

Relationships Between Accelerated Coursework and Gifted Students' Post-Secondary
Matriculation

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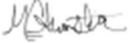
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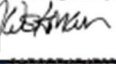
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ABSTRACT

This study explored the relationship between accelerated coursework and the post-secondary enrollment patterns of secondary gifted students in Georgia. Using chi-square tests of independence, the research examined differences in matriculation rates among students participating in Advanced Placement (AP), Dual Enrollment (DE), or a combination of both. Binary logistic regression analyzed the predictive influence of accelerated coursework on enrollment outcomes. The findings showed no significant difference in matriculation rates for gifted students exclusively in AP (65.7%) versus DE (50.0%). However, gifted students who pursued both AP and DE courses exhibited higher rates of enrollment (77.4%), suggesting a combined benefit from diverse accelerated coursework. Furthermore, logistic regression indicated that for every course enrollment increase in AP course enrollment, the odds of post-secondary matriculation increased by 21% for gifted students, holding all other variables constant. These findings align with prior studies underscoring the role of rigorous academic preparation in enhancing college readiness. By highlighting the impact of advanced coursework, this study provides valuable insights for gifted students, their families, educators, counselors, and policymakers seeking to assist students toward successful post-secondary matriculation.

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DEDICATION

This work is dedicated to my bluetick coonhound, Jasper. I got Jasper as a puppy when I started my doctorate classes, and he has been a great companion and support when needed. Jasper accompanied me anywhere I went, whether it was a coffee shop or a brewery, and he happily waited by my side while I typed away. Jasper has been my biggest comfort and support through any trying time, so thank you, Jasper, for your licks, love, and comfort while I worked to achieve this goal. I would not have gotten this done without you.

Chapter 1

INTRODUCTION

Overview

The National Center for Education Statistics (NCES) (2023) found that the overall undergraduate enrollment in degree-granting post-secondary institutions decreased by 15% from the fall of 2010 to the fall of 2021. Furthermore, the total enrollment in undergraduate programs continued to decline when comparing the fall of 2020 to the fall of 2021, regardless of full-time or part-time enrollment status (NCES, 2023). However, NCES found that the cost was generally the same in 2022 compared to the cost of post-secondary education in 2011 (NCES, 2023). The state of Georgia saw a decline in post-secondary enrollment by 1.8% across the state in 2022, despite seeing steady growth before the pandemic (University System of Georgia, 2022).

With the decrease in post-secondary enrollment, the admissions process and overall student interest in post-secondary options come into question. It is possible that students need more support during this transition. For example, high school students may question which courses are necessary for their next educational steps and which ones are not. Specifically, there is not as much data on gifted students as a subgroup describing their transition from secondary education into post-secondary. The acceleration methods for gifted students and their ability to produce post-secondary matriculation come into question. Without long-term analysis of this information, course registration for post-secondary goals becomes a confusing experience for gifted students and their families.

Two significant forms of accelerated coursework for gifted and advanced students have traditionally been offered in the high school setting: Advanced Placement (AP) courses supported by College Board and Dual Enrollment (DE) courses provided by local colleges and partnerships with the state education department. AP and DE courses have different appealing qualities to a gifted student in high school, but no definitive information regarding college admission has been provided. Counselors, parents, and teachers register gifted students for courses that match students' long-term goals. However, there has yet to be clear information regarding possible relationships between AP or DE course enrollments and post-secondary matriculation. Furthermore, gifted students may be interested in attending top universities with increasingly competitive admission criteria; therefore, results from this type of research may be vital to their long-term success.

Statement of the Problem

Historically, secondary gifted students have been encouraged to take Advanced Placement (AP) classes to earn college credit while fulfilling the requirements for a high school diploma (Finn & Scanlan, 2019). However, students have been reconsidering college recently after negative digital experiences from the COVID-19 pandemic, and university-educated students' post-secondary income rates have been mediocre compared to skill-based trade jobs acquired from technical colleges (Pavlov & Katsamakas, 2020). Due to these challenges, students have been enrolling in Dual Enrollment (DE) or concurrent enrollment courses in which students participate in college classes outside their brick-and-mortar building to earn credit toward a college degree. Because of this shift in educational scheduling, students have been enrolling in more DE courses over

time (An & Taylor, 2019). To support gifted students in achieving their higher education goals, it is crucial to determine which courses optimize their transcripts for matriculation into post-secondary educational options.

In reviewing research, much of the studied information has pertained to the retention and completion of college degrees for students with dual enrollment versus advanced placement classes. However, there is a lack of research regarding which courses are more appealing for matriculation to 2-year or 4-year post-secondary schools. Of the research, the most recent regarding admissions for students not solely gifted was Geiser and Santelices's (2004) study on advanced-placement courses and honors-level courses in "high stakes" admissions. This study was completed before the boom in dual enrollment courses and focused on the general student population. Additionally, Do (2020) conducted a phenomenological study about the factors that influence where gifted students apply to college but did not discuss the differences in transcripts with dual enrollment versus advanced placement. Overall, Do (2020) found that much of the research focused on student college participation and the outcomes after taking advanced placement courses. However, there is a gap in understanding regarding the benefits of AP and DE courses on a gifted student's transcript.

As AP course popularity competes with DE course popularity, there has been confusion regarding the admissions criteria for top research universities (Kim, 2021). Beyond the discussion of equity and availability of these courses, the intent behind scheduling gifted students needs to be assessed. Gifted students benefit from acceleration and the opportunity to complete post-secondary courses in advance (Plucker et al., 2022). Because gifted students benefit from this coursework, an evaluation on which level of

courses, AP, DE, or neither, will create a path to post-secondary studies for gifted students to attend. To alleviate the uncertainty regarding the admissions requirements for AP and DE courses, numerical analysis of gifted students' matriculation rate to 2-year and 4-year colleges or universities with comparison across transcripts of students who have AP, DE, and a combination of the two on their records will provide clarification for which courses are best for gifted students who desire matriculation into a 2-year or 4-year post-secondary option.

Purpose

This study measures the possible relationships between accelerated course enrollments (Advanced Placement course and Dual Enrollment courses) on secondary gifted students' enrollments in post-secondary educational options in Georgia. This study analyzed how the relationship between enrollment in Advanced Placement courses and Dual Enrollment courses correlates with post-secondary matriculation, aiming to determine whether course registration could predict post-secondary matriculation in gifted students. Results from this study are meant to assist high school advisors and students in making better-informed decisions that may lead to the goal of college matriculation.

Research Questions

In this study, pre-existing data was used to answer two main research questions.
RQ1: What relationships exist between accelerated course enrollments of secondary gifted students and their post-secondary enrollment (2-year and 4-year schools) in Georgia?

- Subquestion (a): Are there differences in the post-secondary enrollment (2-year and 4-year schools) rates of secondary gifted students enrolled in Advanced Placement course options and Dual Enrollment course options in Georgia?
- Subquestion (b): Are there differences in the post-secondary enrollment (2-year and 4-year schools) rates of secondary gifted students enrolled in exclusively Advanced Placement course options or exclusively Dual Enrollment course options in Georgia?
- Subquestion (c): Are there differences in the post-secondary enrollment (2-year and 4-year schools) rates of secondary gifted students enrolled in accelerated course options or no accelerated course options in Georgia?

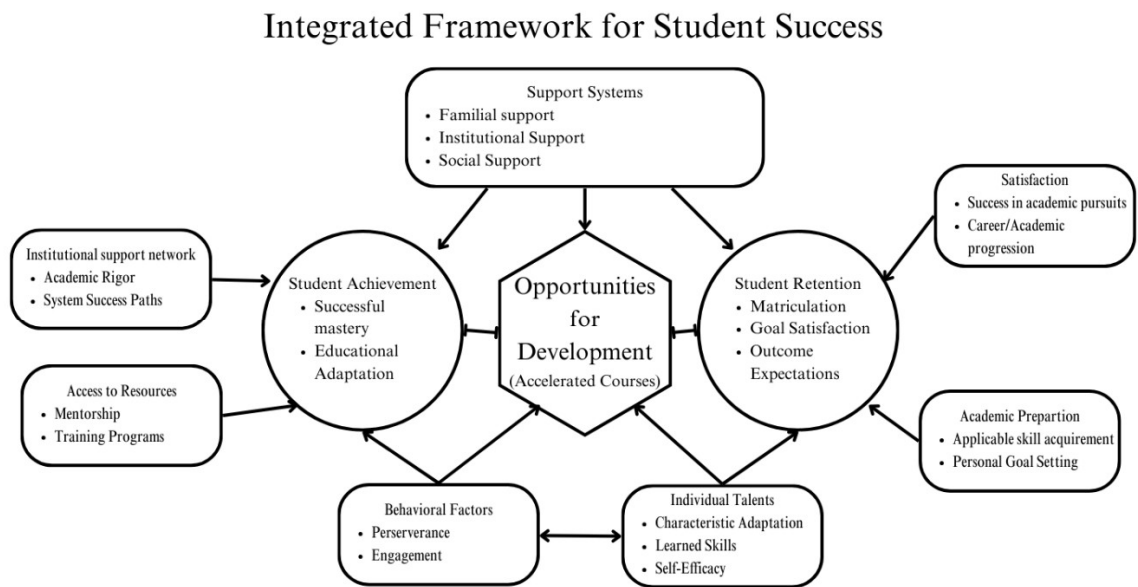
RQ2: To what extent do accelerated course enrollments of secondary gifted students predict their post-secondary enrollment (2-year and 4-year schools) in Georgia?

By answering these two questions, I will hopefully add to the existing literature on the transition of gifted students in accelerated courses into post-secondary education. These two questions will be addressed through chi-square tests of independence, binary logistic regression, odds-ratio analyses, and other relevant statistical techniques. This research aims to provide insights into the effectiveness of different accelerated course options in post-secondary matriculation among gifted students in Georgia. The findings may have implications for educational policy and practice by helping educators and policymakers make informed decisions to assist in the academic success of gifted students.

Theoretical Framework

For this study, the principles of gifted education and college readiness provide the foundation for understanding the factors influencing gifted students' course enrollments and their admissions to post-secondary options. Gifted education provides students with appropriate educational opportunities to meet their unique needs. College readiness incorporates the skills, knowledge, and experiences students need to engage with before college. Both gifted education and college readiness are supported by the talent development theory, social cognitive career theory, and college access and success framework. The theories are intertwined into the following integrated network for student success.

Figure 1. Integrated Framework for Student Success



The integrated framework for student success in Figure 1 incorporates pieces of Dai's Evolving Complexity Theory (2021), Lent et al.'s Social Cognitive Career Theory (1994), and Perna & Thomas's Conceptual Model of Student Success (2006). Each

component of the integrated framework stems from a portion of these three models, all with a central focus on the opportunity for the development of gifted students. Beyond gifted and talented students' innate abilities, environmental supports are key to student success and growth as they progress through their educational careers. With the various options for development via accelerated course enrollments, gifted students must have wrap-around services to ensure they are developing in a way that best suits their individual needs and goals. Accelerated course enrollments allow gifted students to make effective choices toward the talents they wish to grow, with an outcome expectation of different levels of post-secondary matriculation.

The integrated framework highlights how the outer support pieces facilitate the development of a gifted student, with the center of the framework located as the opportunity for development. The integrated framework represents an iterative process that can then repeat and build on itself as a gifted student progresses past each opportunity for development through the different choices made for growth. Finally, the integrated framework establishes an intertwined perspective supporting the use of accelerated courses in gifted education by melding the pieces of evolving complexity theory (Dai, 2021), social cognitive career theory (Lent et al., 1994), and the conceptual model of success (Perna & Thomas, 2006).

Evolving Complexity Theory

Dai's evolving complexity theory (2021) focuses on the perspective that talents are not fixed but can be developed through interactions with individuals and environments. Evolving complexity theory (ECT) provides insight into gifted education with a dynamic view that gifted and talented individuals are not limited to the capacity of

their abilities but rather an ongoing development of their abilities revealed through interaction with their environments (Dai, 2021). ECT embraces differentiation, diversification of education, and a flexible approach to gifted education so that students can most benefit from the developmentally appropriate path tailored to the learner's needs (Dai, 2021). Dai (2021) argues that gifted students have special counseling needs for optimal development and their chosen fields of study later in their career pathways. Overall, ECT (Dai, 2021) provides a refreshed framework for gifted and talented education, with an open perspective on the individual needs of gifted students and the promising developmental opportunities for students based on their environmental interactions.

Dai's evolving complexity theory (2021) applies to the research questions due to the ECT's perspective on the environment a student is in and their talent development. Accelerated course enrollments can be viewed as environmental opportunities that interact with the abilities of gifted students, which can influence gifted students' pathways to post-secondary matriculation. Accelerated course enrollments portray the environmental factor of ECT, with gifted students engaging in different rigor levels depending on their needs and plans. Gifted students have opportunities to develop within accelerated course enrollments, and the various environments of Advanced Placement courses versus Dual Enrollment courses encourage using an ECT lens to see which environment develops talents in the best interest of the gifted students based on their post-secondary matriculation goals.

Social Cognitive Career Theory

The social cognitive career theory (Lent et al., 1994) was created to explain career choices. Social cognitive career theory (SCCT) foundations include student self-efficacy beliefs, outcome expectations, and goals (Lent et al., 1994). According to the SCCT, students with strong self-efficacy beliefs regarding certain activities or programs are more likely to be interested in, engaged in, or excel in such activities (Lent et al., 1994). Lent et al. (1994) SCCT found that outcome expectations similarly influenced the choices made by individuals as self-efficacy beliefs did. The final foundational piece, personal goals, was found by the SCCT to have two types: choice and performance (Lent et al., 1994). Lent et al. (1994) found that goal setting, self-efficacy, and outcome expectations influence vocational interest development, choice-making, and performance attainment.

Lent et al.'s (1994) social cognitive career theory applies to the research questions because the theory examines how self-efficacy, outcome expectations, and goals influence career choices. Such choices may have a relationship with post-secondary enrollment plans by gifted students. SCCT suggests that students' self-efficacy beliefs and outcome expectations are crucial in their academic and career-related decisions (Lent et al., 1994). For gifted students, enrolling in accelerated courses like Advanced Placement (AP) and Dual Enrollment (DE) can enhance their self-efficacy by providing challenging and enriching educational experiences. These experiences can increase their confidence in their academic abilities and positively influence their expectations regarding the benefits of post-secondary education. Lent et al.'s (1994) SCCT emphasizes that personal goals and contextual factors, such as school support and family encouragement, significantly influence students' educational trajectories. Accelerated

course enrollments can be seen as part of a goal-oriented behavior influenced by high self-efficacy and positive outcome expectations. By examining these enrollments as predictors, SCCT can provide insights into how these factors, combined with the support systems, predict post-secondary enrollment.

