WHO GETS IN?: SELECTION INTO ADVANCED COURSES AMONG LOW-INCOME, ETHNICALLY DIVERSE YOUTH

by

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ABSTRACT

WHO GETS IN?: SELECTION INTO ADVANCED COURSES AMONG LOW-INCOME, ETHNICALLY DIVERSE YOUTH

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Studies of educational disparity focus primarily on students who are failing to meet minimum standards. However, looking at students who outperform the standards expected of them may also be critical to understanding the achievement gap. This study assesses top performers by looking at those who enroll in honors, advanced placement, and international baccalaureate classes among a low-income and a majority Hispanic/Latino population. The population at hand comes from Miami-Dade county and is 49.2% male, 71.7% on free lunch, 9.8% on reduced lunch, 6.5% White/Other (N= 1,753), 58.8% Hispanic/Latino (N=15,692), 30.3% Black (N=8,081), .66% Asian (N=175). Prior research finds that low-income and ethnically diverse students under enroll in advanced level coursework as compared to their White, non-low-income peers due to a variety of factors. Using a range of measures including school readiness assessments such as the LAP-D, measures of socioemotional skills (the DECA), and an

array of demographic and school information provided by Miami-Dade county, this study addresses how many students are taking advanced courses, how demographic factors relate to enrollment, how school readiness and prior competence predicts later enrollment, and finally whether race-based access problems still exist after controlling for all of these factors. This will be done through multiple regression, logistic regression, and hierarchical linear modeling.

INTRODUCTION

The growing body of literature about the achievement gap asserts that those from minority populations and low socioeconomic (SES) backgrounds are underperforming relative to their mid- to upper SES, White peers (Burney & Beike, 2008; Ford & Harmon, 2001; Hallett & Venegas, 2011; Jimenez-Castellanos, 2008; Klugman, 2013). The majority of research that dissects the causes and solutions to this problem focuses on underachieving students (Ford, Milner, & Moore, 2005; Lohman, 2005). However, an important and understudied aspect of this gap are those who are overachieving relative to their peers. These students are enrolling in honors, Advanced Placement, and International Baccalaureate programs despite the many barriers that can prevent low-income and minority students from accessing these classes. Examining early predictors of advanced course selection will allow a systematic study of what supports overachieving students' resiliency in the face of limited access and other oppositional forces.

Defining the Problem

Advanced-level coursework includes advanced courses, honors courses, advanced placement courses (AP), and international baccalaureate (IB) courses. Advanced courses are intended to prepare students for honors level coursework and as such include a more demanding and comprehensive curriculum than general courses. These courses are only available to students in grades 6, 7, or 8 (Miami-Dade County Public Schools, 2013).

Honors courses are those which move at a faster pace, cover more topics, or go into greater detail than typical courses (Collegedata, 2016). These are not considered equivalent to college-level courses like AP and IB courses. AP courses are similarly fast paced and include more and deeper knowledge than offered in a traditional course; however these courses are equivalent in difficulty to college coursework. In fact, passing the subject exam at the end of the course can actually grant the student college credit (College Board, 2016). IB courses are higher-level courses taken within one of the IB program's six subject groups; language or literature, language acquisition, individuals and societies, sciences, mathematics, and the arts. These are expected to challenge students and are often considered equivalent to the collegiate level in difficultly (Organization I.B., 2016). The IB program is a two-year-long curriculum that includes challenging coursework, community service, and a research project (International Baccalaureate, 2012). IB courses can offer college credit like AP, and are relatively similar; however they are considered to foster a breadth approach rather than a depth approach. Colleges reportedly look favorably upon both kinds of advanced level coursework (Robinson, 2016). Enrollment in these courses requires choosing difficult coursework as well as teacher or school approval. This suggests a high level of success for the student.

The Achievement Gap and the Excellence Gap

The achievement gap is a widely acknowledged and studied concept in that White and Asian students academically outperform their Black or Hispanic/Latino counterparts (Taylor, 2006). These differences reflect an overall disparity in educational achievement

between White and Black or Hispanic/Latino populations (see Vanneman, Hamilton, Anderson, & Rahman, 2009 for an overview of the Black and White achievement gap; see Hemphill & Vanneman, 2011 for the Hispanic/Latino and White achievement gap). The achievement gap also encompasses the tendency for low-income students to underperform compared to their high-income peers. A different perspective that has received less attention, partially in response to policies like No Child Left Behind which focus primarily on raising the achievement level of the bottom percentile of students (Klein, 2015), is the excellence gap.

The excellence gap refers to the sparsity of minority and low-SES students present at the highest levels of academic achievement. Rather than focusing solely on minimum proficiency like the achievement gap, the excellence gap involves disparity among the highest levels of academic achievement (Plucker, Burroughs, & Song, 2010). This disparity looks like fewer low-income students testing at advanced levels, taking Advanced Placement classes, and earning a graduate degree (College Board, 2014; National Assessment of Education Progress, 2015). This disproportionality also exists along ethnic lines for testing, advanced academic enrollment, and college enrollment (College Board, 2014). The excellence gap also encompasses the tendency for communities of color (Reardon, 2008) and low-income students (Wyner et al., 2007) to be at a higher risk of losing ‘advanced’ or ‘high achiever status’ over time. It is important to keep in mind, that both the achievement gap and the excellence gap stem from the larger opportunity gap.

The Opportunity Gap

Both the achievement and the excellence gap, are subsumed within and a result of the opportunity gap. Carter and Welner (2013) define the opportunity gap as differences in housing, safety, in school and out of school enriching experiences, and more that often result in achievement differences. Segregation based on race and income level result in schools and communities with vastly different resources and opportunities that restrict the ability of the students who exist in these spaces to flourish. This can take many different shapes, some that are particularly relevant to advanced course taking include different rates of gifted program participation by the school income level and the need to work rather than to dedicate the large amount of time necessary to succeed in advanced coursework (Flores, 2007; Yaluma & Tyner, 2018). These examples are even higher level then basic opportunity differences like school funding, programing, and resources to eat and feel safe. As these differences in opportunity persist they create a larger and larger barrier to be overcome. Though the excellence gap is the outcome being targeted in this study, opportunity based differences cannot be disregarded.

Enrollment Disparity

College Board, the institution behind Advanced Placement coursework, reports that in 2013, African American students accounted for 14.5 % of high school graduates in the Unites States (College Board, 2014). However, African-American students account for only 9.2 % of those who take AP coursework. This is made more dramatic by the fact that Black students only have a high school graduation rate of 69% as compared to 86% for White students (State High School Graduation Rates, 2012). This means that the

disparity between eligible students and those who actually enroll is even greater because College Board (2014) did not report on the large number of Black students who dropout before graduation. Somewhat more positively, but still underrepresented, Hispanic/Latino students reportedly account for 18.8% of AP course takers in 2012 while they account for 23.5% of grade school students (College Board, 2014, FFF:Hispanic Heritage Month, 2015).

The U.S. Department of Education Office for Civil Rights reports that although Black and Hispanic/Latino students make up 37% of high school students, they make up only 27% of those who take at least one AP class (2014). Another College Board (2013) report found that the discrepancy between those who graduate and those who enroll in AP was greatest amongst Black students. The discrepancy was smaller for Hispanic/Latino's, however, concerningly, the growth trend from 2011 to 2012 was negative in 24 of 51 regions (50 states and the District of Columbia). This means that for 24 states, the gap between the percentage of Hispanic/Latino students who graduate and those who enroll in at least one AP course is growing rather than shrinking. Further, Wakelyn and the National Governors Association 2010 report that only 16% of low-income students have taken an AP or IB course, while 51% of their high-income counterparts have taken these courses. Moore and Slate (2008) report similar statistics.

The lack of ethnic and socioeconomic diversity in advanced-level courses is especially notable among science and math courses (often referred to as Science, Technology, Engineering, and Math or STEM courses). A College Board report (2013) found that of those with "high potential for success in AP math coursework" (defined as

having a 60% or higher likelihood of passing an AP course based on PSAT (Preliminary SAT) score) only 3 out of 10 Black students and 3 out of 10 Hispanic/Latino students enrolled in such a course while 4 out of 10 White students and 6 out of 10 Asian students with the same potential enrolled in an AP math class. Long, Conger, McGhee, and Kennedy (2016) found that those with less math training prior to being enrolled in an AP science course actually experienced more gains in confidence regarding their proficiency at and interest in STEM-related tasks from the course than those with higher proficiency in math. This could indicate that traditionally lower-achieving students may have more to gain from the experiences provided by advanced-level coursework, particularly regarding STEM education, a problem when enrollment in advanced STEM courses is so low for certain groups.

Despite the dramatic enrollment discrepancies for minority populations, some improvement has been seen in the past two decades. Older studies like that of Burton, Whitman, Yepes-Baraya, Cline, and Kim (2002) report larger disparities such as only 33% of minority students eligible to take an AP course enrolled in one, and Klopfenstein (2004) reports that Black and Hispanic/Latino students enroll in AP courses at nearly half the rate of White students. The reduced gaps seen in more current studies are at least partially due to major initiatives by College Board and state education policies which aim to increase access to these courses (Education Commission of the States, 2016). However, as seen in the statistics reported above, a reduction in enrollment gaps does not indicate that the problem is solved as differences in overall enrollment rate of minority and low-income students continue to exist. A recent Education Week article focused on

this by discussing the need to diversify the members of honors and gifted coursework. It drew public attention to this issue and explored potential ways this could be done like eliminating racialized tracking and developing new measures to more accurately assess learning potential, each discussed further below (Sparks, 2015).

Significance of Advanced-Course Enrollment

Advanced-level classes are markers of high school success and can lead to better academic outcomes and, in turn, more favorable life outcomes (Moore, Ford, & Milner, 2005; Rose & Betts, 2004). These higher-level courses are more than just markers of student effort and success however. Discrepancies in dropout rates, grade point average (GPA), and college readiness are linked to later inequality in income and career opportunities (Rose & Betts, 2004; Tomlinson & Jarvis, 2014). High school achievement clearly impacts overall life outcomes. Because high school is a critical period for determining a student's future, the lack of ethnic and socioeconomic diversity in the upper divisions of high school coursework is extra concerning (Moore et al., 2005; Rose & Betts, 2004).

Advanced-courses, or lack thereof, play a major role in shaping the future of students. Students who take AP courses are more likely to get into college than those who don't, even controlling for other factors (Chajewski, Mattern, & Shaw, 2011; Flowers, 2008; Taliaferro & DeCuir-Gunby, 2008; Warne, Larsen, Anderson, & Odasso, 2015). These students are also more likely to earn higher grades (Flowers, 2008; Patterson, Packman, & Kobrin, 2011) and score better on standardized tests like the ACT than their non-advanced course taking counterparts, even when controlling for ethnicity and SES

(Warne et al., 2015). AP and IB coursework have become so important in the college admissions process that for some universities, enrollment in these kinds of classes is all but required to achieve admittance (Conger, Long, & Iatarola, 2009). And its importance is only growing as weight is being shifted toward success in classes like these rather than SAT and ACT scores as major markers for college acceptance (Conger et al., 2009).

General rigor in course work has a big influence on college entry and college success as well. This means that even traditional honors courses with their increased difficulty but not the same weight as AP and IB classes can be beneficial. Horn, Kojaku, and Carroll (2001) found that students who took more difficult course work had a greater likelihood of graduating from college on time, even when controlling for SES. The importance of academic rigor is especially pronounced in low income and ethnically diverse populations because children of parents who did not attend college increase their chances of attending and succeeding in college by taking advanced coursework. While not putting first-generation college students at the same rate of degree obtainment as their non-first generation counterparts, high school academic rigor greatly increases the odds of obtaining a bachelor's degree for these students (U.S. Department of Education, 2001).

Beyond just getting into college as a major reason for taking these classes, there are financial and time benefits as well, particularly with AP classes. Since AP classes allow one to take a test to receive college credit, students can use these as a way to finish college early. This is also a financial benefit to students who cannot afford to pay for college. There is a fee associated with taking the AP test, but typically not the class, and this fee is sometimes covered by the high school itself. In Miami-Dade county for

example, the district pays for all AP tests (Miami-Dade County Public Schools, 2013). Despite the fee, AP classes often maintain financial appeal, particularly as the cost of the test is substainlly lower than the cost of three credits of college tuition.

One possible reason advanced courses are beneficial to students is the quality of teaching they receive. Hertberg-Davis and Callahan (2008) found that high-school students generally felt that their AP and IB teachers were far more qualified, dedicated, and effective than non-advanced-course teachers. This could be partially due to the resources College Board and many states make available for AP and IB teachers, like conferences, workshops, and reading materials. The Hertberg-Davis and Callahan study also discussed the role of class environment on encouraging success. According to students, the environment in AP and IB courses is more encouraging and the students are more dedicated to learning, something many students felt was lacking in non-advanced classes. This is seconded by Shiu, Kettler, and Johnson (2009) who found that Hispanic/Latino students who enrolled in AP courses made more academically supportive and dedicated friends than Hispanic/Latino students who did not enroll in these courses. Academically supportive friends, better teachers, and higher expectations for students could help explain the academic success associated with advanced-level courses. This is particularly crucial for minority students who often receive less peer and school-level academic support than their White peers (Tenenbaum & Ruck, 2007).

A push to increase access to and taking of advanced courses, particularly AP courses, has occurred in recent years. For instance, former president George Bush mentioned the importance of AP courses in his 2006 State of the Union Address and the

U.S. Department of Education started a grant program with the aim of increasing access to AP courses (Bush, 2006; U.S. Department of Education, 2006). College Board has also created their All In program with the aim of increasing diversity in AP course enrollment. To do this, College Board created resources for teachers and students such as an AP action plan and an AP potential tool (College Board, 2017). Florida, where the sample at hand comes from, in particular has made great strides recently to address advanced-course taking disparities. One major way Florida has attempted to do this is by pairing with College Board to offer teacher incentives and professional development for Florida teachers who want to teach AP courses (Florida Statute, 2017). Another policy level attempt to increase advanced-course taking came with Florida's A++ plan. This legislation aimed to increase rigor by amending middle and school course requirements and incentivizing teaching in short-staffed subject areas and low-income schools (Amos, 2006).

Gifted Literature

A glimpse into the profiles of high achieving students is also provided through the gifted literature. This literature, though generally focused on elementary school, observes similar discrepancy rates and barriers to participation for low-income and minority students as advanced-course taking. Ford (1998) states that only 7.9% of those identified as gifted in 1998 were Hispanic/Latino and that only 12.1% were African American while 72.4% were White. Though these statistics are older, the trend in underrepresentation has continued (Ford et al., 2005). Barriers to admittance in gifted programs for low-income and minority students include teacher and administrator bias, a

common issue in advanced-level course entry (Gibbons, Pelchar, & Cochran, 2012; Peterson & Colangelo, 1996). Another barrier is a lack of adequate measures of giftedness that are not subject to ethnic biases (Ford & Harmon, 2001; Lohman, 2005; Ortiz & Volloff, 1987; VanTassel-Baska, Johnson, & Avery, 2002). This is in response to the multitudes or research that have found that many measures of intelligence, particularly those that are used to grant access to gifted programs, do not sufficiently account for cultural or language variance (VanTassel-Baska et al., 2002). This is also a problem in later years when teachers and tests fail to recognize cultural variance brought on by things like a prevalent oral tradition or emphasis on communal rather than individual work (Ford, Howard, Harris, & Tyson, 2000). When measures of performance misrepresent the achievement of students who are culturally or linguistically different, these same students end up underserved and in lower levels of classes and programs than they may be suited for. Beyond testing bias, we also see varying levels of value placed on traditional education as well as different skills taught and emphasized in families of different cultures.

Mechanisms

Biases and Cultural Effects

Difference in ability based on race is sometimes offered as an explanation for the achievement gap. This outdated notion that there might be something inherent about being African American or Hispanic/Latino that inhibits one from being equally successful to Whites is sometimes known as the deficit paradigm (Tomlinson & Jarvis, 2014). Despite evidence to the contrary by Oates (2009) and others, teachers still express

different expectations, recommendations, and attitudes toward students of different ethnicities (Tenenbaum & Ruck, 2007). This is often observed in the overrepresentation of minorities in special education programs and an underrepresentation of minorities in gifted programs (Shippen, Curtis, & Miller, 2009; Ford, 1998 respectively). Other research in this area explores different characteristics of teachers, students, and schools that affect differences in treatment. For instance, Taylor, Gunter, and Slate (2001) examine the differences in interpretation of behavior by ethnicity, such as African American students having teachers label more of their behaviors as problem behaviors than White students, while Ferguson (2003) acknowledges how teacher's knowledge of the Black-White achievement gap contributes to differential expectations and treatment in the classroom. Specifically, knowledge of the Black-White achievement gap can inadvertently lead to teachers having lower expectations for their Black students (Ferguson, 2003).

Tenenbaum and Ruck's meta-analysis (2007) explored four different aspects of how teachers' expectations for students vary by race. The analyses looked into how these differing expectations could be seen behaviorally through levels of positive speech (praising), levels of negative speech (criticizing), and the number of referrals a teacher gave a student based on ethnicity. Referral rates reflect how often teachers refer students for special needs or gifted/advanced services. This is particularly relevant because access to advanced level coursework often requires teacher or administrator recommendation.

Tenenbaum and Ruck (2007) found that teachers' expectations did vary by ethnicity. However simply being non-White was not necessarily indicative of lower

expectations, rather certain groups (Black and Latino) garnered lower expectations while others (Asians) garnered higher expectations than White students. This is important because it not only reflects the differences for minority groups, but specifically highlights the distinct threat that Black and Latino populations face.

The authors also found that teachers were less likely to refer White students to special education or disciplinary action, but more likely to refer them to gifted programs than their African American or Latino counterparts. Lower levels of positive and neutral attention (such as calling on or offering guidance) were reported for African American and Latino students as well. This means that students who need higher levels of support to seek advanced level coursework (Klopfenstein, 2004) are actually receiving less overall support. This disparity in treatment by teachers could be a contributing factor to minority student's overall success and especially to their underrepresentation in advanced courses.

Related to teachers, is the idea of a need for more 'multicultural navigators'. These navigators are people who can successfully engage with both dominant culture and non-dominant culture, and as such can serve as powerful social and cultural capital for low-income students and students of color (Carter, 2005). A lack of multicultural navigators and culturally sensitive and/or race-matched teachers compounds the systemic inequalities associated with teacher discipline, recommendation, and expectation. At the school level, cultural barriers take the form of a of diverse and culturally appropriate curriculum and instruction in American high schools (Ford et al., 2000). This also includes a lack of culturally sensitive measures of identification or access, like what was

described within the gifted literature (Ford et al., 2000). These barriers, paired with misconceived ideas about students of colors' attitude towards education (Tyson, Darity, & Castellino, 2005), can effectively bar minority students from the very programs that would propel them towards future success.

