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Ameliorating Educational Inequalities through Social Support—A Latent Class Analysis

A dissertation submitted in partial satisfaction of the requirements for the degree Doctor of

Philosophy in Education

by

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June 2018

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Svou dizertaci věnuji své babičce. Děkuji za všechno. Tebe Miluju.

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### **CONFERENCES**

**Witenko, V.M.,** Rios, V., & Mireles-Rios, R. (2014, August). *Networks of Encouragement: Who's encouraging Latino students and White students to enroll in honors and Advanced Placement (AP) courses?* Latina/o Sociology: American Sociological Association (ASA), San Francisco.

Rios, V., **Witenko, V. M.**, & Mireles-Rios, R. (2013, August). *Loosely Coupled Inequality: Classroom Context and the Latino-White Educational Achievement Gap*. Sociology of Education: American Sociological Association (ASA), New York.

Mireles-Rios, R. & **Witenko, V. M.** (2013, May). *The Effects of Teacher Expectations on the Latino-White Achievement Gap*. SIG-Multicultural/Multiethnic Education: Theory, Research, and Practice: American Educational Research Association (AERA), San Francisco.

## ABSTRACT

Ameliorating Educational Inequalities through Social Support—A Latent Class Analysis

by

Vanessa Witenko

Using data from a large comprehensive high school, this study examines the disproportionate rates of enrollment for Latina/o and White students in honors/AP courses. This study expands upon previous research findings that emotional support is especially beneficial for Latina/o students, and examines how different combinations of sources of encouragement help students enroll in honors/AP courses. Using Latent Class Analysis, this study finds that while White students can rely on traditional sources of encouragement, such as a teacher, Latina/o students must expand their networks to include other sources, such as the college counselor in order to circumvent covert racialized tracking and enroll in honors/AP courses.

Additionally, Latina/o students who participate in on-campus extracurricular activities are more likely to have an expansive network of encouragement than those who do not.



## Chapter 1: Introduction

The Latina/o population is the second fastest growing population in the United States (Stepler & Lopez, 2016). Despite the changing demographics of the U.S. school population, one in which White students are the minority, educational achievements for Latina/o students lag in comparison to White students. In 2015, it is estimated that 67% of all Latina/os graduated high school, in comparison 93% of White students graduated from high school (U.S. Census Bureau, 2015). Scores on high-stakes standardized exams such as the ACT (American College Testing) and SAT (Scholastic Aptitude Test), which are used for admissions into four-year universities, highlight further achievement gaps between Latina/o and White students. In 2015, while White students had an average combined score of 1586 on the SAT, Mexican-American students scored on average 1343, Puerto Rican students scored on average 1347, and “Other Hispanic” scored on average 1345 (Jaschik, 2015).

Looking at these trends in scores on standardized tests such as the ACT and AP exams gives a glimpse into the disparities between Latina/o and White students. These tests are particularly important because they are used as criteria for admissions into a four-year university—higher SAT and ACT scores are correlated with admissions into selective four-year universities, and AP courses provide a “weighted” GPA (e.g. an A = 5.0, on a 4.0 GPA scale in an AP course), and AP courses give college credit to those who pass the AP exam. Thus, differential SAT and ACT scores, and AP pass rates between Latina/o and White students is also connected to differential enrollment and completion rates at four-year universities.

In 2015, 15% of Latina/os age 25 years and older had earned a bachelor’s degree or higher, compared to 36% of Whites (U.S. Census, 2015). This difference in college degree

attainment is important because a college degree correlates highly with income. In 2017, the weekly median income of someone with a bachelor's degree was \$1,156; in comparison income was \$692 for those with just a high school degree (U.S. Census, 2017). When income rises, so does one's social class position, in which those who earn more money are able to afford better schools, healthcare, food, and housing. Educational, racial, and social class inequalities are systematically interconnected in a feedback loop (Roithmayr, 2014). If racial and social equality is ever to be achieved, increasing the educational achievements of Latina/o students is imperative.

However, the task of achieving educational equity is a century-long battle that has been fought by generations of students, parents, teachers, researchers, politicians, and all those who believe in an equitable education for an equitable society. Despite decades of research, and challenges to the U.S. public school system to transform it into a more equitable learning environment, there remains a plethora of factors that result in fewer Latina/o students completing and excelling in school.

One example of the extra burdens Latina/o students experience in school is that they are more likely to be punished in school and to receive a more severe punishment for a similar infraction as a White student (Hirschfield, 2008; Wald & Losen, 2003; Western, 2006). For example, 18% of Latina/o students are assigned an out-of-school suspension for their first violation; in comparison to 9.9% of White students, (Fabelo et al., 2011). These disciplinary discrepancies affect Latina/o students' connection to school (e.g. feeling that school is a fair, just, and a safe institution), as well as their ability to complete schoolwork, since they are often pulled out of school during a suspension. Another challenge is that Latina/o students are more likely to be placed into special education, remedial, or basic

academic tracks than White students (D. Zhang, Katsiyannis, Ju, & Roberts, 2014); these low-level academic tracks prevent Latina/o students from obtaining the required coursework to enroll in a four-year university after high school. Further, Latina/o students also have to endure negative stereotypes from their teachers and peers that they are lazy and stupid (Conchas, 2001). These negative stereotypes are incessantly tossed onto Latina/o students who exhaustingly push through the low expectations placed upon them. These examples, among a litany of others, exemplify how Latina/o students navigate overt and covert obstacles in order to reach the same educational achievement as a White student.

While the above factors are valuable in understanding the systemic burdens Latina/o students endure to succeed in school, it is also important to shift the lens from the negative to the positive, and look at how Latina/o students circumvent institutional barriers and succeed in school. For example, understanding how Latina/o students gain entrance into the most advanced and selective courses in their high schools (honors/AP courses) can provide researchers and educators with greater insight as to how Latina/o students excel despite enduring a school system that disproportionately funnels Latina/o students into an educational track that leads to low-levels of educational attainment.

Thus, one way in which schools can diminish educational inequalities that needs further examination is how to increase the proportion of Latina/o students in honors and advanced placement (AP) courses. Given that honors/AP courses help prepare students to enroll in four-year colleges (Solórzano & Ornelas, 2002), and that these courses can also be used as informal means for segregating students (Conchas, 2001; Jones, Vanfossen, & Ensminger, 1995; Kelly, 2004; Oakes & Guiton, 1995; Staiger, 2004; Useem, 1992; Wells &

Serna, 1996), it is critical that researchers examine the ways in which advanced courses are equally represented by both Latina/o and White students.

For decades Latina/o students have been underrepresented in honors/AP courses and “gifted” programs (Ford, 1998; McBee, 2006; Staiger, 2004; Valencia & Villareal, 2011) as a result of both structural and interactional processes. Guidance counselors and teachers have been known to tell Latina/o students that honors/AP courses are too hard, and refuse to admit them into the course (Yonezawa, Wells, & Serna, 2002). In addition, Latina/o students have been known to receive subtle messages that signal to them that they should not be in honors/AP courses, such as being the only Latina/o student in a class of White students, which gives them the feeling that they don’t belong. Latina/o students may also report not feeling welcomed in honors/AP courses when White classmates do not ask them to study together (Lewis & Diamond, 2015) or when the teacher dismisses a Latina/o student’s comment in a class discussion (Yonezawa et al., 2002). The combination of institutional barriers and daily micro-interactions coalesce into a powerful force that prevents Latina/o students from entering advanced courses, and for the few that enter, the force also pushes them out. As a result, few Latina/o students are enrolled in honors/AP courses (Kerr, 2014; Solórzano & Ornelas, 2002).

Research has suggested that there is one way to help increase the enrollment of Latina/o student into honors/AP courses: simply to encourage them to enroll. The simple act of saying “I think you should enroll in an honors course. I think you can do it. I believe in you,” has been shown to be especially powerful for Latina/o students (Malecki & Demaray, 2003; Richman, Rosenfeld, & Bowen, 1998). Such statements are classified as emotional support. Traditionally, in school settings, educators think that supporting students equates to

helping them with their homework, or with a particular lesson. While this form of social support, considered a form of instrumental support (Cooke, Rossmann, Mccubbin, & Patterson, 1988), is beneficial to many students, researchers have also determined that other forms of social support, such as emotional support are critical for student success, especially for Latina/o students (Malecki & Demaray, 2003; Stanton-Salazar, 2001). So while it is important for Latina/o high school students to receive academic support to succeed in a honors/AP course, it is also critical that a person in a Latina/o student's life encourages them to enroll in a honors/AP course.

### **The Current Study**

Building upon the importance of emotional support for Latina/o students, and the low enrollment rates of Latina/o students in honors/AP courses, this study explores the disproportionate rates of enrollment in honors/AP courses between Latina/o and White students, and asks whether the encouragement from particular sources of support can help increase Latina/o enrollment in honors/AP courses. To date, there are no published quantitative studies analyzing sources of emotional support and its effects for Latina/o students' entrance into the honors/AP track. Further this is the first study to analyze the different combinations of sources of support that both Latina/o and White students access, and tests whether these different combinations are helpful for enrolling into honors/AP courses.