Conceptual Model of Student Success

The conceptual model of student success (Perna & Thomas, 2006) includes multiple perspectives and theories based on six characteristics:

- Student success is determined by college readiness, enrollment, and achievement, with a conclusion at postgraduate and/or career involvement.
- When multiple theories are considered, student success has the best chance to be understood. One single theory does not encompass a complete understanding of student success.
- Student success is shaped by internal, family, school, and societal contexts.
- There is variation in determining student success based on specific disciplines.
- Both quantitative and qualitative approaches positively impact the knowledge of student success.
- Student success varies among demographics, socioeconomic status, and other subgroups.

Perna & Thomas (2006) created the model to inform policymakers and practitioners about the college success gap's multiple layers and contexts. Within the development of the model, the layers of internal context, family context, school context, and social, economic, and policy context were each scrutinized through a perspective of education, psychology, sociology, and economics (Perna & Thomas, 2006). The model includes four

suggestions: limitations depending on the student's context, cooperation between policies across programs, multi-approach and variation among implemented policies across contexts, and the support of research for multiple analysis methods of current conceptual models. The conceptual model of student success simplified the conversation about the success gap among students intending to attend college and modeled the next steps for further interest in the college success gap.

For this study, the conceptual model for student success (Perna & Thomas, 2006) applies to the research questions through the context perspectives of the individual context, family context, and school context. The individual context pertained to the student's academic behaviors, performance, and goals, which connects to this study's questions about rigorous course enrollment (Perna & Thomas, 2006). The family context describes a student's socioeconomic status with additional factors such as culture and parental involvement (Perna & Thomas, 2006). The family context applies to this study because of parents' influence on students' academic course schedules (Gruman, 2013; Witenko et al., 2017). The school context examined students' longitudinal experience in education from primary through secondary levels, discussing the effects of academic preparation and readiness for the next educational level (Perna & Thomas, 2006). For this study, the school context provides value when considering gifted students' academic rigor and college preparation based on their accelerated course enrollments. The conceptual model for student success suggests that many factors shape student success, and this study will examine whether accelerated course enrollment shapes student success.

Integrated Framework for Student Success

The integrated framework for student success incorporates pieces of Dai's evolving complexity theory (2021), Lent et al.'s social cognitive career theory (1994), and Perna & Thomas's conceptual model for student success (2006). The central piece of the framework relies on the development opportunities seen through accelerated course enrollments. The opportunities for development stem from Dai's evolving complexity theory (2021), as each student needs many chances to improve upon themselves. Two bubbles stemming from this central location: student achievement and student retention. Both student achievement and student retention are essential to enrollment in accelerated courses, with the student achievement bubble building off the conceptual model for student success and the student retention bubble building off the social cognitive career theory. Both achievement and retention are key to each piece of the framework and connect the outermost influences on the central opportunities for development.

Above the student achievement and retention bubbles are the support systems for students, which come from the conceptual model for student success. Student support systems feed into both achievement and retention because they encourage students to perform while supporting students during the struggle of learning. Underneath student achievement and retention are behavioral factors and individual talents that students may have, which originated from the evolving complexity theory and the social cognitive career theory. These innate pieces of a student's being work with the support systems to balance a student's needs for achievement and retention in accelerated courses. Finally, on the outermost edges are individualized supports for student achievement and separate supports for student retention. The social cognitive career theory supplemented student

achievement support, including institutional and resource support. The conceptual model for student success influenced the outer bubbles for student retention through student satisfaction and academic preparation. The integrated framework for student success took threads from the fabrics of Dai's evolving complexity theory (2021), Lent et al.'s social cognitive career theory (1994), and Perna & Thomas's conceptual model for student success (2006) to weave a fabric of interrelated pieces of a gifted student's opportunity for development through the enrollment in accelerated courses.

Significance

The COVID-19 pandemic has sparked much discussion on the value of higher education (Cebula & Koch, 2021; Heckmen et al., 2023). Cebula & Koch (2021) mention an approaching "storm" if changes are not seen. The amount of high school graduates is anticipated to remain steady, but institutions that depend on tuition must adjust to the current education demands of the post-pandemic graduates (Prescott, 2021). The pandemic led to asynchronous instruction, which many gifted students benefitted from because they could get ahead in their coursework (Wolfgang & Snyderman, 2022). Some gifted students thrived during the pandemic because they could excel individually, creating post-pandemic questions about the best learning environments for gifted students (Wolfgang & Snyderman, 2022). Gifted students demonstrate self-regulatory efficacy, conscientious personality traits, and openness to experience, which lead to high performance and the ability to succeed in higher education (Mammadov et al., 2018). There are more advanced options for coursework, like Advanced Placement and Dual Enrollment courses, and gifted students have taken advantage of both course offerings beyond the traditional AP-only approach (Plucker et al., 2022).

University admissions processes typically include a minimum score requirement on the SAT and ACT and a rigorous transcript, which used to be accomplished only by Advanced Placement classes (Geiser & Santelices, 2004). With the offerings of Advanced Placement and Dual Enrollment courses, further information is needed to discern which courses best set gifted students up for post-secondary matriculation. The focus of the research is to provide insight into which courses, whether Advanced Placement or Dual Enrollment, offer gifted students more matriculation into post-secondary experiences.

With the information from this research, professionals in secondary education will be able to better inform gifted students on the courses they need to take beyond the "word-of-mouth" advice previously given. Counselors, teachers, administrators, and parents will benefit from this information because gifted students can properly enroll in courses to achieve their university admissions goals. The research factors will also assist the gifted education field because information regarding gifted students' decision-making about accelerated coursework will help curriculum developers with course design tailored to the factors that appeal to gifted students. Overall, the impact of the research will improve the understanding of how to support gifted students and their long-term goals.

In a broader sense, this research presents an opportunity to develop a deeper understanding of the possible relationships between secondary education and higher education of gifted students. The impact of this research will enable gifted students to create a schedule conducive to their long-term goals. Additionally, this research will establish the current status quo of college admissions and answer gifted students' questions regarding the implications of dual enrollment, advanced placement, or both on their transcripts. With this information, universities will communicate their expectations

and standards for admission regarding the dual enrollment versus advanced placement course enrollment debate. The clarity from this research will lead to a better informed gifted student, parent, and educational professional that provides a more straightforward path toward long-term achievement.

Assumptions, Delimitations, and Limitations

Assumptions

For the logistic regression analysis, it is crucial that the outcome variable is binary, observations are independent, and there is a linear relationship between the logit of the outcome and the predictor variables (Boateng & Abaye, 2019). Additionally, multicollinearity among predictor variables should be avoided, outliers should not unduly influence the model, and adequate sample size must be ensured (Boateng & Abaye, 2019). These assumptions collectively support the validity and reliability of the study's findings on the relationship between accelerated course enrollments and post-secondary enrollment outcomes for gifted students in Georgia.

Delimitations

This study will be limited to secondary gifted students in Georgia, and findings may not be generalized to other states or countries. The types of courses are also limited to Advanced Placement (AP) and Dual Enrollment (DE) courses due to the nature of the school district curriculum, without the inclusion of other accelerated courses like International Baccalaureate (IB) that may occur in other regions. This study will only consider 2-year, 4-year, or no post-secondary options due to the nature of the data set from Georgia. The study is limited to the cohorts of students from the classes of 2017, 2018, and 2019, which may not account for long-term trends or changes over time.

Limitations

One limitation of this study will be the limited access to comprehensive data on course enrollments and post-secondary outcomes. Access to data verification such as the National Student Clearinghouse database also limits the validity of the data accessed from the local school district in Georgia. Additionally, there may be an inherent self-selection bias, as students who choose accelerated courses might already be more inclined towards higher education. The study may encounter multicollinearity, which can lead to misleading results. The findings may be specific to the population studied and may not apply to different educational systems or demographic groups. If significant relationships exist, attributing the relationships to the elements of the integrated framework for student success (Figure 1.1) will be limited due to the undetermined causal nature of the relationship. These limitations highlight the need for cautious interpretation and suggest areas for future research to address these constraints.

Definitions

Advanced Placement Courses (AP). College-level courses offered to high school students are standardized, reviewed, and approved by college faculty to ensure that high school students are completing college-level work. At the end of the AP course, students have the opportunity to take a standardized AP exam to earn college credit. AP courses earn students credit toward high school graduation (College Board, 2024).

Dual Enrollment. Post-secondary coursework that earns students credit towards high school graduation requirements and post-secondary requirements such as certificates, associate degree, or bachelor's degree requirements in the state of Georgia (Georgia Department of Education, 2021).

Secondary Gifted Student. A student enrolled in a Georgia 9th- 12th-grade high school receives gifted education services after meeting the eligibility criteria as defined in the Georgia State Board of Education Rule 160-4-2-.38. The student is defined as one who demonstrates a high degree of intellectual and/or creative ability, high motivation, and/or excels in certain academic fields in which special services or instruction are needed to achieve at the levels of their abilities (Georgia Department of Education, 2012). For Georgia, students must meet at least 3 of the following criteria or qualify through a composite score at or above the 99th percentile on a standardized mental ability test:

- **Mental Ability:** Students must score at or above the 96th percentile on a standardized mental ability test. For younger students (K-2), composite scores are used, while older students (grades 3-12) may have subtest scores that qualify.
- **Achievement:** Students must score at or above the 90th percentile on a standardized achievement test in reading, mathematics, or a composite score.
- **Creativity:** Students must score at or above the 90th percentile on a creative assessment or demonstrate exceptional creative output as evaluated by district-approved methods.
- **Motivation:** Students must demonstrate high levels of motivation, measured typically by teacher evaluations, student portfolios, or scoring at or above the 90th percentile on a motivation assessment.

Summary

This study sheds light on the relationship between AP and DE courses on gifted students' post-secondary matriculation. There have been discrepancies between the

purposes of AP courses and DE courses, as well as which course would best enable a student to matriculate into a 2-year or 4-year post-secondary option. The COVID-19 pandemic exacerbated this discussion by questioning the purpose of higher education altogether and what methods of higher education best suit the gifted learner. This study highlights the relationship, or lack of, between AP and DE courses with post-secondary matriculation.

Chapter 2

LITERATURE REVIEW

Overview of the Study

This study will determine whether there is or is not a significant relationship between accelerated course enrollment and gifted students' matriculation into post-secondary options. This chapter details the research on the development of accelerated coursework options, the relationship gifted students have had with such options, the differences between the options of Advanced Placement (AP) and Dual Enrollment (DE), and the pressing influences experienced by gifted students when deciding on which courses to enroll in.

History of Accelerated Coursework Options

High school students across the United States have many choices to make when signing up for their courses because the courses on their transcript may impact their post-secondary steps. In the 1950s, College Board created Advanced Placement (AP) courses for students to earn college credit for rigorous, standardized courses completed in high school (Finn & Scanlan, 2019). The only competition for the AP courses was International Baccalaureate (IB) courses from Europe in 1971 (Finn & Scanlan, 2019). However, in 1985 and later in 2000, states began implementing dual enrollment (DE) or concurrent enrollment courses in the local high schools so students could attend actual college courses while remaining high school students through partnerships with local colleges (Finn & Scanlan, 2019).

With all these choices for course enrollment, gifted students must weigh the options to determine which course will look best on their transcript. Before determining the requirements for their transcript, students must decide which university has the best reputation and resources for their personal goals, which has led many families to depend on the *U.S. News* ranking system for universities (Epstein, 2009). *U.S. News* ranks the best colleges by scoring based on different weights, and these top-ranked colleges are released yearly (Morse & Brooks, 2022). Based on the *U.S. News* rankings for 2024, the Top-Ranked National Universities of Georgia within the top 50 national universities are Emory University (#24), Georgia Institute of Technology (#33), and University of Georgia (#47). Students who want to get into top-ranked universities that are on the *U.S. News*' list have requested information about what appeals to these universities, leading admissions officials and reporters to write suggestions regarding these accelerated courses (Besterfield, 2024; Clark, 2019; Claybourn, 2022). Extending accelerated course offerings beyond AP has led researchers, students, families, and staff to question which courses are best.

In the studies about AP and DE courses, the focus shifted from studies about ethnicities and course enrollment to the income level of students who enroll in these courses, along with various sub-populations. The frequent question around AP and DE courses revolves around the superiority of one course type over the other. Klopfenstein & Lively (2012) encouraged the idea beyond competition between AP and DE with an open-ended view of the courses to work in tandem as complements of one another based on what may be best for the student, their environment, and the school's ability to offer specific courses. Over time, the appeal of AP and DE courses has gained the attention of

high school students as opportunities to earn undergraduate degrees quicker, develop their ability to succeed at a higher level, and have the potential to engage with a high-quality curriculum (Klopfenstein & Lively, 2012). The need for these courses to interact as competitors or complements remains to be explored, with multiple factors about the preparation, success, and admission of students into post-secondary options.

Throughout the literature, AP and DE courses have been discussed about rigor, college admissions, readiness, retention, and completion, making these courses appealing to gifted students (Beard et al., 2019; Besterfield, 2024; Bowers & Foley, 2018; Clayton, 2021; Finn & Scanlan, 2019; Geiser & Santelices, 2004; Gruman, 2013; Morgan et al., 2018). The impact of accelerated courses on gifted students allows them to work through academic content at a faster pace and potentially graduate from high school early (Plucker et al., 2022). Gifted students benefit from these courses due to the grounding of the classes in the content area discipline, with the expectation that specific standards are established and anticipated to be mastered (VanTassel-Baska, 2023). The use of gifted high school students as the population for this study differentiates this study from previous work because researchers have not discussed the impact of AP and DE on post-secondary acceptance rates among gifted students. The literature in this review includes journals, dissertations, and resources from College Board to demonstrate the different attempts at investigating the AP versus DE debate.

Further research needs to be conducted regarding the acceptance rates into post-secondary options for gifted students with AP and DE courses. The research detailed in this review creates a foundation for the study of the impacts AP and DE courses have on college acceptance, retention, and completion. However, most research was conducted for

the general population rather than on subpopulations like gifted learners. In this review, the themes of Advanced Placement and Dual Enrollment courses are approached with a focus on the gifted student and include the rigor comparison between courses, the evaluation of college acceptance and readiness with these accelerated courses on student transcripts, and the retention followed with completion of college after having these accelerated courses on student transcripts.

Gifted students and Academic Acceleration Options

Gifted students must meet multiple criteria as defined by the Georgia Department of Education to be qualified and distinguished as a "gifted student" (Georgia Department of Education, 2012). With this distinction, gifted students have engaged with differentiated curriculum, adjusted course progressions, and instructional grouping to promote success based off the needs these students require to be met (VanTassel-Baska, 2019). The need for a differentiated approach to gifted education works with these students' high career expectations and aspirations (Greene, 2006). At the high school level, gifted students participate in multiple tiers of coursework, including on-level, honors, AP, and DE. Schmitt and Goebel (2015) found that high-ability students enjoyed the advanced coursework and the opportunity to engage at a higher level than their peers. However, the learners felt it came at a cost to their social-emotional health. Similar experiences have been found across studies of gifted learners regarding accelerated academic options in that students value the higher standard of curriculum and instruction but struggle socially and emotionally (Kim, 2016; Mammadov et al., 2018; Smith & Wood, 2020; VanTassel-Baska, 2019).