While both Black and Hispanic/Latino students face many similar barriers, it is important to note that their experiences are not always the same. While Latino students do face the imposing obstacles of racism, they also face the added hurdle of language barriers, stress due to immigration, cultural isolation, and more (Becerra, 2010). Building on this, few studies assess the unique barriers faced by Latino students, and those that do focus primarily on their language acquisition itself and not on how to boost Latino students in other important areas like math (Guiterrez, 1999). This makes it exceedingly important that these students are given their due attention in the research world.

Advanced Course Pathways

The opportunity to enroll in advanced classes is often predicated on being in the advanced academic pathway or sequence. This idea of courses stratified by ability has its roots in tracking. Tracking is defined as "the system of assigning high school students to different curricula according to their purported interests and abilities" (Gamoran & Mare, 1989, p. 1147). Tracking originated with the early 20th century influx of immigrants who created a new level of diversity that required more nuanced teaching. The practice of tracking opened opportunity for those who could access the highest track, but in doing so, reduced opportunity and directed resources and attention away from those in lower tracks. At its inception, this was a strict formal system that consisted of the college

preparatory track, the general track, and those pursuing vocational paths and was intended to match students to their "optimum" environment (Hallinan, 2004).

The inequality caused by tracking led to the launch of the detracking movement (Hallinan, 2004). This movement attempted to end tracking and reallocate resources to those who were at the lower levels. Though the movement was effective in moving the education system away from formal tracking it has not eliminated ability grouping and varying curricula for different groups, particularly in core subjects (Hallinan, 2004). This is referred to as informal tracking, like paths of electives, and often begins earlier than high school and even middle school.

Though tracking is not practiced formally, distinct pathways still exist informally and have an effect on minority and low income groups' progression through school (Archbald & Farley-Ripple, 2012; Gamoran & Mare, 1989; Jones, Vanfossen, & Ensminger, 1995). This often takes on the form of multiple levels of a single class such as a regular level, a remedial level, and an advanced level (Promise, 2008). Unlike with formal tracking where a set progression is assigned, each of these courses is supposed to operate independently. However many schools still assign students to their level of an individual course based on an overall classification (such as gifted) or based on their level of the preceding course rather than treating each course individually. This has a tendency to prevent students who were not successful early on from ever entering advanced-level coursework (Alexander, Cook, & McDill, 1978; Oakes & Guiton, 1995; Promise, 2008).

Lack of flexibility among the pathways is a major issue. For instance, students who take advanced math in elementary school can be funneled into pre-algebra in 6th

grade, then onto algebra and geometry all before leaving middle school. For those who did not take advanced math in elementary school, pre-algebra, and everything that follows it, becomes inaccessible or at least delayed. Though academic pathways are intended to surround students with people at their academic level and to teach them at their own pace, an inability to move between paths once assigned can have a negative effect on some students. This is compounded by the potentially biased ways in which students are classified into their tracks, such as teachers being less likely to recommend minority students to advanced courses (Alexander et al., 1978; Oakes & Guiton, 1995; Promise, 2008).

Difficulty moving between course levels is especially pronounced along ethnic lines. This is accounted for by a different track placement early on, fewer opportunities for learning and advancement, and less academic guidance for minority students (Hallinan, 1996). Low teacher expectations and less expressed desire for high placements often leads to students of color being placed in a course lower than their ability might suggest (Tomlinson & Jarvis, 2014). These early placements can often create lasting effects felt throughout the entirety of one's school career. This is particularly true of math and science tracks where prerequisites play such a large role in determining admittance to a course (Useem, 1991). This is especially detrimental to students working toward a STEM career path or college major who would benefit by taking advanced level science and math courses but who are denied access to them based on pathway decisions made when they were young.

School-Level Factors

A large portion of the existing work in this field has been done with AP course enrollment, and in particular AP course availability. In fact, lack of availability of AP and advanced courses is considered a primary reason for enrollment differences along ethnic lines (Cisneros, Holloway-Libell, Gomez, Corley, & Powers, 2014; Taliaferro & DeCuir-Gunby, 2008; Solórzano & Ornelas, 2004). Differences in access are partly based on whether a school offers the course, if they support students seeking those courses, and how students are chosen to get into those courses. These studies repeatedly find that limited access to the courses is a major deterrent in minority enrollment because the schools that minorities are attending often don't offer as many of these classes (Klopfenstein, 2004).

Klopfenstein (2004) found that larger schools tend to offer more AP classes and more track flexibility, but lack the personal mentoring required to help push minority students to take these classes. As discussed throughout this review, cultural attitudes and stigma among minority populations often create opposition toward advanced-level coursework. Personal attention from mentors and guidance counselors help counteract this. However larger schools have more students and usually cannot provide one-on-one attention, especially when these schools are in low-income or underfunded areas. This means that despite an increased level of course offerings, larger schools may actually not be promoting more AP course taking in minority students (Klopfenstein, 2004).

Particularly relevant to minority students at the school level is the presence of minority teachers, who have a positive effect on minority enrollment for high-achieving

students (Klopfenstein, 2004). Some studies have shown that mentoring, particularly by someone of the same race, has a largely positive effect on student enrollment in advanced course work (Kugler & Albright, 2005; Ohrt, Lambie, & Ieva, 2009; Tomlinson & Jarvis, 2014). This is also discussed in Malcolm Gladwell's *Revisionist History* podcast where they explain how for low-income and minority students to capitalize on their potential they need an advocate (Gladwell, 2016). This is a major problem considering the National Education Association reports that despite 40% of students being minorities, only 5% of teachers are minorities (NEA, 2015).

Another school-level characteristic that affects access to and enrollment in AP courses is the makeup of the student body. Barnard-Brak, McGaha-Garnett, and Burley (2011) found that a higher percentage of minority students in the school was negatively related to the number of AP classes available. The same was found to be true for the percentage of students receiving free or reduced lunch. The relationship of ethnic makeup to AP class availability continued to exist even when controlling for free or reduced lunch and vice versa.

Cannon and Jacob (2016) focused on trajectories through high school as an explanation for course taking, rather than early student characteristics, by examining advanced-level math taking (Cannon & Jacob, 2016). Rates of taking college-level math courses like statistics or calculus mirror rates of other advanced course-taking disparities along ethnic and SES divides. When looking at the effect of school-level factors on promoting enrollment in advanced-level math, Cannon and Jacob found that while offering in-person versions of advanced-level math, and allowing for skipping of

prerequisites encourage more advanced-level math taking for White and non-low-income students, they have little to no effect on minorities (Cannon & Jacob, 2016).

Child-Level Factors

Far less work has been done on individual child characteristics that predict enrollment in AP courses. Conger et al. (2009) proposed three explanations for discrepancies in advanced course taking; pre-high school characteristic differences in minority and low-income students, differences in the courses offered at the schools attended by minority and low-income students, and differences in the characteristics of the schools attended by minority and low-income students. They found that student pre-high school characteristics explained more of the variance in course taking discrepancies than the other two explanations. These pre-high school characteristics were defined as 8th grade standardized test scores, demographic information (free or reduced lunch status, gender, and ethnicity), and educational needs (English proficiency and non-gifted exceptional status-such as requiring special services for a learning disability). Though demographic differences in advanced-course enrollment existed before controlling for cognitive ability, when controlling for 8th grade test scores, there was a substantial reduction in poverty gaps and Black-White gaps in advanced-course enrollment. As reported, Black students were 8.4 percentage points less likely to enroll in AP or IB math than their White counterparts, but after controlling for the aforementioned pre-high school ability characteristics, Black students actually had a 5.7 percentage point advantage in the likelihood of enrolling in AP or IB math. This means that when holding demographic and previous test scores constant, Black students are actually more likely

than their White counterparts to take an advanced course. This also suggests that Black students aren't doing as well in school, so while high achieving Black students do get in, there are less of them. The authors suggest that this could be partially due to the fact that low-income students enrolled in magnet schools were included in the analysis. Magnet school attendance is particularly high for Black and Hispanic/Latino students, as is the rate of advanced-course taking in these schools (Conger, 2009). Importantly, the pre-high school measure of cognitive ability used in this study was 8th grade standardized test scores. Because tracking is often already in effect before 8th grade, it is necessary to look earlier, and at multiple points in time, to more clearly control for cognitive ability and to more thoroughly understand the role tracking plays in course enrollment discrepancies.

Conger et al.'s data were gathered from the Florida Department of Education's Data Warehouse and includes information such as student FCAT scores, student course taking and grades earned, and school enrollment and expenditures. The FCAT, or Florida Comprehensive Assessment Test, is a high-stakes, standardized test which measures proficiency with Florida Department of Education benchmarks (Florida Department of Education, 2016). The sample used was majority White and less than 50% low-income. The sample to be used in this study, the Miami School Readiness Project (MSRP) sample, contains information about FCAT scores and grades but also adds a stronger focus on those of low-income and diverse backgrounds as it is primarily a minority and low-SES sample. It is also more recent than the data used in the Conger study. Further, and perhaps more importantly, the Miami School Readiness data set includes more and earlier measures, including school readiness measures collected in preschool,

suspensions, retentions, and more complete standardized test score and grade information from pre-K to high-school. This will allow for an expanded understanding of the factors that affect advanced-course enrollment and the timing of those factors, particularly tracking.

When looking at child-level factors that influence advanced course enrollment, Klopfenstein (2004) found that income was the most significant factor in differentiating who took AP courses and who didn't when looking at minority groups. Hebert and Reis (1999) found that a network of high-achieving peers paired with a high level of familial support were helpful factors in promoting high achievement in low-income students. Lack of awareness, as well as a sense of intimidation from currently advanced-tracked students, keeps minority populations from participating in higher-level courses (Yonezawa, Wells, & Serna, 2002). These studies provide reasons beyond the school level to help explain minority student's lack of movement between tracks even when not faced with institutional barriers.

Sparse work has been done specifically in relation to honors courses and IB courses. Much of the work related to traditional honors courses is about tracking. Some exceptions to this exist such as Corra, Carter, and Carter (2011) who conducted an important study that explored race and gender in relation to honors and AP enrollment rates. This study used SAT scores to control for cognitive ability, but unlike other similar studies did not control for SES. The SAT is a standardized measure of mathematic and verbal ability used to make college entrance decisions (Princeton Review, 2016). The authors combined the percentage of those who scored above the mean on the SAT for

each demographic group with the percentage of the student body made up by that demographic group. This method was used to predict the expected number of students enrolling in a particular advanced course (by subject). Then these expected numbers were compared to the actual number of enrollments by ethnicity.

What this showed is that Black students under-enrolled in advanced-level courses and White students over-enrolled based on their expected enrollment rates by SAT score. This might suggest a social component is involved in differentiating enrollment levels. This is somewhat different than what would be expected based on Conger et al. (2009) who found that enrollment differences were reversed when controlling for 8th grade test scores. This could also however, be confounded by the differences inherent in the tests used or the fact that Corra et al. did not control SES. The SAT is an optional test used primarily to gain entrance to college, while the standardized testing used in Conger et al. is mandatory for all students regardless of their post-graduation aspirations. Because the SAT is often used in connection to college entry, those who take it are often college bound already and are generally doing well in school.

Research related to IB coursework is also relatively slim, probably due to its relative lack of availability as compared to honors and AP courses. Kugler and Albright (2005) discuss the merit of IB courses, particularly in that their testing methods are less subject to the biases that work against minority students. This is due to the international focus of the IB program and its aim to reduce cultural bias in its assessments. Some studies have found that IB programs could be a successful way to engage and develop minority students (Mayer 2008; Perna et al., 2013). Another major theme in IB

coursework research is emphasizing programs put in place to support students, and that success requires more than just access (Borman, Stringfield, & Rachuba, 2000; Kugler & Albright, 2005; Mayer, 2008; Perna et al., 2013).

Gaps in the Literature

Though the gifted literature is relatively rich, few studies extend beyond the elementary school years to observe how high-achieving students are doing at the high school level and what classes they are taking. Of the studies that do look at talented students among this age range, most focus on strictly middle or high-school rather than looking at early school and child factors as relevant predictors as well. This overlooks the need to analyze the effects of tracking and examine the role of pre-high school characteristics that occur before tracking begins to take place. Further, there is ample room for expanding the ethnicities included when comparing course taking disparities, as the Black-White comparison tends to be the primary comparison discussed.

The Current Study

The study at hand will use a cohort sequential, longitudinal design, tracking students from pre-K through high school, to address the need for a more longitudinal look at how students differ in their paths to advanced course taking. The data come from the Miami School readiness Project and as such the population for this project is not only primarily composed of ethnic minorities, but is actually a majority Hispanic/Latino population. This thesis uses a large-scale, cohort sequential, longitudinal design consisting of five cohorts of children who attended pre-K programs during 2002 to 2006 (Winsler et al., 2008). These children have been followed for 15 years and they are

currently in high school. Using similar models that occur in the gifted literature, and a few of the most closely aligning studies, this project will explore who among low-income, minority students are taking advanced courses, what advanced courses they are taking, and what the early predictors are of taking those classes.

Winsler, Karkhanis, Kim, and Levitt (2013) looked at what factors worked protectively to increase enrollment of black males in gifted educational programs. Winsler et al. (2013) serves as a model for the current study because it shares the same population and follows a similar structure by looking at low levels of participation by low-income and minority groups in an advanced subsection of the school system, and examining what factors increase the chances of students being a part of those programs. This population includes nearly the entirety of those who received subsidized childcare or attended public school pre-K at age 4 in Miami-Dade County between 2002 and 2006.

Winsler et al. (2013) found that attending public school pre-K, having higher levels of school readiness, being older at the start of kindergarten, having better grades, having higher standardized test scores in first grade, and speaking a language besides English at home increased the probability of early identification in elementary school of gifted status in Black males. Though the sample for the current study would also look at females and Hispanic/Latino children, the predictors used in this study could also all feasibly predict later enrollment in advanced level coursework in high school. Ricciardi, Haag, and Winsler (in preparation) used similar predictors for giftedness in elementary school in the entire population, rather than just Black males. Though there were some

slight differences found, both papers identified type of preschool and school readiness at age 4 as significant predictors.

Something that's important to note is that the existing studies focused on relatively late in schooling, cognitive outcomes (like 8th grade test scores and SAT scores) (Conger et al., 2009; Corra et al., 2011). MSRP data not only allow cognitive measures from as early as preschool but also include social and behavioral predictors as well. This could expand the understanding of which students enroll in advanced courses. This data set also allows a more nuanced understanding of Hispanic/Latino advanced course enrollment which is important due to the ever growing number of Hispanic/Latinos in America paired with their low representation in higher-level coursework (Krogstad, 2016).

Based on these existing studies, this study will first describe the proportions of students taking each kind of advanced-level class (advanced, honors, AP, or IB) in middle and high school (grades 6-11). Because so little research describes enrollment in honors and IB classes, this description will illuminate what is actually happening amongst low-income, minority populations in schools. Exploring when students enroll in advanced courses and which types of courses they enroll in will also help illuminate early tracking effects. This study will ask if school-readiness, demographic factors (like ethnicnity, free or reduced lunch status, and English Language Learner status), and prior-competence are related to later advanced course enrollment. These data will allow us to look at what is related to advanced-course enrollment among those who would otherwise be forecasted into lower levels of achievement. Knowing what is related to these markers

of success can help us more effectively shape a generation of successful learners. Further, before we can look at the effect of these advanced level courses on students, we have to first understand who is taking them and how access to these classes differs among groups.

The following research questions will be addressed: 1) How many students are taking advanced, honors, AP, and IB courses and when? 2) Do demographic factors (gender, ethnicity, disability status, and SES), school readiness at age four (LAP-D and DECA measures of academic, physical, and socio-emotional competence at age 4, and prior competence (standardized test scores and student GPA in 5th grade) predict advanced-course enrollment in grades 6 through 11? and 3) Do low-income and minority students experience less track mobility than non-minority, non-low-income students?

METHODS

Participants

Participants for this study come from the Miami School Readiness Project (MSRP), which is a diverse sample including close to the entire population (92%) of those who received child care subsidies for low-income families and those who attended public school pre-K in Miami-Dade county between 2002 and 2006. The MSRP is a large-scale, university-community partnership that utilized a cohort-sequential, longitudinal design. Five cohorts of low-income, minority students were assessed at age 4 on a battery of school-readiness measures in pre-kindergarten. This study includes a subset of 32,885 students. These students have data for at least one grade from sixth to eleventh. This subsample is 51.7% male, 71.7% on free lunch in grade 6, 9.8% on reduced lunch in grade 6, 57.4% Hispanic/Latino (*N*=18,870), 32.2% Black (*N*=10,574), 6% White/Other (*N*= 1,965), and .55% Asian (*N*=183).

The sample is being followed longitudinally throughout school, and administrative school record data are collected from the school system each year. Students are followed even when they change schools so long as they remained within the public-school system. Previous pilot work (Ricciardi, Haag, & Winsler, 2018) indicates that about 6,000 students in this sample were flagged as "gifted" by the school system at some point in their elementary school years. Students are still completing high

school - with each year, another cohort of children completes 12th grade. All of the middle and high schools in Miami-Dade County offer some sort of advanced course.

Measures

Predictors.

Poverty Status. Poverty status will be measured through receipt of free or reduced lunch in 6th grade (Three levels: 1) did not apply/receive free or reduced-price lunch, 2) received reduced price lunch, or 3) received free lunch). This service is available to those in Miami-Dade County who receive food stamps, Temporary Assistance to Needy Families (TANF), or whose family income falls within a specified range (Department of Food and Nutrition, 2003). In this sample, 71.7% of students are on free lunch in grade 6 and 9.8% are on reduced lunch in grade 6.

Ethnicity. Ethnicity will be coded into 4 groups; 1 for White/Other, 2 for Hispanic/Latino, and 3 for Black and 4 for Asian. Criterion for entry in these groups is based on the self-declared ethnicity according to school records. This classification is based on whether they ever selected that option.

Gender. Gender will be coded as either 0 for female or 1 for male as specified by the school district.

Preschool Type. Type of preschool attended will be coded as 1 for center-based care, 2 for family child care, and 3 for public school pre-K as recorded during the original wave of data collection.

ELL Status. English language learner status is obtained from parent-reported home language used. Upon kindergarten entry, if parents reported that a language other

than English was the primary language used at home, participants were considered English language learners by the school district.

Disability Status. Students who are identified by the district as having an intellectual disability, speech/language disorder, visual impairment, deafness, specific learning disability, autism, emotional disturbance, brain injury, or another health impairment were coded accordingly each year. The only exceptionality status not included in this variable is gifted status. An overall code indicating disability status where 0 equals none of these codes and 1 equals the presence of at least one of these codes will be used to assess disability status. If a student was coded 1 in 1st grade or 6th grade they will be considered to have a disability.

School Readiness.