The first step in such a study is measuring a student's social support network. While previous studies have looked at the importance of traditional sources of support in a student's network, such as parent, teacher, and peers (Cherng, Calarco, & Kao, 2012; Gibson, Gándara, & Koyama, 2004; Ndura, Robinson, & Ochs, 2003), this study looks at whether

students might be accessing other non-traditional sources of emotional support using a quantitative survey instrument. Including diverse sources of support may be particularly important for Latina/o students because Latina/o students may not be connecting with traditional sources of support, such as their teacher or guidance counselor, because of negative experiences with these more formal sources of support. Thus, it is critical that a measurement exists that is able to measure the diverse range of sources of support that may exist in a student's life. As part of this study, the Students Networks of Encouragement (SNE);(Witenko, Mireles-Rios, & Rios, 2016) instrument measured a diverse range of sources of support that may be providing encouragement to students to enroll in honors/AP courses. A detailed explanation of which sources of support are measured is provided in Chapter 2.

This social support data provided new information on how Latina/o students access social support to enroll in honors/AP courses. Such information is especially beneficial for schools and policymakers as they make decisions on which programs to support in order to improve educational outcomes for Latina/o students. As one example, this study provided information on whether Latina/o students access social support from their Advancement Via Individual Determination (AVID) teacher or their regular teacher. This distinction can help policymakers determine if they should continue to fund the AVID program, or invest more resources in the traditional classroom teacher. While a list of specific research questions will be discussed in Chapter 3, the general aim of this study is discussed here.

### **Purpose of the Study.**

The purpose of this study is three-fold. One purpose is to explore whether there is racialized academic tracking at the high school where the study was conducted. Historically,

racialized academic tracking in a common phenomenon, however, before additional analyses could be conducted, determining whether this phenomenon existed at this particular high school was necessary. Thus, data collection and statistical analyses were conducted to determine if a greater proportion of Latina/o students within the school were enrolled in basic courses whereas a greater proportion of White students were enrolled in honors/AP courses.

Second, instead of adding another finding that one more school participated in racialized tracking, this study looked to see if there might be an underlying mechanism that could help ameliorate the racialized tracking at this school. Given the plethora of research on the benefits of social support and using a critical race theory approach that recognizes the Latina/o students have their own sources of support (Yosso, 2005), this study looked at the unique social support networks that exist for Latina/o students and whether these networks could help Latina/o students enter honors/AP courses. Another reason this study looked at social support networks is that many public schools lack the financial resources to add new programs. As a result, findings from this study can be applied to all schools regardless of their financial standing.

Third, a purpose of this study was to explore not only whether students have their own social support networks, but whether these networks have positive effects. Given the purpose of this study, the following research questions were asked:

Q1: Controlling for academic and demographic variables, what are the proportions of enrollment into the honors/AP track for Latina/o and White students?

Q2: What are the descriptive characteristics of Latina/o and White students enrolled in the honors/AP track and basic track?

Q3: What proportion of each source of support encouraged Latina/o and White students in both the honors/AP and basic tracks to enroll in honors/AP courses?

Q4: What are the prominent combinations of encouragement that Latina/o and White students received who are enrolled in the honors/AP track and basic track?

Q5: What is the descriptive composition of the emergent classes for (1) Latina/o students enrolled in the honors/AP track; (2) White students enrolled in honors/AP track; (3) White students enrolled in honors/AP track; (4) White students enrolled in basic track?

A detailed explanation of the research questions, the variables used, and the specific statistical analyses that were conducted are provided in Chapter 3. These research questions are related to the purpose of the study because they address whether there is racialized academic tracking, the unique social support networks that exist within these tracks, and the difference in the social support networks for students who are enrolled in these tracks.



## **Chapter 2: Related Literature & Theoretical Framework**

This chapter explores how school tracking, the process of assigning students into separate educational tracks based on a student's purported academic performance (Oakes, 1985), began as a highly overt classification system based on a student's race, immigration status, and religion, and has since shifted into a more covert system. Reviewing the history of tracking is important because it provides one way of understanding why so few Latina/o students are enrolled in a school's most advanced courses; tracking also offers one explanation for the inequitable educational attainment levels between Latina/o and White students. In the context of this study, understanding the history of tracking is relevant because several researchers have documented the ways in which schools can function as a racially biased institution. Schools employ a majority of White teachers and staff who often track Latina/o students into the lowest level courses. Thus, it is important to determine if there might be other people in a student's life who encourage them to enroll in the most advanced track beyond traditional sources of support. As a result, this dissertation will look at whether other people in a Latina/o student's life provide encouragement to enroll in advanced courses, and if these alternative sources of encouragement can compensate for institutionalized school policies and behaviors that effectively place a disproportionate number of Latina/o students in the lowest academic tracks. The literature on racism that Latina/o students encounter is reviewed below.

I will begin this chapter by laying out the history of school tracking as an overt sorting mechanism, the use of IQ tests as "scientific evidence" for tracking students, and how school tracking is used in schools as a covert mechanism to reproduce racialized educational inequality in a colorblind era through the socially accepted lens of meritocracy. Next, I will

also discuss how school tracking is used as a mechanism in the social construction of race, in which Latina/o students are viewed as unintelligent and deserving of placement in the low-track. Despite the perennial story of how Latina/o students “underperform,” or are disproportionately enrolled in the low-track of U.S. K-12 public schools, this chapter then turns to discussing how Latina/o students are able to access unique social support networks that can help them move into the advanced track.

Lastly, the benefits of social support will be discussed with a detailed analysis of emotional support and its benefits for Latina/o students. Current methodological models for measuring social support will be examined which will lead to a recommendation that posits that researchers include more diverse sources of support when measuring students’ social support networks.

**The History of School Tracking: An Overt Sorting Mechanism.** Since its inception, school tracking has served two main functions: (1) segregate students based on some social classification, race, gender, religious affiliation (Oakes, 1985); (2) prepare students for work in a stratified capitalistic labor market (Anyon, 1980; Bowles & Gintis, 1983, 2002). Historically, tracking has acted as a mechanism for both racial and class inequalities—a pernicious history that still permeates U.S. education policy today. What follows is a closer look at this deleterious history and the ways in which it still currently effects school tracking policies that are in place today.

Tracking first began in the United States during the early 1900s when an influx of new immigrants entered the United States (González, 1999; Oakes, 2005), and when the U.S. economy shifted from agricultural work to industry, and required a specific skillset to meet the shifting labor force demands (Bowles & Gintis, 1983). At the turn of the 20<sup>th</sup> Century,

enrollment in public schools expanded rapidly as a result of an influx of new immigrants, child-labor laws, compulsory education laws, and expanding primary schools (Kliebard, 2004; Oakes, 1985). “Between 1880 and 1910 student enrollment increased by over 700 percent...,” (Oakes, 2005, p. 19). Because a large majority of these new public school children were children of immigrants who differed from the White Anglo-Saxon Protestant children that schools were accustomed to educating, schools began to develop separate educational tracks as a means to separate White Anglo-Saxon Protestant public school children from the new immigrant school children (Oakes, 1985). Schools claimed that they needed to create separate educational tracks in order to “Americanize” the new immigrants, which included lessons on obedience and cleanliness (Oakes, 2005).

In the southwest, U.S. schools segregated Mexican American students from White students. The majority of Mexican American students were educated in segregated public schools or classrooms known as “Mexican schools” or “Mexican classrooms,” (Donato, 1997; González, 1999; Guadalupe San Miguel, 1999, 2003). Even if schools did not overtly create “Mexican schools,” such as in Oxnard, California, school officials covertly segregated Mexican American students from White students by accommodating White parents’ request for segregated classes (Garcia, Yosso, & Barajas, 2012). School districts justified the segregation of Mexican American students by stating that Mexican American children were dirty, had lower IQs, lacked motivation, couldn’t speak English, and because their parents constantly moved due to their agricultural jobs, Mexican American students needed to be educated in separate Mexican schools (Delgado, 2000; Donato, 1997; Foley, 2014; González, 1999).

While one role of tracking was to segregate students based on racial and ethnic classifications, another role of tracking has been to create an inequitable labor force that best supports the U.S. labor market (Anyon, 1980; Bowles & Gintis, 1983, 2002; Moller & Stearns, 2012). At the turn of the 20<sup>th</sup> Century, the U.S. economy was shifting to an industrialized nation, in which factory-like efficiency was valued. Urban business community members as well as rural agricultural businesses pressured schools to create vocational tracks that prepared students for work in U.S. industry (Oakes, 2005). In 1918, the National Education Association (NEA) recommended a vocational curriculum in high schools that included an emphasis on agricultural, industry, and house-hold arts in order to prepare students for the different demands of the U.S. economy (Oakes, 2005). Colleges also pressured high schools to appropriately prepare students for a college curriculum (Oakes, 2005). Thus schools began to develop vocational tracks and college-prep tracks in order to separate students who were college-bound from those students who were not (Oakes, 2005).

The combination of U.S. labor demands, xenophobia, and racism provided a theory for segregating students into separate educational tracks. The development of the IQ test, however, provided the needed “scientific evidence” for the theory of tracking students (Kamin, 1995). The following section will discuss the history of IQ tests and how they provided a meritocratic rational for tracking students—a rational that is still used today.

**Eugenics, School Tracking, and IQ Tests.** In 1905, the first IQ test was developed by the French psychologist, Alfred Binet, to identify low-level learners in order to provide them with a specialized education that could increase their intelligence (Kamin, 1995; Ravitch, 2000). However, in 1911, Lewis M. Terman, a professor at Stanford who was grounded in theories of eugenics, modified Binet’s intelligence test, and developed the

Stanford-Binet IQ test that was used to determine a child's innate intelligence (Kamin, 1995; Ravitch, 2000). Since Terman believed that intelligence was innate, he argued that students should be tracked into different curriculums based on their IQ scores. The test claimed to provide a "scientific" tool for assigning children to a particular educational track that would best benefit society (Kamin, 1995). It is important to understand Terman's influence on the concept of meritocracy, since a similar rationale is used today to track students, the brightest and best children go to honors/AP and the average or slow children go to the basic and remedial classes.