One example of the impact on gifted students' choice to enroll in AP or DE could be based on the course setting. The different settings in which these courses occur could challenge the social life of gifted students, as AP courses are typically in the traditional high school building (Schmitt & Goebel, 2015). However, DE courses are at a local college. Despite a social-emotional impact, gifted students need multiple options for their coursework (Wolfgang & Snyderman, 2022). The need for accelerated coursework has been around since the identification of gifted learners has been incorporated into the educational system, with gifted learners benefiting from differentiated coursework from their peers.

Dual Enrollment

Dual Enrollment coursework enables high school students to take coursework through partnerships with colleges and universities, and the coursework earns them both high school credit and college credit on their transcripts. The dual enrollment programs offer high school students a bridge between high school and college coursework by enabling students to remain enrolled at both institutions simultaneously. Dual enrollment options vary state by state. For example, in Georgia, students can earn their diploma alongside an associate degree or a technical college certificate by engaging with college coursework taught by college professors, typically at the college's main location. However, north of Georgia in Tennessee, the dual enrollment courses are state-created by joint teams involving high school teachers and college professors, which are delivered by high school instructors inside the high school (Hemelt et al., 2020).

The location of the dual enrollment courses has been shown to play a significant role by benefiting students when taught at community colleges and not high school

(Klopfenstein & Lively, 2012). However, as previously mentioned, the impact of a different setting for the courses could affect a student's social life. Dual enrollment as a label holds the same general foundation in purpose: to provide students an opportunity to earn advanced credit. However, the instructional setting, admission requirements, and continuation of higher education differ across the implementation of dual enrollment per state, which affects the recruitment of students and the appeal of the program (Jagesic et al., 2022). Dual enrollment has become a prevalent option for accelerated coursework in high schools across the United States.

Advanced Placement

Advanced Placement courses have been offered in schools since the 1950s, and consistent, steady growth in enrollment and achievement has been seen since the courses' introduction (Finn & Scanlan, 2019; Judson & Hobson, 2015). Historically, AP courses have existed longer than dual enrollment courses. AP courses must participate in an AP Course Audit to demonstrate that the course meets the requirements defined by the College Board, with the flexibility that the high school teacher can develop their instruction and curriculum (Judson, 2017). AP courses are modeled after a comparable introductory college course, and each has a course description that is standardized and followed nationally with a culminating exam that must be passed to receive college credit (College Board, 2024). Colleges and universities offer different score requirements on AP exams depending on the course. High school students need to consider the AP exam requirements by their desired universities to plan which courses may earn them college credits.

Because AP courses have a standardized set of requirements, various research studies have focused on the different factors for student success in these courses. Students experiencing poverty or a lower socioeconomic status tend to be overlooked in placement into these courses, and the social-emotional health of these students needs to be considered when enrolling students in these courses (Szymanski, 2021). Critiques for the AP courses include additional stress with lower mental health status of students, lack of diversity in students taking courses, and mismatching of coursework to the same rigor and difficulty of college courses (Conger et al., 2019; Finn & Scanlan, 2019; Judson & Hobson, 2015; Walsh, 2016). College Board has attempted to address these concerns with workshops and guidebooks on recruitment toward diverse student populations, along with the implementation of Advanced Placement Summer Institutes to instruct new teachers on how to match the intended rigor and depth of coursework (College Board, 2024).

Despite some controversy, AP courses have been used as another vehicle for high school students to earn college credit. AP courses have demonstrated value on a student's transcript with the historical reputation and standardized curriculum, but these courses continue to develop to match the desires of colleges and universities (Finn & Scanlan, 2019). AP Courses do not have prerequisites beyond understanding the anticipated robust curriculum and pace of the courses. High school students who participate in these courses remain within the walls of their high school but carry the credit earned post-AP exam on their transcript to the institution of their choosing.

Comparison of Acceleration Methods

Accelerated courses like Dual Enrollment and Advanced Placement work with the same population, high school students, but have different histories, requirements,

instructional settings, and reputations. Historically, AP courses have been around longer than DE (Finn & Scanlan, 2019). The requirements to enroll in these courses also differ in that AP courses do not require any sort of GPA, exam score, or overall college admissions like the DE courses because of their tie to a local institution. As previously stated, the locations and instructors of these courses differ, with some variations from state to state. All AP courses are taught by high school instructors who have attended an Advanced Placement Summer Institute with the students remaining in their high school buildings. DE courses may have a high school instructor in one state or a college professor in another state, and the course may be taught at the home high school or the local college location. Finally, with all these logistical differences come the reputational differences regarding rigor, collegiate preparedness, and the overall post-secondary outcome after participating in these courses.

Academic Rigor

Higher education and its purpose have been rethought with the generation of high school students who had their education interrupted by a pandemic. The rigor of high school and college courses has been a discussion topic among educators lately, even at the congressional level, where negative impacts on the educational experience after the COVID-19 pandemic have been speculated (U.S. House of Representatives, 2022). Despite demographic differences among students, Morgan et al. (2018) found that high-rigor courses had a positive relationship with college success. With dual enrollment courses on the heels of advanced placement courses in the footrace of popularity, the initial impression of the ease of dual enrollment courses has appealed to some advanced learners (Finn & Scanlan, 2019). However, DE courses are academically challenging (Jett

& Rinn, 2020). Advanced Placement courses have historically been the golden standard for the most rigorous option in accelerated coursework (Finn & Scanlan, 2019). This review will detail the importance of rigor for gifted learners, the similarities among AP and DE courses, and the differences in rigor among AP and DE courses.

Most likely, high school gifted learners have been challenged through gifted programming, but Yeung (2014) proposed that these learners could be pushed further than present expectations. Gifted students have been found to be more likely to enroll in advanced courses (Crabtree et al., 2019). Advanced courses offer gifted students a faster pace, deeper exploration of content, and more challenging tasks and assessments. The rigor needed to satisfy and engage a gifted student is found within AP and DE courses. AP courses have long been touted as the standardized model for a rigorous course due to the national standards that must be met to teach an AP course (Finn & Scanlan, 2019). The value of a rigorous course option for gifted students must remain at the forefront of gifted education at the secondary level so that gifted students can reach their full potential.

The two popular avenues for gifted students to engage with accelerated coursework are Advanced Placement and Dual Enrollment courses, which have similar characteristics. Both courses allow students to earn college credit for mastery of college-level coursework completed in high school. Additionally, many states have been offered incentives to add or expand both AP and DE course offerings, with some states mandating such offerings (Clayton & Guzman, 2022). On a student's transcript, either AP or DE course completion signals a separation from the pack because students who completed these courses have demonstrated an ability to persevere through a recognized

rigorous learning environment (Clayton, 2021). Overall, AP and DE courses have been respected as courses that deserve the attention of college admissions officials due to the similar post-secondary opportunities these courses offer students.

Earning College Credit

AP and DE courses offer gifted students the chance to earn college credit, but the process to earn the credit is different among the two courses. The difference in processes has led some to question the equivalency of rigor between the courses. AP has been around longer and is recognized nationally as a more extensive program than DE (Clayton, 2021). DE courses are not dependent upon passing a final examination, contrary to AP courses, where college credit is awarded based on the final AP Exam score (Clayton, 2021). While DE courses have traditionally been identified for low-income, first-generation, or rural populations, this does not necessarily mean the rigor of these courses was less than AP (Clayton, 2021). DE courses have more flexibility in the avenue for their offerings than AP courses. DE courses can be offered through partnerships with local universities, offered in the brick-and-mortar high school setting with a teacher who has met the requirements, or now through a virtual setting (Clayton, 2021). The content offerings of courses for AP and DE may also differ due to the school's location, the teachers' certifications, and the student body's desire to participate in these courses (Clayton & Guzman, 2022). The lack of AP or DE course offerings in particular content areas, such as math, may lead one to think that there is a lack of rigor because there is a lack of courses. However, this fallacy has begun to be debunked through research on the different factors influencing course offerings (Howley et al., 2013). Additionally, DE courses have been thought to be less rigorous because of the disconnect between high

schools and local colleges. However, Duncheon and Relles (2020) found that this could be alleviated through proper communication and system-wide reformation efforts.

Overall, the differences in the implementation and availability of AP and DE courses do not prevent these courses from offering similar post-secondary opportunities to advanced students.

The rigor of accelerated coursework is essential to the success of gifted students, and AP and DE courses have been established as rigorous outlets for learning. Both courses offer students similar beneficial outcomes for their post-secondary studies. However, the mode in which students receive this education may be different depending on the location and support of their local school system. Gifted students thrive in rigorous environments, and the engagement level of these students impacts their post-secondary success (VanTassel-Baska, 2023). Despite the differences between the two accelerated courses, AP and DE courses contain the tools to advance gifted students to a faster-paced learning environment that meets their needs.

Acceptance and Readiness

The literature is limited regarding college acceptance rates of gifted learners who have AP and DE courses on their transcripts and the readiness of these students for college. Admission into college is one step, but the ability to perform at the expected caliber extends this first step. The acceptance and preparation of students for the next steps in their educational career is critical to the reputation of both AP and DE courses. A review of both the acceptance and readiness determinations for students in AP courses and DE courses highlights the findings in the research while also spotlighting the gaps that need further study.

Due to the historic nature of the AP program and its longer existence, more data, research, and analysis were available to peruse when compared to DE course evaluations. College Board® has found that AP students have demonstrated higher levels of college readiness than traditional students (College Board, 2014). Beard et al. (2019) found that participation in one or two AP courses had the most significant predicted increase in first-year college grades. In Tennessee, credit in AP English and AP mathematics increased the chance of success for students in those content area classes during college (Bowers & Foley, 2018). All these statements support the ability of AP courses to earn students' acceptance to college and prepare students for college. The lack of specifics regarding the types of colleges and students encourages this study to fill that gap. The impact AP courses have on gifted students' acceptance and preparedness to matriculate into a post-secondary option has yet to be studied with the gifted student sub-group.

The literature and data on DE courses were not as extensive as the information on AP courses. In a specific study focused on dual enrollment with math courses, Hemelt et al. (2020) did not find an effect on overall college enrollment. However, they saw a mild change in students' choice to attend a four-year university over a two-year college, depending on their math achievement. Similarly, Kilgore and Taylor (2016) discussed the positive relationship between DE courses and a student's likelihood to attend college. The statistics for DE were not as detailed about the type of colleges attended, but rather, admissions to colleges in general were happening. Lee et al. (2022) found that participation in at least one dual enrollment course led more students to choose attendance at a 4-year college over a 2-year college. Most of the positively impacted dual enrollment students were those of minority populations, lower socio-economic status, or

first-generation students, which could potentially explain the lack of research regarding the specific ranking of colleges (Lee et al., 2022). Dual enrollment courses are seen as a way to bridge the gap between the long-time prestigious AP program for highly affluent students and the rest of the population that was left to figure out college applications themselves (Finn & Scanlan, 2019; Lee et al., 2022). Overall, the literature did not focus on the gifted student subgroup, leaving room for this study to fill that gap. The impacts of dual enrollment courses on overall college acceptance and readiness were positive, with room for further research to occur regarding the subgroups of the studied populations, specifically gifted students.

Both course offerings earn flying colors when assessing AP and DE courses for successful college acceptance rates and preparedness. None of the research supported adverse outcomes with these courses, and students benefited through college acceptance and readiness. However, the general studies found in the literature further supported the need to study more precisely and specifically the impacts of AP and DE courses on acceptance and readiness for subpopulations like gifted students. By researching these subgroups, trends could be found, and more information could be gathered to support identified subpopulation needs best.

Retention and Completion

Following college acceptance and readiness, the support of AP and DE courses to ensure new students remain in college and further finish the degrees they started is critical to the purpose of the courses. The literature provided more details regarding retention and completion of college degrees than the previous section. Kretchmar and Farmer (2013) found that students who took at least five AP or DE courses outperformed

students who did not take any. College Board® found that students in both AP and DE courses graduated from college on time or in a shorter amount of time than comparable peers (Godfrey et al., 2014). The first-year college retention rate is a strong predictor for students to finish their intended college degree (Bowers & Foley, 2018). The impacts of AP and DE courses on college success support the retention of these course offerings in high schools.

Like the literature on acceptance and readiness, AP courses have a multitude of research regarding the continuation of students in college and the completion of their degrees. Smith et al. (2015) found that students who received a relatively high AP exam score had an increased chance of completing a bachelor's degree within four years of high school graduation. Additionally, students who completed AP courses show positive relationships with college GPA, less time to graduate, and double majors (Clayton, 2021). Kolluri (2018) completed a literature review regarding the success of the AP program and found that the academic achievements were there. However, the AP program had room for improvement in equity and accessibility. Concerning retention and completion of college degrees, students who participate in AP courses improve their chances of college completion compared to those who did not participate in these courses.

Similar to AP courses, DE course completion typically led to more positive collegiate outcomes. Dual Enrollment students were found to be 11% more likely to finish the second year of college than those not enrolled in DE courses, with further prediction to finish a bachelor's degree (Swanson, 2008). Giani et al. (2014) found dual enrollment to be a "promising strategy for increasing the likelihood of students accessing, persisting through, and completing a degree in post-secondary" (p. 200). When compared

to students not enrolled in accelerated coursework, students in DE courses had a one-year retention rate of 87%, which was comparable to the AP rates that were close to 90%, but also at least 10% points higher than a student in on level courses (Bowers & Foley, 2018). With these statistics, the research regarding DE courses demonstrated positive effects on the retention and completion of college degrees. This information was broad and included a variety of colleges and populations. Therefore, further study into specific colleges and populations could provide more insight.

AP and DE courses have been shown to positively impact the general students' post-secondary goals without any noticeable adverse effects. Both modes of accelerated courses offer students an increased probability of staying in college and succeeding in completing their college degree. After considering the literature, further study into subgroups such as gifted students with specific analysis regarding the type of college could provide insight into more specific implications an AP or DE course has on the future of gifted students.

Advising

The different course options between AP and DE impact high school students' discussions with their counselors and parents when deciding their next steps toward higher education. The advice provided to students by counselors, parents, and teachers may influence a student's choice to participate in AP, DE, or a combination of both. Counselors have been seen as "gatekeepers" to courses like AP and DE due to their roles requiring them to provide information and recommendations and understand the educational opportunities available to high school students (Stich et al., 2024). A counselor's interpretation and understanding of AP and DE courses may factor into their

recommendations and discussion with students about their next steps. Additionally, teachers enroll students in the next level of courses, and inconsistencies have been found regarding course enrollment across teachers of the same subject (Bernhardt, 2014). High school students, particularly gifted students, take academic advice from their teachers and counselors while attempting to meet their parents' expectations. These different influences and perceptions may affect enrollment in AP and DE courses and the post-secondary matriculation of gifted high school students.

