in the methodology. The first the research question included in the study required measuring changes in grit and self-efficacy for coached and non-coached student using the GRIT-S and NGSE scales. Since students in the coaching program were not given pre-tests for either of these scales, their indicated scores and the change in these scores cannot be used to determine the influence of coaching on grit or self-efficacy. Secondly, naturalistic observation of
coaching sessions and coach training would have provided clearer indications of the key techniques taught to coaches and what techniques were used. Since coach training and coaching sessions began prior to the beginning of the study, this approach was not possible.

Implications for Future Research and Practice

As implied in the previous section, there are several implications for future research on coaching developmental education students.

First, there is still some room for future studies to explore the relationship between coaching term GPA and credit accumulation for students. While there are some newer studies that explore these relationships, results have been mixed (Alzen et al., 2021; Capstick et al., 2019; Lehan et al., 2018; Rodriguez Ott et al., 2020; Sepulveda et al., 2019). Moreover, none of these studies focus specifically on students selected for developmental education. Data from the treatment and comparison groups in this study indicated that overall credit accumulation was lower for coached students, but GPA was higher. Forty-five percent of the students in the coached group had a GPA over a 3.0, while 20% of the students in the non-coached group had achieved the same standard. This suggests that more coached students in the study were on a path to graduation or transfer to a four-year institution. As stated previously, one reason for this could be that coaches help students make better choices on credit load so that they can safeguard their GPA, but further research is needed to explore this hypothesis. Since these are two strong predictors of completion (Capstick et al., 2019; Glazier et al., 2019; Johnson et al., 2021) additional research in this area could be helpful in guiding how colleges use coaches to support students.
Second, the influence of coaching on self-efficacy, self-advocacy, and grit should be explored further. Both student and coach interviews indicated that coaching increased student confidence and empowered them, but this study was limited in its ability to assess self-efficacy, grit, and self-advocacy. Future research should explore the influence of coaching on self-efficacy and grit using a pre-post-test approach to increase validity. Students also pointed out the nature of the relationship was one that was judgement-free zone, where they were listened to but at the same time held accountable. Future studies should investigate what elements of the coaching relationship may influence student self-efficacy and grit.

Thirdly, tied to this exploration of coach connection with the student is the need for further research about the characteristics that motivate individuals to become coaches. Three coaches noted that they had a hard time in school growing up, and someone helped them to overcome challenges. Further, coaches also noted that being a coach brought them joy. Given that some coaching programs within institutions utilize volunteer coaches, understanding the characteristics that motivate and bring fulfillment to coaches may help with recruiting new coaches. In addition, more exploration of how coach characteristics contribute to building connection with the students could increase the effectiveness of coaching programs. With the coaching program at MCC, about 20% of students who were in the coaching program at the start of the fall 2019 semester, did not remain in coaching that semester. While data on why these students dropped out of the program is not available, an investigation for what characteristics help coaches build connection with students may provide insight into why students stay or leave their coaches.
Fourth, more research is needed to determine the optimal structure for coaching programs. This refers to the content for training coaches and the length and frequency of coaching sessions. The current study explored research questions related to fidelity of implementation as it related to coach training and the influence of coaching session length and frequency on retention. However, due to the limited number of participants interviewed results were not generalizable. Admittedly, the coaching sessions reviewed in the coaching database indicated that coaches adhered to the session length and frequency recommendations from their training. At the same time, the small sample size of coaches available in the coaching database and the fact that all the students documented in the database were retained, meant that it was not possible to determine the influence of length and frequency of coaching sessions on student retention. While some newer studies have explored the relationship between frequency and length of coaching sessions, (Alzen et al., 2021; Capstick et al., 2019; Rodriguez Ott et al., 2020) results have differed and none of these studies specifically focus on students in developmental education courses.

Fifth, due to the COVID-19 pandemic, coaches and students indicated that their sessions moved to the virtual environment. Pechac and Slatcheva-Durst (2021) found that having the first coaching session occur one-on-one in person had a strong positive correlation with credit hour completion. According to coaches and students, this blurred the boundaries between school and home for coaches and students. Students were able to see their coaches in the home environment and this may have brought more context and richness to the relationship between student and coach. Of note, these students already had established relationships with their coaches, so that they were not beginning their
coaching relationships when they moved into the virtual space. Further research on the influence of coaching session mode on academic success for developmental education students is required. If colleges can leverage coaches on a national level to support students in the virtual environment, this may change the general approach to coaching for many schools.