To offer scientific proof for Terman's theory that children had an innate intelligence and schools should track students according to their IQ scores, Terman conducted a large study in Los Angeles, San Francisco, and the East Bay Area of California to identify the characteristics of "gifted" students (Terman, 1925). Terman's (1925) study of 999 "gifted" students (those who scored in the 99<sup>th</sup> percentile of the Stanford-Binet test) found that the median IQ for Latina/o children in California was between 75-85, while the mean IQ for White children in California was 100; during this time, the average IQ of a "gifted" student was 114. Using a "scientific" assessment, such as the IQ test provided credibility for sorting students into different educational tracks.

**IQ Tests and Tracking.** As a result of his study, in the 1920's Terman proposed that schools sort students into five different academic ability groups based on their IQ scores: "accelerated," "normal," "opportunity," "limited," and "atypical," (Terman et al., 1922, p. 35). Students were labeled according to their track placement: "gifted," "bright," "average," "slow," and "special," (p. 19). Terman argued: "For each of these groups there should be a separate educational track and specialized curriculum," (p. 19). The five different groups

would learn the skills that corresponded with the labor requirements for particular jobs in the U.S. economy (Terman et al., 1922). An IQ score less than 70 equated to unskilled labor, 70-80 semiskilled labor, 80-100 skilled labor, 100-115 semiprofessional, and scores exceeding 115 were recommended for professional labor (Terman et al., 1922). For example, unskilled labor equated to students learning to be shoe shiners, domestic servants, and to work in agriculture.

By 1925, 64% of elementary schools, 56% of junior high schools, and 40% of high schools in 215 U.S. cities used IQ tests to determine which students should enter a school's vocational track, and which students should enter the academic track (Ravitch, 2000). As the classification of students based on purported academic ability became a norm in public education, a new vocabulary began to appear in education that focused on describing students based on this new classification schema (González, 1999). Such classification terms of students included "gifted," "bright," "superior," "average," "subnormal," "dull," "moron," "low grade moron," "borderline moron," "low mentality," and "feble-minded," (González, 1999, p. 60). While particular labels have changed since the 1920's, such as "moron" is now "dumb," the process of labeling students based on perceived intellectual ability continues to be a socially acceptable form of discourse, and one that adds credibility to the concept of tracking students based on their perceived intellectual ability.

The lexicon that developed in the 1920's to describe students' academic ability and the associated labor potential of that purported ability is still prevalent today. A popular document found on school district websites aimed at helping parents navigate "gifted" education, is a document titled "Bright child, gifted learner" (Szabos, 1989). The document states that a "bright" child is a "technician" and a "gifted" child is an "inventor." In 2017, the

discourse around “gifted,” education still includes assumptions related to labor opportunities and school tracking: the “gifted” track is for those children who will become inventors, and the non-gifted track is for those students who will become technicians.

**The Construction of Race via School Tracking.** School tracks are highly correlated with race: Black and Latina/o students are disproportionately placed in special education, remedial, and basic courses, and White and Asians are disproportionately placed in “gifted,” advanced placement (AP), and honors courses (Artiles & Trent, 1994; Blanchett, 2006; Ford, 1998; Kohler & Lazarin, 2007; Lewis & Diamond, 2015; McBee, 2006; Sullivan, 2011; Valencia & Villareal, 2011; D. Zhang, Katsiyannis, Ju, & Roberts, 2014).

Ford (1998) analysis of “gifted” education using data from the Office of Civil Rights found that in 1992 Latina/os were underrepresented by 42%, while White students were overrepresented by 17%. Valencia and Villareal’s (2011) analysis of “gifted” student enrollment from U.S. Office of Civil Rights found that Latina/o students are 1.9 times less likely to be identified as “gifted” than their White peers. Teachers are also less likely to recommend Latina/os for “gifted” education (McBee, 2006).

Further, Zhang, Katsiyannis, Ju, and Roberts's (2014) study of five racial groups and their representation in special education found that between 2004 and 2008, Latina/o students identified as learning disabled were more overrepresented than White and Asian students and that “The representation rate of each group was also similar to that of 10 years ago. Thus, it seems that nothing has changed in the past 10 years with regard to the overall representation in special education,” (p. 124).

Racially segregated tracks perpetuate racial stereotypes that Whites are smart and hardworking, and Latina/os are lazy and unintelligent (Conchas, 2001). Parents, students, and

educators look at advanced courses and see only White students, and look at remedial courses and see only Latina/o students, and use these observations as evidence that their stereotypes about White and Latina/o students are true. Because the majority of “gifted” program are occupied by White students, “gifted” has become associated with whiteness (DeCuir & Dixson, 2004). Staiger (2004) 18-month ethnographic study of an urban high school in California with a “gifted” magnet program found students referring to the “gifted” program as “a program for white students only” (Staiger, 2004, p.163). Conchas (2001) two-year case study at an urban high school in the Western United States, found that students not only associated particular academic tracks with a students’ race, but that the students connected these course placements with how society views different racial groups. According to one student in the study:

“society says that...you are Latino and lazy, that [if] you are Asian, you are smart, if you are White, Oh God, the best, and if you are Black, you are bad, horrific. If you walk into a class full of Asians and White students...you think that this is a really good class, because they are Asian and White. It must be a good class. If you walk into a class that is majority African American and Latino, you know it’s bad, because they are lazy and dumb” (p. 486).

While tracking is often viewed as a meritocratic rationale for supporting diverse learners, scholars argue that it functions as a covert mechanism for perpetuating racial and social inequalities. For the majority of the public, tracking makes sense: place fast learners in accelerated courses, and slow learners in remedial classes. By doing so, each student will receive the appropriate level of instruction: the slow learners won’t be overwhelmed, and the fast learner won’t be bored. However, there is a glaring problem with this approach—Black and Latina/o students are disproportionately placed in special education, remedial, and basic courses, and White and Asians are disproportionately placed in “gifted,” advanced placement (AP), and honors courses (Artiles & Trent, 1994; Blanchett, 2006; Ford, 1998; Kohler &



Lazarin, 2007; Lewis & Diamond, 2015; McBee, 2006; Sullivan, 2011; Valencia & Villareal, 2011; D. Zhang, Katsiyannis, Ju, & Roberts, 2014).

Because schools are the epitome of meritocratic ideology, racism in schools is especially covert—grades, honor role, stickers on a homework assignment, teacher praise—is all purported to be purely based on a student’s merits, however, researchers have shown that race still matters (Corra, Carter, & Carter, 2011; Lewis & Diamond, 2015; Tenenbaum & Ruck, 2007). Corra et al.'s (2011) study of 5,470 students in five high schools, for example, found that on average White students with lower SAT scores were over-enrolled in AP courses, while on average Black students with high SAT scores were under-enrolled in AP courses. Tenenbaum and Ruck (2007) synthesized the differential treatment that Black and Latina/o students experience in comparison to White students with their meta-analysis of 39 group samples, which found that teachers provided more encouragement to White students than Black and Latina/o students, held higher and more positive expectations for White students than Black and Latina/o students, praised White students more than Black and Latina/o students, referred more White students for “gifted” programs than Black and Latina/o students, and referred more Black and Latina/o students for special education than White students. So, while most teachers would say, “I treat all students fairly, I believe all students can achieve,” researchers have found that teachers and school staff give preferential treatment to White students (Tenenbaum & Ruck, 2007).

The above studies highlight how educational tracks are segregated by race, and how White students receive preferential treatment for enrolling in honors/AP courses, however, it is also important to understand that these academic tracks are not equal, and lead to inequitable life outcomes (Gamoran, 1987; Moller & Stearns, 2012).

**Unequal Tracks.** School tracks are also embedded in a hierarchical structure in which different tracks are associated with varying degrees of privilege, discrimination, and opportunity. “Gifted,” “high-ability,” and honors/AP students are placed at the top of the school academic structure; they receive the best teachers (Ball, 1981; Finely, 1984; Kalogrides & Loeb, 2013; Lewis & Diamond, 2015), and their teachers hold high expectations for them (Ball, 1981; Hargreaves, 1967; Kelly & Carbonaro, 2012; Lewis & Diamond, 2015). Students with special needs (special education students) and “low-ability” students and student enrolled in the “basic” (not honors/AP) are placed at the bottom of the structure at times with less than effective teachers (Oakes, 1985; Schwartz, 1981; Oakes, Ormseth, Bell, & Camp, 1990), and where teachers hold low-expectations for them (Ball, 1981; Finely, 1984; Kalogrides & Loeb, 2013; Oakes, Ormseth, Bell, & Camp, 1990).

Teachers are less enthusiastic and less engaged with their students in the low track compared with advanced track students and are also more likely to use punitive disciplinary procedures in the lower tracks (Oakes, 1985). The decreased teacher engagement is explained in greater detail in Schwartz’s (1981) study that found that teachers of low-tracked classes reviewed their students’ homework 20% less than their high-tracked classes, had lower expectations, and were less likely to praise their students. In more recent work, Lewis and Diamond (2015) five-year study of a large high school found that teachers taught students in the honors/AP courses until the bell rang, while in the “basic” courses students packed up their bags and stopped working minutes before the bell rang, accumulating in differences in educational time on task. Further, students placed in the low-track, or in special education are more likely to be suspended, drop out, attend juvenile detention, and be incarcerated as adults (Fabelo et al., 2011; Rumberger, 2011).