Teacher Influence

Teachers influence the trajectory of a gifted high school student's path, especially due to the course recommendations completed by the teacher. Bernhardt (2014) found discrepancies across only three teachers and their criteria for determining the next best course for each student. Some of these discrepancies included a lack of understanding of the next course level, a difference in criteria used to recommend students to advanced courses, and a concern about whether their course recommendations influenced students' subsequent pathways (Bernhardt, 2014). These discrepancies can affect a gifted student's high school and college career trajectory. Teachers' belief in students and their potential also encourages or discourages student enrollment in these courses, such as in Jaime Escalante's AP Calculus class in 1978 (Finn & Scanlan, 2019). Teachers who consistently encourage students, are approachable, and have individual conversations with students meet the needs of gifted high school students when deciding their next steps (Seward & Gaesser, 2018). Teachers typically interact with students more frequently than counselors, which can be valuable for students' academic advice. Teacher-student interactions encourage students to pursue different tracks, whether AP, DE, or some other course path

toward secondary education. Further study is needed on the impact of teachers on gifted students' tracks because, presently, the literature speaks about the general high school student population.

Counselor Influence

Students rely on local high school guidance counselors to assist with their course schedule, career track, and their preparation for post-secondary plans. Counselors are expected to know and understand the different course options available to students and the requirements for high school graduation as deemed by the state. Besides the graduation requirements, counselors must know which colleges and universities accept credits for both AP and DE purposes. Some students may intend to transfer to schools different from the ones they are initially enrolled in, which would require students to plan their course schedule with their counselor proactively. Counselors influence students' understanding of the purpose of AP and DE courses on their transcripts, assist students with their plans and course choices that may affect their college applications, and educate students on the ability of courses to transfer if students choose to move schools.

It has been recommended that school counselors spend the majority of their time on college readiness with students on their caseload, with the start of this proactive education being in 9th grade (Bryan et al., 2023). Counselors who shared financial aid, college readiness, and other college preparatory information with their caseload gave those students more opportunities to engage with different pathways to college, whether it included AP or DE courses. Enrollment in AP courses correlated with school counselor interactions for college admission counseling, demonstrating further that school counselors impacted where students looked to continue their education (Bryan et al.,

2023). School counselors' choices with their time at school have been shown to predict the percentage of students who enroll in AP courses (Shi & Brown, 2020). Counselors have demonstrated an influence on the number of AP courses on a student's transcript. For gifted students, the implications of a counselor's input, time, and advice may significantly impact a student's trajectory, which could be explored in further studies.

Parental Influence

A student's parents make up the central portion of the network that students have for support, alongside teachers, counselors, and peers. However, the influence a parent has on a student's college aspirations is the strongest among the different sources of support (Bergerson, 2009; Gruman, 2013; Witenko et al., 2017). Students look to their parents for guidance, use their parents as sounding boards, and listen to the wisdom of their parents due to the nature of the parent-child relationship. Gifted students primarily welcome their parents' involvement and see it as a supportive piece to their academic puzzle rather than one of direct authority instruction (Do, 2020). Do (2020) found that parents supported gifted students in a non-direct way, in that parents were supportive and offered help when approached but did not push their involvement. Do (2020) also found that gifted students' parents typically had jobs with coworkers that may be beneficial as a resource, such as a parent who was a teacher who worked with a school counselor, and that they would tap into this resource at the request of their student for further information about academic trajectories and course enrollment. A parent's influence on a student's choices regarding academic coursework cannot be overlooked.

Parents have a supportive influence on gifted students' decisions on their path to college, but the education parents can limit their influence and involvement. Witenko,

Mireles-Rios, & Rios (2017) found that parents with lower educational attainment, such as a high school diploma, did not have as much of an understanding of the classes a gifted learner may choose to enroll in, such as Honors/AP/DE courses. The lack of understanding did not necessarily create an unwillingness to support but suggested that students with parents who had lower educational attainment did not enroll in specialized accelerated courses at the same rate as students who had parents with higher educational attainment (Witenko et al., 2017). Regardless of academic achievement, parents can stay involved in their students' education and encourage them to push themselves to the academic level at which they participate most successfully. Parental influence on the enrollment of gifted students in AP and DE courses must be considered during the academic advising process. The literature looked at the parental influence on gifted students specifically, contrasting the lack of literature on counselor and teacher influence on gifted students' post-secondary plans. The need to further study all the sources of influence on gifted students' post-secondary plans remains open for more exploration.

Summary

Despite a significant decline in college enrollment following the COVID-19 pandemic, Advanced Placement and Dual Enrollment courses were still used in high schools across the United States (Causey et al., 2021). The long-standing tradition of AP courses holding a superior edge over the college-level coursework game has been challenged by alternatives to the AP chokehold (Finn & Scanlan, 2019). DE courses have become a strong contender in the popularity contest among accelerated courses. AP courses have established dominance through standardized course descriptions, teacher certifications, and nationally recognized AP exams (Finn & Scanlan, 2019). However, the

accessibility of these courses has come into question, which has led to other avenues of higher education being explored. DE courses are more accessible and local, but the quality of the courses to prepare students for the next level has come into question (Clayton, 2021). Additionally, the influence of teachers, counselors, and parents on students' choices has been studied among specific subpopulations, with the gifted population primarily seeing positive benefits from involvement in each part of their support network.

Overall, the literature included reports and journals that analyzed the impacts of both AP and DE courses on student acceptance and readiness while also considering the impact on retention and college completion. The literature focused primarily on the general high school student population rather than the specific subpopulation of gifted students. Further research on the impact of these courses, the rigor, and expectations on gifted students needs to be completed to better serve this population of students and make these courses better opportunities for acceleration. AP and DE courses bridge the gap between high school and college and offer gifted students a taste of the next level. More focused research on subpopulations with different levels of college classification would take the AP and DE debate to the next level while improving the educational opportunities for gifted students.

Chapter 3

METHODOLOGY

Method

This chapter describes this non-experimental study's research design, participants, and instrumentation using transcript data from multiple cohorts of a large Georgia school district. The following research questions guide the study:

RQ1: What relationships exist between accelerated course enrollments of secondary gifted students and their post-secondary enrollment (2-year and 4-year schools) in the state of Georgia?

- Subquestion (a): Are there differences in the post-secondary enrollment (2-year and 4-year schools) rates of secondary gifted students enrolled in Advanced Placement course options and Dual Enrollment course options in the state of Georgia?
- Subquestion (b): Are there differences in the post-secondary enrollment (2-year and 4-year schools) rates of secondary gifted students enrolled in exclusively Advanced Placement course options or exclusively Dual Enrollment course options in the state of Georgia?
- Subquestion (c): Are there differences in the post-secondary enrollment (2-year and 4-year schools) rates of secondary gifted students enrolled in accelerated course options or no accelerated course options in the state of Georgia?

RQ2: To what extent do accelerated course enrollments of secondary gifted students predict their post-secondary enrollment (2-year and 4-year schools) in Georgia?

Research Design

This study is an ex post facto non-experimental research design with a binary logistic regression analysis. The researcher obtained data from the Barrow County Schools System to be retrospectively analyzed to measure the post-secondary enrollments of the graduating classes of 2017, 2018, 2019, and 2020. A nonexperimental, ex post facto research design is most appropriate for this study because the independent variables will not be manipulated. A logistic regression provides the best approach to respond to the research questions in which a binary outcome variable would occur. See the research questions and analysis in Table 1.

Table 1

Research Questions and Data Analysis

Research Question	Analysis
RQ1: What relationships exist between accelerated course enrollments of secondary gifted students and their post-secondary enrollment (2-year and 4-year schools) in the state of Georgia?	Inferential Statistics Chi-Square Test of Independence
<ul style="list-style-type: none"> • Subquestion (a): Are there differences in the post-secondary enrollment (2-year and 4-year schools) rates of secondary gifted students enrolled in Advanced Placement course options and Dual Enrollment course options in the state of Georgia? 	Chi-Square Test of Independence
<ul style="list-style-type: none"> • Subquestion (b): Are there differences in the post-secondary enrollment (2-year and 4-year schools) rates of secondary gifted students enrolled in exclusively Advanced Placement course options or exclusively Dual Enrollment course options in the state of Georgia? 	Chi-Square Test of Independence
<ul style="list-style-type: none"> • Subquestion (c): Are there differences in the post-secondary enrollment (2-year and 4-year schools) rates of secondary gifted students enrolled in accelerated course options or no accelerated course options in the state of Georgia? 	Chi-Square Test of Independence
RQ2: To what extent do accelerated course enrollments of secondary gifted students predict their post-secondary enrollment (2-year and 4-year schools) in Georgia?	Binary Logistic Regression

Threats to Internal Validity

The ex-post facto design is, however, not devoid of limitations, especially on internal validity. It inherently limits control over variables and potential confounding factors (Liu et al., 2021). The biggest threat to internal validity is selection bias; for example, students self-select in AP and DE courses. This self-selection could introduce

systematic differences in academic preparedness, motivation, or access to resources, potentially confounding the observed relationship between accelerated coursework and post-secondary matriculation. Additionally, the study relies on pre-existing secondary data, limiting the ability to control for unmeasured variables. Some common variables that could be required for controlling include socio-economic status, school resources, or teacher influence. While binary logistic regression analysis helped estimate associations, casual inferences by the researcher were not made (Harris, 2021).

To strengthen internal validity, the study included statistical controls in the form of using binary logistic regression to account for potential confounding variables by adjusting for predictors that could influence post-secondary matriculation. These included SES (free and reduced-price meal eligibility) and gender. In addition, power analysis ensures that the study was sufficiently powered to detect meaningful relationships, reducing the risk of Type II error (Giner-Sorolla et al., 2024).

This study recognizes the absence of random assignment as a limitation, which may result in differences between groups that influence outcomes independent of the variables under investigation. To mitigate this, efforts were made to ensure group comparability by creating a matched dataset from the original dataset. Propensity score matching mimics some features of randomized designs, which helps balance the confounding variables (Wan, 2025). Despite these precautions, it is acknowledged that residual bias may remain, and this should be considered when interpreting the findings.

Population and Sample

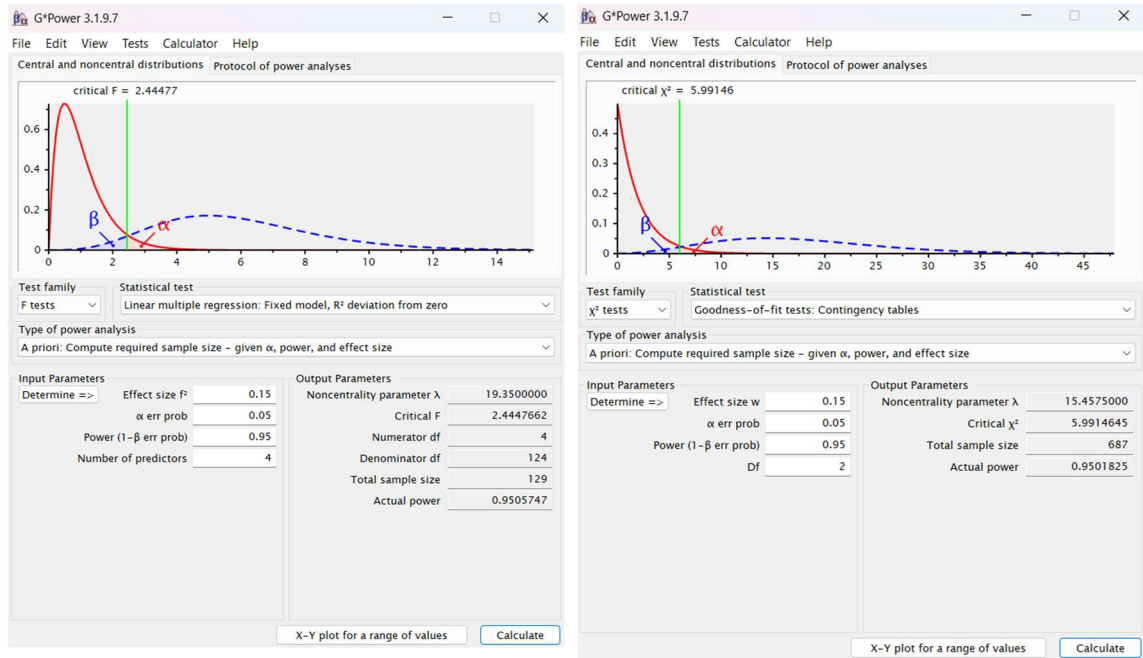
This study's target population includes high school seniors from a local school district in Georgia. In 2017, 106,940 students graduated from high school in Georgia,

with 39.2% enrolled in a Georgia public college/university and 7.8% enrolled in a public Georgia technical college (GOSA, 2024b). In 2018, 111,310 students graduated from high school in Georgia, with 38.3% enrolled in a Georgia public college/university and 7.7% enrolled in a public Georgia technical college (GOSA, 2024b). In 2019, 112,924 students graduated from high school in Georgia, with 37.1% enrolled in a Georgia public college/university and 8.2% enrolled in a technical college (GOSA, 2024b). In 2020, 113,181 students graduated from high school in Georgia, with 39.1% enrolled in a Georgia public college/university and 6.7% enrolled in a public Georgia technical college (GOSA, 2024b). Additionally, across all grade levels in Georgia, 11.5% of the students were considered gifted in 2017 and 2018, 11.6% were considered gifted in 2019, and 11.8% were deemed gifted in 2020 (GOSA, 2024a).

To determine the required sample size, the researcher conducted an a priori power analysis using G*Power 3.1.9.7. Two statistical analyses were planned: a chi-square test for independence and binary logistic regression. The researcher performed separate power analyses for each approach. For the chi-square test, the researcher conducted a power analysis with an anticipated small effect size (w (Cramér's V) = .15), an alpha level of .05, and a desired power of .95. Given two degrees of freedom ($df = 2$), the analysis determined that a minimum sample size of 687 participants was required (see Figure 2.1). For binary logistic regression, the researcher conducted a power analysis using an F -test for multiple linear regression with an expected small to medium effect size (f^2 (Cohen's f^2) = 0.15), an alpha level of .05, and a power of .95). With four predictors, the minimum sample size needed was 129 participants (see Figure 2.1). For the chi-square test, the final study sample size was set to 687 participants to ensure

sufficient statistical power. For the binary logistic regression, the final study sample size was set to 129 participants to ensure sufficient statistical power.

Figure 2. Power Sample Size Computation.