Last, coaching appears to benefit both students and coaches. While current research focuses on the how coaching effects students, none of these studies explore the benefits of coaching to the coach. Of the coaches interviewed, each expressed that they found a joy in the work they did with students and pointed to learnings they had gained along the way. One coach pointed out the satisfaction he felt because he was able to help someone in much the same way others had helped him growing up. Another coach noted how much he had learned about the culture his student came from and ultimately how that impacted the student’s decisions in an academic setting. While yet another coach noted that coaching made her more flexible in her thinking than she was previously. One coach indicated that she shifted away from trying to save the student to helping the student save themselves. Further, with COVID, she and her student developed a deeper understanding of each other’s lives as they could see into each other’s homes. This dynamic between student and coach can open the door for reverse mentoring of coaches as they learn about the cultural context of their students.

Conclusion

With over 900 coaches active in academic settings today (Pisarik & Blankenship, 2019, pp 20) the influence of coaching on retention remains a significant question for educators. This study found that students who were coached were more likely to progress
academically than students who were not coached. While some studies have explored the relationship between coaching and retention, currently there is a dearth of research about the influence of coaching on retention for developmental education students. This study fills a gap in current research and shows that coaching support increases retention for developmental education students. Beyond coaching influence on retention, it also suggests potential avenues for future research: (1) coaching influence on academic success markers such as GPA and credit accumulation; (2) coaching influence on grit, self-efficacy and self-advocacy and the elements of the coaching relationship that influence these factors; (3) coach characteristics, motivation and connection to student; (4) influence of coaching session length and frequency on students outcomes; (5) elements of coach training that influence outcomes; (6) benefits of the coaching relationship to the coach. With less than 50% of students completing their college education on time (NCES, 2021), coaching remains a viable option for practitioners looking to improve the retention rates for developmental education students in the college setting.
References


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https://doi.org/10.1080/07448481.2021.1954012


https://postsecondaryreadiness.org/developmental-education-faqs/


http://doi.org/10.1177/0091552115576566


http://doi.org/10.1177/1538192710371982


Crisp, G., & Nora, A. (2009). Hispanic student success: factors influencing the persistence and transfer decisions of Latino community college students enrolled
http://doi.org/10.1007/s11162-009-9151-x

Crisp, G., & Taggart, A. (2013). Community college student success programs: A 
synthesis, critique, and research agenda. *Community College Journal of Research 

Cruz, C., Rajpal, G., Lecocke, M., Martines, I., & Lurie, A. (2021). Peer coaching 
program development: A framework of first-year Latina/o student persistence 
pursuing stem pathways at a hispanic serving institution. *Journal of Hispanic 


prevention: Are implementation effects out of control? *Clinical Psychology 

students and staff* [Conference Presentation]. National Council of Supervisors of 
Math 2010 Conference, New York, NY, United States. 

*College Board.*


http://doi.org/10.1093/her/18.2.237


http://doi.org/10.2307/42802328


https://doi.org/10.1080/03634520903564362


http://doi.org/10.1353/jhe.2014.0006


http://doi.org/10.1016/j.stueduc.2014.04.001


http://doi.org/10.1080/10668920490891629

Jaramillo, L. M., Castrillón Diaz, L. T., & López Caro, L. B (2013). *Teaching learners to set smart goals to increase their self-efficacy* [Master's thesis, Universidad de La Sabana]. [http://hdl.handle.net/10818/8239](http://hdl.handle.net/10818/8239)


dissertation, Virginia Polytechnic Institute and State University]. https://vtech
works.lib.vt.edu/bitstream/handle/10919/22017/Lubin_MM_D_2013.pdf

http://doi.org/10.1111/j.1548-1492.2011.01131.x

Martin, K., Galentino, R., & Townsend, L. (2014). Community college student success
the role of motivation and self-empowerment. *Community College Review*, 42(3),

Martirosyan, N. M., Kennon, J. L., Saxon, D. P., Edmonson, S. L., & Skidmore, S. T.
(2016). Instructional technology practices in developmental education in texas.
https://doi.org/10.1080/10790195.2016.1218806

remediation on academic and labor market outcomes. *Review of Economics and

McFarland, J., Hussar, B., Zhang, J., Wang, K., Hein, S., Diliberti, M., Cataldi, E. F.,
Condition of Education 2019. NCES 2019-144. *National Center for Education
Statistics*.

Melguizo, T., Kosiewicz, H., Prather, G., & Bos, J. (2014). How are community college
students assessed and placed in developmental math?: Grounding our
http://doi.org/10.1353/jhe.2014.0025


http://doi.org/10.3102/0034654307313793


https://doi.org/10.1080/00221546.2017.1390970


https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.188.7104&rep=rep1&type=pdf

https://doi.org/10.1177/1521025119869849


http://doi.org/10.1016/j.energy.2014.09.015

https://doi.org/10.1080/10668926.2014.964429
http://doi.org/10.2307/42802357

https://www.ou.edu/content/dam/alc/docs/CHEC%20Business%20Meeting.pdf.