Given the benefits of being placed in the advanced track and the disadvantages of being placed in the basic track, it is not surprising that contrary to some beliefs that tracking helps support diverse learners, tracking actually exacerbates educational achievement gaps (Gamoran, 1987; Oakes, 1985; Vanfossen, Jones, & Spade, 1987). Gamoran's (1987) study using the national High School and Beyond dataset in 1980 and 1982, of approximately 20,000 students found that educational achievement gaps were greater between students in different tracks at the same school than between high school graduates and dropouts.

**Controlling for Other Factors, Race Matters.** While the above literature indicated the many ways race matters, the following literature includes studies that controlled for other factors, and still found that race mattered. When White, Black, and Latina/o students exhibit similar disabilities, Black and Latina/o students are more likely to be placed in segregated special education classes than White students (The Civil Rights Project at Harvard University, 2001).

Using the High School and Beyond dataset from 1980, with a follow-up sample in 1982, Vanfossen et al. (1987) found that after controlling for socioeconomic status and prior education, tracking negatively affects students' educational aspirations, self-esteem, participation in extracurricular activities, perceived value of their friends, and academic performance; additionally these effects continue after high school graduation. Similarly, Lleras and Rangel's (2009) study using a nationally represented sample from the Early Childhood Longitudinal Study controlled for a multitude of variables, such as the child's sex, socioeconomic status, student behavior, teacher characteristics, whether a student spoke Spanish at home, and whether a student was born in the United States found that students

placed in a low-ability reading group had lower achievement gains than students not grouped by academic ability.

Educational tracking has long-term effects related to social class inequality, because tracking is correlated with income inequality. In Moller and Stearns' (2012) study of 6,742 students from the National Educational Longitude Study that controlled for socioeconomic status, age, disciplinary problems, ambition, prior academic achievement, highest degree attainment, geographic location, school type, and family characteristics found that high school tracks predicted annual and hourly earnings in adulthood, with student placed in the low track earning significantly less than those in the advanced track.

**Tracking and the Development of Peer Networks.** Tracking also affects the development of peer networks, and covertly keeps students racially segregated even in racially diverse schools. When students are placed into a particular academic track, they tend to develop friendships with other students in the same academic track (Ball, 1981; Carter & Welner, 2013; Eckert, 1989; Hallinan & Sorensen, 1985; Kubitschek & Hallinan, 1998). Hallinan and Sorenson (1985) conducted a study of 1,477 students in ten elementary schools and found that students were more likely to develop friendships within the same ability group, and that over time these friendship networks became denser. In Schwartz's (1981) study at three elementary schools and one junior high school, high-tracked students were perceived as a more desirable friend among both high-tracked and low-tracked students, and that high-tracked students had more reciprocal friendship ties, and thus were able to develop social group closure. In comparison, low-tracked students had between 1/2 and 1/8 of the number of reciprocal friendship ties as high-tracked students, and thus had a less dense social

group (Schwartz, 1981). These studies highlight how tracking can facilitate racial segregation even in racially diverse schools.

**Students Resisting Tracking.** While Latina/o students endure a host of bureaucratic, institutional, psychological, emotional, and informational barriers to enter the advanced track, they also have the power to resist such institutional forces that push and pull them in their school's lowest academic tracks. One way in which Latina/o students can resist a racialized academic tracking system is by tapping into their unique social support networks (Yosso, 2005). The following section will discuss the benefits of social support.

**Social Support Networks and its Benefits.** As evident by the name, social support is support provided to an individual via their connections to other individuals (Barrera, Sandier, & Ramsay, 1981). Dumont and Provost (1999) define social support as “a multidimensional concept that includes the support actually received (informative, emotional, and instrumental) and the sources of the support (friends, family, strangers, and animals),” (p. 345).

For decades, researchers have recognized the importance of having people in an individual's life who provide support (Cauce, 1986; Harber et al., 2012; Lin, Woelfel, & Light, 1985; Rosenfeld, Richman, & Bowen, 2000; Stanton-Salazar, 2010). Galand and Hospel (2013) study of 400 7<sup>th</sup> and 8<sup>th</sup> graders in Belgium found that “parental support was associated with reduced depressive symptoms, peer support was associated with higher academic self-efficacy, while teacher support was associated with [decreased depression, increased academic self-efficacy, and decreased school disaffection]” (p. 581). Garnefski and Diekstra (1996) study of 476 high school students, ages 16-18 years, found that students who receive social support from their peers, family, and school had lower levels of emotional and behavioral problems. Legault, Green-Demers, and Pelletier (2006) study of 741 Canadian

high school students found that decreased social support is correlated with decreased academic motivation.

The benefits of social support continue in college. Schneider and Ward (2003) study of 35 Latina/o students at the State University of New York at Geneseo, found that the perceived social support received from family, peers, faculty, and administrators significantly predicted the student's ability to adjust to college. Similarly, Alvan, Belgrave, and Zea (1996) study of 77 Latina/o college student in the Washington D.C. area found that after controlling for age, sex, and the students' levels of stress, increased level of social support significantly predicted increased adjustment to college.

**Importance of Emotional Support.** Emotional support is beneficial for all students (Malecki & Demaray, 2003), and especially for Latina/o students (Stanton-Salazar, 2001). Students are able to develop emotional competencies by being able to express distresses in their life and receive the necessary emotional support to help them move beyond isolation, depression, and an unrelenting stress that negatively affects their academic achievements (Stanton-Salazar & Urso Spina, 2005). In comparison to other forms of social support, Malecki and Demaray (2003) found that the emotional support received from teachers was most related to academic achievement rather than informational, instrumental, or appraisal support. Similarly, in a study of 525 students enrolled in Communities in Schools programs, which provide additional social service support to at-risk students in 17 middle and high schools in North Carolina and Florida, Richman, Rosenfeld, and Bowen (1998) found that students receiving emotional support spent more hours studying, had higher attendance rates, and reported greater self-efficacy. These studies, among others (Brock & Curby, 2014; Côté, Bouffard, & Vezeau, 2014; Ruzek et al., 2016) suggest that while all forms of support are

beneficial to students, emotional support seems to be particularly salient, especially with Latino/a students.

**Importance of emotional support for Latina/o students.** While the above literature highlights the importance of emotional support for all students, other studies have found it to be especially beneficial for Latina/o students (Allen et al., 2016; Hudley & Daoud, 2007; Stanton-Salazar & Urso Spina, 2005). Hudley and Daoud's (2007) study of White and Latina/o students at a suburban high school in California found that teacher warmth was more important for school engagement among Latina/o students than for White students. Additionally, they found that if Latina/o students did not have a good interpersonal relationship with their teachers, they were more likely to be disruptive in class. Thus, providing emotional support, such as “warmth,” is of critical importance in order to best support Latina/o students.

Stanton-Salazar's (2001) expansive research on Latina/o adolescents social support networks found similar results. He found that Latina/o adolescents who had “caring and nurturing relationships with school personnel” (p. 167) were better able to persevere through school despite difficult life challenges. Even beyond high school, Latina/o students who receive emotional support through a faculty mentoring program in college had increased levels of self-efficacy and positive self-identity (Santos & Reigadas, 2002).

**Measuring social support networks in schools.** Since we have established the importance of emotional support in a student's life, it is also important to consider the different sources of social support in a student's network. Previous researchers have examined the benefits of social support networks, however, the network data collected are largely defined in traditional supportive roles such as family, school, and peers, and these

studies fail to disaggregate the unique roles embedded within each network (Cauce, 1986; Cherng, Calarco, & Kao, 2012; Gibson, Gándara, & Koyama, 2004; Ndura, Robinson, and Ochs, 2003; Stanton-Salazar and Dornbusch, 1995; Stanton-Salazar, 2005, 2010).

Although Stanton-Salazar (2001) argues for the importance of school agents in a student's network, the unique roles encompassing school agents are limited to teachers, sports coach, guidance counselors, and the AVID teacher. Other researchers have attempted a bit more disaggregation, however, once again the number of potential sources of support was limited to a handful. Ndura, Robinson, and Ochs (2003) surveyed approximately 58,000 students in eight schools, and asked them to identify the person who encouraged them to enroll in AP classes, however, students were restricted to five potential sources of support: "parent," "teacher," "counselor," "friend," and "other." As a result, students could not identify potential sources of encouragement beyond those five sources. In another example, Cherng, Calarco, and Kao (2012) looked at peer networks and relied on the National Longitudinal of Adolescent Health dataset, and because they were limited by the secondary dataset, they were able to only analyze "best friends," within a student's network, which restricted the peer network to strong ties. This matters because students who did not select a "best friend," may be receiving support from a different source in their network, e.g., a counselor, a sports coach, however, the design of the study prevented researchers from identifying these other sources of support.

Cauce, Felner, and Primavera (1982) also began some level of disaggregation by measuring family support by parents and relatives, formal support by guidance counselor, teacher, principal or assistant principal, and "state employment service officer," (p. 422), and informal support by "any adult not already mentioned and friends." By conducting a



principal component analysis, the authors were able to determine that these three categories (family, formal, and informal) were distinct from each other, which provides evidence for the continuation of disaggregating network roles to uncover the diverse sources of support in a student's network.

The following literature review examines the benefits of different sources of social support. Not only do these sources provide social support, but they can also influence a student's academic trajectory. While some of these roles are often measured in research studies analyzing social support networks (e.g. parent, teacher, peer), other roles have not been measured (e.g. school secretary, private tutor, college & career counselor).

### **Family Network**

It comes as no surprise that family members are especially influential in a students' academic trajectory. Understanding how unique roles within family structure provide social support to students will be discussed in the following sections.