This study pulled the graduation cohorts from a local school district, Barrow County Schools, of the 2017, 2018, 2019, and 2020 classes as a representative sample for the state of Georgia. The BCSS class of 2017 had 701 graduates, the class of 2018 had 730, the class of 2019 had 801 graduates, and the class of 2020 had 773 graduates (GOSA, 2024a). Across all grade levels in the Barrow County School System, 10.7% of the students were considered gifted in 2017, 10.5% of students were considered gifted in 2018, 9.8% of the students were considered gifted in 2019, and 10.8% were deemed gifted in 2020 (GOSA, 2024a). The study gathered 2,994 records. The records were evenly distributed among the four years involved, with gifted students accounting for 13.6% ($N = 408$) of the total student population. Gifted students were the focus of the study, and their demographic characteristics are presented in Table 2.

Table 2*Gifted Demographic Characteristics*

<i>Demographic</i>	<i>n</i>	<i>%</i>
Gender		
Female	211	51.7
Male	197	48.3
Ethnicity		
Asian	16	3.9
Black or African American	21	5.1
Hispanic	43	10.5
Pacific Islander/Native American	2	.5
Multi-Racial	16	3.9
White	310	76.0
Free and Reduced-Price Meal Eligibility (FRAM)		
Not FRAM Eligible	77	18.9
Reduced Meal Eligible	36	8.8
Free Meal Eligible	295	72.3
Cohort		
2017	96	23.5
2018	100	24.5
2019	96	23.5
2020	116	28.4
Accelerated Course Enrollment		
AP Only	286	68.6
DE Only	8	2.0
AP & DE	93	22.8
None	27	6.6
Post-Secondary Education		
Not Enrolled	140	34.3
Enrolled	268	65.7

The genders were evenly distributed, with females slightly outnumbering (51.7%, $n = 211$) their male counterparts. This was a white ethnicity-dominated sample (76.0%, $n = 310$), and most (72.3%, $n = 295$) were eligible for free meals in the free and reduced-price meal eligibility (FRAM). Among this gifted populace, 68.6% ($n = 280$) enrolled exclusively in AP-accelerated courses, 2.0% exclusively in DE-accelerated courses, and 22.8% ($n = 93$) in both AP and DE. A limited number did not enroll in

either AP or DE (6.6%, $n = 27$). Regarding registering for post-secondary education, a majority (65.7%, $n = 268$) of these gifted students matriculated to post-secondary schools (2-year and 4-year).

The comparison between the student population of Georgia demographics and the district for the sample's socio-economic status can be seen in Table 3 (GOSA, 2024a).

Table 3
BCSS vs Georgia Demographic Characteristics

<i>Demographic</i>	<i>2017 (BCSS) %</i>	<i>2017 (GA) %</i>	<i>2018 (BCSS) %</i>	<i>2018 (GA) %</i>	<i>2019 (BCSS) %</i>	<i>2019 (GA) %</i>	<i>2020 (BCSS) %</i>	<i>2020 (GA) %</i>
Gender								
Female	48	49	49	49	50	49	49	49
Male	52	51	51	51	50	51	51	51
Ethnicity								
Asian	7	4	5	4	6	4	5	4
Black or African American	17	37	15	37	16	37	14	36
Hispanic	21	16	18	16	19	15	20	17
Pacific Islander/Native American	0	0	1	0	1	0	0	0
Multi-Racial	4	4	4	4	3	3	5	4
White	60	39	57	40	56	40	56	38
Free and Reduced-Price Meal Eligibility (FRAM)								
Not FRAM Eligible	51	40	49	39	53	38	45	41
Free & Reduced Meal Eligible	49	60	51	61	47	62	54	59

The sample district corresponds with Georgia's demographics in terms of gender, Asian, Hispanic, Pacific Islander/Native American, and Multi-Racial subgroups. The

sample is close to the Georgia percentages regarding FRAM eligibility and Black and White subgroups. With these similarities, the sample demonstrates a representation of the Georgia population.

Variables and Instrumentation

The variables are from independent student transcripts. Two continuous independent variables represent background and academic factors (the number of AP courses taken and the number of DE courses taken). Three dichotomous variables (gender, gifted status, and post-secondary matriculation) and two nominal variables (ethnicity and graduation class) represent background, environmental, and academic factors. For gifted status, a student in Georgia is defined as gifted by meeting at least 2 of the following criteria or qualify through a composite score at or above the 99th percentile on a standardized mental ability test:

- **Mental Ability:** Students must score at or above the 96th percentile on a standardized mental ability test. For younger students (K-2), composite scores are used, while older students (grades 3-12) may have subtest scores that qualify.
- **Achievement:** Students must score at or above the 90th percentile on a standardized achievement test in reading, mathematics, or a composite score.
- **Creativity:** Students must score at or above the 90th percentile on a creative assessment or demonstrate exceptional creative output as evaluated by district-approved methods.

- Motivation: Students must demonstrate high levels of motivation, which are typically measured by teacher evaluations, student portfolios, or scoring at or above the 90th percentile on a motivation assessment.

The dependent dichotomous variable will be the post-secondary matriculation (either enrollment out of state, by a University System of Georgia college university, a private university in Georgia, or by the Technical College System of Georgia) or no post-secondary matriculation.

The use of National Student Clearinghouse (NSC) data is typically a reliable tool for verifying students' post-secondary enrollment. However, the National Student Clearinghouse data access is limited to university-level researchers only. Due to limited access to the NSC, the study relied on public data provided by the Georgia Governor's Office of Student Achievement (GOSA) High School Graduate Outcomes Dashboard to verify post-secondary enrollments. This dashboard is part of the State of Georgia's official website and is publicly accessible. The GOSA database offers reliable information, but the absence of NSC verification represents a limitation of this research. To address this, the data provided by the GOSA database were cross-referenced with the district-reported data where possible, and the researcher evaluated the degree of correspondence between the two sources. Although minor discrepancies were observed, the overall consistency between the district-provided data and the GOSA dashboard supports the credibility of the findings. By using the strengths of the available GOSA data, the study aims to maintain methodological rigor despite the obstacle of NSC verification.

When comparing the reported Barrow County data to the GOSA High School Grad Outcomes database, the data could not be isolated comparing gifted vs. non-gifted because the GOSA database does not differentiate between gifted and non-gifted students. According to the records from GOSA, Barrow County had 701 students graduate in 2017, 730 students graduate in 2018, and 801 students graduate in 2019. Of the 701 graduates in 2017, 59.3% enrolled at a post-secondary institution (GOSA, 2024b). Of the 730 graduates in 2018, 56.5% enrolled in a post-secondary institution (GOSA, 2024b). Of the 801 graduates in 2019, 53.3% enrolled in a post-secondary institution (GOSA, 2024b). Of the 769 graduates in 2020, 59.6% enrolled in a post-secondary institution (GOSA, 2024b) Compared to the data given by Barrow County, the graduate class sizes were within five students. The percentage of graduates enrolled in post-secondary programs was also within range. A major discrepancy exists between Barrow County-reported post-secondary enrollment figures for 2020 (44.3%) and the GOSA-reported data (59.6%) (see Table 4). This may stem from differences in definitions, data collection methods, or reporting practices. The state of Georgia may use NSC's available resources to assist in its data collection, while BCSS may have different practices. Additionally, the graduating class of 2020 experienced a system-wide shutdown of schools due to the COVID-19 pandemic, which could have affected BCSS's ability to follow students' post-secondary tracking due to a lack of communication from students to BCSS.

Table 4*Graduate Totals & Post-Secondary Enrollment Percentages from BCSS vs. GOSA*

<i>Cohort</i>	<i>Total Barrow Graduates (as reported by BCSS)</i>	<i>Total Barrow Graduates (as reported by GOSA)</i>	<i>Percentage of Graduates enrolled in post-secondary (as reported by BCSS)</i>	<i>Percentage of Graduates enrolled in post-secondary (as reported by GOSA)</i>
2017	701	701	52.3%	59.3%
2018	728	730	54.0%	56.5%
2019	796	801	52.1%	53.3%
2020	769	769	44.3%	59.6%

Procedure

Once the Institutional Review Board granted permission, the researcher submitted the IRB approval, as shown in Appendix A, to the Barrow County School System’s (BCSS) Professional Development Center. Once BCSS approved (see Appendix B), data were released from two high schools in Barrow County for the graduation classes of 2017, 2018, 2019, and 2020. To maintain student confidentiality, BCSS recoded the student identification number field to a new nominal number before releasing the data files. No interaction with students was necessary to collect the data used in this study. The researcher stored the data stored securely, and the researcher created backup copies before any modifications were made.

Within the variables for accelerated coursework, AP and DE are the only options without including another popular accelerated coursework program, International Baccalaureate (IB). For this study, the IB Diploma program would be comparable, as schools must earn a designated IB authorization to teach the accelerated, internationally recognized courses at their locations (International Baccalaureate Organization, 2019).

However, due to the sample school district not having IB as an option for coursework, IB courses were not included in this study. Future research comparing IB coursework to DE and AP may be of interest to future researchers.

To ensure the integrity and accuracy of the dataset, the researcher conducted systematic data management and cleaning procedures in SPSS, following best practices in quantitative research. The researcher imported data from the four cohort years (2017–2020) from Excel into SPSS, with each cohort structured identically for seamless consolidation into a single dataset. The researcher standardized key demographic variables, including gender (recoded 1 = Female, 2 = Male), ethnicity (converted into six categories), and socioeconomic status (FRAM eligibility recoded as 1 = Not Eligible, 2 = Reduced Meal Eligible, and 3 = Free Meal Eligible). The researcher transformed gifted status into a binary variable (1 = Gifted, 0 = Not Gifted), and students were classified based on their AP and DE participation. This classification included four groups: AP only, DE only, both AP and DE, and no accelerated coursework, ensuring structured analysis of how these educational pathways impacted post-secondary matriculation (see Table 5).

Table 5*Categories and Codes for Dichotomous, Nominal, and Ordinal Independent Variables*

Variable	Description	Categories and Codes
Gender	Gender of the student.	1 = Female 2 = Male
Ethnicity	Ethnicity of the student.	1 = Asian 2 = Black or African American 3 = Hispanic 4 = Pacific Islander/Native American 5 = Multi-Racial 6 = White
Reduced Meal Status	If the student qualified for free meals or reduced meal status.	1 = Not FRAM Eligible 2 = Reduced Meal Eligible 3 = Free Meal Eligible
Gifted	If the district identified the student as gifted, the variable was coded 1. Otherwise, the variable was coded 0.	0 = No 1 = Yes
Post-Secondary Matriculation	If the student was enrolled out of state, by a University System of Georgia college university, or by the Technical College System of Georgia, the variable was coded 1. Otherwise, the variable was coded 0.	0 = Enrolled in NSC, USG, and/or TCSG post-secondary school 1 = Did not enroll in any post-secondary school

To accurately assess post-secondary matriculation, the researcher reviewed student records across multiple education systems, including non-state colleges (NSC), the University System of Georgia (USG), and the Technical College System of Georgia (TCSG). The researcher created a composite post-secondary enrollment variable, where the researcher coded students as 1 = Enrolled if they attended any post-secondary institution and 0 = Not Enrolled otherwise. Additionally, the researcher applied an

exclusion criterion to remove students who did not have a confirmed graduation status (“EndStatus” marked as “G”), ensuring that only those eligible for post-secondary matriculation were analyzed. The researcher applied filtering techniques to refine the dataset, selecting only students enrolled in gifted programs and categorizing accelerated coursework into distinct groups. Finally, the researcher analyzed descriptive statistics and conducted outlier detection procedures to identify anomalies before statistical modeling. These procedures ensured a rigorous and reliable dataset, preparing it for logistic regression, odds-ratio analysis, and the chi-square test used in the study.

The researcher conducted data analysis using the statistical software SPSS. The researcher generated descriptive statistics, including frequencies, means, and standard deviations, to summarize demographic characteristics (gender, ethnicity, socioeconomic status, cohort, and gifted status). The researcher performed chi-square tests (χ^2) of independence using contingency tables to assess associations between categorical variables, such as gifted status and accelerated course participation. To assess the statistical assumptions of using binary logistic regression, the researcher performed Box-Tidwell tests to examine the linearity of continuous variables in relation to the logit, while the researcher computed log transformations of AP and DE course counts to meet normality assumptions. The researcher assessed multicollinearity diagnostics to ensure independent variable stability, including tolerance and variance inflation factors (VIF). Additionally, the researcher conducted outlier detection through Cook’s distance to identify influential cases. The final logistic regression model provided odds ratios and confidence intervals (95%), offering insights into how participation in AP and DE programs influenced the likelihood of post-secondary enrollment.

Data Analysis

For RQ1, the researcher analyzed the data using contingency tables utilizing the Chi-Square Test for Independence as the inferential statistic because multiple explanatory variables (AP, DE, both, or neither) are followed by dichotomous response variables (matriculation or not). Before conducting the logistic regression analysis for RQ2, the researcher examined the data to ensure compliance with underlying assumptions. The researcher evaluated the linearity of the logit for continuous predictors by incorporating interaction terms between the predictors and their natural logarithms. The researcher used variance inflation factors (VIF) to check for multicollinearity. The outcomes of these tests are presented in Chapter 4.

For RQ2, the researcher analyzed the data using logistic regression to assess the probability that a gifted student will or will not matriculate into a post-secondary option based on their transcript. The logistic regression model included SES (free or reduced-price meal eligibility) and gender as covariates to account for their potential influence on post-secondary matriculation. By including these demographic factors, the analysis controls for confounding effects, ensuring a clearer understanding of the relationship between accelerated course enrollment and matriculation outcomes. The combined information from RQ1 and RQ2 led to the estimation of propensity scores and nearest-neighbor matching for gifted student matriculation in post-secondary options based on the explanatory variables. Additionally, the analysis from RQ1 and RQ2 provided an odds ratio statistic informing the association of certain accelerated course enrollments with post-secondary matriculation of gifted students. Regarding effect size reporting, the

chi-square tests reported the Cramér's V effect size. For the logistic regression, the researcher reported odds ratios and their 95% confidence intervals.

Summary

This chapter outlined a non-experimental study investigating the relationship between accelerated course enrollments of secondary gifted students and their post-secondary enrollment in Georgia. Utilizing transcript data from the Barrow County Schools System for the graduating classes of 2017 to 2020, the study employs chi-square tests and logistic regression to explore how enrollment in Advanced Placement (AP) and Dual Enrollment (DE) courses affects the likelihood of attending 2-year or 4-year post-secondary institutions. Key variables include course types (AP, DE) and various demographic factors such as gender, ethnicity, and socio-economic status. The research aims to identify differences in enrollment rates between students who took different types of accelerated courses and predict post-secondary outcomes based on these variables. The researcher conducted data analysis using SPSS software, with results expected to inform educational policies and support mechanisms for gifted students in Georgia. The study emphasizes the importance of understanding how accelerated course participation can influence educational trajectories, providing valuable insights for educators and policymakers.