Demonstration Research Corporation.


http://doi.org/10.1177/0002764213515230


http://doi.org/10.1007/BF01680039


https://doi.org/10.1002/cc.20469

https://doi.org/10.1080/10668926.2019.1655501


In Annual Meeting of the National Center Postsecondary Research. New York.
### Appendix A

#### Table of Constructs and Indicators

<table>
<thead>
<tr>
<th>Construct and Indicator</th>
<th>Definition</th>
<th>Source of Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remedial Student/Developmental</td>
<td>Students required to take at least one pre-college-level course to be considered prepared for college-level courses</td>
<td>National Center for Education Statistics</td>
</tr>
<tr>
<td>Student/Under-prepared student/Pre-admit students</td>
<td></td>
<td>National Survey of Student Engagement</td>
</tr>
<tr>
<td>Indicator</td>
<td>(Jeong, 2009; Crisp &amp; Delgado, 2014; James, 2006; Sullivan &amp; Nielson, 2009).</td>
<td>Community College Survey of Student Engagement</td>
</tr>
<tr>
<td>Remedial (Developmental) Education</td>
<td>Pre-college-level courses in mathematics and English offered to college students assessed as not prepared to take college-level courses</td>
<td>National Center for Education Statistics</td>
</tr>
<tr>
<td>Indicator</td>
<td>(Jeong, 2009; Crisp &amp; Delgado, 2014; James, 2006; Sullivan &amp; Nielson, 2009).</td>
<td>National Survey of Student Engagement</td>
</tr>
<tr>
<td>Gatekeeper courses</td>
<td></td>
<td>Community College Survey of Student Engagement</td>
</tr>
<tr>
<td>Boot-camp courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-requisites for College</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English, Statistics or Algebra</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Placement</td>
<td>Refers to the process where students are assessed for college readiness in mathematics, reading or writing and asked to complete pre-college coursework</td>
<td>National Center for Education Statistics</td>
</tr>
<tr>
<td>Indicator</td>
<td>(Jeong, &amp; Cho, 2010; Crisp &amp; Delgado, 2014; James, 2006).</td>
<td>National Survey of Student Engagement</td>
</tr>
<tr>
<td>Retention</td>
<td>Pertains to any student who remains at the same institution from term to term, ultimately leading to the completion of their chosen credential</td>
<td>National Center for Education Statistics</td>
</tr>
<tr>
<td>Indicator</td>
<td>(Bailey, Jeong, &amp; Cho, 2010; Crisp &amp; Delgado, 2014; James, 2006).</td>
<td>National Survey of Student Engagement</td>
</tr>
<tr>
<td>Term over term enrollment</td>
<td></td>
<td>Community College Survey of Student Engagement</td>
</tr>
<tr>
<td>On-time graduation rates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfer rates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time to Degree</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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| Persistence | References students who remain at any college (they may change colleges during this time), ultimately leading to the completion of their chosen credential (Bailey, Jeong, & Cho, 2010; Crisp & Delgado, 2014; James, 2006). | National Center for Education Statistics |
| Persistence Indicator | On-time graduation rates | National Survey of Student Engagement |
| Persistence Indicator | Transfer rates | Community College Survey of Student Engagement |
| Persistence Indicator | Time to Degree | |

| Progression | Refers to whether students complete their remedial course sequence and move on to college-level courses (Bailey, Jeong, & Cho, 2010). | National Center for Education Statistics |
| Progression Indicator | Term over term enrollment | National Survey of Student Engagement |
| Progression Indicator | On-time graduation rates | Community College Survey of Student Engagement |
| Progression Indicator | Transfer rates | |
| Progression Indicator | Time to Degree | |

| Low-income | Refers to students who are economically disadvantaged (Strayhorn, 2013; 2014). | National Center for Education Statistics |
| Low-income Indicator | Pell-grant eligible | National Survey of Student Engagement |
| Low-income Indicator | Below poverty line for household income | Community College Survey of Student Engagement |
| Low-income Indicator | Below-average income of US population | |

| College-ready [defined by the college, not the high school] | Term used to capture the level of academic preparation that allows students to matriculate into college-level courses with no remediation required (Bettinger & Long, 2009; Crisp & Delgado, 2014; James, 2006; Sullivan & Nielson, 2009). | National Center for Education Statistics |
| College-ready Indicator | Above minimum scores on college placement exams/entry exams | National Survey of Student Engagement |
| College-ready Indicator | No remedial courses required | Community College Survey of Student Engagement |
| College-ready Indicator | | |