**Parents/Guardians.** A plethora of studies have found the social support parents provide to their children corresponds positively with educational outcomes (Galand & Hospel, 2013; Richman et al., 1998; Rosenfeld et al., 2000; Sanders, 1999; Wentzel, 1998). Parental emotional support, in the form of encouragement, has been associated with increased English scores, and units completed in math, science, and English courses (Catsambis, 2002), and students who receive emotional support from their mothers are more likely to graduate high school and attend college (Tenenbaum, Porche, Snow, Tabors, & Ross, 2007).

As expected, parents also have a strong influence on their children's course placements (Kelly, 2004), and often White, high socioeconomic status parents use their

influence to garner the best courses, teachers, and educational tracks for their children (Ball, 1981; Oakes & Guiton, 1995; Wells & Serna, 1996). However, when parents lack the necessary knowledge to navigate the educational system, parents still provide encouragement and emotional support to their children in order to succeed in school (Enriquez, 2011; Sanchez, 2006; Yosso, 2005). In Enriquez's (2011) study of 54 undocumented Latina/o college students in the Los Angeles area, she found that despite their parents having low levels of education, they still provided high levels of emotional support, in the form of encouragement, to succeed in school.

**Siblings.** Family support also comes from other family members other than parents. Siblings often provide emotional support for each other because of their understanding of the shared living and home environment, and thus have a special understanding of each other, which may not exist between child and parent (Stanton-Salazar, 2011). When parents are unable to provide educational guidance, older siblings who have enrolled in college often provide the necessary guidance and support to their younger siblings (Ceja, 2006). Similarly, when students are socially isolated from their peers at school, East and Rook's (1992) study of 405 sixth graders in 12 public schools in southern California found that they were able to access social support from their favorite sibling, which resulted in lower levels of anxiety and reduced levels of "immaturity."

**Other Relatives.** Other relatives, such as aunts and uncles, grandparents, and cousins, also provide emotional social support for students (Stanton-Salazar, 2011). Cheng and Starks (2002) found that after controlling for family background and school achievement, "the effect of Hispanic American close relatives' educational aspirations is 28 percent larger than Whites," (p. 320). Thus, when measuring social support for Latina/o students, it's important

to include other relatives as by only measuring relationships and support from parents may provide a underestimate of support students access from other members of their family.

### **School Network**

Beyond family, students are also embedded in social support networks at their schools. Understanding the unique roles within a school network, and measuring the encouragement students receive from these roles is critical given the extensive amount of time students spend at school. In a longitudinal study of 166 students between grades 7-11, DuBois, Felner, Brand, Adan, and Evans (1992) found adolescents who had high levels of social support from school personnel (the study did not specify unique roles within “school personnel”) were better able to buffer the stressors associated from living in a difficult home or neighborhood environment. The unique roles within a school must be considered since some school administrators, such as the school’s *principal or assistant principal*, can also perpetuate tracking inequalities, by succumbing to the belief that tracking is a sound meritocratic process (Gamoran, 1992). *Guidance counselors* also have great influence on students’ course placement. High school counselors advise students on their postsecondary plans (Trusty & Niles, 2003), and whether students enroll in honors and AP courses can affect their probability of being admitted into college (Solórzano & Ornelas, 2002). Gamoran (1992) found that guidance counselors were more likely to push students from high-status families into higher tracked classes, and students from low-SES and ethnic minority backgrounds into lower track courses. In Lewis and Diamond's (2015) five-year study of an affluent and liberal school district, they found that *school personnel* were still more likely to encourage White students to enroll in honors/AP courses (even when they did not have the

grades to be in the more advanced courses), while Black and Latina/o parents had to “fight” for their children to be placed in honors/AP courses.

*Teacher* social support is also associated with student academic success (Green, Rhodes, Hirsch, Suárez-Orozco, & Camic, 2008; Sanders, 1999; Suárez-Orozco, Suárez-Orozco, & Todorova, 2008). In a study of 633 Latina/o students in grades 6-12, Brewster and Bowen (2004) found that students with higher levels of perceived teacher support correspondingly had higher levels of school engagement and lower incidences of behavior problems, such as fighting, suspensions, truancy, and tardiness. Other studies support the claim that perceived teacher support is highly beneficial for students. Students who reported that their teachers cared about them showed greater school satisfaction, scholastic competence, which were both indirectly related to greater life satisfaction (Danielsen, Samdal, Hetland, & Wold, 2009). In a longitudinal study of 1,023 students in 29 schools in which data was collected in 7<sup>th</sup>, 9<sup>th</sup>, and 11<sup>th</sup> grades, and after high school graduation, Wang, Brinkworth, and Eccles (2013) found that positive teacher–student relationships at age 13 resulted in decrease levels of depression and delinquent behavior through age 18. Not surprising, students who perceived having teacher support had fewer school absences (Elias & Haynes, 2008). Using data from the National Educational Longitudinal Study of 11,000 students who attended both private and public schools, Croniger and Lee (2001) found that students at-risk of dropping out of high school who had strong teacher relationships, measured by whether teachers are interested in them, values what the student says, praises the student, and cares whether the student succeeds in school were half as likely to drop out of school than those student who did not receive support from teachers. Teachers also influence students’ academic course-placement (Gamoran, 1992; Oakes & Guiton, 1995).

**AVID counselors.** Some schools also offer specialized programs that provide students with social support, such as the Advancement Via Individual Determination (AVID) program, which provides students with an AVID elective course taught by a trained AVID teacher to support students who are underrepresented in college (Fashola & Slavin, 1998).

The goal of AVID is to help students succeed in applying and attending college, and previous research has found that AVID explicitly teaches students the covert lessons associated with educational success, such as how to contact a professional at a college, fill-out a college application, and dress for an interview, thus AVID provides students with access to knowledge that is often secured in middle-class social networks (Mehan, Villanueva, Hubbard, & Lintz, 1996). As a result, AVID provides students with social support.

**College Counselors.** While school guidance counselors support students with a variety of issues including course enrollment, disciplinary, and family concerns, some schools are able to employ college counselors who are charged with supporting students through the college application process. These college counselors can be a critical source of support for students. Not only do these college counselors encourage students to enroll in advanced courses (Gonzales, 2010), but also provide financial support by paying for a student's college application fees (Enriquez, 2011). Examining the benefits of college counselors in providing encouragement to enroll in honors/AP courses is important as well.

**Club advisors.** Previous studies have noted the benefits of school clubs and extra-curricular activities (Gardner, Roth, & Brooks-Gunn, 2008; Lee, 2002; Lindsay, 1984; Mahoney & Cairns, 1997; Marsh & Kleitman, 2002). In Mahoney, Schweder, and Stattin's (2002) study of 703 adolescents, they found that adolescents who participated in structured

afterschool activities were less depressed than those who did not; however, this was mostly true when the adolescents perceived their activity leader as providing high levels of support. Thus, it is important to consider how club advisors may be providing social support to students.

**Sports coaches.** Students who participate in school sports are more likely to receive social support from school personnel than students who do not (Eccles, Barber, Stone, & Hunt, 2003). Because sport coaches are expected to ensure that their student athletes are making academic progress and are healthy, coaches act as a special advocate, and take on the role of communicating with parents and school personnel (Stanton-Salazar, 2001). Broh's (2002) study provides further credibility to the assertion that sports coaches provide social support and act as bridge to other sources of support by finding that participating in sports in 10<sup>th</sup> and 12<sup>th</sup> grades significantly increased the amount of contact students had with their teachers, their parents, and increased parent communication with school personnel as well as parent-to-parent communication.

**Other school counselors.** Other school programs also provide social support to students, such as a teen-parent center. Students who are able to attend on-campus teen-parent centers receive intimate social support, not only with respect to information about parenting their children, but also encouragement to reach their own educational goals (Williams & Sadler, 2001).

**Informal school sources of social support.** Previous researchers have noted the benefits of informal sources of support, such as the school's secretary, providing students with social support (Witenko et al., 2016). The informal relationships that are forged between students and staff at school are often unexamined, however, it is important to do so as

previous literature has found that diverse networks of social support are critical for student achievement.

**Peers.** A student's peer network can influence a student's academic trajectory, (Demaray & Malecki, 2002; Gibson et al., 2004; Stanton-Salazar, 2001; Wentzel & Caldwell, 1997). In fact, peers can have a greater influence on educational plans than parents. In McDill and Coleman's (1965) study, they found that by 12<sup>th</sup> grade, whether a student is a socially high-status student, and thus surrounded by and influenced by many peers, is a greater contributing factor on their stated college plans than the influence of the student's mother's or father's education level. Peers can also influence each other's grades. Mounts and Steinberg's (1995) study of 1,798 high school students enrolled in nine high schools in California and Wisconsin found that students who begin with a low GPA, but who have friends with high GPAs, overtime improve their GPAs.

**Out-of-school sources of support.** While great attention has been focused on how sources of support embedded within school, peers, and family provide social support to students, other sources of social support exist beyond these networks. A tutor, a counselor at a YMCA, or a church member also provides students with social support.

Sanders (1999) mixed-method study of 827 African American 8th graders in 19 schools found that students involved in their church had statistically higher levels of academic self-concept, and the interview data found that students had high levels of emotional support from their church members that translated into increased school success. One student stated: "Going to church gives me the confidence that I'm going to make good grades, because the members always support me in whatever I do," (p.403).

Other students pay for additional social support to succeed in school, such as when high- and middle-income students pay for private tutors to prepare for the SAT, or to receive emotional support and guidance through the college application process (McDonough, 1994). Some tutoring services cost up to \$400 per hour with tutors mixing academic support with emotional support; so much that students refer to their tutors as being like an “uncle” (Ellin, 2012). These examples highlight the many ways in which students can access social support, and that social support is not constrained to family, school, and peers.