Chapter 4

FINDINGS

This chapter details the findings from the statistical analysis of the data gathered regarding gifted students' enrollment in AP and DE courses and their post-secondary matriculation. The results are organized by research question to provide a comprehensive review of the findings. Each section highlights significant data insights to lay a foundation for the discussion in Chapter 5.

Analysis of Research Questions

This quantitative study on the relationship between enrollment in advanced placement (AP) and dual enrollment (DE) courses and university matriculation for gifted students was the focus of this analysis. Two main research questions were to be answered, with the first RQ being split into three sub-questions. The researcher answered the first RQ using contingency tables utilizing chi-square test of independence as the inferential statistics. The second and last RQs, dealing with predictive factors for enrolling in post-secondary education, were mainly handled using binary logistic regression. The findings of this section will be presented along with the RQs.

RQ1: What relationships exist between accelerated course enrollments of secondary gifted students and their post-secondary enrollment (2-year and 4-year schools) in the state of Georgia?

This first research question was split into three sub-questions.

Sub-question (a): Are there differences in the post-secondary enrollment (2-year and 4-year schools) rates of secondary gifted students enrolled in AP course options and DE course options in the state of Georgia?

The researcher performed a chi-square test of independence to evaluate the relationship between post-secondary enrollment among gifted students enrolled in AP and those taking DE courses in Georgia. The relationship between the gifted students enrolled in advanced placement versus those in dual enrollment courses was not significant, $\chi^2(2, N = 381) = 5.668, p = .059$ (see Table 6). Those gifted students enrolled in both AP and DE were more likely (77.4%) to matriculate in post-secondary schools than those doing only AP (65.7%) and only DE (50.0%). However, this difference was not statistically significant. The Cramér's V effect size was 0.12, indicating a small practical significance.

Table 6

Comparison of Post-secondary Enrollment Among Gifted Students Enrolled in Advanced Placement vs. Dual Enrollment Courses (N = 381), Non-Matched Sample

<i>Variable</i>	Total N (%)	Accelerated Course Enrollment			<i>p</i>
		AP Only N (%)	DE Only N (%)	AP & DE N (%)	
Post-Secondary Education					
Not Enrolled	121 (31.8)	96 (34.3)	4 (50.0)	21 (22.6)	.059
Enrolled	260 (68.2)	184 (65.7)	4 (50.0)	72 (77.4)	

Sub-question (b): Are there differences in the post-secondary enrollment (2-year and 4-year schools) rates of secondary gifted students enrolled in exclusively AP course options or exclusively DE course options in the state of Georgia?

The researcher executed a chi-square test of independence to evaluate the differences in the post-secondary enrollment (2-year and 4-year schools) rates of secondary gifted students enrolled in exclusively AP course options or exclusively DE course options in the state of Georgia. The observed frequencies revealed that among those in AP-only courses, 65.7% were enrolled in post-secondary schools, while 50.0% in the DE-only courses were registered for post-secondary schools (see Table 7). The analysis resulted in a chi-square statistic (χ^2) of .847, with 1 degree of freedom. The associated p-value was .357, above the alpha level of 0.05, suggesting a non-statistically significant association between exclusive accelerated course enrollment and post-secondary matriculation.

Table 7

Comparison of Post-secondary Enrollment Among Gifted Students Enrolled Exclusively in AP or DE Courses in Georgia (N = 288), Non-Matched Sample

<i>Variable</i>	Total N (%)	Accelerated Course Enrollment		<i>p</i>
		AP Only N (%)	DE Only N (%)	
Post-Secondary Education				
Not Enrolled	100 (34.7)	96 (34.3)	4 (50.0)	.357
Enrolled	188 (65.3)	184 (65.7)	4 (50.0)	

Sub-question (c): Are there differences in the post-secondary enrollment (2-year and 4-year schools) rates of secondary gifted students enrolled in accelerated course options or no accelerated course options in the state of Georgia?

The researcher performed a chi-square test of independence to examine the relation between post-secondary enrollment of secondary gifted students enrolled in accelerated course options and those not in accelerated course options in the state of Georgia. The relation between these variables (enrolled in accelerated course options versus those not in enrolled accelerated course options) was significant, $\chi^2(1, N = 408) = 16.677, p < .001$ (see Table 8). The gifted students enrolled in accelerated course options were more likely (68.2%) to matriculate in post-secondary schools than those not enrolled in these accelerated course options (29.6%). The association had a Cramér's V of 0.20, reflecting a small-to-medium effect size.

Table 8

Post-Secondary Enrollment Among Gifted Students in Georgia by Accelerated Course Enrollment Status (N = 408), Non-Matched Sample

<i>Variable</i>	Total N (%)	Accelerated Course Enrollment		<i>p</i>
		No accelerated course N (%)	Accelerated course N (%)	
Post-Secondary Education				
Not Enrolled	140 (34.3)	19 (70.4)	121 (31.8)	.000
Enrolled	268 (65.7)	8 (29.6)	260 (68.2)	

RQ2: To what extent do accelerated course enrollments of secondary gifted students predict their post-secondary enrollment (2-year and 4-year schools) in Georgia?

The researcher used binary logistic regression for the last research question. However, before presenting the findings from the primary analysis model, it is recommended that the assumption analysis findings be presented. Certain assumptions must be fulfilled for binomial logistic regression to produce reliable and valid results.

These assumptions included a) linearity in the logit, b) avoidance of multicollinearity, and c) no significant outliers.

The first assumption is the most crucial, and the logit's linearity principle asserts that each of the continuous independent variables in the model has to have a linear relationship with the log odds (logit) of the dependent variable (Schober & Vetter, 2021). The assumption states that every one-unit increase in a continuous independent variable value should constantly increase the dependent variable's log odds. The study had two continuous independent variables: the number of AP and DE courses undertaken by the gifted students. For example, for every one-percentage increase in the estimated number of AP courses taken in this research, the log odds (logit) of admission to post-secondary schools should be constant.

The researcher evaluated the model to determine the coefficient of the interaction terms for the continuous variables. If the coefficient deviates much from zero, there is no linear relationship between the variable and log odds. This was achieved by generating an interaction term by multiplying the continuous independent variables by their natural logarithm. The original continuous variables, their interaction terms, the log odds of the continuous variables, and the additional categorical controlling variables of gender and FRAM were all included in the logistic regression model. The researcher assessed the model to find the coefficient of the interaction terms for the continuous variables. The variable and log odds do not have a linear connection if the coefficient deviates sufficiently from zero. The linearity assumption was not violated in the study since none of the interaction terms were statistically significant ($p > .05$) (see Table 9).

Table 9*Variables in the Equation for the Box-Tidwell Linearity Test**(Original Sample of Cohorts 2017-2020, Gifted Only, N = 408)*

<i>Variable</i>	<i>B</i>	<i>S.E.</i>	<i>Wald</i>	<i>p</i>	<i>95% CI</i>	
					<i>Lower</i>	<i>Upper</i>
AP Courses	- 2.134	1.192	3.207	.073	.011	1.223
DE Courses	2.212	1.794	1.520	.218	.271	307.32 0
Gender						
Female		Reference				
Male	-.011	.220	.002	.961	.643	1.522
Free and Reduced-Price Meal eligibility						
Not FRAM Eligible		Reference				
Reduced Meal Eligible	.046	.434	.011	.915	.447	2.454
Free Meal Eligible	.247	.279	.785	.376	.741	2.212
Constant	-.978	.431	5.156	.023		

Additionally, the researcher created a matched sample of the more extensive data set through propensity score estimations and a matching of the propensity scores ($n = 71$). The researcher evaluated the matched sample to determine the coefficient of the interaction terms for the continuous variables. The researcher assessed the model to find the coefficient of the interaction terms for the continuous variables. The variable and log odds do not have a linear connection if the coefficient deviates sufficiently from zero. The linearity assumption was not violated in the study since none of the interaction terms were statistically significant ($p > .05$) (see Table 10).

Table 10*Variables in the Equation for the Box-Tidwell Linearity**(Matched Sample of Cohorts 2017-2020, Gifted-only, n = 71)*

<i>Variable</i>	<i>B</i>	<i>S.E.</i>	<i>Wald</i>	<i>p</i>	<i>95% CI</i>	
					<i>Lower</i>	<i>Upper</i>
AP Courses	.890	4.870	.033	.855	.000	34055.669
DE Courses	1.767	4.284	0.170	.680	.001	25959.942
Gender						
Female			Reference			
Male	-0.206	0.635	0.106	.235	2.823	
Free and Reduced-Price Meal eligibility						
Not FRAM Eligible			Reference			
Reduced Meal Eligible	-0.468	0.994	0.222	.089	4.394	
Free Meal Eligible	0.147	0.712	0.043	.287	4.674	
Constant	-0.730	0.754	0.937	.333		

The second assumption was about multicollinearity, implying that no independent variables in the model should be significantly correlated with one another (Kim, 2019).

The researcher used the variance inflation factor (VIF) to test for this assumption.

According to the VIF, multicollinearity increased the variance of the predicted regression coefficient for an independent variable. A score between 1 and 10 implies no serious multicollinearity between the variables, but any above 10 implies definite collinearity issues that need to be investigated. The study's VIF for all the independent variables was within the allowed ranges, showing that this assumption was not violated (see Table 11).

Additionally, the researcher created the VIFs for the matched sample and scored between 1 and 10, implying no serious multicollinearity between the variables (see Table 12).

Table 11*Collinearity Statistics**(Original Sample of Cohorts 2017-2020, Gifted Only, N = 408)*

<i>Variable</i>	Tolerance	VIF
AP Courses	.923	1.084
DE Courses	.945	1.059
Gender	.983	1.018
Free and Reduced-Price Meal eligibility	.971	1.029

Table 12*Collinearity Statistics**(Matched Sample Cohorts 2017-2020, Gifted-only, n = 71)*

<i>Variable</i>	Tolerance	VIF
AP Courses	.943	1.061
DE Courses	.761	1.314
Gender	.766	1.305
Free and Reduced-Price Meal eligibility	.940	1.064

The third and last assumption was the absence of significant outliers. The researcher used case-wise diagnostics to identify outliers, and any case with standardized residuals of more than ± 2.5 standard deviations ought to be shown (Jones, 2019). The 408 students' records of the original sample and the 71 of the matched sample had no significant outliers, so the assumption was not violated.

The researcher performed a logistic regression model on the larger sample to see whether the number of AP and DE courses predicted the odds of a student enrolling in post-secondary school among gifted students in Georgia ($N = 408$). The overall model was non-statistically significant ($\chi^2(5) = 4.508, p = .479$), with a Nagelkerke R-squared value of .015. The Nagelkerke R-squared value of .015 suggests a very weak relationship

between the predictors and outcomes. The number of AP and DE courses the gifted students took was not statistically significant in predicting one's odds of enrolling in a post-secondary school ($p = .183$ and $p = .373$, respectively). In particular, the odds of one enrolling in a post-secondary school increased by 4% for every additional increase in the number of AP and DE courses (OR = 1.039, 95% CI [.982, 1.101] and OR = 1.036, 95% CI [.959, 1.120], respectively, see Table 13).

Table 13

Predictive Value of Advanced Placement and Dual Enrollment Courses on Post-secondary Enrollment Among Students in Georgia (Original Sample of Cohorts 2017-2020, Gifted Only, N = 408)

<i>Variable</i>	OR	95% CI		S.E.	Wald	<i>p</i>
		Lower	Upper			
AP Courses	1.039	.982	1.101	.029	1.770	.183
DE Courses	1.036	.959	1.120	.040	.794	.373
Gender						
Female			Reference			
Male	.945	.624	1.432	.212	.070	.791
Free and Reduced-Price Meal eligibility						
Not FRAM Eligible			Reference			
Reduced Meal Eligible	1.018	.451	2.301	.416	.002	.966
Free Meal Eligible	1.325	.784	2.242	.268	1.103	.294
Constant	1.246			.298	.547	.459

The researcher performed a logistic regression model on the matched sample ($n = 71$) to see whether accelerated course enrollments (the number of AP and DE courses taken) predicted the odds of a student enrolling in post-secondary school among gifted students in Georgia, while controlling for gender and Free and Reduced-Price Meal (FRAM) eligibility. Matching helped control for potential confounders, ensuring the

observed relationship between accelerated courses and post-secondary enrollment was less influenced by extraneous factors, such as varying socio-economic backgrounds. The matched sample model was non-statistically significant ($\chi^2(5) = 10.025, p = .075$), with a Nagelkerke R-squared value of .176. The Nagelkerke R-squared of .176 indicates a moderate effect size. The odds of post-secondary enrollment were significantly higher for students who took AP courses compared to those who did not, $OR = 1.21, 95\% CI [1.03, 1.43], p = .023$ (see Table 14). This implied that for every unit increase in AP course enrollment, the odds of enrolling in post-secondary education increased by 21%, holding all other variables constant. Dual enrollment courses did not significantly predict post-secondary enrollment, $OR = 1.10, 95\% CI [0.94, 1.28], p = .227$. This suggested that DE course enrollment was not associated with a statistically significant increase in the likelihood of post-secondary enrollment.