Cognitive, Language, and Motor Skills. Children's cognitive, language, and motor (both gross and fine) skills were assessed directly through the Learning Accomplishment Profile- Diagnostic (LAP-D) (Nehring, Nehring, Bruni, & Randolph, 1992). The LAP-D is a norm referenced assessment that was given individually to pre-K students. Children were assessed with this test both at the beginning of the school year (September/October) and again at the end of the year (April/May) when they were 4 years old. This was administered by masters level, trained, bilingual assessors (in whichever language was stronger for the child) for those children enrolled in center-based care. For those in public school pre-k, the child's teacher administered the LAP-D. Alphas for internal consistency on the LAP-D subscales range from .76 to .92, however within the Miami School Readiness Project dataset itself alphas range from .93 to .95 (Winsler et al., 2008). LAP-

D and Dial-3 scores correlations ranged from .50 to .92 indicating moderate to strong predictive validity (Redesetgrow, 2016). Each child's latest time point was used in analyses.

Social Skills and Behavior Problems. The Devereaux Early Child Assesment (DECA) (LeBuffe & Naglieri, 1999) is a 37-item measure that has both a teacher and parent report form. It was used to evaluate the social-emotional competence of participants at school entry as it is appropriate for ages 2 through 5 (Crane, Mincic, & Winsler, 2011). I will have data on both teacher- and parent-reported DECA information and both will be included as predictors. Within the DECA, the subscales I intend to use are initiative, self-control, attachment, and overall behavioral concerns. Initiative, self-control, and attachment will also be combined into one measure of total protective factors. The DECA is a reliable and frequently used measure of social emotional skills, and it is known to maintain its integrity when evaluating ethnically diverse and low-income children; particularly important with the population of interest for this study. Alphas for internal consistency range from .71 to .94 in the sample of interest (Crane et al., 2011).

Early Achievement.

Standardized Test Scores. Students in Florida must take the Florida Comprehensive Assessment test (FCAT). This test is Florida's standardized and high stakes measure of comprehension with state education benchmarks (Florida Department of Education, 2016). The Florida Department of Education reports internal consistency reliability coefficients ranging from .88 to .92. Criterion-related validity obtained by

correlating FCAT scores to SAT10 scores (another standardized test) are .79 and .71 for math and reading respectively (Florida Department of Education, 2016). This study will use FCAT math and reading scores in 5th grade as a measure of prior academic performance.

GPA. Another authentic measure of student academic performance in school is grades received at the end of the year in all subjects. These grades are provided by teachers and converted to a 5-point scale where A= 5, B=4, C=3, D=2, and F=1. The grades are then averaged to create a composite measure of academic performance for the 5th grade school year.

Gifted Status. Gifted status will be measured by looking at those within the data set who were ever flagged as gifted as their primary exceptionality code. This means that their school has marked them as gifted/talented and is likely, but not necessarily, receiving some type of services for gifted students. According to the Exceptional Student Education Policies and Procedures Handbook set by the Miami-Dade County school board (2013), a student is eligible for participation in gifted programs if the student meets the following criteria: 1. The student demonstrates the need for a special program, possesses a majority of characteristics of gifted students according to a standard scale or checklist, or superior intellectual development as displayed by an intelligence quotient of at least two standard deviations above the mean (a score of 130 or higher) on an individually administered standardized IQ test. Alternative criteria are also used to increase minority access to gifted and include standardized test scores at the 89th percentile or higher, a level 4 or 5 on Florida Comprehensive Assessment Test 2.0, or A's

or B's on coursework. This is not an exhaustive list but are the primary identifiers of academic excellence that lead to being identified as gifted.

Retention. If a child completed a grade, repeated that grade, and had final, end of the year grades for that grade a second time, the child will be coded as having been retained that year. If this occurred one or more times in elementary school (K-G5), they will be considered as having been previously retained for the purposes of this study.

Suspension. If a child ever received (in grades K-G5) indoor or outdoor suspension they will be coded as having been suspended in that year. If this occurs one or more times in elementary school they will be considered as having been suspended for the purposes of this study.

Skipping. If a student has data in a grade in a particular year and then data in a grade one year higher than they should the next year they will be flagged as having skipped a grade. If this happens one or more times in elementary they will be counted as skippers in this study.

Outcome Variables.

Enrollment in Advanced Courses. The primary outcome of this study is the enrollment in advanced courses. Advanced-level coursework includes advanced courses, honors courses, Advanced Placement courses (AP), and International Baccalaureate (IB) courses. Each academic year, we receive the course/subject titles for which the student receives a grade. Each course with either 'honors', 'AP', 'advanced' or 'IB' will be carefully coded as an advanced type of course and children will be categorized each year in school as to whether they are or are not in one of these types of classes. Each child will

be coded yes/no for each type of advanced course in each grade 6 through 11 as well as for which subject area that advanced course is in. The participant will receive a 1 if they were in enrolled in the specified type of advanced course in the specified year (e.g. a student would be coded 1 for the honors 6^{th} grade variable if they were enrolled in an honors class in 6^{th} grade). If a student is not enrolled in the specified type of course in the specified year (e.g. honors 10^{th} grade) then that student will receive a code of 0 for that variable.

Ever enrolled. One measure of advanced course enrollment will be the ever enrolled variable. This variable flags those who took an advanced course at any point in grades 6 through 11. To measure this, the variable assigns a 1 to any student who has a 1 in any advanced course type in any grade 6 through 11 and assigns a 0 to any student who did not have a 1 in any advanced course flag for grades 6 through 11.

Ever Enrolled by Year. This will be the same as the ever enrolled variable but broken down into each grade. That is, if a student has 1 for any advanced course in grade 6 they will be given a 1 in the grade 6 ever enrolled variable.

Ever Enrolled Type. Four variables will measure whether a student enrolled in each of the four types of advanced course, advanced, honors, AP, and IB. There will be one variable for each type of advanced course and each student who has ever enrolled in a course of that type will be coded a 1. Students who have not ever enrolled in a course of that type will be coded a 0.

Number of Advanced Courses. Another measure of advanced course enrollment is how many advanced courses a student ever enrolled in. This is calculated using the

original enrollment variables provided by the county and totaling the number of courses which received a code of 1 in grades 6 to 11. This encompasses all four types of advanced courses included in this study.

Number of Advanced Courses by Year. This variable separates the number of advanced courses variable into a year by year breakdown. This means that for each student, the number of advanced courses they took in each of grade 6 through 11 will be coded in separate variables.

Advanced Subjects. The advanced subjects variables measure the number of advanced courses (of any of the four types) a student took in each of the 4 main subject areas. These subject areas are Language (which encompasses all English language, literature, and composition courses as well as foreign languages) Math, Science, and Social studies (which includes all histories and social sciences). These variables will be calculated by totaling the number of courses in each of the 4 main subject areas a student took between the grades of 6 to 11.

STEM courses. The STEM courses variable will measure the number of advanced courses a student took that fall into the STEM category (Science, Technology, Engineering or Math). This will be calculated by adding together the number of advanced science courses and the number of advanced math courses a student took in grades 6 through 11.

Trajectories of Advanced Courses. For those who do take advanced courses, we will also track the progression of advanced courses that they took to reflect on the effect of tracking. These variables will use the sequence of course types to monitor tracking.

Entry to Advanced Track. We will measure student entry to advanced tracks by flagging the first time they took an advanced course of any kind in grades 6 to 11. This will be measured by using the earliest grade in which they received a 1 for any type of advanced course.

Track Progression. Track progression will be measured by looking at the series of advanced math courses a student took once they took an advanced math course. The standard progression of advanced courses in Miami-Dade is "advanced" then "honors" then "AP". Variables will be created to broadly measure participation in each type of advanced math course and if multiple types (e.g. ADV and honors but not AP) were obtained.

ANALYSIS PLAN

These quantitative data will be analyzed with advanced multivariate inferential statistical techniques (multiple regression and logistic regression) using SPSS to examine important predictors/selection factors associated with entrance into advanced courses in middle and high school (Grades 6-12). The first research question: How many students are taking advanced, honors, AP, and IB courses and when? will be answered through descriptive statistics. Primarily frequencies will used to analyze the number of students taking each type of advanced course, in which grades, and on what trajectories.

The second research question: Do demographic factors such as gender, ethnicity, disability status, preschool type, and SES predict advanced-course enrollment, does school readiness at age four predict later enrollment in advanced-courses, and does prior competence, as measured by standardized test scores and student grades, predict advanced-course enrollment? will be measured through OLS and logistic regression. OLS regression will be used to analyze the effect of various predictors on the number and type of advanced courses taken while the logistic regression will be used to assess whether the same predictors affect whether advanced courses were ever taken or not. Demographic factors, school readiness, and prior competence will all analyzed in steps, controlling for the others using hierarchical linear regression. The third research question: Do low-income and minority students experience less track mobility than non-minority, non-low-

income students? will first be answered through descriptive statistics of relevant proportions in various tracks at different grade, grade upon track/category entry, and track progression are the outcomes, and ethnicity and free and reduced lunch status will be the predictors.

RESULTS

Research Question 1

Research question 1 asks how many students are taking which advanced classes and when. In order to answer this, new variables were created to capture whether or not advanced classes of different varieties were being taken overall and in specific grades. Then descriptive statistics were run to calculate overall frequencies. Table 1 summarizes the number of students who took any type of advanced course in any grade 6 through 11. What this table reveals is that 68% of students (who have data for at least one grade 6 through 11) have taken at least one advanced class of any kind (AP, IB, Honors, ADV, and PreIB). The overall percentage of students who took an advanced class in a particular grade ranges from 51% in 6^{th} grade to 70% in 11^{th} grade. This makes sense in terms of the availability of advanced courses (low in sixth grade but high by the time a student has reached 11^{th}). Though the table shows decreasing numbers of course takers, due to the cohort sequential nature of the data, fewer students have reached the later years than have reached the earlier years. Thus the percentage of students is a more descriptive measure (compared to Ns) of how many students are enrolling in advanced courses.

Overall, there was a relatively high level of participation in some sort of advanced course work (nearly 70%). Breaking advanced course work into its subtypes reveals further information on advanced course taking. ADV courses had the highest level of

participation (62%), which is in line with them being the first step in the accelerated pathway. The next highest level of participation is in honors classes (45%), followed by AP classes (22%), following the trajectory of advanced course taking. The participation gap between Honors and AP (nearly a 25% difference) is indicative of the relative difficulty of these courses. PreIB and IB, somewhat separate from the traditional advanced path due to the added requirement of being in the rare IB program, show very low levels of participation (less than 2%).

Table 1. Enrollment in advanced courses by grade and type

	Students Enrolled	Students Possible	Percent Enrolled
Ever Enrolled Ever	22,332	32885	67.91%
Enrolled G6	15927	31227	51.00%
Enrolled G7	15580	28435	54.79%
Enrolled G8	13465	22383	60.16%
Enrolled G9	9032	15327	58.93%
Enrolled G10	5249	8566	61.28%
Enrolled G11	2346	3358	69.86%
Ever Enrolled ADV	20301	32885	61.73%
Enrolled ADV G6	15906	31227	50.94%
Enrolled ADV G7	15426	28435	54.25%
Enrolled ADV G8	12015	22383	53.68%
Ever Enrolled Honors	14808	32885	45.03%
Enrolled Honors G6	27	31227	0.09%
Enrolled Honors G7	3874	28435	13.62%
Enrolled Honors G8	9943	22383	44.42%

Enrolled Honors G9	8940	15327	58.33%
Enrolled Honors G10	5123	8566	59.81%
Enrolled Honors G11	2017	3358	60.07%
Ever Enrolled AP	3356	15559	21.57%
Enrolled AP G9	2023	15327	13.20%
Enrolled AP G10	1739	8566	20.30%
Enrolled AP G11	1069	3358	31.83%
Ever Enrolled PreIB	649	32885	1.97%
Enrolled PreIB G6	113	31227	0.36%
Enrolled PreIB G7	118	28435	0.41%
Enrolled PreIB G8	157	22383	0.70%
Enrolled PreIB G9	396	15327	2.58%
Enrolled PreIB G10	198	8566	2.31%
Enrolled PreIB G11	4	3358	0.12%
Ever Enrolled IB	358	32885	1.09%
Enrolled IB G6	143	31227	0.46%
Enrolled IB G7	157	28435	0.55%
Enrolled IB G8	146	22383	0.65%
Enrolled IB G9	0	15327	0.00%
Enrolled IB G10	44	8566	0.51%
Enrolled IB G11	28	3358	0.83%

Finally, Table 2 summarizes the number of advanced courses students took overall, in each subtype, and across subjects. Of the advanced subtypes, students on average took the most ADV classes. Of the subjects breakdown, students took the most advanced STEM courses. However, STEM includes both math and science courses so this makes sense. Though there is a wide range of course taking (0 to 26 in the cases of

any type of advanced), the average number of courses taken is somewhat low, and never exceeds 3.34 classes for any particular subtype or subject of advanced course. Similarly, the median number of classes taken never exceeds 3. This suggests a high degree of skew paired with a high degree of variance (see standard deviations in Table 2). As such, interpretation of related results will have to be interpreted with caution.

Table 2. Number of advanced courses taken by type and subject

Total Number of	Mean	SD	Minimum	Maximum
Advanced Courses	5.36	6.04	0	26
ADV Courses	3.34	3.65	0	12
Honors Courses	1.77	2.70	0	13
AP Courses	.19	.69	0	8
PreIB Courses	.04	.30	0	5
IB Courses	.02	.27	0	6
STEM Courses	2.67	3.10	0	14
Math Courses	1.29	1.55	0	7
Science Courses	1.39	1.65	0	8
Language Courses	1.48	1.77	0	9
Social Studies Courses	1.20	1.42	0	7

Research Question 2

Research question 2 asks if demographic factors, school readiness skills, and prior academic competence predict later advanced course enrollment. First, bivariate statistics were used to determine the role of each of these factors independently on later advanced course enrollment. Ever enrolled in any type of advanced course, along with enrollment in ADV, Honors, AP, PreIB, and IB courses were used as the outcomes of interest.

Tables 3 through 5 summarize the results of chi^2 and t-tests used to analyze each predictor on this set of outcomes.

Bivariate Analyses.

Table 3 reveals that course enrollment significantly differs by ethnicity ($\chi^2(3) = 502.867$, $p < .001$) such that Black students were the least likely to enroll in any type of advanced course and Asian students were the most likely to enroll in any type of advanced course. Of the Black students in the sample, about 60% enrolled in some sort of advanced course in grades 6 through 11, while almost 90% of the Asian students in the sample took some sort of advanced course. White and Latino students tended to fall in between Black advanced course takers and Asian advanced course takers such that 68% of Latino students took some sort of advanced course and 77% of White students did. The same trend can be seen across all subtypes of advanced course taking as you move across the rows in the table.

Table 3. Bivariate relationships between categorical predictors and advanced course taking

	Any Advanced Course[a]	Any ADV Course[b]	Any Honors Course[c]	Any AP Course[d]	Any PreIB Course[e]	Any IB Course[f]
Ethnicity[a,b,c,d,e]						
White	7.2%	7.5%	7.9%	11.7%	14.2%	5.4%
Latino	61.5%	61.8%	64.3%	70.9%	62.2%	61.3%
Black	30.5%	29.8%	26.9%	15.5%	20.6%	31.6%
Asian	.8%	.9%	1%	1.9%	2.9%	1.7%
Degree of Poverty[a,b,c,d,e]						
Denied/Did not apply	20.8%	21.3%	23.4%	34.5%	41%	17.3%
Reduced	10%	10%	11.2%	12.9%	7.5%	7.7%
Free	69.2%	68.7%	65.4%	52.7%	51.5%	75%
Gender[a,b,c,d,e]						
Male	48.2%	47.9%	46.9%	40.3%	38.2%	44.5%
Female	51.8%	52.1%	53.1%	59.7%	61.8%	55.5%
ELL Status[a,b,c,d,e]						
Non-ELL	41.1%	41%	38.4%	32.3%	34.3%	39.3%
ELL	58.9%	60%	61.6%	67.7%	65.7%	60.7%
PreK Type[a,b,c,d,e]						
Public School PreK	65.3%	66%	65.6%	68.5%	74.4%	67.7%
Center/Family Based Care	34.7%	34%	34.4%	31.5%	25.6%	32.3%
Ever Skipped[c]						
Did Not Skip	99.4%	99.5%	99.3%	99.2%	99.7%	99.7%
Skipped	.6%	.5%	.7%	.8%	.3%	.3%
Ever Retained[a,b,c,d,e,f]						
Not Retained	89.4%	90%	93.4%	98.2%	98.9%	91.1%
Retained	10.6%	10%	6.5%	1.8%	1.1%	8.9%
Ever Suspended[a,b,c,d,e]						
Not Suspended	75.9%	77%	76.7%	84.6%	90%	80.2%
Suspended	24.1%	23%	23.3%	15.4%	10%	19.8%
Ever Gifted[a,b,c,d,e]						
Not Gifted	75.6%	73.4%	70.4%	54.6%	45.3%	78.7%
Gifted	24.4%	26.6%	29.6%	45.4%	54.7%	21.2%

A less clear pattern emerges when bivariately examining the relationship between poverty and advanced course taking. Reduced price lunch receivers (our middle level of poverty), contributed the highest proportion of enrollers for any type of advanced course, ADV courses, and honors courses. This means that the percent of students receiving reduced price lunch and enrolling in any of the aforementioned advanced courses was higher than the percent of free priced lunch receivers who enrolled, and more surprisingly, higher than the percent of non-low-income students who enrolled. However, when looking at AP and PreIB course enrollment the highest proportion of students was contributed by the non-low-income students. For example, of those who classified as

non-low-income, almost 40% enrolled in an AP class. This is a stark jump from the 15% of free lunch receivers who enrolled in an AP course.

The raw percent of female students who took advanced courses was consistently higher than the percent of males who took advanced courses across each subtype. For nearly all subtypes of advanced course included, there is about a 10% difference in the percent of course takers identifying as each gender. Similarly the proportion of ELL students who took advanced courses was consistently higher than the proportion of non-ELL students who took advanced courses for all courses ($\chi^2(1) = 94.883$, $p < .001$) and each subtype. The same pattern was found when looking at preschool type, such that a higher percent of public school pre-K enrollers took an advanced course than the percent of center-and-family based child care enrollers.

Unsurprisingly, a consistently low percent of students who were retained in elementary school enrolled in advanced courses later. This is particularly pronounced when looking at honors and AP taking where only 15% and 3% of those who had been retained took each of these classes respectively. Similarly, though with larger proportions of students than when looking at retention, the percent of students who were suspended but still took an advanced course of some kind was consistently lower than the percent of students who were not suspended and took an advanced course of some kind. Gifted status was strongly, significantly related to advanced course enrollment ($\chi^2(1) = 3090.442$, $p < .001$), where nearly 100% of students identified as gifted enrolled in sort of advanced course in grades 6 through 11 compared to the roughly 60% of those not identified as gifted who enrolled in some sort of advanced course.

Overall, in terms of how categorical child characteristics relate to advanced course taking at large, we see that each of our included factors, ethnicity, poverty level, gender, ELL status, preschool type, retention, suspension, and gifted status, were significantly related to taking any advanced courses later on as well as taking ADV, honors, AP, and preIB courses specifically. However, few things, in fact only retention, was ever significantly related to IB course taking ($\chi^2(1) = 28.911$, $p < .001$). This followed the same pattern as retention did for all other subtypes. Also interestingly, having skipped a grade in elementary school was only significantly related to honors course enrollment ($\chi^2(1) = 26.689$, $p < .001$). As skipping is offered as a path for acceleration for advanced students it is interesting that skipping was only related to more course taking for honors courses and was not significantly related to taking any other subtype of advanced course.