### **Social Support, School Connectedness, and Social Capital.**

The above literature provides evidence that social support is an important factor for student success. It is also critical to understand that social support is not a vapid construct, but functions through a human connecting to another human (although the argument can be made that a pet may also provide social support, for the purpose of this study, social support will be understood as connections among humans). Through these connections, social support can be transferred between people, such as between a counselor and a student. These connections also help in the development of social capital because social capital is garnered by forming connections with other people.

**Social Capital.** Social capital is embedded in human relationships, (Bourdieu, 1986; Coleman, 1988; Lin, Cook, & Burt, 2001). One of the first formal articulations of social capital was by Pierre Bourdieu (1982):

“Social capital is the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition—or in other words, to membership in a group—which provides each of its members with the backing of the collectivity-owned capital, a “credential” which entitles them to credit, in the various senses of the world... [These relationships] may also be socially instituted and guaranteed by the application of a common name (the name of a family, a class, or a tribe or of a school, a party, etc.)... (p. 249).



In this early definition, Bourdieu is discussing how social capital is embedded in a “network of connections.” Bourdieu heavily focuses on the cultural capital that translates into economic capital, that is embedded in the closed structures of the upper social classes (Bourdieu, 1986), however, other researchers have looked beyond this unidirectional hierarchical perspective of obtaining social capital (Domínguez, 2011; Michael, Farquhar, Wiggins, & Green, 2008; Stanton-Salazar & Urso Spina, 2005; Yosso, 2005).

Domínguez (2011) conducted a seven-year ethnographic study of Latin American immigrant women living in two separate, high-poverty neighborhoods: South Boston and East Boston. In this study, she found that social support embedded in their networks was used “to negotiate two cultures, immigration, and family relationships in a context of racial antagonism and poverty” (p. 69). In her book, Domínguez found that social capital was used to exchange babysitting for a ride to the grocery store, and international social networks were used to send their children to their country of origin for the summer with the goal that their children would stay immersed in their own cultural norms (or Latina/o cultural capital).

Denner, Kirby, Coyle, and Brindis (2001) comparative study of Latina/o communities with either a high teen-birth rate or a low teen-birth rate, found that although the community with a lower teen-birth rate had higher levels of poverty, the community had a stronger network of social support, which mitigates the effects of poverty on teen pregnancy. “Much of the social capital was informal, such as residents sharing child rearing and mutual support, due to long histories of relationships and extended family,” (p. 12). Thus, social support is a powerful mechanism that can mitigate or effectively negate the effects of highly correlated social factors, such as teen pregnancy and poverty.

These examples highlight how social capital can be found in diverse communities and it is not solely isolated in the upper socioeconomic classes. Latina/o students may be cultivating social capital through diverse social support networks that are not traditionally measured, such as through the school's secretary or an AVID teacher. Thus, social support can help in the facilitation of social capital.

**School Connectedness.** Further, because social support is garnered through human connections, students who have strong connections with school personnel will feel more connected to their school (Blum & Libbey, 2004). Not surprisingly, students who feel connected to their school, such as enjoy going to school, and feel that school personnel care about them have more positive educational and social outcomes than students who don't feel connected to their school. Students who feel connected to their school have lower levels of depression and anxiety than those who don't feel connected (Lester, Waters, & Cross, 2013); they are also more likely to intervene and stop their friends from engaging in high-risk activities, such as "doing something bad at school," underage driving, and alcohol consumption (Chapman, Buckley, Reveruzzi, & Sheehan, 2014). Feeling connected to school is especially beneficial for Latina/o students. Niehaus, Irvin, and Rogelberg (2016) study of 11,913 students from the Educational Longitudinal Study of 2002 (ELS:2002) found that being connected to school was a significant predictors for whether Latina/o students completed high school and attended college, and that being connected to school was a stronger benefit for Latina/o students than White students.

**Accessing Sources of Support.** While it may seem that all students can easily access social support, researchers have noted barriers for particular groups of students.

**Gender.** Previous studies have found differences between the ways boys and girls access social support, with girls more likely to seek out social support (Eschenbeck, Kohlmann, & Lohaus, 2007). Frey and Röthlisberger's (1996) study found that girls are more likely to access emotional support from their peers and are more likely to seek out numerous sources of emotional support than boys; in contrast boys are more likely to receive emotional support from their parents and other family members.

Further, students who are more connected to their school not only have overall greater personal and academic success, (Niehaus, Irvin, and Rogelberg, 2016), but they also receive higher levels of social support from adults than students who don't feel connected to their school (Martinez, Coker, McMahon, Cohen, & Thapa, 2016). Thus, a student who feels connected to their school is more likely to indicate that school adults provided them with encouragement to enroll in honors/AP courses than a student who does not feel connected to their school. Involvement in extracurricular school activities and school sports has been used to measure school connectedness (Brown & Evans, 2005).

Social support, social capital, and school connectedness are all powerful tools for improving educational outcomes. In particular, the connections students make with different people in their lives who encourage them to enroll in honors/AP courses can also help them enroll in the advanced track at their school.

While previous studies have focused on traditional networks of support, such as family, school, and peers, this chapter highlights that there are diverse sources of social support that students can access. Additionally, the benefits of social support are not isolated within particular social classes, but can be accessed by all individuals, including Latina/o students via their connections to other individuals. Further, this chapter has shown how

tracking acts as a mechanism in the social construction of race, the ways in which Latina/o students are pushed and pulled out of the advanced tracks, and the possibility that Latina/o students can use their social networks to resist these institutional barriers and enter the advanced track.

Given these frameworks, and the need to think about social support more broadly, and the subsequent task that follows is how to best measure these diverse sources of support in a student's network. The following section provides a detailed description of how this study measured these diverse sources of social support.

### **Instrument Development**

Based on a review of the literature, the Student Networks of Encouragement (SNE) instrument was developed, and initially used to measure 20 different sources of support in a student's network that provided encouragement to enroll in honors/AP courses (Witenko et al., 2016). The SNE was developed for use in high school students. Multiple revisions, pilot testing, and cognitive interviews<sup>1</sup> were conducted to ensure the instrument was valid and reliable. The cognitive interviews revealed that certain terms needed greater clarification, and the pilot tests revealed that students would skip questions depending on the layout of items. After a year of revisions, and multiple pilot tests, the SNE had been revised in a way that yielded a high response rate in pilot tests where all items were answered, and cognitive interviews found that students understood the questions as intended.

The Student Networks of Encouragement instrument asks: "*Have you been encouraged by the following people to enroll in Honors or AP courses?*" Students selected

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<sup>1</sup> Researchers ask respondents to explain their understanding of survey questions to ensure that the researcher's and the respondent's conceptual understanding of the survey items are equivalent.

among 20 sources of support that provided encouragement. (See Appendix A for a version of the SNE).

**Affiliation Networks.** A unique feature of the SNE is that it measures affiliation networks, a concept adapted from the social network analysis literature. Traditional social network data involves asking respondents to identify other individuals in their network, (e.g., name your five best friends, name the person who gave you information about your current job, etc.). In contrast, affiliation network data asks respondents to identify participation in particular events or social activity (Faust, 1997). Field, Frank, Schiller, Riegle-Crumb, and Muller (2006) define affiliation networks as “...in an affiliation network the relations are between actors and events. Thus, actors are not represented as directly interacting with other actors, but instead are related to each other through participation in common events,” (p. 98-99). Building upon the theoretical definition of an affiliation network, this study proposes that receiving encouragement from particular “roles of actors” equates to “the participation in common events.” In the school context, an example of an affiliation network would be that instead of an individual student identifying a teacher by name, the student identifies the category teacher, such as the AVID teacher, or other teachers in the school. When surveying adolescents, affiliation network data collection is a more sensitive way to measure adolescent networks given the sensitive relationships during this adolescent development period.

**Selection of Sources of Support for the SNE.** The Student Networks of Encouragement (SNE) builds upon previous social network analysis scales that focused on traditional networks of school, family, and peers (Gibson et al., 2004; Ndura et al., 2003). The SNE, however, provides a more in-depth understanding of the underlying sources of support within these networks to expand beyond the traditional sources of support, family,

school, and peers. The following sources of support were added to the survey: “*College and Career Counselor*,” a special center on campus staffed with two counselors who provide information on internships, community service, and college and career counseling. “*Program Counselors*,” which included adults managing the teen-parent center, mentors from a nearby university, and specialized programs located on the Riverland High School campus. “*Riverland HS Club Advisor*,” included any adult that advised a school club at Riverland High School. “*Other Riverland HS Adults*,” was aimed at encompassing any other adult on campus that was not listed in the above categories, such as librarians, security, secretary, etc. Additionally, to test whether out-of-school tutors provided additional encouragement to enroll in advanced courses, “*Private Fee Teacher*,” and the role “*Advisor/Teacher at a free program*,” were added.

Given the debates among social network analysis scholars as to whether strong or weak ties are more important (Cherng et al., 2012; Enriquez, 2011; Granovetter, 1973; Stanton-Salazar & Urso Spina, 2005; Thomas, 2000), including both strong and weak ties on the SNE instrument was critical in order to determine if a student’s close friend (strong tie) or student’s acquaintance (weak tie) was providing encouragement to enroll in honors/AP courses. “*Friends who have been in or are enrolled in Honors or AP courses*,” was included as a strong tie, whereas “*People you’ve met (not a close friend) who have been or are enrolled in Honors or AP courses*” was included as a weak tie. Other peer connections included on the SNE were: “*Friends who are enrolled or have graduated from college*” and “*People you’ve met (not a close friend) who are enrolled or have graduated from college*.” The final peer group was “*Other Friends*,” which determined a general peer influence not measured by the above four peer groups.