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<table>
<thead>
<tr>
<th>Indicator</th>
<th>The level of resilience of a student to overcome challenges and persist in their progress towards their degree (Reynolds &amp; Baird, 2010; Strayhorn, 2013; 2014).</th>
<th>Community College Survey of Student Engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grit (as it relates to student)</td>
<td>Student belief in their ability to impact their academic performance (Bandura, 1977; Moore, 2007; Young &amp; Ley, 2003).</td>
<td>National Center for Education Statistics National Survey of Student Engagement Community College Survey of Student Engagement</td>
</tr>
<tr>
<td></td>
<td>The ability of students to use available college resources to support their academic performance (Lareau, 2015; Strayhorn, 2014).</td>
<td>National Center for Education Statistics National Survey of Student Engagement Community College Survey of Student Engagement</td>
</tr>
<tr>
<td>Self-Efficacy (as it relates to student)</td>
<td>Refers to students who are the first in a generation to go to college (Lareau, 2015; Strayhorn, 2014; Terenzini et al.,1996).</td>
<td>National Center for Education Statistics National Survey of Student Engagement Community College Survey of Student Engagement</td>
</tr>
<tr>
<td>Dependence on financial aid</td>
<td>Minority-status</td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------</td>
<td></td>
</tr>
<tr>
<td>Student funnel</td>
<td>References the data stream that captures the movement of prospective students from interest in a program to completing the program.</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*Indicator*
Number of students who inquire, apply, enroll and complete
Appendix B

Sample Student Interview Questions

1. Why did you join the coaching program?

2. Did the coaching program meet your expectations? Why or why not?

3. In your coaching sessions, did your coach ask you questions to clarify what you were saying? Were these questions helpful?

4. Did the coach ask you questions that helped you make better decisions?

5. Did you feel supported or judged?

6. Was your coach able to provide you contacts to help with some of your challenges?

7. Do you mind sharing how you did this semester? Can you think of what were the most helpful activities along the way?

8. How did your coach influence your progress this semester (if at all)?

9. Did you set goals with your coach?

10. Over the course of the semester, did you remain focused on your goals?

11. Did your coach help you reach those goals? Why or do you or don’t you think so?

12. Were you ever discouraged during the semester? Did you have any setbacks? Can you share what that experience was like? How did you move forward?

13. How do you feel about possible future challenges?

14. I am going to ask you a series of questions. Can you reflect back to the start of the semester? Based on how you felt back then, can you respond to the following statements with one of these: (1) strongly disagree (2) disagree (3) neither agree nor disagree (4) agree (5) strongly agree.
a. I will be able to achieve most of the goals that I set for myself.
b. When facing difficult tasks, I am certain that I will accomplish them.
c. In general, I think that I can obtain outcomes that are important to me.
d. I believe I can succeed at most any endeavor to which I set my mind.
e. I will be able to successfully overcome many challenges.
f. I am confident that I can perform effectively on many different tasks.
g. Compared to other people, I can do most tasks very well.
h. Even when things are tough, I can perform quite well.

Reflect on who you are today and respond to the same statements based on how you feel today.

15. Do you think the coaching you receive impacted your responses today? How?

16. Is there anything I have not asked that you would like to share with me?
Appendix C

 Sample Coach Interview Questions

1. Why did you decide to coach?

2. Did the coaching meet with your expectations?

3. How well did you think the coach training prepared you for supporting your
   student(s)? What elements of the training did you use? What did you not find useful?

4. Did you set goals with your student(s) at the start of the semester? How did you
   support your student(s) in achieving goals?

5. Did you observe any changes in the students you coached? Can you share some
   examples?

6. Did you help students overcome any challenges? Can you share how?

7. How useful do you think coaching is in helping students stay on track academically?
   Why?

8. Did you notice any change in the following behaviors for your student? Can you
   share some examples?

9. Compared to the beginning of the semester, do you think they are now more or less
   likely to believe that:

   a. They can achieve the goals they set for themselves

   b. They can accomplish difficult tasks

   c. They can obtain outcomes that are important to them

   d. They can succeed at most any endeavor to which they set my mind.

   e. They will be able to successfully overcome many challenges

   f. They can perform effectively on many different tasks
g. Compared to other people, they can do most tasks very well.

h. Even when things are tough, they can perform quite well.

10. Is there anything I have not asked that you would like to share with me?
Appendix D

Logic Model

Inputs
- Materials: training documentation
- 3 online coaching modules Online training
- Time: 90 mins of in-person coach training
- Executive approval
- Student application for coach
- Data of existing student population
- Access to student information

Activities and Participants
- FTIC developmental education students
- Coaches
- Coach program director
- Coach training sessions
- Student goal-setting
- Coaching sessions

Outputs
- Coaching logs
- Student information system database
- Survey results
- Interview notes

Short Term Outcomes
- Improved term GPA
- Improved credits attempted to credits completed ratio
- Increased self-efficacy
- Increased grit

Medium Term Outcomes
Increased percentage of developmental education students who persist from fall to spring semester

Long Term Outcomes
Increased graduation and transfer rates for developmental education students

Assumptions
COVID-19 and current civil unrest will not impact ability of students and coaches to participate in interviews and surveys

External Factors
COVID-19 impacted student retention in the spring semester.