Analysis of continuous predictors (Tables 4 and 5), reveals that the cognitive, language, and fine motor subscales of the LAPD are significantly related to later advanced course enrollment in all types of advanced course. For each of the aforementioned subtests, the mean score of those who enrolled was significantly higher than the mean score of those who did not enroll. The gross motor subscale was only significant for ADV, Honors, and AP courses. Interestingly, unlike with ADV and honors courses, the mean gross motor score for those who did not enroll in an AP course was actually higher than for those who did enroll in an AP class. Cohens *d* suggests that cognitive and fine motor skills have the largest effect on course taking while gross motor is the least related.

Parent and teacher ratings of student total protective factors (TPF) and behavioral concerns (BC) were significantly related to later course taking for all types except IB, where only teacher rated behavioral concerns is significant. Those who enrolled in advanced courses had higher total protective scores, on average, than those who did not enroll. In contrast, those who enrolled in advanced courses had lower behavioral concerns at school entry than those who did not. Effect sizes for teacher ratings were generally higher than for parent ratings, however parent behavioral concerns were particularly salient for ADV course taking (*d*= .61).

FCAT math scores, FCAT reading scores, and GPA in 5th grade were all significantly related to advanced course enrollment for all subtypes, such that higher GPAs and test scores were had by those who did enroll in each type of advanced course. Cohens D suggests that the largest effects are happening when comparing enroller's and non-enroller's mean scores for FCAT math, FCAT reading, and GPA. The smallest effect sizes are found for the gross motor subscale of the LAPD (ranging .03 to .14).

Table 4. Bivariate relationships between continuous predictors and advanced course taking 1

	Any Advanced Course[a]					Any ADV Course[b]					Any Hon Course[c]				
	Enrolled		Not Enrolled			Enrolled		Not Enrolled			Enrolled		Not Enrolled		
	M	SD	M	SD	D	M	SD	M	SD	D	M	SD	M	SD	D
LAPD															
Cognitive[a,b,c,]	57.59	29.6	38.86	28.05	.65	58.66	29.5	40.88	28.54	.61	60.18	29.24	42.67	28.95	.60
Language[a,b,c]	49.06	30.69	32.63	27.69	.56	50.07	30.79	34.31	28.07	.53	51.55	30.71	35.75	28.58	.53
Fine Motor[a,b,c]	61.29	27.49	44.64	28.98	.59	62.07	27.27	46.7	29.17	.54	63.4	26.8	48.25	29.23	.54
Gross Motor[a,b,c]	69	28.12	65	30.86	.14	68.75	28.23	66.22	30.25	.09	69.61	27.79	65.79	30.22	.13
Parent DECA															
TPF[a,b,c]	53.74	30.42	44.15	31.5	.31	54.15	30.33	45.05	31.49	.29	55.32	30.10	46.85	31.36	.28
BC[a,b,c]	64.9	29.35	72.88	27.42	.28	64.59	29.31	72.07	27.87	.61	63.63	29.48	70.6	28.19	.24
Teacher DECA															
TPF[a,b,c]	62.39	27.13	49.95	28.51	.45	63.04	26.98	50.94	28.48	.44	64.27	26.58	53.6	28.55	.39
BC[a,b,c]	43.07	28.86	56.44	29	.46	42.48	28.77	55.21	29.12	.44	40.94	28.4	52.62	29.46	.40
FCAT Reading (G5)[a,b,c]	284.6	59.93	235.05	44.35	.94	284.8	62.136	244.62	48.05	.73	303.4	57.74	239.37	43.04	1.26
FCAT Math (G5)[a,b,c]	300.03	67.331	249.77	55.49	.81	298.9	68.81	262.67	59.246	.56	322.6	62.09	250.31	52.72	1.26
5th Grade GPA[a,b,c]	4.27	.48	3.68	.56	1.15	4.3	.48	3.72	.55	1.16	4.37	.45	3.85	.57	1.01

Table 5. Continuous predictors and advanced course taking 2

	Any AP Course[d]					Any PreIB Course[e]					Any IB Course[f]				
	Enrolled		Not Enrolled			Enrolled		Not Enrolled			Enrolled		Not Enrolled		
	M	SD	M	SD	D	M	SD	M	SD	D	M	SD	M	SD	D
LAPD															
Cognitive[d,e,,f]	65.86	28.43	49.73	29.69	.55	71.96	26.37	51.44	30.32	.72	61.48	28.77	51.79	30.39	.33
Language[d,e,,f]	57.7	30.4	42.23	29.86	.51	62.05	30.27	43.67	30.64	.60	50.3	30.12	44.01	30.76	.21
Fine Motor[d,e,,f]	67.71	25.77	54.54	28.7	.48	70.52	25.74	55.91	28.97	.53	64.48	28.15	56.14	28.97	.29
Gross Motor[d]	69.65	27.78	70.36	28.24	.03	70.62	27.88	67.75	29.05	.10	66.53	30.25	67.83	29	.04
Parent DECA															
TPF[d,e]	58.4	29.14	49.82	31.27	.28	59.74	29.74	50.58	31.08	.30	54.83	30.99	50.72	31.07	.13
BC[d,e]	61.9	29.23	68.93	28.71	.24	61.01	30.05	67.51	28.96	.22	66.44	28.61	67.39	29	.03
Teacher DECA															
TPF[d,e]	67.5	26.05	58.03	28.09	.35	68.36	26.7	58.28	28.17	.37	60.78	26.93	58.45	28.18	.08
BC[d,e,f]	37.07	28.02	48.37	29.31	.39	34.15	27.66	47.54	29.53	.47	41.68	29.28	47.34	29.55	.19
FCAT Reading (G5)[d,e,f]	353.17	41.8	303.34	45.91	1.13	327.24	63.7	271.49	59.69	.90	294.22	65.57	272.62	60.30	.35
FCAT Math (G5)[d,e,f]	372.51	36.36	332.41	41.17	1.03	345.99	67.94	286.67	67.52	.88	310.86	74.02	287.87	68.03	.32
5th Grade GPA[d,e,f]	4.57	.37	4	.53	1.25	4.63	.36	4.07	.58	1.16	4.35	.44	4.08	.58	.52

Multivariate Analyses.

Though bivariate analyses reveal significant relationships between nearly all of our variables of interest and enrollment in advanced coursework, they don't account for the possible confounding influence of related variables. As such, multivariate analyses were conducted to assess each predictor accounting for the others. This was done first for whether or not a student ever enrolled in the advanced course of interest. To address this, 3-step logistic regressions with demographics entered first, school readiness skills entered second, and prior school competence entered third, were conducted.

Ever Enrolled – Any Type of Advanced Course.

Step 1. The first of these regressions (depicted in Table 6), looks at ever enrolling in any type of advanced course as the outcome. The overall model significantly predicted

enrollment in an advanced course of any type ($\chi^2(23) = 5434.339$, $p<.001$). The first step reveals that when just assessing demographic factors; poverty, ethnicity, gender, preschool type, and special education status, are each significantly related to enrollment. Attending public school pre-K, as opposed to family based or center based care, made students about 50% more likely to enroll in some sort of advanced course ($p < .001$). Receiving reduced priced lunch (rather than free lunch) was actually associated with a larger increase in the odds of enrolling in an advanced course (OR = 1.809), than not receiving free or reduced lunch as compared to receiving free lunch (OR = 1.439). This suggests that degree of poverty is particularly important in predicting advanced course enrollment, to the point that slight income differences produce meaningful differences in advanced course enrollment. Further, there were significant ethnicity effects for Latino students, Black students, and Asian students (as compared to White students). Both Latino and Black students were less likely than White students to enroll in some sort of advanced course (by about 30% and 65% respectively). Inversely, Asian students were nearly 3 times as likely as White students to enroll in some sort of advanced course. Being male was associated with a 35% decrease in the odds of enrolling in an advanced course, while receiving special education services was associated with a 75% decrease in the likelihood of enrolling in an advanced course. The only demographic factor that was not significantly associated with advanced course enrollment was English language learner status.

Step 2. However, after adding in school readiness skills this changes slightly. All subscales of the LAPD (cognitive, language, fine motor, and gross motor), as well as both

parent and teacher rated reports of student social skills at school entry were significantly related to advanced course enrollment. Scoring higher on the cognitive, language, and fine motor subscales of the LAPD were all associated with an increase in the odds of enrolling in an advanced course. The largest of these effects was for the cognitive subscale, where a 1 point increase on the cognitive subtest was associated with a 1.1% increase in the odds of having enrolled in an advanced course. This means that for a 50 point increase on the cognitive subtest, the odds of enrolling in an advanced course were increased by 55% (1.1 X 50 = 55). The smallest effect size among the LAPD subscales belongs to gross motor, where an increase of 1 point on the gross motor subscale was actually associated with a decrease of .02%. As such, for a 50 point increase on the gross motor scale, odds of enrolling in an advanced course were decreased by 1% (.02 X 50 = 1). This is a negligible effect, that is likely driven by our large sample size. Both parent and teacher ratings of students social skills at school entry were associated with a .3% increase in the odds of having enrolled in an advanced course. Parent-and-teacher rated behavioral concerns were associated with a decrease in the odds of advanced course enrollment.

In contrast, after adding in readiness at school entry, many of the previous background variables lose their significance. Attending public school pre-K and being Asian are no longer associated with a significant increase in the odds of taking an advanced course. For Asian students, the odds ratio is similar between these steps suggesting that loss of significance could possibly be due to a decreased sample size after the inclusion of school readiness skills. Further, our non-low-income group, those who

did not apply or receive free or reduced price lunch, were no longer significantly more likely to enroll in an advanced course than the most poor in the sample, those who received free priced lunch. The contrast between those who receive reduced rather than free priced lunch remains significant such that those who receive reduced price lunch are 60% more likely than those who receive free priced lunch to enroll in some sort of advanced course. Similarly, Latino and Black students remain less likely to enroll in advanced courses by 33% and 50% respectively. This suggests that the difference between Asian and White students can be explained by differences in readiness at school entry, but that enrollment differences between Black and Latino students and White students were not fully explained by differing readiness at school entry. Being a male now resulted in only a 20% decrease in the odds of advanced course enrollment. Receiving special education services also remained significant where those who do receive services were 65% less likely to take advanced courses than those who don't receive services. Notably, being an English language learner was significantly associated with an increase in the odds of advanced course enrollment by about 20% in step 2 of the model.

Step 3. Step 3, our main model of interest, includes both demographic factors and school readiness skills like step 2, but adds in various measures of prior school competence. This allows us to differentiate the role of academic skills at school entry from academic skills in later schooling (G5 in this instance), while also helping to examine the persistence of demographic variable's influence on advanced course

enrollment even when controlling for the measures that should suggest academic prowess.

Prior academic competence, as expected, was highly related to likelihood of advanced course enrollment. Being assigned the designation gifted, having a higher GPA in grade 5, having higher standardized test scores in grade 5, and not being retained or suspended are all significantly related to increased likelihood of enrolling in an advanced course. Gifted students were 7.5 times more likely to have ever taken an advanced class. This is a massive effect, especially when considering that this controls for GPA and test scores which are used by school systems to measure academic success. Similarly, an increase of 1 GPA point (e.g. moving from a 'C' to a 'B' average) increased the odds of enrolling in an advanced course by more than 4 times. Additionally, an increase of 1 point on the grade 5 FCAT reading test increased the odds of enrolling in an advanced course by 1.4% (OR = 1.014, $p < .001$). Though that may seem small in comparison to the previous prior competence factors, the FCAT is measured on a 500 point scale. A better way to understand this then is by looking at a 50 point increase on the test, which would result in a 70% increase in the odds (50 X 1.4 = 70) of advanced course enrollment. On the flip side, being retained or being suspended in elementary school decreased the odds of ever enrolling in an advanced course. Being retained decreased the odds by about 60%, and being suspended decreased the odds by about 23%. However, skipping a grade (a rare event) was not significantly associated with a change in the odds of advanced course enrollment.

Even accounting for the very powerful effects of elementary school academics, certain school readiness measures were still significantly related to advanced course enrollment. Higher scores on the cognitive subscale of the LAPD at age 4 increased the odds of enrollment by .3% per percentage point increase (OR = 1.003, $p<.01$). In other words, moving from the 25th percentile on the cognitive test to the 75th percentile increased the odds of advanced course enrollment by 15%. Higher teacher-rated behavioral concerns however, decreased the odds of advanced course enrollment by .2% per percentage point increase (OR = .998, $p < .05$). As such, moving from the 25th percentile to the 75th percentile of behavior problems decreased the odds of advanced course enrollment by 10%. All other school readiness skills at age 4 were no longer significantly related to advanced course enrollment after taking elementary school academic competence into account.

Finally, even when accounting for all other variables in the model, gender, ESE status and poverty level were still significantly associated with advanced course enrollment. Unlike in the previous 2 models, being male now makes one more likely to enroll in an advanced class (OR = 1.206, $p <.001$). This indicates that when prior academic competence and school readiness skills are held equal, boys are actually more likely to gain admittance to these classes. Similarly to the previous 2 models, having some sort of (non-gifted) exceptionality is related to a substantial decrease in the likelihood of advanced course enrollment (by about 65%)(OR=.362, $p <.001$). Interestingly, regarding poverty level, when holding all other variables in the model constant, those who did not apply for or receive free or reduced price lunch (the most

affluent group in the sample) were actually 40% less likely to gain admittance to some sort of advanced course than those who received free lunch (those with the highest degree of poverty in the sample). None of the other demographic variables remained significant in this model. This suggests that prior academic competence is explaining more of the variance in advanced course taking than ethnicity, such that after controlling for those who are achieving the same in elementary school, there is no statistically meaningful difference in the likelihood of enrolling in advanced courses by ethnicity.

Table 6. 3 step logistic regression predicting enrollment in any type of advanced course by demographic variables in step 1, school readiness variables in step 2, and prior competence variables in step 3 (N = 13, 727).

Variable/Step	Step 1		Step 2		Step 3	
	Odds Ratio	*SE(B)*	Odds Ratio	*SE(B)*	Odds Ratio	*SE(B)*
Background Variables						
ELL Status	1.059	.054	1.201***	.057	1.021	.068
Public School Pre-K	1.491***	.041	1.077	.045	2.087	.052
Gender (Male)	.661***	.040	.848***	.044	1.206***	.052
Special Education	.256***	.089	.344***	.093	.362***	.104
Ethnicity						
Latino	.579***	.115	.666***	.118	.810	.141
Black	.354***	.113	.456***	.117	.798	.138
Asian	2.798***	.526	2.701	.538	2.445	.613
Poverty						
Did not apply/receive	1.439***	.058	1.119	.061	.589***	.073
Reduced price	1.809***	.080	1.576***	.083	1.109	.096
School Readiness at age 4						
Cognitive			1.011***	.001	1.003**	.001
Language			1.007***	.001	1.001	.001
Fine Motor			1.005***	.001	1.002	.001
Gross Motor			.998*	.001	.999	.001
Teacher TPF			1.003***	.001	1.000	.001
Teacher BC			.994***	.001	.998*	.001
Parent TPF			1.003***	.001	1.000	.001
Parent BC			.997***	.001	.999	.001
Prior Academic Competence						
Ever Gifted					7.414***	.174
GPA in Grade 5					4.373***	.058
FCAT Reading Score (G5)					1.014***	.001
Ever Skipped					1.009	.391
Ever Retained					.437***	.062
Ever Suspended					.775***	.057

Ever Enrolled – ADV.

Next, the same analysis was run for each of the subtypes of advanced course (ADV, honors, AP, preIB, and IB). Tables for subtype analyses are contained in appendix A, where bolded terms indicate deviations from the ever enrolled in any kind of advanced course model just discussed. When looking at enrollment in ADV courses specifically (Grades 6-8) (Table A1), the results look very similar to that of the advanced courses at large and the model significantly predicts ADV enrollment ($\chi^2(23) = 5341.288$, $p<.001$). In the first step, all background variables remain significant, while ELL remains nonsignificant, except for the Asian/White comparison. When predicting ADV course taking, Asian students are not significantly more or less likely to enroll in an ADV course than White students. Similarly, in step two of the ADV model, the pattern of significance and non-significance stays the same with the exception of the difference in likelihood of enrollment as predicted by poverty. In the model predicting enrollment in any type of advanced course, those who did not apply for or receive free or reduced priced lunch were not significantly more likely to enroll than those who received free priced lunch in the second step. When just predicting ADV enrollment however, the non-low-income students in our sample remain significantly more likely than the most poor students to enroll.

For the full model for ADV course enrollment, the largest differences from overall results for any course, were seen in school readiness skills. More of the school readiness variables remained significant when looking at ADV enrollment specifically. An increase on both the cognitive and language subscales was associated with increased odds of ADV enrollment, rather than just the cognitive subscale (OR = 1.003, p <.01; OR

= 1.002, p <.05 respectively). Interestingly, increased gross motor scores were also significantly associated with decreased odds of ADV enrollment by .3% per percentage point increase (or 15% for 50 percentage point increase) while they were not significant in the model predicting any type of advanced course enrollment (OR = .997, p<.001). Additionally, an increase in preschool teacher-rated social skills increased the odds of course taking by .2% per percentage point increase for ADV courses specifically (OR = 1.002, p<.05).

In the third model, for ADV course taking, ethnicity remained significantly related but only for the Black/White comparison. This suggests that even after controlling for elementary school academic skills, Black students were less likely to enroll in an ADV class than White students. Although the pattern of prior academic competence on likelihood of enrollment stays the same when looking at ADV course taking, the effect size of gifted status is notably larger. For predicting ADV enrollment specifically, being gifted increased the odds by nearly 9 times.

Ever Enrolled – Honors.

The next step in the traditional advanced course taking pathway is Honors coursework. Again, the full model significantly predicts honors enrollment (χ^2 (23) = 6948.745, p <.001). Predicting enrollment in Honors courses looks very similar to that of predicting any advanced course (Table A2). In step one, all demographic factors followed the same pattern as in the any type model except for English language learner status and the Asian/White comparison. Where ELL status was not significant in the first step of the any type model, ELL status was significantly associated with an increase in the odds of

having enrolled in an honors course. In contrast, though being Asian was associated with a significant increase of the odds in the any type of advanced course model, when predicting honors course taking specifically, this effect is not significant.

In the second step where school readiness variables are added in, the only variance from the any type model is that the gross motor subscale of the LAPD was not significantly related to the likelihood of enrolling in an honors course and the non-low-income in the sample were significantly more likely than the most poor in the sample to enroll in an honors course. In the final model, adding in prior competence variables, most relationships continue to follow the pattern seen in the any type model. However, ELL status remained significant in the final model such that those who were English language learners were more likely to enroll in an honors course than those who were not English language learners. Also differing from the any type model, the distinction between those on reduced price lunch and those on free priced lunch was significant in step 3 where those on reduced priced lunch (the less poor), were more likely than those on free priced lunch to enroll in an honors course. Additionally, teacher rated behavioral concerns were not significantly related to a decrease in the likelihood of honors enrollment. Though still following the pattern observed in the any type model, the effect size of gifted status on honors course taking is substantially smaller than the effect gifted status had on any type of advanced course taking (2.8 times more likely for predicting honors course taking, while 7.5 times more likely for predicting any kind of advanced course taking).