Including the aforementioned sources of support, as well as pre-established, traditional sources of support (e.g. parent, teacher, peers, etc.), resulted in the following 20 network roles that were included in the SNE: (1) Parent/Guardian, (2) Brother/Sister, (3) Other Relatives, (4) College Recruiter, (5) Principal or Assistant Principal, (6) Riverland Guidance Counselor, (7) Riverland College & Career Counselor, (8) Program Counselors, (9) Riverland AVID Teacher, (10) Riverland Club Advisor, (11) Riverland Sports Coach, (12) Other Riverland Teacher(s), (13) Other Riverland Adults, (14) Private fee teacher, (15) Advisor/Teacher at a free program, (16) Friends who have been in or are enrolled in Honors or AP courses, (17) People you've met (not a close friend) who have been or are enrolled in Honors or AP courses, (18) Friends who are enrolled or have graduated from college, (19) People you've met (not a close friend) who are enrolled or have graduate from college, (20) Other Friends.

### **Chapter 3: Method**

This chapter describes the specific research questions this study aims to answer and a description of the statistical models used to answer those questions. A discussion of the participants and the data collection process involved in the study follows. This chapter then outlines how a particular survey instrument (SNE) was used, which is the primary source of data for this study. Lastly, the latent class analysis (LCA) model is introduced and the modeling process used to answer some of the research questions is described including specific model-fit criteria that were used in the analyses of the survey data.

#### **Research Questions**

To best convey the research questions that are explored in this study, Table 3.1 below presents each research question with the corresponding student sample, statistical analyses, and independent descriptive variables or covariates that were used to answer each research question.



Table 3.1. Matrix of research questions with corresponding samples and variables

Research Questions	Sample	Analyses	Independent or Descriptive Variables and Covariates
Q1: Controlling for academic and demographic variables, are there disproportionate rates of enrollment into the honors/AP track for Latina/o and White students?	Latina/o and White students enrolled in honors/AP track.	Chi-square analyses, proportions, odds-ratio, logistic regression, and descriptive statistics.	GPA, Parental Ed Level
Q2: What are the descriptive characteristics of Latina/o and White students enrolled in the honors/AP track and basic track?	Latina/o students in honors/AP track; Latina/o in basic track; White students in honors/AP track; White in basic track	Descriptive statistics, means, proportions, percentages.	Gender, GPA, Parental Ed., involvement in sports and extracurricular activities, employment, home language(s),
Q3: What proportion of each source of support encouraged Latina/o and White students in both the honors/AP and basic tracks to enroll in honors/AP courses?	Latina/o students in honors/AP track; Latina/o in basic track; White students in honors/AP track; White in basic track	Proportions; percentages.	Nine potential sources of encouragement from the School Networks of Encouragement instrument.
Q4: What are the main profiles of encouragement that Latina/o and White students received who are enrolled in the honors/AP track and basic track?	Latina/o students in honors/AP track; Latina/o in basic track; White students in honors/AP track; White in basic track	Latent class analysis	Nine potential sources of encouragement from the School Networks of Encouragement instrument.
Q5: What is the descriptive composition of the emergent classes for the four samples?	Emergent Classes from Latina/o students in honors/AP track; Latina/o in basic track; White students in honors/AP track; White in basic track	LCA with 3-step approach to covariate specification.	Gender, GPA, School Activities, School Sports, Parent Ed Level

## Participants

Participants from this study were Latina/o and White students from a large high school in Southern California ( $N = 2,493$ ). Because this study is including only Latina/o and White students, students who did not self-identify as either Latina/o or White were deleted from the sample ( $n = 518$ ). Additionally, given that this study is comparing students enrolled in the honors/AP track with students enrolled in the basic academic track, participants were deleted from the sample if they were not enrolled in a math or English course during spring 2013 (these courses were used to define track placement), or did not have any course or demographic information from the district data set ( $n = 213$ ).

While there were participants who had the above district data, they did not complete the survey that was administered by the researchers and therefore were deleted from the sample ( $n = 186$ ). Additionally, students were deleted if they did not complete the Networks of Encouragement instrument on the survey ( $n = 84$ ) or they were enrolled in an English Language Development (ELD) course (Latina/o  $n_L = 85$  Latina/o and White  $n_w = 2$ ). The decision was made to delete ELD students in order to circumvent issues that may arise around the rationale that Latina/o students in the study may not have been encouraged to enroll in honors/AP courses because they were not proficient in English, and thus would struggle in a honors/AP course.

Students were also deleted from the dataset if they responded *yes* to all 20 sources of encouragement on the Networks of Encouragement instrument without any variability on the 1-5 Likert-type response scale (Latina/o  $n_L = 1$  and White  $n_w = 32$ ). Since it is very unlikely that any student would receive all 20 sources of support and simultaneously value all 20 sources of support equally, this strategy was used to remove mischievous responders, or

students whose responses cannot be trusted because they are not actually reading the survey questions, but simply checking boxes in order to complete the survey.

After removing the above students from the dataset, the final sample for the analyses was  $n = 1,322$ ; Latina/o  $n_L = 658$ ; White  $n_w = 664$ . Students in grades 9-12 were equally represented in the sample, with ages ranging from 13-19 years ( $M = 16$ ,  $SD = 1.24$ ); 49.3% self-identified as male and 50.4% as female. Forty-two percent of Riverland's (pseudonym) students were identified by the school district as socio-economic disadvantaged (SED).

**Creation of Participant Samples.** The above participants were separated into four separate student samples. First, participants were separated into two groups, (1) students enrolled in the honors/AP track, and (2) students enrolled in the basic track. Those student groups were then split by race, which resulted in four samples: Latina/o students in the honors/AP track,  $n = 213$ ; White student in the honors/AP track,  $n = 523$ ; Latina/o students in the basic track,  $n = 405$ ; and White students in the basic track,  $n = 93$ .

**Creation of Course Tracking Groups.** Student course enrollment data provided by the school district were used to determine track placement. The school district provided data for every course each Riverland High School student was enrolled in during the spring 2013 semester (the same time when the survey data was collected). The decision was made to only focus on English and math course enrollment because regardless of the student's grade the vast majority of students were enrolled in an English or math course.

Additionally, honors and AP course enrollment were collapsed because at Riverland High School, only 11<sup>th</sup> and 12<sup>th</sup> graders can enroll in both AP and honors courses, while 9<sup>th</sup> and 10<sup>th</sup> graders can enroll in only honors courses. Since honors courses often lead to AP courses in later grades, collapsing honors course enrollment with AP course enrollment in

order to create a honors/AP track enrollment variable was a logical decision. This resulted in a single honors/AP academic track variable that differentiated students who were in the honors/AP track and students who were enrolled in the basic track. If a student was enrolled in at least one honors/AP math *or* English class, the student was classified into the honors/AP track. If the student was enrolled in both an English and Math basic class, the student was classified into the basic track.

### **Data Collection**

A research team of over 100 undergraduate students, seven graduate students (including myself), one post-doc, and one professor canvassed the school during second period to administer the survey. During the first 20 minutes of the school's second period, one or two members of the research team entered an assigned classroom, read a common protocol that discussed confidentiality, the value of their participation, and explained that there were no right or wrong answers to the survey questions. The surveys were then distributed to the high school students, who completed the survey in approximately 15 minutes. In total, students in 69 classrooms, the school library, the gym, detention rooms, counseling offices, and the teen-parent center were surveyed. Once students completed their survey, research members immediately collected the surveys and handed them to a graduate student leader. The surveys were then stored in a locked cabinet in the principal investigator's office. Students were identified via their school identification number, which ensured that students were not surveyed more than once.

### **Measures**

**Student Networks of Encouragement.** Data from the Student Networks of Encouragement (SNE; Witenko, Mireles-Rios, & Rios, 2016) instrument was intended to

measure 20 different sources of encouragement. The question asked to measure the encouragement data was, “*Have you been encouraged by the following people to enroll in honors/AP courses?*” Although the original research questions aimed at exploring all 20 sources of encouragement (e.g., parent/guardian, teacher, counselor, etc.), due to the small size of the four samples used in this analysis and the necessary sample size needed for LCA there was a need to reduce the number of sources that could be analyzed. Given the smallest sample considered in this study (White students in the basic track,  $n = 93$ ), the number of sources of encouragement was reduced from 20 to nine. The process of selecting these nine sources of encouragement among the 20 potential sources of encouragement will be discussed in the following sections.

**Reduction of source of encouragement indicators.** Nine sources of encouragement that were selected based on theory and descriptive statistics. To help guide the decision of which sources of encouragement to retain, the different sources of encouragement were organized into three general categories: (1) Traditional Sources; (2) College Sources; (3) Extended Sources. Within each of these categories, two to four sources of encouragement were selected. In the following subsections, the selection process of the sources of encouragement will be explained in according to these three classifications of sources of encouragement, and the operationalization of the variables will be explained.

**Traditional sources.** Parent, teacher, guidance counselors, and peers are traditional sources of encouragement that are often considered in research concerning student social support networks and therefore were selected to represent the traditional sources. Because the SNE had five peer sources of support, we had to select one among the five peer sources. The “*Friends who have been in or are enrolled in Honors or AP courses*” was selected because

research has shown that a close friend is more likely to provide emotional support (e.g., encouragement) than an acquaintance.