Table 14

Predictive Value of Advanced Placement and Dual Enrollment Courses on Post-secondary Enrollment Among Students in Georgia

(Matched Sample of Cohorts 2017-2020, Gifted-only, n = 71)

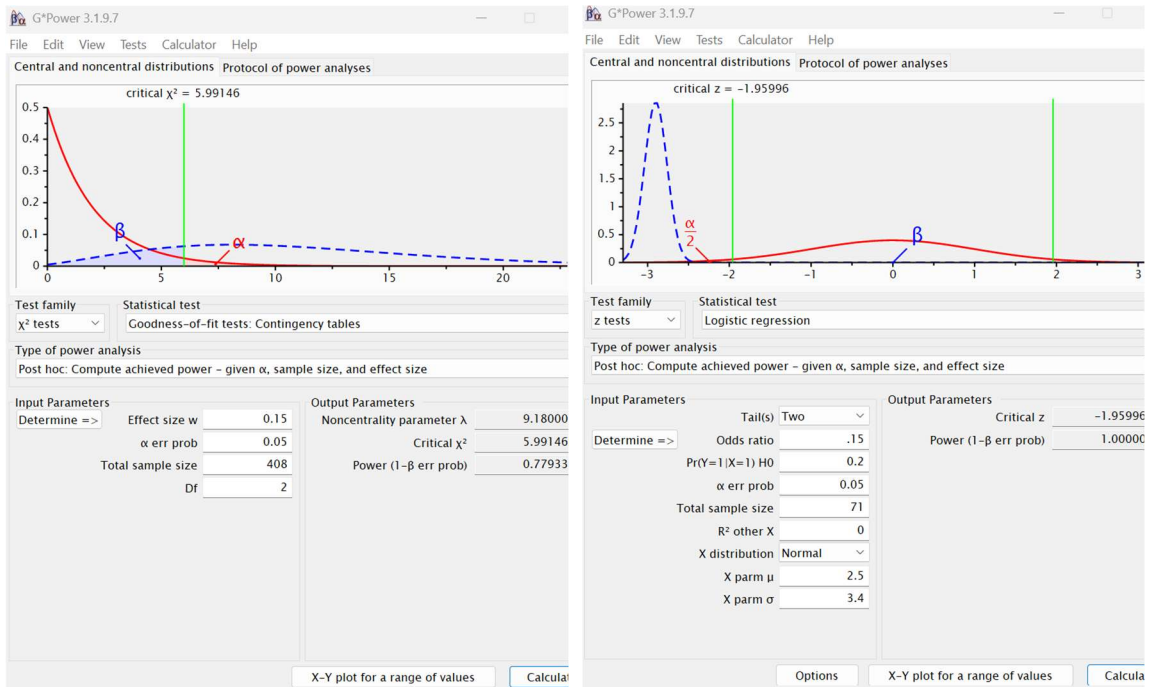
<i>Variable</i>	OR	95% CI		S.E.	Wald	<i>p</i>
		Lower	Upper			
AP Courses	1.212	1.026	1.430	0.085	5.134	.023
DE Courses	1.099	0.943	1.280	0.078	1.460	.227
Gender						
Female			Reference			
Male	.716	.232	2.211	0.575	0.337	.562
Free and Reduced-Price Meal eligibility						
Not FRAM Eligible			Reference			
Reduced Meal Eligible	0.692	0.103	4.624	0.969	0.145	.704
Free Meal Eligible	1.363	.348	5.331	0.696	0.198	.657
Constant	0.544			0.708	0.740	.390

The researcher conducted a post-hoc power analysis to determine the statistical power achieved with the sample of gifted students from the overall sample ($N = 408$). The researcher conducted the original power analysis for the chi-square test with an anticipated small effect size (w , equivalent to Cramér's V for 2x2 tables) = .15), an alpha level of .05, and a desired power of .95. Given two degrees of freedom ($df = 2$), the analysis determined that a minimum sample size of 687 participants was required. However, the sample size of gifted students from cohorts 2017 – 2020 was 408. The researcher performed a post-hoc power analysis to evaluate the power achieved with the available data (see Figure 3). The results of the post-hoc power analysis indicated an achieved power of .77, indicating that the sample size is slightly below the ideal amount. Typically, power above .80 is considered sufficient to confidently detect effects while minimizing the risk of Type II errors (Giner-Sorolla et al., 2024). Although the power of this study does not reach the .80 benchmark, it is still reasonably strong at .779, which translates to moderate confidence in the results. Further research could address this limitation through a larger sample size.

The researcher conducted a post-hoc power analysis to determine the statistical power achieved with the matched sample of gifted students ($n = 71$). The researcher based the original power analysis for binary logistic regression on an F-test for multiple linear regression, with an expected small to medium effect size (f^2 (Cohen's $f^2 = 0.15$), an alpha level of .05, and a power of .95). This analysis indicated a required sample size of 129 participants to detect a significant effect with four predictors. However, the matching process reduced the sample size of gifted students ($n = 71$). The researcher performed a post-hoc power analysis to evaluate the power achieved with the available data (see

Figure 3). The results of the post-hoc power analysis indicated an achieved power of 1.000, indicating that the sample size was more than sufficient to detect a significant effect at the specified alpha level and expected effect size. This result minimized the likelihood of a Type II error. While the high power is reassuring, the reduced sample size due to matching requires cautious interpretation of results, particularly regarding generalization to broader populations. The matched design remains critical to controlling for confounding factors, thereby enhancing the study's internal validity.

Figure 3. Post-Hoc Power Analysis



Summary

This study sought to quantify the impact and predict characteristics of accelerated course enrollments, including AP and DE courses, regarding secondary talented students' enrollment in post-secondary educational options in Georgia. To determine whether course registration could predict post-secondary educational enrollment, this study

examined the relationships between AP course enrollment and post-secondary education enrollment, as well as between DE course enrollment and post-secondary matriculation. The study found that those students enrolled in both AP and DE courses were more likely (77.4%) to matriculate in post-secondary schools than those doing only AP (65.7%) and only DE (50.0%). However, this difference was not statistically significant. The observed frequencies revealed that among those in AP-only courses, 65.7% were enrolled in post-secondary schools, while 50.0% in the DE-only courses were registered for post-secondary schools. The difference was not statistically significant. The gifted students enrolled in any accelerated course options were more likely (68.2%) to matriculate in post-secondary schools than those not enrolled in these accelerated course options (29.6%), which was statistically significant. Despite the non-significant results, these results are still important for understanding the landscape and guiding future research. Lastly, the logistic regression analysis of the matched sample indicated that participation in AP courses significantly predicted post-secondary enrollment among gifted students in Georgia, while dual enrollment courses did not. Despite the limitations in the data sample size, the results are still informative and valuable to the field after the post-hoc power analysis confirms the matched sample size has adequate power. While the study's sample size for some analyses was below the ideal threshold for statistical power, the achieved power was still reasonably strong, and the use of matched samples and statistical controls enhances the reliability of the findings. These results provide valuable insights for educators and policymakers, even as they highlight areas for further research and larger-scale studies. These findings from the matched sample suggested that AP courses could

play a critical role in preparing gifted students for post-secondary education, but further research is needed to explore the lack of significance for DE courses.

Chapter 5

DISCUSSION & IMPLICATIONS

Overview

The primary purpose of this study was to identify whether AP or DE courses impacted post-secondary matriculation for gifted students. Several studies focus on the impact of AP or DE courses on post-secondary matriculation, but none do it through the focus of the gifted student subgroup. The research focused on two main questions:

(1) What relationships exist between AP/DE course enrollment and post-secondary matriculation? (2) To what extent does AP/DE course enrollment predict post-secondary enrollment?

The researcher collected data on the matriculation of gifted students in post-secondary options from a local school district. The study used a logistic regression analysis to assess the predictive power of the number of AP and DE courses taken by gifted students and the likelihood of enrolling in post-secondary institutions. The study also performed statistical tests to determine whether the observed differences in matriculation rates between groups were statistically significant. To compare those who took AP and/or DE with those who did not take either in relation to post-secondary enrollment, the researcher used a chi-square test to test for the differences, and logistic regression analysis to determine the predictive value of the AP and DE courses.

Summary of the Study

The study addressed the lack of clarity regarding the impact of AP vs. DE courses on gifted students' post-secondary matriculation. Prior research has shown that both AP

and DE enhance college readiness, but further information was needed about which course offers more significant benefits (Finn & Scanlan, 2019). The study used a cross-sectional, non-experimental quantitative research design, using data from 408 gifted students from a sample of 2,994 high school graduates. The study further used a matched sample generated from the propensity scores of the original sample. The study found that students enrolled in both AP and DE courses had a higher likelihood (77.4%) of matriculation in post-secondary schools compared to those in AP-only (65.7%) and DE-only (50.0%) courses. However, this difference was not statistically significant. Among students in AP-only courses, 65.7% enrolled in post-secondary schools, while 50.0% of those in DE-only courses did the same, with no significant statistical difference. Gifted students taking any accelerated course were significantly more likely (68.2%) to matriculate into post-secondary schools than those not enrolled in accelerated courses (29.6%). In the matched sample of gifted-only students, the odds of post-secondary enrollment were significantly higher for gifted students who took AP courses than those who did not. For every additional AP course taken, the odds of 2-year or 4-year matriculation increased by 21%. Dual enrollment courses did not significantly predict post-secondary enrollment, $OR = 1.10$, 95% CI [.94, 1.28], $p = .227$. This suggested that DE course enrollment was not associated with a statistically significant increase in the likelihood of post-secondary matriculation for gifted students. Overall, the study had findings that could inform advising practices for gifted students along their educational pathways.

Major Findings

This section details the key findings organized by research question. Each section focuses on the data analysis results that pertain to the corresponding research question. Subsequent sections present the significant findings by research question and discuss them thematically by literature comparison, theoretical implications, and practical implications.

Research Question 1

The results of this study showed that gifted students who enrolled in AP and DE had a relatively higher post-secondary matriculation than those who did not take any of the accelerated classes. This corresponds with other findings suggesting course difficulty prepares students for the rigor of college coursework (Morgan et al., 2018). The blend of enrollment with AP and DE courses positively impacted gifted students' post-secondary matriculation.

No statistically significant difference was found between AP-only and DE-only students and their post-secondary matriculation. The results indicated that the post-secondary enrollment rates for AP-only (65.7%) and DE-only (50.0%) gifted students were not significantly different ($p = .059$). While the data revealed no statistically significant difference in matriculation rates between students enrolled exclusively in AP courses versus those in DE courses, students taking both AP and DE courses showed a slightly higher likelihood of matriculating into post-secondary institutions. Gifted students who took both AP and DE showed a slightly higher likelihood of matriculation, with a 77.4% matriculation rate. However, this was not statistically significant ($p = .059$). This outcome suggests a potential cumulative benefit of engaging in multiple types

of accelerated coursework. These findings support earlier research by Clayton (2021) and Plucker et al. (2022), suggesting that both AP and DE may improve student college readiness. College readiness predicts college matriculation in that students who are prepared for college will look for a post-secondary education option rather than the workforce. The research highlights how rigorous academic programs help students prepare for higher education and improve their chances of successfully enrolling in college.

Research Question 2

The logistic regression analysis of the sample revealed a significant prediction: the number of AP and DE courses strongly influences post-secondary matriculation. The matched sample ($n = 71$) produced significant results ($p = .023$), while the non-matched sample ($N = 408$) did not produce significant results ($p > .05$). Of the matched sample ($n = 71$), the results that produced a significant finding were regarding AP courses. From the matched sample, gifted students who took AP courses had higher odds of post-secondary enrollment ($OR = 1.21$, 95% $CI [1.03, 1.43]$, $p = .023$). This result found that for every course enrollment increase in AP course enrollment, the odds of post-secondary matriculation increased by 21% for gifted students, holding all other variables constant. This result supports the findings of Geiser and Santelices (2004), who argued that advanced coursework plays a key role in post-secondary admission. Their study suggested that students who engage in rigorous academic programs like AP and DE are better prepared for the academic rigors of post-secondary education, thereby enhancing their chances of matriculating into colleges and universities.

The predictive value of accelerated courses was evident in the stronger likelihood of enrollment in 2-year or 4-year post-secondary institutions for gifted students. These findings align with the work of Morgan et al. (2018), who noted that engagement in challenging coursework correlates with higher college persistence rates. Their research indicated that students taking more challenging courses tend to develop the skills and resilience needed to persist and succeed in college. This supports the value of academic achievement and the benefits of challenging coursework, inspiring students to strive for excellence in their academic pursuits.

Overall, the study findings suggest that a combination of advanced coursework, strong academic performance, and participation in rigorous courses significantly enhances gifted students' chances of enrolling and persisting in post-secondary education. This highlights the importance of encouraging students to take on challenging academic programs and maintain high levels of academic achievement throughout their high school years. By reiterating these key findings, the study aims to inform and empower educators, school counselors, and educational policymakers in their efforts to guide students toward successful post-secondary matriculation.

Discussion

This section provides an overview of the interpreted results within the context of existing literature and proposed theoretical framework. In addition, practical implications for various stakeholders are offered. Following this discussion of insights and suggestions, topics for proposed future research are given to address limitations the study presented.

Limitations

One limitation of the study comes from the sample sizes. From the overall sample of cohorts 2017-2020, only 408 students were identified as gifted, below the minimum suggested sample size of 687 from the power analysis. Additionally, the matched sample of gifted students used for the binary logistic regression, included only 71 gifted students, which was below the minimum sample size of 129 determined by the initial power analysis. The matching process was deemed necessary to control for confounding variables such as gender and FRAM eligibility, still enhancing the validity of the analysis. The researcher conducted a post-hoc power analysis was confirmed that the sample size was sufficient, but any replications of this study need to be cautious of the sample size limitation. This study was limited to data from one school district. Therefore, the results need to be cautiously interpreted. Using multiple school districts or larger samples could combat the potential limitations faced in this study. Expanding the scope of the study could enhance the findings and allow for a deeper exploration of trends.

The study was also limited to cohorts from 2017-2020. The four years of cohorts provided sufficient data for the chi-square analysis, but data from more years could look at longitudinal trends across accelerated courses and post-secondary enrollment. By including data spanning a longer timeframe, future research could capture variations over time, examine the impact of policy changes (or the impacts of the COVID-19 pandemic), and look to understand shifts in course enrollments or post-secondary enrollment trends. A longer analysis period could also enhance the generalization of the findings and provide more insight into trends across different demographic contexts.

Comparison with Previous Literature

The results of this study confirm the well-established role of AP coursework in college readiness, aligning with findings from the College Board (2024) and Finn & Scanlan (2019). AP courses are designed to provide high school students with college-level academic challenges, which help them develop the skills and knowledge necessary for success in higher education. The rigorous nature of AP courses and the opportunity to earn college credit upon passing the AP exams contribute to students' college readiness and ability to handle the demands of post-secondary education. Additionally, the benefits of Dual Enrollment (DE) programs, particularly for first-generation and low-income students, have been highlighted in prior studies, such as those by Jagesic et al. (2022). DE programs allow high school students to enroll in college courses and earn credits while still in high school, often at little to no cost. This accessibility makes DE programs an attractive option for students facing financial barriers to higher education. Research has shown that participation in DE programs can improve these underserved populations' college access and success rates by providing early exposure to college-level coursework and fostering a smoother transition to post-secondary education. By confirming the positive impact of both AP and DE coursework on college readiness and matriculation rates, this study adds to the growing body of evidence that supports the implementation and expansion of accelerated academic programs. The finding that the students who took both AP and DE courses were most likely to attend post-secondary education corresponds to the argument made by Clayton (2021) that AP and DE courses are complementary pathways enhancing college readiness. These programs enhance students' preparedness

for higher education and help bridge the gap for first-generation and low-income students, offering them a more equitable opportunity to succeed in college and beyond.

Theoretical Implications

The findings align with Dai's (2021) Evolving Complexity Theory, which proposes that talent development is a process that is bound to be dynamic due to certain environmental factors, such as course offerings and academic assistance. According to Dai, talent development is continuously shaped by course offerings and academic assistance. In the context of this study, the higher post-secondary matriculation rates observed among students enrolled in AP and DE courses suggest that these environmental factors play a crucial role in nurturing and enhancing students' academic potential. The availability of challenging coursework and educational support create an environment conducive to the growth and development of students' talents.