Ever Enrolled – AP.

The final step in the traditional advanced course pathway is Advanced Placement (AP) (Table A3). Enrollment in at least one AP class is somewhat different than enrollment in ADV or honors classes, however the full model does still significantly predict enrollment ($\chi^2(23) = 2719.004$, $p<.001$). While all demographic factors (excluding ELL status) are still significantly related to AP course enrollment in step 1, as in the previous analyses, the effect of being Black or Asian exerts a much stronger influence than when predicting ADV or honors enrollment. Being Black decreases ones odds of AP enrollment by over 70%, while being Asian increases the odds of AP course enrollment by almost 3 times (compared to being White). Similarly the effect of being non-low-income as opposed to being on free lunch was substantially higher when predicting AP enrollment, than any type of advanced course enrollment (OR = 2.768 compared to 1.439).

In the second step, fewer school readiness skills are significantly related to AP course enrollment as compared to enrollment in any type of advanced course. Unlike in the any type model, gross motor skills at school entry, teacher rated social skills, and parent rated behavioral concerns were no longer significantly related to the likelihood of enrollment. Also unlike in the any type model, Latino students are not significantly less likely than White students to enroll, but Asian students are significantly more likely than White students to enroll. Similarly, non-low-income students are 2.3 times more likely to enroll in an AP class than the lowest-income students in the sample.

In step 3, all prior competence variables, except skipping a grade, are significantly associated with later AP enrollment, as in the any type model. Similarly to honors, GPA

has a larger effect than gifted status for AP enrollment where moving up a letter grade increased the odds of AP enrollment by almost 300% (OR = 3.902, p <.001). Gifted status is still a significant predictor of AP enrollment though, as receiving gifted status more than doubles the odds (OR = 2.101, p <.001). Of school readiness skills, only the language subscale of the LAPD is still significant in the final model. This is different than in the any type model where LAPD cognitive skills and teacher rated behavioral concerns were significantly related to enrollment, not language skills.

Also unlike in the any type model, even after controlling for skills at school entry and prior competence at the end of elementary school, Black students are still nearly 40% less likely to enroll in an AP class than their similarly skilled White peers. Uniquely, the effect of being Asian actually strengthens after controlling for prior competence and skills at school entry. In the full (step 3) model, being Asian increases the odds or enrollment in an AP course by more than 3 times (OR = 3.292, p <.001). Additionally, only when looking at AP course taking do males remain less likely to enroll than females even in the final model (OR = .759, p <.001). The effect of poverty on course taking is also different when looking at AP classes specifically rather than any type of advanced course. First, the distinction between the low-income and the most low-income in the sample was significant for predicting AP course enrollment, unlike predicting any type of advanced course. Second, and more strikingly, unlike in any of the previous models, those were not in poverty were significantly more likely than those who were the most low-income to take an AP course. Also unlike in the any type of advanced course model, attending public school preK was significantly related to a decrease in the likelihood of

enrollment, while receiving special education services was not significantly related to enrollment.

Ever Enrolled – PreIB.

The IB pathway is somewhat different than the ADV to honors to AP pathway. IB is contained in special IB programs and only offered at selected schools. As such the pattern of results are somewhat different for the multivariate analyses of these advanced course types as well. The full model significantly predicts preIB course enrollment ($\chi^2(23) = 629.965$, $p<.001$). In step 1, preschool type, gender, ESE status, ethnicity, and poverty status are all significantly associated with preIB course taking as in the predicting any type model (Table A4). Unlike with the predicting any type model, ELL status was significantly associated with an increase in the odds of enrolling in a preIB course and the comparison between those on reduced price lunch rather than free priced lunch was no longer significant.

Unlike with ADV, honors, or AP courses, adding in readiness at school entry barely affects the effect of demographic factors on preIB enrollment, likely because only the cognitive subscale of the LAPD (OR = 1.011, $p<.001$) and teacher rated behavioral concerns (OR = .993, $p<.001$) are significant. Unlike in the any type model, the Asian/White comparison remained significantly related to an increase in the odds of enrollment, as does being not in poverty. The distinction between reduced and free priced lunch remains nonsignificant.

In the final model (step 3), prior academic competence skills all follow the same pattern of direction and significance as in the any type model. Similarly, the school

readiness variables all follow the same directional pattern, however with the substantially fewer number of students enrolling in preIB courses, none of the school readiness variables remain significant in the final model. Also unlike in the any type model, being Asian was related to a significant increase in the odds of preIB enrollment, while being Latino was significantly related to a decrease in the odds of enrolling. There were no significant poverty, gender, or special education status effects in the preIB step 3, dissimilar to the any type of advanced course model. Also different from the any type of advanced course model, is the finding that being an English language learner was significantly associated with an increase in the odds of preIB enrollment.

Ever Enrolled – IB.

Very little is similar when comparing the ever enrolled in any type of advanced course model to the ever enrolled in an IB course model. This is mostly because very little is significant when predicting enrollment in an IB class due to low numbers of students in IB courses, however the full model does still predict enrollment ($\chi^2(23) = 120.058$, $p<.001$) (Table A5). In step 1, only that being Asian increased the odds of IB enrollment (OR = 3.857, $p<.05$) and that ELL status was not significant are similar to the first step of the any type model. In step 2, being Asian remains the only demographic variable related to IB enrollment. This means that the only effects that are similar between the any type model and the IB model are that preschool type and non-low-income/lowest income were not significantly related to enrollment, and that cognitive skills, teacher rated behavioral concerns, and parent rated behavioral concerns at school entry were significant among the school readiness skills.

In the final model (step 3), slightly more is significant, however the gender effect, the special education effect, and the effects of cognitive and parent rated social skills at school entry were no longer significantly related to enrollment. Also different from the any type model is that being Asian continues to significantly increase the odds of IB enrollment, as does parent rated behavioral concerns. Interestingly, parent rated behavioral concerns has a positive relationship to IB course enrollment such that an increase in parent rated behavioral concerns (or more parent rated behavioral problems) was actually related to an increase in the odds of enrolling in at least one IB course. Though gifted status is significant in both models, having gifted status is actually related to a decrease in the odds of IB enrollment, unlike with any advanced course enrollment.

Number of Courses – Any Type of Advanced Course.

All of the above had to do with whether or not students ever took particular types of courses. The second set of multivariate analyses assesses what factors among demographics, school readiness skills, and prior competence predict *how many* advanced courses are taken by those who have taken at least one of the specified type. These results must be interpreted with caution however, because ICCs reveal that 3 to 35 percent of the variance in number of advanced courses taken can be attributed to the school attended. As the goal of this project was to examine the effects from specifically the student level, no multilevel modeling was used. However future projects looking at school effects will parse this out more carefully. Similarly, low numbers of courses were taken on average (6 being the average number of total courses taken) and the variance of number of courses taken was extremely high.

First, 3-step regressions were run assessing if demographic factors, school readiness skills, and prior competence predicted how many courses of each advanced type were taken among students who took at least 1. The first of these, depicted in Table 7, used the total number of advanced courses taken, regardless of subtype. Step 1, which includes only demographic factors, shows that going to public school pre-K and not applying for/receiving or receiving reduced price lunch predicted a small increase in the number of total advanced courses taken. Attending public school pre-K rather than center or family based child care was related to a standard deviation increase of .083 in the number of courses taken. Similarly, not receiving free or reduced price lunch, or receiving reduced priced lunch, was associated with a standard deviation increase of about .16 and .07 in the number of advanced courses taken respectively. Being male, having a disability, and being Latino or Black were associated with slight decreases in the number of advanced courses taken (among those who took them). The largest of these effects belonging to ethnicity where being Latino or being Black (compared to White) was associated with a standard deviation decrease of .112 and .214 respectively. As the standard deviation for number of advanced courses taken was 6.04 (see Table 2), this translates to Latino students having taken .7 fewer advanced classes than White students, and Black students having taken 1.3 less advanced classes. Being Asian or an English Language Learner was not significantly related to the number of advanced courses taken in step 1, given that they took at least one.

Step 2 incorporates readiness skills at school entry. Higher cognitive, language, fine motor skills, and parent and teacher rated social skills were related to more advanced

courses taken. Of these, higher cognitive ability was the most strongly related to advanced courses where a standard deviation increase of 1 on the cognitive test was associated with a standard deviation increase of .13 advanced courses taken (β= .129, *p* <.001). As a standard deviation increase in cognitive ability equates to an increase of about 30 points, this means that for every 30 point increase on the cognitive test students took .8 additional advanced courses. This means that higher gross motor ability and parent-and-teacher rated behavioral concerns were associated with a decrease in the number of advanced courses taken. Teacher-related behavior concerns was the measure of social skills most strongly related to number of courses taken such that a standard deviation increase of 1 on the behavioral concerns scale was associated with having taken .06 standard deviations less of advanced classes (β = -.056, *p* <.001). In step 2, the influence of demographics changed very little from step 1. ELL status became significantly associated with more advanced courses taken (β=.044, *p* <.001) and all other demographics variables stayed very similar, with effect sizes shrinking slightly but no directional or significance changes occurring. This suggests that different readiness at school entry is not strongly associated with any of the demographic factors, such that school readiness differences better explain enrollment differences.

In the third and final model, prior competence variables were included. Being gifted, having a higher GPA, and having a higher FCAT reading score all predicted an increase in the number of advanced courses taken. Receiving gifted status increased the number of advanced courses taken by a standard deviation .2 (β=.212, *p* <.001). Moving up a standard deviation in GPA increased the number of advanced courses taken by about

.3 standard deviations (β=.273, p <.001). Interestingly, a standard deviation increase in FCAT reading score was associated with a standard deviation increase of almost .4 in the number of advanced courses taken (β= .381, p <.001) holding all other factors constant. This means that for each 60 point increase (the standard deviation of FCAT reading scores) on the FCAT reading test, students took an additional 2.4 advanced classes. Being retained and being suspended were both associated with a decrease in the number of advanced courses taken (β= -.071, p <.001; β = -.088, p <.001) among those who had taken at least one.

Once prior competence has been factored in, only cognitive skills at school entry remained meaningfully predictive of the number of advanced courses taken. After accounting for 5th grade competence, a standard deviation increase of 1 point in pre-K cognitive skills was associated with a standard deviation increase of .024 in the number of advanced courses taken. This suggests that even after accounting for elementary school competence, differences in cognitive skills at school entry were significantly related to the number of advanced classes taken above and beyond. In this model, being male was associated with a slight increase in the number of advanced courses taken (β = .018, p <.05) and having received special education services is related to a decrease in the number of courses taken (β= -.028, p <.001). In essence, of boys and girls with the same demographics, school readiness skills, and elementary school competence, boys took more advanced classes than girls did.

Table 7. 3 step OLS regression predicting total number of advanced courses by demographic variables in step 1, school readiness variables in step 2, and prior competence variables in step 3 (N = 10, 024).

Variable/Step	Step 1		Step 2		Step 3	
	β	*SE(B)*	β	*SE(B)*	β	*SE(B)*
Background Variables						
ELL Status	.010	.154	.044***	.150	.008	.114
Public School Pre-K	.083***	.121	.008	.124	.000	.094
Gender (Male)	-.075***	.115	-.032***	.116	.018*	.089
Special Education	-.081**	.367	-.053***	.355	-.028***	.269
Ethnicity						
Latino	-.112***	.249	-.090***	.240	-.015	.182
Black	-.214***	.253	-.175***	.244	-.018	.187
Asian	.018	.674	.106	.649	.009	.491
Poverty						
Did not apply/receive	.161***	.154	.112***	.150	.007	.115
Reduced price	.073***	.195	.057***	.187	.015*	.142
School Readiness at age 4						
Cognitive			.129***	.003	.024*	.002
Language			.107***	.003	.006	.002
Fine Motor			.039***	.003	.016	.002
Gross Motor			-.025*	.002	-.005	.002
Teacher TPF			.043***	.003	.000	.002
Teacher BC			-.056***	.002	.002	.002
Parent TPF			.055***	.002	.004	.001
Parent BC			-.020*	.002	.001	.002
Prior Academic Competence						
Ever Gifted					.212***	.108
GPA in Grade 5					.273***	.110
FCAT Reading Score (G5)					.381***	.001
Ever Skipped					.002	.580
Ever Retained					-.071***	.152
Ever Suspended					-.088***	.103

Number of Courses – ADV.

Next, the same 3 steps were performed with each subtype of advanced course (ADV, honors, AP, preIB, and IB). The tables for each of these is contained in appendix A, where bolded terms indicate deviations from the total number of advanced courses model just discussed. Predicting the number of ADV courses taken looks very similar to predicting advanced courses at large (Table A6). In the first step, there are no differences between the number advanced classes model and the number of ADV classes model. In the second step, most of the school readiness variables are significant in the same direction as for advanced classes at large, however teacher-rated social skills and parent-

rated behavioral concerns are no longer significant. Step 2 demographics also stay very similar to that of the any type model, but attending public school pre-K was significantly associated with an increase in the number of ADV courses taken, and ELL status and gender were not. In the third and final model, only the reduced price lunch/free priced lunch comparison and cognitive readiness at school entry differ from step 3 of the any type model. Neither of these predictors was significantly related to the number of ADV classes taken.

Number of Courses – Honors.

Table A7 in the appendix, depicts the same procedure predicting the number of honors courses rather than the number of ADV courses. The pattern of results stays the same in step 1, however in step 2, only cognitive (β= .063, p <.001) and gross motor ability (β= .030, p <.05) significantly predicted later honors course taking. Interestingly, gross motor ability at school entry positively predicts more honors courses taken later on. This is in contrast to what is seen in many of the other models included in this paper where higher gross motor ability at school entry is actually related to decreased odds of advanced course taking and fewer numbers of courses taken. Additionally, ELL status is not significant for predicting the number of honors courses taken.

In the final model predicting number of honors courses taken, none of the prior academic competence variables differ from predicting any type of advanced course. However, while cognitive skills at school entry were significant for predicting the number of advanced courses taken, they were not significant for predicting the number of honors courses taken. In contrast, language and gross motor skills were significantly

associated with the number of advanced courses taken. Unexpectedly, higher language skills at school entry was associated with a decrease in the number of honors courses taken (β= -.043, p <.001), while an increase in gross motor skills at school entry was associated with an increase in the number of honors courses taken (β= .032, p<.001). Most demographic variables in the final model predicting advanced course enrollment paralleled the effect of those predictors on the number of total advanced courses taken. The only exceptions were that those not in poverty in the sample took significantly more honors courses than the most low-income in the sample (β= .026, p <.05), and receiving special education services was no longer significantly related to the number of courses enrolled in.

Number of Courses – AP.

When predicting the number of AP courses enrolled in (Table A8), the highest level of advanced coursework offered at most schools, few factors in any of the models are significant. In step 1, preschool type and the reduced price lunch/free priced lunch were no longer significant predictors of the number of courses taken, as compared to the any type model where both significantly predicted the total number of advanced courses taken. A major difference in step 2 of the model predicting AP course enrollment is that none of the readiness skills at school entry were significantly associated with the number of AP courses taken. Additionally, poverty, gender, special education status, and English language learner status were also not significantly related to the number of AP courses taken, but were significantly related to total number of advanced courses taken in the step 2 model. Only preschool type was significant when predicting number of AP courses,

where it wasn't significant for predicting total number of courses. As such, those who attended public school pre-K took significantly less AP classes than those attended family or center based care (β= -.069, p <.01).

In the step 3 model, there are some interesting deviations even among the prior academic competence variables. For the first time when predicting number of courses, gifted status is not significant. As gifted status was strongly associated with the odds of ever taking an AP class, but not with how many AP classes were taken, it seems like gifted status is serving a function that is helping students get identified for AP classes but it is not supporting them in their continued taking of AP classes. In addition, having been suspended in elementary school was not significantly related to the number of AP classes taken, In the final model predicting total number of advanced classes taken, cognitive skills at school entry were significantly related to number of courses taken, but this is not seen when predicting the number of AP classes taken specifically. Also unlike when predicting the total number of advanced courses taken, Black students took significantly fewer AP classes than White students, even holding competence factors constant. Further, public school pre-K was significantly related to a decrease in the number of AP courses taken (β= -.072, p <.01) while special education status was not significantly related to the number of AP courses taken.

Number of Courses – PreIB.

Even fewer variables were significantly related to the number of preIB and IB courses taken (Tables A9 and A10 respectively). No demographic variables or school readiness skills were significantly related to the number of preIB courses taken in any

model. This means that only the insignificance of ELL status and the Asian/White comparison are similar between predicting the number of advanced courses taken and the number of preIB courses taken. In step 2 the exact same pattern occurs, except now the similarities to the any type of advanced courses model is the lack of significance preschool type and the Asian/White comparison. None of the school readiness variables were significantly related to the number of preIB courses taken. In the third step, only FCAT reading score in 5^{th} grade was significantly related to the number of preIB courses taken. As FCAT scores went up, the number of preIB courses taken also went up (β=.230, p<.001). This differs from the any type model as gender, special education status, poverty, cognitive skills at school entry, and all prior academic competence variables (except grade skipping) were associated with more courses taken in the any-type, step 3 model.

Number of Courses – IB.

Most predictors included in this analysis were not significant for predicting the number of IB courses taken in any of the models. Unlike in the total number of advanced courses step 1 model, where all predictors except ELL status and the Asian/White comparison were significant, only the non-low-income/lowest income comparison was significant in the number of IB courses model. Similarly, in step 2, all predictors except for preschool type and the Asian/White comparison significantly predicted the number of advanced courses taken, and only language skills at school entry were significantly related to the number of IB courses taken. Higher language skills at school entry were associated with a decrease in the number of IB courses taken (β=-.218, p <.05). The step

3 model predicting IB courses taken looks far more similar to the step 3 model of total advanced courses taken, than in previous steps. When looking at prior academic competence, gifted status and FCAT reading score both significantly predicted the number of IB courses taken, however they have a negative relationship with number of IB courses taken such that being gifted is related to a standard deviation decrease of .38 in the number of IB classes taken and a standard deviation increase of 1 in FCAT reading scores in 5^{th} grade were related to a standard deviation decrease of .43. While having been retained in elementary school was still significantly related to fewer courses taken (β=-.159, p <.05), suspension was not significantly related to the number of IB courses taken. No other findings were significant.

Number of Courses – STEM.

Lastly, the same 3 steps were used to predict the total number of advanced courses that were taken within each subject (Language, Math, Science, Social Studies, and STEM). The total number of STEM classes taken by a student who has taken at least one STEM class was assessed by looking at what factors predicted either advanced math or advanced science (Table A11). All demographic factors except for ELL status significantly predicted the number of STEM courses taken in the first model. This means that the only difference between the model predicting the total number of advanced courses and the model predicting the total number of advanced STEM courses is that Asian students took significantly more STEM classes than White students (β = .025, p < .05). In the second model, Asian students continued to take significantly more STEM classes than White students (β = .023, p < .05), unlike in the total number of advanced

courses model. Additionally, gross motor skills at school entry were not significantly related to the number of advanced STEM courses a student took.

Finally, in the last model, prior competence was added. All prior academic competence variables followed the same pattern as the total number of advanced courses model. After the inclusion of prior competence variables, only higher fine motor abilities at school entry predicted taking more advanced STEM courses. This is different from the total number of advanced courses model where only cognitive ability at school entry was significantly related to number of courses taken. The pattern of demographic predictors was the same when predicting advanced STEM courses as when predicting all advanced courses.

Number of Courses – Math.

Advanced level math is often considered particularly important in assessing a student's academic capabilities. Table A12 (in the appendix) depicts how demographic variables, school readiness skills, and prior competence are related to the number of advanced math classes taken by a student. This outcome includes advanced math classes of any subtype (ADV, honors, AP, preIB, and IB). In the first model which includes only demographic factors, all but ELL status were significantly related to the number of advanced math courses taken. Thus, like when predicting the number of STEM courses taken, the only difference between the all advanced courses and the advanced math courses step 1 models is that Asian students took significantly more advanced math classes than White students. In the second model, all demographic factors maintain their significance except preschool type, which is no longer significantly associated with

number of advanced maths taken, as in the total number of advanced courses model. Of readiness skills at school entry, only gross motor skills and parent rated behavioral concerns were not significant and as such different from the total number of advanced courses model.

In the main and final model, all prior academic competence variables follow the same pattern as the total number of advanced courses model. Different from the all advanced courses model, but similar to the STEM model, only fine motor skills at school entry were significantly related to the number of advanced math courses taken. Poverty also had a unique relationship with the number of advanced math courses taken such that non-low-income students took significantly fewer advanced math courses than the lowest-income students when holding all other predictors constant ($\beta = -.022$, $p < .05$). In contrast, the distinction between reduced priced lunch and free priced lunch receivers was no longer significant.

Number of Courses – Science.

Predicting the total number of advanced science courses taken (Table A13) looks extremely similar to predicting the number of STEM courses taken, as well as to the total number of advanced courses taken. The first model depicts the same pattern of significance and valence as for predicting advanced STEM. The second model differs from the total number of advanced courses model where, like with STEM courses, the Asian/White comparison is significantly related to the number of courses taken and gross motor skills at school entry are not. Additionally, parent-rated behavioral concerns are also not significantly related to the number of advanced science courses taken.

In the third model, prior academic competence again mimics that of the model predicting the total number of advanced courses taken. Interestingly, it is gross motor, not cognitive skills at school entry that is significantly related to number of advanced sciences taken ($\beta = .019$, $p < .05$). The only other difference from the all advanced courses model is that gender is not significantly related to number of advanced science courses taken.

Number of Courses – Language.

The same 3 step regressions were also used to look at the effect of demographics, school readiness skills, and prior competence on the number of advanced language and social studies classes taken. Advanced language classes (Table A14) include all English, writing, literature, and foreign language courses taken at any advanced level. When looking at only demographics, the model follows the same pattern as predicting the total number of advanced courses taken. When school readiness skills are incorporated in the model, neither of the motor skills subscales of the LAPD significantly predict the number of advanced language courses taken. Similarly, parent-rated behavioral concerns does not significantly predict the number of advanced language courses taken. In the final model, prior academic competence is the same as in the any type model. However cognitive skills at school entry and being male are not significantly related to the number of advanced courses taken. Interestingly, unlike in the all advanced courses model and the STEM model, ethnicity is significantly associated with the number of advanced languages taken such that Black students took significantly fewer advanced language courses than their White peers ($\beta = -.037$, $p < .05$).

Number of Courses – Social Studies.

Finally, when predicting the number of advanced social studies course enrolled in, the only deviation from the all advanced courses model in step 1 is that Asian students took significantly more advanced social studies courses than White students (β =.024, $p <$ .05) (Table A15). In step 2, the Asian/White comparison continues to be significant (β = .024, $p < .05$). Unlike in the all advanced courses model, ELL status, gender, gross motor skills at school entry, teacher-rated social sills, and parent-rated behavioral concerns were not significantly related to the number of advanced social studies courses taken. In the final model, none of the school readiness skills were significantly related to number of advanced social studies courses taken. In addition, being male, receiving special education services, and poverty were unrelated to the number of courses enrolled in. However, Black students took significantly fewer advanced social studies classes than their White peers (β =- .066, $p < .001$).

Research Question 3

Research question 3 asks if students of color, and low-income students, experience track mobility differently than non-low-income, White students. This was investigated in two ways, first with descriptives on when students first entered the advanced path, and second with chi^2 tests to determine if ethnicity and degree of poverty were significantly related to grade of advanced entry and to different progressions of advanced course taking trajectories. Table 8 shows that a full three quarters of those who take advanced courses between 6^{th} and 11^{th} grade, began their advanced course taking in 6^{th} grade. Further, less than 5% of advanced course enrollers took their first advanced

course in high school (see grades 9 through 11). This suggests that early entry is vital to accessing advanced courses. This is further emphasized by the fact that less than 1% of advanced course takers took their first advanced course in 11th grade. It is likely that this number will grow somewhat, as more cohorts of 11th graders are added into the data, but it is unlikely that the pattern of decreasing entry as grades get later will change.

Table 8. Grade at advanced course entry

Grade	Number	Percent of Total Advanced Takers
6th Grade	15,972	74.1%
7th Grade	2,7934	13%
8th Grade	1,749	8.1%
9th Grade	698	3.2%
10th Grade	261	1.2%
11th Grade	93	.4%
	21,566	100%

To examine the relationship between ethnicity and entry to advanced course trajectories, 6 by 4 chi^2s with grade at advanced entry by ethnicity were calculated. Entry into advanced pathways varied significantly by ethnicity ($\chi^2(15) = 212.078$, $p < .001$). As can be seen in table 9, more than 90% of Asian students who took an advanced course of some kind took their first advanced course in 6th grade. This is substantially higher than the full sample total (ungrouped by ethnicity), where about 75% of advanced course takers took their first advanced course in 6th grade. None of the Asian students in our sample who took an advanced course started their advanced course taking after grade 9. Black students in the sample entered advanced pathways later than the full sample, as can

be seen in comparisons between Black students enrollment in 6th grade as compared to the full sample (lower), and in comparison between Black student entry and the full sample entry from grades 7 through 11 (higher). Latino students in the sample tracked most closely to the full sample percentages for course taking, though this makes sense as the sample at hand is majority Latino. Finally, White students entered the advanced pathway at a higher proportion in 6th grade than the full sample, but entered at a lower rate than the full sample for grades 7 through 11.

Table 9. Grade at advanced course entry by ethnicity

	White	Latino	Black	Asian	Sample Total
6th Grade	85.2%	74.5%	69.9%	91.1%	74.1%
7th Grade	7.3%	12.6%	15.3%	5.6%	13%
8th Grade	5.5%	8.3%	8.5%	1.1%	8.1%
9th Grade	1.4%	2.9%	4.4%	2.2%	3.2%
10th Grade	.5%	1.2%	1.4%	0%	1.2%
11th Grade	.1%	.4%	.5%	0%	.4%
	100%	100%	100%	100%	100%

In addition, 6 by 3 chi^{2}s with grade at advanced entry by free or reduced lunch status (Table 10) reveal the pattern of advanced course entry by degree of poverty ($\chi^2(10) = 236.405$, $p < .001$). Students not in poverty in the sample (those who did not apply for receive free or reduced lunch) enrolled at a higher rate than the full sample in 6th grade, but a lower rate than the full sample for the subsequent grades. Reduced cost lunch receivers followed almost an identical percentage breakdown of advanced course entry to

the sample as a whole. Free priced lunch receivers also followed the full sample pretty similarly, however they slightly under enrolled in 6th grade compared to the full sample and slightly overenrolled in the subsequent grades. Taken together this suggests that non-low-income students are more likely than their low-income peers to enter advanced course trajectories earlier, and less likely to enter later on.

Table 10. Grade at advanced course entry by free or reduced lunch status

	Did not apply/Receive	Reduced	Free	Sample Tota
6th Grade	82.5%	75.1%	71.4%	74.1%
7th Grade	8.2%	11.3%	14.6%	13%
8th Grade	6.1%	8.5%	8.6%	8.1%
9th Grade	2.3%	3.3%	3.5%	3.2%
10th Grade	.6%	1.2%	1.4%	1.2%
11th Grade	.3%	.7%	.4%	.4%
	100%	100%	100%	100%

Moving forward from when students entered the advanced track to how they progressed along this pathway, chi^2 and descriptive analyses were run. Pathways of advanced course taking were incredibly varied and complicated in our data set, particularly across subjects. To make the pathways clearer, only advanced math classes were included in the subsequent analyses. Math was chosen because it has a well-defined progression and is required for all the years included in these analyses. Additionally, only ADV, honors, and AP were included in the definition of advanced courses for the purposes of this particular subsection. These were chosen because the preIB and IB data in the dataset has very high missingness and Miami Dade county predefines its advanced

path as ADV to honors to AP. Even with these narrowing factors in place, there were still a wider variety of course progressions than was prudent to discuss here. As such, 6 distinct and common pathways are discussed here. These pathways include taking no advanced math courses (and as such will not be discussed), and 5 different versions of progression through advanced course taking (that are depicted in Figure 1, Appendix A). Roughly 17,000 students in the sample took some sort of advanced math course.

The first advanced course taking progression discussed is "terminated at ADV'. Frequencies revealed that 5,721 students fit into this group. This means that these students took an ADV math class but not an honors or an AP math class after it. As everyone included in the current dataset has been through at least 7th grade, all students had the opportunity to take both ADV and honors math courses. Nearly 15,000 students in the sample took an some an ADV math course, which means that more than a fourth (38.7%) of advanced math takers never made it beyond ADV for math classes (5,721 terminated at ADV/14,775 total ADV math takers).

The next advanced course pathway is 'terminated at honors (includes ADV)'. These are students who took an ADV math course, and an honors math course, but did not take an AP math course. Frequencies reveal that there were 5,998 students who fit into this category. As there were 9,052 students who took an ADV math and an honors math in the sample, this equates to roughly 66.3% of advanced math takers who took an ADV math and an honors math but did not go on to take an AP math. Finally we look at those who took the full trajectory of advanced math taking in which a student took an ADV math, an honors math, and an AP math. Only 133 students in the sample completed

this trajectory (or 1.5% of those who took an ADV math and an honors math went on to take AP math). The low numbers of students to complete this trajectory were likely due, in part, to some cohorts not yet having made it to this point yet.

However, some students skipped over ADV and went straight into honors classes. Of these students who did not take an ADV math class, some only took an honors math, while some took both an honors and an AP math class. Those who only took an honors math class, 'terminated at honors (skipped ADV)', numbered 2,233 students. As 2,884 students in the sample did not take an ADV math but did take an honors math course at some point this means that 77.4% of honors (no ADV) math course takers both skipped ADV and stopped at honors. Those who skipped ADV math, but took an honors and an AP math, 'took AP (skipped ADV)' numbered only 7. This means that far fewer than 1% of advanced math takers who skipped ADV math and took an honors math went on to take an AP math. No students took an AP math class without taking an honors math class.

Exploring the role of ethnicity and income on advanced math trajectories using chi^2 analyses revealed that both ethnicity and degree of poverty impacted advanced math course continuing (Tables 11 and 12 respectively). A 2 by 4 chi^2 revealed that there was a significant ethnicity effect for terminating after ADV courses ($\chi^2(3) = 253.589$, $p < .001$) where of Black advanced math takers, almost half (48.6%) terminated at ADV math. On the flip side, only 20% of the Asian students who took an advanced math course did not go on to take an honors math course. Overall 39% of students who took an ADV math class took an ADV math and then stopped. This means that Black students stopped at ADV math more often than in the full sample while Asian, Latino, and White students

stopped at ADV less than the full sample. There was also a significant ethnicity effect for those who terminated at honors (including ADV) ($\chi^2(3) = 93.516$, $p < .001$). Here we see that Black students were the only students more likely than the sample as a whole to take an ADV and an honors math and not continue on (75%).

An interesting pattern can be seen when looking at the effect of ethnicity on taking an AP math (including ADV) where White and Asian ADV and honors math takers were more likely than the full sample to take the full trajectory of advanced math (go on to take an AP), while Black and Latino students were less likely to take the full trajectory of advanced math courses ($\chi^2(3) = 61.923$, $p < .001$). When looking at those who stopped at honors but did not take an ADV math, we see the highest proportion of Black students, followed by Latino students did this ($\chi^2(3) = 25.511.894$, $p < .001$). Asian students were the least likely group to take only an honors math class. Finally, there are also ethnicity effects for those who skipped ADV math but still took an AP math such that this was done almost exclusively by Asian students ($\chi^2(3) = 27.984$, $p < .01$).

Table 11. Advanced course pathways by ethnicity

	White	Latino	Black	Asian	Sample Total
Terminated at ADV***	27.7%	29.8%	39.2%	20.8%	32.2%
Terminated at Honors (includes ADV)***	39.8%	34.5%	31.1%	39.9%	34.0%
Took AP (includes ADV)***	2.0%	.8%	.2%	5.2%	.8%
Terminated at Honors (skipped ADV)***	7.6%	12.1%	15.5%	5.2%	12.6%
Took AP (skipped ADV)**	0%	0%	.1%	.6%	0%

A similar pattern can be seen when looking at the effect of ethnicity on taking an AP math (including ADV) where White and Asian advanced math takers were more likely than the full sample to take the full trajectory of advanced math, while Black and Latino students were less likely to take the full trajectory of advanced math courses ($\chi^2(3) = 94.723$, $p < .001$). When looking at those who stopped at honors but did not take an ADV math, the highest proportion of Black students, followed by Latino students, followed this pattern ($\chi^2(3) = 80.894$, $p < .001$). Asian students were the least likely group to take only an honors math class. Finally, there are also ethnicity effects for those who skipped ADV math but still took an AP math ($\chi^2(3) = 14.109$, $p < .01$).

Chi^2 analyses were also run to asses group differences in advanced math trajectories by SES. Of those took an ADV math, those who received free lunch were more likely than the sample as a whole to stop after ADV, while students not in poverty and those on reduced price lunch were less likely than the sample as a whole to terminate after an ADV math course ($\chi^2(2) = 225.801$, $p < .001$). There are no significant SES differences for those who took an ADV and an honors math but did not continue on. Of those who took the full trajectory of advanced math taking (ADV to honors to AP), the percent of students from each SES group was highest for the non-low-income students and lowest for those who received free lunch ($\chi^2(2) = 19.916$, $p < .001$).

There were also no significant SES effects for terminating at honors when ADV was skipped. Finally there is a significant effect for SES differences for those who

skipped ADV math but took an honors and an AP math ($\chi^2(2) = 9.510$, $p < .01$). This was almost exclusively done by students not in poverty.

Though I had hoped to explore income and ethnicity differences multivariately and in more detail, the data showed that advanced course trajectories, even restricted to math and excluding the IB program, were much more complicated than expected. For instance, the analyses previously discussed don't accommodate for those with gaps in advanced math taking or students who had the opportunity to be there and did not enroll vs. those who just did not enroll. As such, a manual, more time and labor intensive process needs to be enacted to accommodate for all the different possible pathways, and each student's opportunity to have taken classes of each type based on cohorts. Further, this can be more completely explored when more cohorts have reached the latter years of high school. This will likely be the basis of a subsequent project where more thorough exploration can be accommodated.

Table 12. Advanced course pathways by free or reduced lunch status

	Did not apply/Receive	Reduced	Free	Sample Total
Terminated at ADV***	26.1%	26.6%	35.9%	32.7%
Terminated at Honors (includes ADV)***	39.4%	38.4%	31.8%	34.2%
Took AP (includes ADV)***	1.4%	1.2%	.5%	.8%
Terminated at Honors (skipped ADV)***	9.7%	11.7%	13.0%	12.1%
Took AP (skipped ADV)**	.1%	0%	0%	0%

DISCUSSION

This thesis aimed to explore how many students were enrolling in advanced courses and when, what child related factors were affecting their likelihood of enrollment, and how trajectories of advanced course taking were affected by similar predictive factors. This is in response to the large amount of research looking at achievement gaps (Burney & Beike, 2008; Ford & Harmon, 2001; Hallett & Venegas, 2011; Jimenez-Castellanos, 2008; Klugman, 2013, Taylor, 2006), and the substantially smaller amount of research that focuses on the highest achieving students as a way to better understand achievement differences. Analyses revealed some expected findings, such as those receiving special education services and those who were retained in elementary school being less likely to enroll in advanced courses, and also revealed some more nuanced and sometimes unexpected findings like those summarized below. In all, our large scale, longitudinal, authentic data allowed for a deep and nuanced look at the excellence gap, particularly as it applies to advanced courses in middle and high school.

Ethnicity

As one of the main constructs discussed in excellence gap research (College Board, 2014, Plucker et al., 2010), the effects of ethnicity on advanced course taking are important to discuss. Though previous research found support for continued ethnic and racial differences in enrollment, even after controlling for academic competence (Corra et

al., 2011), other studies found support for students of color actually out-enrolling White students after controlling for academic proficiency based factors (Conger et al., 2009). Our findings were more in line with the findings of Corra et al. as, particularly with AP taking, ethnicity continued to play a role even after accounting for academic competence. This was not always the case (e.g. with honors course taking), but our results never showed the full reversal of enrollment patterns by ethnicity that was seen in Conger et al. (2009). However these other studies did not specifically deconstruct each advanced course taking subtype (e.g. honors and IB) like is done in the study. What our results suggest is that bivariately, ethnicity is strongly related to all types of advanced course enrollment. This effect persists when controlling for poverty, ELL status, and other highly related constructs suggesting that ethnicity itself is a factor in enrollment. However, when controlling for elementary school competence, the effects of ethnicity become much more complicated.

Black students were significantly less likely than White students to enroll in ADV and AP classes specifically. In addition, they took significantly fewer AP, advanced language, and advanced social studies courses than White students. This lines up with our findings that Black students were more likely to enter the advanced trajectory later than White and Asian students (in line with previous research), and thus were more likely to skip over ADV and straight to honors (thus being less likely to take ADV courses in general). As discussed previously in this paper, beginning the advanced track early also enables more opportunity for the highest levels of advanced course taking (like AP) later on, so starting later restricts this ability (Hallinan, 1996, Promise, 2008).