This study also has implications for social cognitive theory (Lent et al., 1994) that underlines the role of self-efficacy and goals in determining students' course choices. Social Cognitive Theory emphasizes the role of self-efficacy and personal goals in influencing behavior and decision-making. The study's findings suggest that students who enroll in AP and DE courses likely possess a higher sense of self-efficacy and have set ambitious academic goals. These students are motivated to take on challenging coursework, which, in turn, positively impacts their post-secondary matriculation rates. The alignment with Social Cognitive Theory highlights the importance of fostering students' belief in their abilities and encouraging them to set and pursue meaningful academic goals.

This study supports the conceptual model for student success (Perna & Thomas, 2006), which proposes that students' success depends on complex contextual factors of school, family, and society. Their model suggests that a complex interplay of contextual factors related to school, family, and society influence students' educational attainment. The findings of this study suggest that the presence of accelerated academic programs (such as AP and DE) and the support systems within schools significantly contribute to students' success in matriculating to post-secondary institutions. Additionally, family support and societal expectations likely play a role in encouraging gifted students to take advantage of these opportunities. By recognizing the multifaceted nature of student success, this study reinforces the need for a holistic approach to education that considers the various factors influencing students' academic journeys.

This study highlights the dynamic and interconnected processes involved in talent development, course selection, and academic attainment. By aligning with theories and models proposed by Dai (2021), Lent et al. (1994), and Perna and Thomas (2006), it underscores the importance of creating supportive and challenging academic environments, fostering self-efficacy, and addressing the broader contextual factors that influence students' educational outcomes.

Practical Implications

This study provides practice implications for school counselors, teachers, and parents when advising gifted learners. Additionally, information from this study can inform educational policymakers when drafting legislation regarding post-secondary options.

Implications for Counselors

The results of this study indicated that high school officials, specifically counselors, should offer more information regarding the advantages of AP than DE, depending on a gifted student's plans after college. School counselors are responsible for influencing decisions related to students' academic endeavors (Bryan et al., 2023). Counselors are uniquely positioned to influence students' academic decisions as they comprehensively understand their academic abilities, career aspirations, and personal circumstances. By offering well-informed guidance, counselors can help students make strategic choices about pursuing AP, DE, or a combination of both, based on their post-secondary goals. Counselors typically adjust student schedules, which can affect students' post-secondary pathways (Stich et al., 2024). Bryan et al. (2023) found that enrollment in AP courses correlated with school counselor interactions for college admission counseling. With the findings from this study, counselors should expect that students in AP courses plan to have post-secondary plans, supporting what Bryan et al. (2023) highlighted. This study provides information that AP courses may provide a better route for gifted students and that counselors should consider this information when advising gifted learners.

Implications for Teachers

Additionally, teachers and parents play an important role in influencing the students' course choices, and therefore, these figures should be provided with better awareness and advising strategies to guide gifted students (Gruman, 2013; Witenko et al., 2017). Teachers who interact with students daily and understand their academic strengths and areas for growth can provide valuable insights and recommendations regarding

course selection. Bernhardt (2014) found course recommendation discrepancies across teachers, but information from this study could impact the criteria teachers use to determine the next step in a gifted student's path. By better informing the classroom teacher, who arguably spends a significant amount of time daily with students, gifted learners could be on better pathways to reach their goals when deciding between signing up for a DE or AP course in the next content level. Increasing the knowledge about the prediction for DE or AP courses on gifted students' post-secondary matriculation could improve the anticipated outcomes gifted students may have when applying to their next steps after high school.

Implications for Parents

Parents with a vested interest in their children's academic success and future opportunities can support and encourage their children's decisions. Therefore, it is crucial to equip parents with better awareness and advising strategies to guide gifted students effectively. Do (2020) found that gifted students experienced parental support in non-direct ways, sometimes with the parent having coworkers who are resources for information about post-secondary steps. The findings from this study could positively impact parental knowledge of the accelerated course options for their gifted learner, and this could assist families in anticipating where a gifted student may go after high school depending on their course registration. Witenko et al. (2017) found that parents who had lower educational attainment tended to have students who did not enroll in accelerated courses as those parents who had higher educational attainment. However, the information from this study could help bridge the gap regardless of the parents' level of educational attainment. The findings from this study support accelerated coursework (AP

or DE) as a means to predict post-secondary matriculation for gifted learners, with a slight edge for AP. Parents with this information may better advocate for their students' high school schedule depending on their post-secondary goals.

Implications for Policymakers

Lastly, educational policymakers need to stop perceiving AP and DE as rival programs that are directly in competition for student enrollment and consider them complementary, as together, they may be most beneficial for college matriculation (Clayton, 2021). Heckman et al. (2023) found that there were changing perceptions of higher education, and students were weighing the value of an education compared to the onslaught of debt that comes with further education. A combination of AP and DE courses could lower potential debt by future post-secondary students because they could earn college credit while still completing their high school diploma requirements. By combining the strengths of both programs, students can benefit from a diverse range of challenging coursework, ultimately enhancing their college readiness and matriculation rates. This holistic approach to advanced academic offerings can better prepare students for the demands of higher education and support their long-term academic and career success. An additional approach for educational policymakers to take includes language in laws that focus on the cost of higher education through a fiduciary lens, with expectations for governing boards to keep the overall cost of students beyond tuition and fees in mind (Cebula & Koch, 2021). Increasing educational policymakers' understanding of advanced course enrollment on gifted student post-secondary matriculation may provide additional financial support for future programs and post-secondary education. Further research into policymaker knowledge and understanding of AP and DE courses

could provide insight regarding the trajectory of college enrollments and how these courses could benefit students, their school course offerings, and their families' finances.

Recommendations for Future Research

Future research has the potential to positively impact gifted students' understanding of which accelerated courses fulfill their long-term goals. Further topics to explore include the differences in availability of accelerated coursework across regions, longitudinal trends and affects from the COVID-19 pandemic on accelerated coursework and post-secondary matriculation, differences in demographical trends among students in accelerated courses and post-secondary matriculation, and the differences in which accelerated courses allow for admission to 2-year or 4-year post-secondary institutions. Additional studies could provide research in these topics and additional understanding that was limited to this study.

Regional Differences

Future studies should aim to determine the impact of AP/DE availability on regional differences to investigate college enrollment trends beyond Georgia's state requirements. This research would provide valuable insights into how regional disparities in course offerings may affect students' access to advanced academic programs and their subsequent college enrollment rates. By examining the availability and accessibility of AP and DE courses in different regions, researchers can identify potential gaps and develop strategies to ensure equitable access to these programs for all students, regardless of location. IB programs are offered worldwide, and future research comparing the predictiveness of AP, DE, and IB courses for different levels of university matriculation would provide beneficial information to gifted students and their families. Additionally,

comparing AP, DE, and IB programs may provide insight into different regional opportunities, which may offer one or all of the accelerated coursework programs. This research could be done to compare the effectiveness of each program regarding student preparation, post-secondary matriculation, and post-university success. Comparing AP, DE, and IB programs between gifted and non-gifted learners could also provide undiscovered insight into which programs may be best for gifted or non-gifted learners and their goals.

Longitudinal Research and COVID-19 Pandemic Impacts

Future longitudinal research could compare the long-term workplace outcomes of students who took AP, DE, or both, building on the work of Cebula and Koch (2021), who examined higher education's evolving value. By tracking students over an extended period, researchers can assess the lasting impact of AP and DE coursework on their professional success and overall life outcomes. Additionally, comparing the effect of the COVID-19 pandemic on post-secondary matriculation in terms of AP and DE courses could be worthwhile to understand how gifted students engaged with post-secondary school following a worldwide event of such magnitude. The COVID-19 pandemic impacted students' learning after negative digital experiences and declining perceptions of the value of a college education (Pavlov & Katsamakos, 2020). Further research on the impact of the COVID-19 pandemic on matriculation rates compared to AP and DE courses could provide insight into the experiences gifted students had when taking these accelerated courses in a world that shut down. Post-secondary enrollment rates and the corresponding coursework leading to those rates may have further findings when looking

at pre-pandemic graduation cohorts (before 2020) compared to post-pandemic graduation cohorts (2021 and after).

Future Demographic Research

Studies should investigate the relationship between socioeconomic status and the choice of AP/DE courses, as earlier research showed that enrollment in such courses may be unevenly distributed (Mammadov et al., 2018). Understanding the socioeconomic factors influencing course selection can help educators and policymakers develop targeted interventions to promote greater inclusivity and support for underrepresented students. Szymanski (2021) found that students of lower socioeconomic status tend to be overlooked for placement in accelerated courses, and the matriculation of such students into 2-year and 4-year post-secondary options may be beneficial to inform high schools in impoverished areas. Discrepancies in the accessibility and equity of AP courses have existed in the past (Finn & Scanlan, 2019). Future studies could explore how the decisions of underrepresented students regarding accelerated coursework provide deeper insights into the unknown barriers they face. Additionally, a comparison of the findings from this study pertaining to gifted students could be compared to similar research of non-gifted students. Comparing gifted versus non-gifted student accelerated coursework and post-secondary matriculation could provide insight into the best course pathways dependent on the students' goals and diverse needs. By addressing the barriers that prevent low-income and first-generation students from enrolling in advanced courses and looking at the different potential course plans that benefit gifted versus non-gifted learners, educators can create a more equitable educational landscape that fosters academic excellence for all students.

Post-Secondary Enrollment

Future research should explore how AP and DE courses influence students' matriculation decisions into 2-year versus 4-year institutions. Because of the limited access to admissions data, this study could not compare the differences in the admission of gifted students into 2-year and 4-year schools and their corresponding accelerated coursework. While AP courses are often associated with preparation for 4-year colleges due to their rigors, exam-focused structure, and widespread recognition by selective universities, DE courses provide students with direct exposure to college-level coursework, which may align better with the pathways offered by 2-year technical institutions. The relationship between AP courses and preparation for 4-year colleges has increased the likelihood of enrollment in 4-year post-secondary institutions (Chajewski et al., 2011). Similarly, the role of DE courses being used as pathways to 2-year institutions with the benefit of transfer credit and alignment of DE coursework to 2-year graduation requirements has been found by Taylor and Jain (2017). Understanding how AP and DE courses affect student matriculation to specific 2-year or 4-year institutions would provide more information to gifted students, their families, teachers, counselors, and policymakers.

In summary, future research should explore regional differences in AP/DE availability, the long-term workplace outcomes of students who took these courses, the relationship between socioeconomic status and course selection, and the differences in 2-year and 4-year institutions. These studies will provide a comprehensive understanding of the factors influencing students' access to and benefits from advanced academic programs, ultimately informing policies and practices promoting equitable educational

opportunities and long-term success for all students. Future research on the differences in AP/DE outcomes, along with a comparison with IB, will help inform school districts, families, and policymakers on the ability of these courses to predict post-secondary matriculation.

Summary

This study showed that gifted students who participated in AP and/or DE courses experienced a higher post-secondary matriculation rate. These results are consistent with prior research on accelerated coursework and contribute additional knowledge about the effectiveness of AP and DE. The findings of this study also reveal the significance of enhancing counseling approaches and guidelines concerning gifted students' education directions (Finn & Scanlan, 2019; Plucker et al., 2022). These figures can help students navigate their academic pathways more effectively by offering tailored information and support for counselors, teachers, and parents. Additionally, educational policymakers should consider AP and DE courses as complementary rather than competing programs, recognizing their collective benefits in preparing students for post-secondary education and enhancing college matriculation rates. Educational policymakers should use the information from this study to inform legislative writing to offer the most opportunities for gifted learners to reach their post-secondary goals.

Future research should investigate regional differences in AP and DE course availability and their impact on college enrollment trends beyond Georgia. Longitudinal studies could explore the long-term workplace outcomes of students who participated in AP, DE, or both, building on existing research about higher education's evolving value. The implications of COVID-19 on accelerated coursework could provide insight into the

rates of gifted students attending colleges. A comparison of AP, DE, and IB could also offer valuable insight for the guidance of gifted students with post-secondary education plans. Furthermore, examining the relationship between socioeconomic status and the choice of AP/DE courses will help address disparities in course enrollment, ensuring that all students have equitable access to advanced academic opportunities. Gifted students participating in accelerated coursework need to be extensively studied to provide these students with the best opportunities to push their knowledge to the next level.

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APPENDIX A: IRB Protocol Exemption Report



**Institutional Review Board (IRB)
for the Protection of Human Research Participants**

PROTOCOL EXEMPTION REPORT

Protocol Number: 04575-2025

Responsible Researcher(s): Rachael Lehner

Supervising Faculty: Dr. Meagan Arrastia-Chisholm

Dissertation Research Member: Dr. Ophelie Desmet

Project Title: *The Relationship Between the Enrollment of Advanced Placement and Dual Enrollment Courses on Gifted Students' Postsecondary Education.*

Institutional Review Board Determination:

This research protocol is **exempt** from Institutional Review Board (IRB) oversight under 45 CFR 46.101(b) of the federal regulations, **category 4**. If the nature of the research changes such that exemption criteria no longer apply, please consult with the IRB Administrator (irb@valdosta.edu) before continuing your research study.

Comments:

- *Upon completion of the research study all data (e.g. data, pseudonym/email lists, transcripts, etc.) must be securely maintained (e.g. locked file cabinet, password protected computer, etc.) and accessible only by the researcher for a minimum of 3 years. At the end of the required time, collected data must be permanently destroyed.*

- Proposed modifications must be submitted to the IRB Administrator at tmwright@valdosta.edu for review and approval before implementation is permitted.*

Elizabeth W. Olphie

01.31.2025

Elizabeth W. Olphie, IRB Administrator

Date

Thank you for submitting an IRB application.

Please direct questions to irb@valdosta.edu or 229-259-5045.

Revised: 00.02.10

APPENDIX B: Approval To Conduct Research

From: Angela Moton <angela.moton@barrow.k12.ga.us>
Sent: Tuesday, July 23, 2024 10:58:07 AM
To: Rachael Lehner <rachael.lehner@barrow.k12.ga.us>
Cc: Dallas Leduff <dallas.leduff@barrow.k12.ga.us>; Rochelle Rushton <rochelle.rushton@barrow.k12.ga.us>
Subject: Approval for Research in Barrow County School System

Dear Ms. Lehner,

I hope you are doing well. I am pleased to inform you that your application to conduct research within the Barrow County School System (BCSS) has been approved. We appreciate your interest in studying "The Relationship Between the Enrollment of Advanced Placement and Dual Enrolment Courses on Gifted Students' Postsecondary Education."

Thank you for your assurance that all research activities will adhere to the highest ethical standards, and your willingness to share IRB approval as soon as possible. Your commitment to strictly maintain participant confidentiality and data protection throughout the research process is appreciated.

Should you have any questions or need further clarification regarding expectations and guidelines for conducting research in the Barrow County School System, please do not hesitate to contact me directly via email or telephone.

We look forward to collaborating with you on your research and trust that your findings will contribute positively to BCSS and the educational community at large.

Kindest regards,

A. Moton

Dr. Angela Moton
Assistant Superintendent
Teaching and Learning
Barrow County School System