When looking at Latino students specifically, we only found decreased odds of enrolling after elementary school competence was controlled for in preIB classes. There were no significant differences for other types of advanced course taking. This could suggest that fewer Latino students enrolling in advanced classes (College Board, 2014) is a factor of lower elementary school achievement. This could also however, be more reflective of the unique sample at hand where both those who make up the sample, and the surrounding culture at large are Latino. This could provide a buffer in the form of more race-matched teachers (Statistical Highlights, 2017) and less feelings of lack of belonging for Latino students that is reducing enrollment discrepancies in this particular context.

Finally, Asian students consistently enrolled at or above the rate of White students in the sample. AP courses were particularly salient for Asian/White differences in these analyses such that Asian students were more than 3 times as likely as White students to enroll in an AP class even after controlling for prior academic competence. This aligns well with College Board's (2013) study which found that of students with the same propensity for advanced math, Asians students enrolled at a higher rate than White students, who enrolled at a higher rate than Latino and Black students.

Poverty

Poverty findings were surprisingly complex in our analyses. Though a great deal of previous research (with more financially advantaged samples) finds strong enrollment disparities along SES lines (Wakelyn and the National Governors Association, 2010), our results suggest something slightly different. In the first step of the models, those of lower

income status enrolled less frequently than non-low-income students. However, after controlling for 5th grade competence (step 3), those of low-income backgrounds were more likely to enroll in an advanced class than those from non-low-income backgrounds. This could be a result of our predominantly low-income sample, or it could be reflective of low-income students generally achieving lower in measures of academic success (Hemphill & Vanneman, 2011) such that the different competence measures are the driving force behind enrollment differences by poverty. The latter is supported by the directional change in the odds ratio for poverty in step 1 versus step 3. The story then could be that low-income students are less likely to enroll overall (as suggested by the bivariate results and previous research), but when elementary school competence is accounted for they become more likely to enroll. This suggests that few high-poverty students are achieving the same in 5th grade as their peers who are not in poverty, and that is why low-income students under enroll overall.

Also interestingly, the effect of receiving reduced price lunch, rather than free priced lunch is consistently larger then effect of being non-low-income compared to receiving free priced lunch. Though this isn't the case in every step of every model, it is common, and is particularly salient when looking at ever enrolling in an honors or AP class. This could be indicative that supports in place for low-income students are more beneficial for moderately poor students in comparison to students in high levels of poverty. This could also suggest that slight income level differences (like the 8,000 to 10,000 dollar differences in annual income between free and reduced price lunch) make a large impact in the development of a child.

Patterns of course taking by poverty are different when looking at AP courses specifically though, as when predicting enrollment in AP classes, students not in poverty were significantly more likely to enroll in an AP class than low-income students, and the effect of this was larger than when looking at how those receiving reduced price lunch were more likely to enroll than those receiving free lunch. This, in conjunction with ethnicity, suggests that AP course taking is more affected by demographic characteristics than other forms of advanced course taking. Honors also has a unique relationship with poverty where, unlike with other total number models, being not in poverty is related to a significant increase in the number of honors courses taken once a student begins to take advanced courses. This is in line with other excellence gap research that shows less persistence in advanced level coursework for low-income students (Wiener et al., 2007).

Gender

Much like with poverty, gender presented an interesting and unexpected flip in the final step of many of the models. This means that in terms of gender, being male made a student significantly less likely to enroll in an advanced course, but after 5th grade competence was added in, boys became significantly more likely to enroll in advanced courses. However, the interpretation of this is slightly different than the interpretation of poverty in the final step because bivariate analyses suggest that a higher proportion of girls are enrolling in advanced courses than boys. Taken together this suggests that in general, girls are out performing boys and this is what is driving more female enrollment than male, but that boys are more likely to be selected, or to select into these classes, with similar performance criteria. This is in line with Bianco, Harris, Garrison-Wade, and

Leech's (2011) study that found the same likelihood differences when using fictional boys and girls attempting to be admitted in gifted educational programs.

The same pattern is seen when looking at the number of advanced courses taken overall, and in ADV specifically, but once they reach the higher levels of advanced course (honors and AP), boys consistently take fewer classes. AP enrollment continues to deviate from the rest of the models, in this case such that males are always less likely to enroll in an AP class even after accounting for all other predictors. This aligns with the above finding that boys consistently took fewer AP courses than girls even after controlling for academic competence.

Retention and Suspension

A finding that was novel, though not surprising, was that suspension and retention in elementary school were both consistently related to decreased odds of advanced course taking and the number of advanced courses taken. Regarding ever enrolling, retention consistently halved the odds of enrollment (or more). This is an important consequence of retention not previously considered, and with high stakes testing policies (like the one in Florida), it could be introducing an unforeseen barrier to advanced course taking. Suspension had an overall smaller effect, but despite this, the significant role suspension played in preventing advanced course enrollment could suggest that behavioral factors play an important role in deciding who makes it to advanced courses. This could connect to qualitative research which found that students felt that their advanced classrooms were more academically minded, in that those who exhibit behaviors that identify them for

suspension are less likely to be in advanced classes, and as such those behaviors are less likely to be in advanced classrooms (Hertberg-Davis & Callahan, 2008).

School Readiness

Many studies have explored the long term impact of school readiness, but the definition of "long term effects" for most of these studies does not extend past late elementary/early middle school (Ricciardi & Winsler, 2018). This makes sense in the school readiness world where research started with more immediate effects and has been expanding outward slowly. This project took perhaps one of the longest term looks at school readiness yet. This is partially what makes it astonishing that slight differences at school entry could be related to advanced course taking in middle and even high school. This also explains which school readiness skills were more strongly related to ADV and honors taking than to AP, as ADV and honors are middle school (ADV and honors) and early high school (honors) course types while AP is almost exclusively taken at the end of high school. It makes sense that the further a student gets from school entry, the more course taking differences are subsumed in the more proximal GPA and test score differences. Of course, studies show that school readiness is related to both GPA and standardized test scores in elementary school, so school readiness is playing a role even if it is being mediated by other academic factors.

Skippers

One predictor that was surprisingly unrelated to advanced course taking was skipping a grade in elementary school. As grade skipping is offered as an option for the extremely accelerated student, it would have been expected for these students to be taking

coursework designed to challenge advanced students. However skipping was only bivariately related to honors course taking and was never multivariately related to any type of advanced course taking when other variables were controlled. This suggests that by this measure of academic success, skipping is not providing added benefit to accelerated students.

Gifted Status

Some interesting findings also arose when looking at differences between what predicted course taking, and how strongly when comparing the ever enrolled models to the total number of courses models. A particularly salient difference is the role of gifted status. In the ever enrolled models, giftedness is a consistently large predictor of advanced course enrollment. However, the effect size of being gifted markedly decreases when shifting to the total number of advanced courses taken. This suggests that being gifted is particularly useful in identification for advanced courses and advanced trajectories but not necessarily helpful for actually encouraging success or persistence in these advanced courses. This interpretation is supported by the fact that even among the ever enrolled models, gifted status has the largest effect on enrollment for all advanced courses and for ADV specifically, as ADV is the entry point to advanced course enrollment (Miami-Dade County Public Schools, 2013). Of course, this is inextricably tied to ethnicity and income effects due to the enrollment disparities prevalent in gifted and talent program placement (Vega & Moore, 2016, Yaluma & Tyner, 2018).

A similar pattern, though reversed, was observed when looking at 5th grade FCAT scores as well. In this way, being gifted and having a higher GPA are strongly associated

with ever enrolling in an advanced course, but having a higher FCAT score is where the strongest associations are for number of advanced courses taken. Overall there are fewer significant effects when predicting the number of advanced courses verses predicting enrollment yes or no, suggesting most early childhood predictors are more salient for ever enrolling than for predicting the number of courses taken.

Advanced Trajectories

The results of the trajectory-related questions, in conjunction with the findings as a whole, suggest strongly that early life and educational factors are highly related to later advanced course taking. This is highlighted by the finding that it is nearly impossible to begin taking advanced courses in high school for students in Miami-Dade (only 5% of those who took an advanced course at some point began in high school). This suggests that for those not being encouraged to pursue advanced coursework in middle school, they would likely never take advanced courses.

The importance of trajectories is clearly outlined in findings about pathways through advanced course taking, but also in findings regarding school readiness, gifted status, and even preschool. All of these early factors open and close doors that relate to a student's odds of taking advanced coursework which can enable them to seek and succeed in the future they seek. For instance, Black students being less likely to be selected for gifted programs (Ford, 1998), makes them less likely to take an ADV class, and thus less likely to take an honors, and thus less likely to take an AP. In a similar vein, our results suggested that Black students being at increased risk of suspension compared to White students (Taylor, Gunter, & Slate, 2001), also put an additional barrier between

students and advanced course enrollment. The same parallels can be drawn with Black students being more likely to be classified as special education than their White peers (Shippen, Curtis, & Miller, 2009). This suggests that if people intend to decrease enrollment disparities by ethnicity, particularly for Black students, they need to address the biased policies happening much earlier in that student's life. Additionally, counselors and teachers need to be recommending and encouraging Black students to take ADV classes in middle school.

Access versus Selection

The question of access versus selection is a bit more complicated than just offering versus not offering particular courses. Miami-Dade is an excellent place to explore this concept, as Miami has an open enrollment policy for advanced course taking. This means that anyone who would like to can sign up for these classes without the need for teacher recommendation/ approval or qualifying scores. This, to some extent, removes the barrier of teacher bias and testing bias from the equation. Though this would suggest that enrollment differences by ethnicity observed in the results were a result of selection differences, the previous sections make clear that early education experiences are related to enrollment, and that these early experiences often vary by ethnicity. Taken together the results suggests that selection differences in enrollment exist, but that these selection differences may be driven by access differences in earlier life stages. This means that enrollment differences are likely driven by a combination of not getting the necessary skills early on and not electing to take courses when those skills have been obtained.

Implications

This study's main contribution to the literature is the ability to look at such a wide ranging, and long term group of predictors. As such, conclusions about how performance (even as early as in elementary school), school readiness skills from before a child even enters school, and their unique backgrounds can be drawn that shed new light on the problem of enrollment discrepancies. Particularly, this study looks at multiple popular forms of advanced courses which allows for more specific policy change and suggestion tailored to the factor of interest (i.e. poverty) or the advanced coursework of interest (i.e. AP). This is particularly important because, as the results show, AP courses are influenced by different factors than other types of advanced course enrollment. In addition, it is clear that there needs to be a concerted effort to increase enrollment, particularly for Black students, early on and in gateway advanced courses like ADV. One possible way to accomplish this is with an increase in guidance counselors all together, and specifically an increase in culturally competent counselors and teachers. Further, policies like universal screening for gifted programs, which have been shown to enroll more high achieving minority students (Card & Giuliano, 2016), could increase enrollment in advanced course taking for these students down the line.

Limitations

There were three main limitations in this project. The first is the sample. Though this sample provided major advantages, such as having a sufficient sample to look at ethnic differences beyond just Black/White, having large numbers overall, and a high level of income as well as ethnic diversity, these same things threaten broad

generalizability somewhat. This is particularly true because the region that makes these sample characteristics possible is relatively unique within the United States. As such it is not safe to assume that certain findings, particularly those relating to Latino students, generalize to situations in which Latino students are not the numerical majority. Additionally, schools in this sample were open enrollment for their advanced courses. This means that some of these findings may not be generalizable to school districts in which there are administrative barriers to enrollment in advanced courses. Second, schools explained some of the variance in advanced course taking. This is to be expected and is intended to be studied in more depth specifically in later studies. However, this does still suggest more caution with interpretation of the results of the total number of advanced courses analyses. Third, the nature of advanced course taking pathways was much more complicated than anticipated, particularly with the complication of the cohort sequential, longitudinal nature of the data. This meant that a narrowed account of advanced course trajectories had to be used for this particular project.

Future Directions

This thesis took a broad look at many different facets of the excellence gap through the lens of advanced course enrollment. In that way it provided a foundation upon which many future studies will be conducted delving deeper into particular topics, using more advanced statistical methods to understand different aspects of the data and the world the data reflect, and upon which related concepts can be explored. Specific future studies that are currently intended include a full project on advanced course trajectories where differing trajectories can be tracked in detail to account for the full

spectrum of trajectory differences, a project dedicated to school based factors to examine opportunity and resource differences, and a project using multilevel modeling to account for school-based nesting and allow for a more careful discussion of access versus selection. Additionally, more work should be done on skippers specifically, as well as work on what predicts how well students of all backgrounds will perform in these advanced classes once they are taking them. Further, there were few significant findings regarding preIB and IB courses overall. The unique nature of these courses should likely be further studied independently of ADV, honors, and AP as there was little overlap in the findings between these groups of courses.

APPENDIX

Table 13. 3 step logistic regression predicting enrollment in an ADV course by demographic variables in step 1, school readiness variables in step 2, and prior competence variables in step 3 (N = 13, 727).

Variable/Step	Step 1		Step 2		Step 3	
	Odds Ratio	*SE(B)*	Odds Ratio	*SE(B)*	Odds Ratio	*SE(B)*
Background Variables						
ELL Status	1.015	.051	1.149**	.054	.995	.063
Public School Pre-K	1.481***	.038	1.062	.042	1.053	.048
Gender (Male)	.685***	.037	.887**	.041	1.220***	.048
Special Education	.264***	.091	.351***	.095	.427***	.104
Ethnicity						
Latino	.561***	.104	.641***	.108	.784	.126
Black	.343***	.103	.440***	.107	**.767***	.125
Asian	**2.060**	.409	1.929	.420	1.619	.478
Poverty						
Did not apply/receive	1.452***	.054	**1.134***	.057	.649***	.066
Reduced price	1.540***	.071	1.341***	.074	.955	.084
School Readiness at age 4						
Cognitive			1.010***	.001	1.003**	.001
Language			1.007***	.001	**1.002***	.001
Fine Motor			1.005***	.001	1.002	.001
Gross Motor			.996***	.001	**.997****	.001
Teacher TPF			1.005***	.001	**1.002***	.001
Teacher BC			.994***	.001	.998	.001
Parent TPF			1.003***	.001	1.000	.001
Parent BC			.998*	.001	1.000	.001
Prior Academic Competence						
Ever Gifted					8.771***	.144
GPA in Grade 5					4.433***	.055
FCAT Reading Score (G5)					1.009***	.000
Ever Skipped					.901	.332
Ever Retained					.532***	.060
Ever Suspended					.753***	.053

Table 14. 3 step logistic regression predicting enrollment in an honors course by demographic variables in step 1, school readiness variables in step 2, and prior competence variables in step 3 (N = 13, 726).

Variable/Step	Step 1		Step 2		Step 3	
	Odds Ratio	*SE(B)*	Odds Ratio	*SE(B)*	Odds Ratio	*SE(B)*
Background Variables						
ELL Status	**1.138****	.048	1.310***	.051	**1.133***	.063
Public School Pre-K	1.397***	.037	1.018	.041	.996	.050
Gender (Male)	.691***	.036	.860***	.039	1.202***	.049
Special Education	.303***	.096	.414***	.100	.508***	.115
Ethnicity						
Latino	.705***	.089	.791*	.093	1.073	.116
Black	.407***	.089	.501***	.092	.947	.115
Asian	**1.526**	.293	1.456	.302	1.168	.366
Poverty						
Did not apply/receive	1.653***	.050	**1.316*****	.053	.669***	.066
Reduced price	1.829***	.066	1.629***	.069	**1.181***	.083
School Readiness at age 4						
Cognitive			1.010***	.001	1.003*	.001
Language			1.006***	.001	.999	.001
Fine Motor			1.004***	.001	1.002	.001
Gross Motor			**.999**	.001	1.000	.001
Teacher TPF			1.004***	.001	1.000	.001
Teacher BC			.995***	.001	**.999**	.001
Parent TPF			1.004***	.001	1.001	.001
Parent BC			.997***	.001	**.998***	.001
Prior Academic Competence						
Ever Gifted					2.767***	.081
GPA in Grade 5					3.842***	.058
FCAT Reading Score (G5)					1.019***	.000
Ever Skipped					1.646	.368
Ever Retained					.349***	.070
Ever Suspended					.646***	.054

Table 15. 3 step logistic regression predicting enrollment in any AP course by demographic variables in step 1, school readiness variables in step 2, and prior competence variables in step 3 (N = 8, 258).

Variable/Step	Step 1		Step 2		Step 3	
	Odds Ratio	*SE(B)*	Odds Ratio	*SE(B)*	Odds Ratio	*SE(B)*
Background Variables						
ELL Status	1.129	.076	1.346***	.080	**1.281****	.089
Public School Pre-K	1.324***	.060	.955	.066	**.843***	.075
Gender (Male)	.590***	.057	.681***	.061	**.759*****	.070
Special Education	.315***	.196	.446***	.200	**.858**	.215
Ethnicity						
Latino	.729**	.110	**.825**	.113	**1.063**	.128
Black	.281***	.118	.339***	.121	**.617*****	.139
Asian	2.746***	.303	**2.871*****	.310	**3.292*****	.363
Poverty						
Did not apply/receive	2.768***	.069	**2.302*****	.071	**1.577*****	.082
Reduced price	1.858***	.088	1.678***	.090	**1.380****	.102
School Readiness at age 4						
Cognitive			1.008***	.001	**1.000**	.002
Language			1.009***	.001	**1.003***	.001
Fine Motor			**1.002**	.001	.999	.002
Gross Motor			.996***	.001	1.000	.001
Teacher TPF			**1.000**	.001	.998	.002
Teacher BC			.995***	.001	**1.000**	.001
Parent TPF			1.004***	.001	1.001	.001
Parent BC			**.998**	.001	1.000	.001
Prior Academic Competence						
Ever Gifted					2.101***	.078
GPA in Grade 5					3.902***	.105
FCAT Reading Score (G5)					1.013***	.001
Ever Skipped					.612	.394
Ever Retained					.239***	.220
Ever Suspended					.486***	.084

Table 16. 3 step logistic regression predicting enrollment in a PreIB course by demographic variables in step 1, school readiness variables in step 2, and prior competence variables in step 3 (N = 13, 726).

Variable/Step	Step 1		Step 2		Step 3	
	Odds Ratio	*SE(B)*	Odds Ratio	*SE(B)*	Odds Ratio	*SE(B)*
Background Variables						
ELL Status	**1.696*** **	.151	1.912***	.154	**1.702*** **	.158
Public School Pre-K	1.668***	.132	1.185	.140	1.120	.145
Gender (Male)	.555***	.116	.643***	.122	**.788**	.126
Special Education	.072**	1.004	.105*	1.005	**.197**	1.009
Ethnicity						
Latino	.453***	.190	.492***	.192	**.625***	.197
Black	.396***	.206	.476***	.209	.961	.218
Asian	2.651**	.336	**2.501****	.342	**2.326***	.360
Poverty						
Did not apply/receive	2.336***	.129	**1.910*** **	.133	**1.228**	.140
Reduced price	**1.016**	.218	**.911**	.219	.688	.223
School Readiness at age 4						
Cognitive			1.011***	.003	**1.003**	.003
Language			**1.004**	.003	.999	.003
Fine Motor			**1.003**	.003	.999	.003
Gross Motor			**.999**	.003	1.002	.002
Teacher TPF			**.999**	.003	.997	.003
Teacher BC			.993**	.003	**.998**	.003
Parent TPF			**1.003**	.002	1.000	.002
Parent BC			**1.000**	.002	1.001	.002
Prior Academic Competence						
Ever Gifted					1.747***	.134
GPA in Grade 5					3.987***	.204
FCAT Reading Score (G5)					1.007***	.001
Ever Skipped					.499	1.026
Ever Retained					.169**	.593
Ever Suspended					.346***	.223

Table 17. 3 step logistic regression predicting enrollment in an IB course by demographic variables in step 1, school readiness variables in step 2, and prior competence variables in step 3 (N = 13, 726).

Variable/Step	Step 1		Step 2		Step 3	
	Odds Ratio	*SE(B)*	Odds Ratio	*SE(B)*	Odds Ratio	*SE(B)*
Background Variables						
ELL Status	1.366	.215	**1.329**	.219	1.170	.219
Public School Pre-K	**1.273**	.163	1.062	.173	1.051	.174
Gender (Male)	**.836**	.153	**.916**	.161	**1.114**	.164
Special Education	**.551**	.509	**.610**	.512	**.708**	.519
Ethnicity						
Latino	**.843**	.338	**.894**	.341	1.006	.341
Black	**.527**	.353	**.586**	.356	.816	.360
Asian	3.857*	.549	**3.292***	.554	**3.228***	.559
Poverty						
Did not apply/receive	**.835**	.210	.777	.213	.571**	.218
Reduced price	**.787**	.285	**.760**	.286	.635	.287
School Readiness at age 4						
Cognitive			1.008*	.004	**1.005**	.004
Language			**.999**	.003	.997	.003
Fine Motor			**1.003**	.004	1.002	.004
Gross Motor			**.995**	.003	.995	.003
Teacher TPF			**.995**	.004	.993	.004
Teacher BC			.993*	.003	**.996**	.003
Parent TPF			**1.005**	.003	1.003	.003
Parent BC			1.009**	.003	**1.010*** **	.003
Prior Academic Competence						
Ever Gifted					**.669***	.202
GPA in Grade 5					2.070***	.220
FCAT Reading Score (G5)					1.005***	.001
Ever Skipped					.944	1.022
Ever Retained					.502*	.329
Ever Suspended					.537**	.224

Table 18. 3 step OLS regression predicting total number of ADV courses by demographic variables in step 1, school readiness variables in step 2, and prior competence variables in step 3 (N = 9, 110).

Variable/Step	Step 1		Step 2		Step 3	
	β	*SE(B)*	β	*SE(B)*	β	*SE(B)*
Background Variables						
ELL Status	-.021	.087	**.014**	.086	-.015	.073
Public School Pre-K	.099***	.069	**.023***	.071	.014	.061
Gender (Male)	-.031**	.066	**.010**	.066	.056***	.058
Special Education	-.085***	.218	-.060***	.211	-.033***	.182
Ethnicity						
Latino	-.091***	.140	-.071***	.135	-.015	.116
Black	-.175***	.142	-.139***	.138	-.008	.119
Asian	.009	.374	.007	.362	-.001	.310
Poverty						
Did not apply/receive	.120***	.087	.072***	.086	-.008	.075
Reduced price	.056***	.111	.043***	.108	**.006**	.093
School Readiness at age 4						
Cognitive			.123***	.002	**.020**	.001
Language			.110***	.001	.032	.001
Fine Motor			.050***	.002	.016	.001
Gross Motor			-.040***	.001	-.011	.001
Teacher TPF			**.022**	.001	-.010	.001
Teacher BC			-.057***	.001	-.001	.001
Parent TPF			.045***	.001	.000	.001
Parent BC			**-.021**	.001	.002	.001
Prior Academic Competence						
Ever Gifted					.239***	.068
GPA in Grade 5					.309***	.073
FCAT Reading Score (G5)					.152***	.000
Ever Skipped					-.010	.382
Ever Retained					-.080***	.101
Ever Suspended					-.056***	.068

Table 19. 3 step OLS regression predicting total number of honors courses by demographic variables in step 1, school readiness variables in step 2, and prior competence variables in step 3 (N = 7, 636).

Variable/Step	Step 1		Step 2		Step 3	
	β	*SE(B)*	β	*SE(B)*	β	*SE(B)*
Background Variables						
ELL Status	.013	.081	**.029**	.082	.009	.069
Public School Pre-K	.031**	.065	.006	.068	-.003	.058
Gender (Male)	-.075***	.061	-.062***	.064	-.028**	.054
Special Education	-.042***	.207	-.028*	.207	**-.018**	.175
Ethnicity						
Latino	-.064**	.128	-.057*	.127	.006	.108
Black	-.093***	.132	-.082***	.132	.013	.112
Asian	.004	.339	.003	.338	.001	.285
Poverty						
Did not apply/receive	.126***	.080	.106***	.080	**.026***	.069
Reduced price	.069***	.100	.063***	.099	.032***	.084
School Readiness at age 4						
Cognitive			.063***	.001	**.005**	.001
Language			**.029**	.001	**-.043*** **	.001
Fine Motor			**.017**	.001	.017	.001
Gross Motor			.030*	.001	**.032*** **	.001
Teacher TPF			**.026**	.001	.000	.001
Teacher BC			**-.012**	.001	.011	.001
Parent TPF			**.031**	.001	.001	.001
Parent BC			**-.015**	.001	-.008	.001
Prior Academic Competence						
Ever Gifted					.064***	.062
GPA in Grade 5					.116***	.071
FCAT Reading Score (G5)					.475***	.000
Ever Skipped					.012	.326
Ever Retained					-.063***	.114
Ever Suspended					-.057***	.064

Table 20. 3 step OLS regression predicting total number of AP courses by demographic variables in step 1, school readiness variables in step 2, and prior competence variables in step 3 (N = 1, 837).

Variable/Step	Step 1		Step 2		Step 3	
	β	*SE(B)*	β	*SE(B)*	β	*SE(B)*
Background Variables						
ELL Status	.019	.074	**.035**	.076	.028	.075
Public School Pre-K	**-.045**	.064	**-.069****	.069	**-.072****	.068
Gender (Male)	-.050*	.059	**-.046**	.061	-.056*	.060
Special Education	-.052*	.220	**-.043**	.222	**-.027**	.219
Ethnicity						
Latino	-.094*	.102	-.087*	.102	-.061	.100
Black	-.170***	.118	-.167***	.118	**-.134*****	.117
Asian	.024	.217	.025	.218	.027	.214
Poverty						
Did not apply/receive	.062*	.069	**.052**	.070	.028	.069
Reduced price	**-.023**	.089	**-.025**	.089	-.037	.087
School Readiness at age 4						
Cognitive			**.025**	.001	**-.008**	.001
Language			**.059**	.001	.016	.001
Fine Motor			**-.001**	.001	-.014	.001
Gross Motor			**.009**	.001	.027	.001
Teacher TPF			**.010**	.001	.013	.001
Teacher BC			**-.019**	.001	.005	.001
Parent TPF			**.019**	.001	.014	.001
Parent BC			**.013**	.001	.022	.001
Prior Academic Competence						
Ever Gifted					**.039**	.065
GPA in Grade 5					.075**	.094
FCAT Reading Score (G5)					.146***	.001
Ever Skipped					.039	.361
Ever Retained					-.056*	.249
Ever Suspended					**-.019**	.083

Table 21. 3 step OLS regression predicting total number of preIB courses by demographic variables in step 1, school readiness variables in step 2, and prior competence variables in step 3 (N = 336).

Variable/Step	Step 1		Step 2		Step 3	
	β	*SE(B)*	β	*SE(B)*	β	*SE(B)*
Background Variables						
ELL Status	.044	.131	**.030**	.138	.024	.137
Public School Pre-K	**.108**	.128	.094	.135	.095	.133
Gender (Male)	**.038**	.110	**.037**	.118	**.047**	.117
Special Education	**-.025**	.978	**-.007**	1.002	**.005**	.994
Ethnicity						
Latino	**-.082**	.169	**-.054**	.170	-.051	.171
Black	**-.069**	.196	**-.066**	.199	-.059	.208
Asian	-.030	.299	-.005	.314	-.004	.312
Poverty						
Did not apply/receive	**-.013**	.125	**-.015**	.128	-.022	.129
Reduced price	**.059**	.212	**.068**	.215	**.063**	.212
School Readiness at age 4						
Cognitive			**-.058**	.003	-.057	.003
Language			**.069**	.002	.054	.002
Fine Motor			**.058**	.003	.082	.003
Gross Motor			**.106**	.002	.097	.002
Teacher TPF			**-.074**	.003	-.057	.003
Teacher BC			**-.084**	.002	-.049	.002
Parent TPF			**.069**	.002	.057	.002
Parent BC			**.093**	.002	.083	.002
Prior Academic Competence						
Ever Gifted					**-.118**	.117
GPA in Grade 5					**-.054**	.215
FCAT Reading Score (G5)					.230***	.001
Ever Skipped					.022	.963
Ever Retained					**-.056**	.566
Ever Suspended					**-.029**	.208

Table 22. 3 step OLS regression predicting total number of IB courses by demographic variables in step 1, school readiness variables in step 2, and prior competence variables in step 3 (N = 174).

Variable/Step	Step 1		Step 2		Step 3	
	β	*SE(B)*	β	*SE(B)*	β	*SE(B)*
Background Variables						
ELL Status	-.029	.366	**-.049**	.384	.005	.352
Public School Pre-K	**-.095**	.241	-.116	.249	-.093	.232
Gender (Male)	**.133**	.232	**.096**	.256	**.101**	.237
Special Education	**-.007**	.763	**.005**	.765	**-.007**	.684
Ethnicity						
Latino	**.149**	.516	**.122**	.518	.019	.467
Black	**.086**	.550	**.052**	.561	-.004	.513
Asian	**-.008**	.854	-.073	.877	-.039	.808
Poverty						
Did not apply/receive	-.181*	.327	**-.136**	.334	.018	.318
Reduced price	**-.101**	.430	**-.081**	.433	**-.086**	.388
School Readiness at age 4						
Cognitive			**.057**	.005	**.072**	.005
Language			-.218*	.005	-.113	.005
Fine Motor			**.001**	.005	-.054	.005
Gross Motor			**-.113**	.004	-.026	.004
Teacher TPF			**.045**	.006	.083	.005
Teacher BC			**.000**	.005	.020	.005
Parent TPF			**-.145**	.004	-.132	.004
Parent BC			**-.014**	.005	-.040	.004
Prior Academic Competence						
Ever Gifted					**-.367*** **	.280
GPA in Grade 5					.263**	.329
FCAT Reading Score (G5)					**-.427*** **	.002
Ever Skipped					-.035	1.339
Ever Retained					-.159*	.418
Ever Suspended					**-.035**	.303

Table 23. 3 step OLS regression predicting total number of advanced math courses by demographic variables in step 1, school readiness variables in step 2, and prior competence variables in step 3 (N = 8,093).

Variable/Step	Step 1		Step 2		Step 3	
	β	*SE(B)*	β	*SE(B)*	β	*SE(B)*
Background Variables						
ELL Status	.001	.039	**.025**	.039	.001	.032
Public School Pre-K	.072***	.031	.017	.032	.010	.027
Gender (Male)	-.056***	.029	-.023*	.030	.026**	.025
Special Education	-.051***	.104	-.035***	.103	-.021*	.086
Ethnicity						
Latino	-.086***	.061	-.073***	.060	-.015	.050
Black	-.187***	.062	-.164***	.061	-.032	.052
Asian	**.027***	.161	**.025***	.159	.017	.132
Poverty						
Did not apply/receive	.099***	.038	.065***	.038	**-.022***	.032
Reduced price	.062***	.048	.052***	.048	**.014**	.040
School Readiness at age 4						
Cognitive			.102***	.001	**.020**	.001
Language			.061***	.001	-.023	.001
Fine Motor			.032*	.001	**.025***	.001
Gross Motor			**-.010**	.001	.002	.000
Teacher TPF			.031*	.001	-.008	.001
Teacher BC			-.041**	.001	-.002	.001
Parent TPF			.046***	.001	.001	.000
Parent BC			**-.010**	.001	.007	.000
Prior Academic Competence						
Ever Gifted					.146***	.029
GPA in Grade 5					.211***	.033
FCAT Reading Score (G5)					.388***	.000
Ever Skipped					-.002	.158
Ever Retained					-.065***	.049
Ever Suspended					-.067***	.030

Table 24. 3 step OLS regression predicting total number of advanced science courses by demographic variables in step 1, school readiness variables in step 2, and prior competence variables in step 3 (N =8, 409).

Variable/Step	Step 1		Step 2		Step 3	
	β	*SE(B)*	β	*SE(B)*	β	*SE(B)*
Background Variables						
ELL Status	.007	.041	.033*	.041	.000	.033
Public School Pre-K	.058***	.033	.003	.034	.002	.028
Gender (Male)	-.051***	.031	-.022*	.032	**.013**	.026
Special Education	-.061***	.106	-.042***	.104	-.020*	.085
Ethnicity						
Latino	-.081***	.064	-.067***	.063	-.005	.052
Black	-.176***	.066	-.153***	.065	-.020	.053
Asian	**.024***	.173	**.023***	.170	.016	.138
Poverty						
Did not apply/receive	.135***	.040	.100***	.040	.008	.033
Reduced price	.072***	.052	.062***	.051	.020*	.041
School Readiness at age 4						
Cognitive			.084***	.001	**.000**	.001
Language			.082***	.001	-.010	.001
Fine Motor			.036**	.001	.021	.001
Gross Motor			**.008**	.001	**.019***	.000
Teacher TPF			.032**	.001	-.002	.001
Teacher BC			-.041***	.001	.005	.001
Parent TPF			.045***	.001	.003	.000
Parent BC			**-.016**	.001	.003	.000
Prior Academic Competence						
Ever Gifted					.176***	.030
GPA in Grade 5					.203***	.034
FCAT Reading Score (G5)					.400***	.000
Ever Skipped					.012	.176
Ever Retained					-.060***	.050
Ever Suspended					-.069***	.031

Table 25. 3 step OLS regression predicting total number of advanced language courses by demographic variables in step 1, school readiness variables in step 2, and prior competence variables in step 3 (N =8,372).

Variable/Step	Step 1		Step 2		Step 3	
	β	*SE(B)*	β	*SE(B)*	β	*SE(B)*
Background Variables						
ELL Status	.021	.044	.048***	.044	.012	.036
Public School Pre-K	.055***	.035	-.001	.037	-.010	.030
Gender (Male)	-.072***	.033	-.046***	.034	**-.011**	.028
Special Education	-.055***	.118	-.035***	.116	-.019*	.095
Ethnicity						
Latino	-.105***	.069	-.089***	.068	-.020	.055
Black	-.188***	.071	-.165***	.070	**-.037***	.058
Asian	.013	.182	013	.178	.008	.146
Poverty						
Did not apply/receive	.137***	.043	.101***	.043	.011	.036
Reduced price	.071***	.055	.061***	.054	.020*	.045
School Readiness at age 4						
Cognitive			.096***	.001	**.009**	.001
Language			.081***	.001	.002	.001
Fine Motor			**.011**	.001	-.003	.001
Gross Motor			**.007**	.001	.013	.001
Teacher TPF			.026*	.001	-.010	.001
Teacher BC			-.054***	.001	-.009	.001
Parent TPF			.044***	.001	.001	.000
Parent BC			**-.019**	.001	-.005	.000
Prior Academic Competence						
Ever Gifted					.164***	.032
GPA in Grade 5					.212***	.036
FCAT Reading Score (G5)					.403***	.000
Ever Skipped					.008	.184
Ever Retained					-.071***	.054
Ever Suspended					-.063***	.033

Table 26. 3 step OLS regression predicting total number of advanced social studies courses by demographic variables in step 1, school readiness variables in step 2, and prior competence variables in step 3 (N =8,148).

Variable/Step	Step 1		Step 2		Step 3	
	β	*SE(B)*	β	*SE(B)*	β	*SE(B)*
Background Variables						
ELL Status	-.010	.035	**.020**	.035	-.005	.029
Public School Pre-K	.061***	.028	.010	.029	.004	.025
Gender (Male)	-.042***	.026	**-.014**	.027	**.016**	.023
Special Education	-.052***	.091	-.034**	.089	**-.011**	.076
Ethnicity						
Latino	-.111***	.055	-.095****	.054	-.033	.046
Black	-.211***	.057	-.186***	.056	**-.066*** **	.048
Asian	**.024***	.150	**.024***	.148	.017	.124
Poverty						
Did not apply/receive	.133***	.035	.096***	.034	.014	.029
Reduced price	.063***	.044	.053***	.043	**.013**	.037
School Readiness at age 4						
Cognitive			.082***	.001	**.007**	.001
Language			.095***	.001	.018	.00
Fine Motor			.030*	.001	.013	.001
Gross Motor			**-.007**	.000	-.003	.00
Teacher TPF			**.023**	.001	-.012	.001
Teacher BC			-.039**	.001	.001	.000
Parent TPF			.058***	.000	.013	.000
Parent BC			**-.003**	.000	.009	.000
Prior Academic Competence						
Ever Gifted					.140***	.026
GPA in Grade 5					.187***	.030
FCAT Reading Score (G5)					.391***	.000
Ever Skipped					-.002	.152
Ever Retained					-.043***	.044
Ever Suspended					-.074***	.028

Table 27. 3 step OLS regression predicting total number of advanced STEM courses by demographic variables in step 1, school readiness variables in step 2, and prior competence variables in step 3 (N =9,149).

Variable/Step	Step 1		Step 2		Step 3	
	β	*SE(B)*	β	*SE(B)*	β	*SE(B)*
Background Variables						
ELL Status	.009	.079	.038**	.078	.004	.062
Public School Pre-K	.077***	.062	.011	.065	.006	.051
Gender (Male)	-.061***	.059	-.022*	.060	.025**	.048
Special Education	-.074***	.197	-.051***	.192	-.028***	.152
Ethnicity						
Latino	-.087***	.126	-.070***	.122	-.006	.097
Black	-.195***	.128	-.164***	.125	-.014	.100
Asian	**.025***	.339	**.023***	.330	.015	.261
Poverty						
Did not apply/receive	.140***	.078	.098***	.077	-.002	.062
Reduced price	.070***	.099	.058***	.097	.016*	.077
School Readiness at age 4						
Cognitive			.117***	.001	**.020**	.001
Language			.082***	.001	-.016	.001
Fine Motor			.040***	.001	**.025***	.001
Gross Motor			**-.012**	.001	.005	.001
Teacher TPF			.044***	.001	.005	.001
Teacher BC			-.048***	.001	.003	.001
Parent TPF			.047***	.001	.000	.001
Parent BC			-.022*	.001	.000	.001
Prior Academic Competence						
Ever Gifted					.197***	.057
GPA in Grade 5					.249***	.061
FCAT Reading Score (G5)					.379***	.000
Ever Skipped					.009	.319
Ever Retained					-.070***	.087
Ever Suspended					-.080***	.057

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