**College sources.** The college sources of encouragement, such as “*College Recruiter*,” “*College/Career Counselor*,” and “*Program Counselor*” were selected because college counselors provide information to students regarding the college application process and these counselors can also provide encouragement to enroll in honors/AP courses. As a result, these three college sources of encouragement were included in the LCA models.

**Extensive sources.** AVID teachers and club advisors were sources of encouragement that were chosen to remain in the category of extensive sources of encouragement. The AVID program is a national program serving more than 1 million students with an aim to support underrepresented students (for more see [avid.org](http://avid.org)), thus it was determined that seeing whether there was a positive influence of the AVID program with respect to encouragement into honors/AP courses was an important contribution to education policy. This is also a unique program in which students enrolled in the program have a dedicated AVID class with a teacher trained in the AVID program.

When considering sport coach and club advisor sources of encouragement, only club advisor was retained. The reason being is that all students at Riverland High School can participate in a school club, whereas only a select group of students can participate in high school sports. Additionally, descriptive statistics revealed that participation in a club at Riverland High School was more evenly distributed between Latina/o and White students in both the honors/AP track and the basic track than was participation in sports. As a result, AVID and Club Advisor were selected as indicators to be included the LCA models.

**Coding Indicators.** The following coding mechanism was used to dichotomize the nine sources of encouragement from the SNE data. Students who did not select any response for a particular source of encouragement (e.g., *Have you been encouraged by the following people to enroll in Honors or AP courses?*) were coded as missing (i.e., “999”). In reviewing the responses to the surveys, students who did not select any response to one of the sources of encouragement often wrote in comments, such as “doesn’t apply,” “N/A,” and “don’t have this class,” and as a result we concluded that students who did not select a particular source of encouragement were doing so because that source did not exist in the student’s network. Furthermore, never being encouraged and not acknowledging any form of encouragement is theoretically equivalent: a student who does not have a sibling cannot receive encouragement from a sibling, and a student who has a sibling, but does not receive encouragement is logically equivalent: In both cases, neither student receives encouragement. Students who selected “*I was never encouraged by this person*” were coded as “0.” Missing responses (i.e., values of “999”) and “*I was never encouraged by this person*” (i.e., values of “0”) were collapsed into one category (i.e., value of “0”).

Students who selected “*I was encouraged, but it was not important,*” “*I was encouraged and it was somewhat important,*” “*...very important,*” and “*...extremely important*” were coded as “1.” Using this coding mechanism, a binary variable was created to determine if a student received encouragement from any of the nine sources of encouragement, where “1” = yes, received encouragement, and “0” = no, did not receive encouragement.

### **Covariates.**

The four covariates that were used in the modeling process are discussed below.

**Gender.** Data on gender was collected on the survey, in which students self-reported their gender as either male or female. The dichotomized variable was coded as male = “0” and female = “1.”

**School Activities.** Data on student involvement in extracurricular activities and was gathered on the survey, in which students were asked: “*This year, have you participated in any extracurricular activities?*” Students were provided with three options: (1) “*Yes, a non-Riverland extracurricular activity*”; (2) “*Yes, a Riverland extracurricular activity*”; (3) “*No.*” Students who responded “*Yes, a Riverland extracurricular activity,*” were coded as “1.” Students who only selected (1) “*a non-Riverland extracurricular activity,*” or “*No*” were coded as “0,” meaning that they did not participate in a Riverland extracurricular activity. Thus a binary variable was created with “1” = yes, participated in a school extracurricular activity, and “0” = did not participate in a school extracurricular activity.

**School Sports.** Data on student involvement in school sports was gathered on the survey, in which students were asked: “*This year, have you played on a sports team?*” Students were provided with three options: (1) “*Yes, a non-Riverland sports team;*” (2) “*Yes, a Riverland sports team;*” (3) “*No.*” Students who selected (2) “*Yes, a Riverland sports team,*” were coded as “1,” while students who selected (1) “*a non-Riverland sports team,*” or (3) “*No*” were code as “0.” Thus a binary variable was created with “1” = yes, participated in a school sport, and “0” = did not participate in a school sport.

**Parental education.** The student survey collected data on both the student’s mother’s and father’s educational level. The following question was asked: “*What’s the highest level of education your mom has completed?*” and “*What’s the highest level of education your dad has completed?*” Students could select among eight response options: (1) “*K-8th;*” (2)



“Some High School;” (3) “Some College;” (4) “Graduate from a 2-year community college (Associate’s Degree);” (5) “Graduated from a 4-year university (Bachelor’s Degree);” (6) “Graduated from graduate school, law school, medical school, or veterinary school;” (7) “I don’t know.” Pearson correlations were conducted between the mom’s highest educational level and father’s educational level, and were determined to be highly correlated at  $r = .76, p < .001$ . As a result, mom’s highest education level and dad’s highest education level were collapsed into one variable, “parent’s highest education level,” which used the highest education level of either parent.

To provide a more parsimonious statistical model and interpretation of the effects of parental education levels on students’ social support networks, the six levels of parent’s highest education level were collapsed into one: parents with a high school diploma and parents without a high school diploma. Students who’s parent’s highest educational level was either (1) “K-8<sup>th</sup>” or (2) “Some High School,” were coded as “0,” while students who’s parent’s highest educational level were (1) “Some College;” (2) “Graduate from a 2-year community college (Associate’s Degree);” (3) “Graduated from a 4-year university (Bachelor’s Degree);” or (4) “Graduated from graduate school, law school, medical school, or veterinary school,” were coded as “1.”

### **Methodological Approach for the Current Study**

**Descriptive Statistics.** The first step in exploring the racial inequality between the two academic tracks was to compare the proportion of Latina/o and White students enrolled in the honors/AP track and the proportion of Latina/o and White students enrolled in the basic academic track. After creating separate samples based on the students’ academic track and their race, a variety of descriptive variables, such as a student’s GPA and a student’s

parental education level, were used to answer questions about student characteristics. Four groups were created for comparison: (1) Latina/o students enrolled in the honors/AP track; (2) White students enrolled in honors/AP track; (3) Latina/o students enrolled in the basic track; (4) White students enrolled in the basic track.

**Logistic Regression/Odds Ratios.** This study also explores questions regarding whether racialized academic tracking is present in this school. While the descriptive statistics provide a descriptive understanding of the students enrolled in the honors/AP track and the basic track, we are not able to determine whether race is a factor in students being placed in one academic track over another. A logistic regression and odds ratio were used to understand the probability of a given student being enrolled in the honors/AP track, while controlling for other variables that may influence track placement, such as a student's GPA.

**Latent Class Analysis to Explore Difference in Encouragement to Enroll in Honors/AP Courses.** Further, this study used latent class analysis to explore patterns of encouragement that students received to enroll in honors/AP courses. Specifically, a latent class analysis (LCA; McCutcheon, 1987; Nylund, Asparouhov, & Muthén, 2007) model was specified on the four groups of students considered in this study to determine if these patterns of encouragement varied across the course and racial groups. Since students could have received different combinations of sources of encouragement, LCA provided a way for us to see patterns in the exorbitant number of possible combinations of encouragement that students received. LCA was a valuable method since it allows for students to be classified into latent classes or groups, which provided a more in-depth understanding of the prominent profiles of encouragement.

**Detailed explanation of LCA.** A latent class analysis (LCA) is an exploratory statistical model used to identify “classes” or groups of individuals based on how they respond to measurements (McCutcheon, 1987; Nylund et al., 2007). One of the benefits of using an LCA model is that it models and quantifies the heterogeneity within populations (Nylund-Gibson, Grimm, Quirk, & Furlong, 2014). As a result, LCA models can be used to provide nuanced information by finding hidden, yet very meaningful, response patterns to a set of survey questions. Instead of only analyzing one survey question at a time, LCA is a multivariate approach, which simultaneously models multiple survey questions and creates classes of students based on how similarly they respond to multiple survey questions.

The assumptions underlying the latent class analysis model are that classes are “mutually exclusive and exhaustive,” (Langeheine, 1988, p. 78); and there is Local Independence (Zhang, 2004).

To determine if the model is a properly fitting one, “goodness of fit,” criteria are used (Bartholomew & Knott, 1999). Models are fit using the maximum likelihood, which “provides asymptotic standard errors of the parameter estimates and a global test of goodness of fit,” (Bartholomew & Knott, 1999, p. 26). The following criteria will be used to assess model fit: the Bayesian Information Criterion (BIC), the Bootstrap Likelihood Ratio Test (BLRT), the Lo-Mendell-Rubin-Likelihood Ratio (LMR), BF, correct model probability (cmP), and the Bayes Factor (BF). Both the LMR and BLRT compare model fit between classes and provide a *p*-value to determine if adding another class improves model fit, e.g., a four-class solution versus a five-class solution (Nylund et al., 2007). The BIC is used “for comparison across several plausible models where the lowest value of a given IC indicates the best fitting model” (Nylund et al., 2007, p. 545). The BF “estimates the ratio of the

probability of the  $(K - 1)$ -class model being the correct model to the probability of the  $K$ -class being the correct model,” (Masyn, 2013, p. 571). While the BF only compares two models, the cmP compares more than two models and any model with a cmP  $> .10$  can be considered as a possible model (Masyn, 2013).

Once a model has been selected based on the above model-fit criteria, the entropy, which ranges between 0 and 1 will be reported. Entropy assumes a model has been selected based on the model-fit criteria, and thus entropy is only used to assess “overall classification of students into latent classes assuming the model is correct” (Nylund-Gibson et al., 2014, p. 443).

### **Statistical Analysis Procedures**

All analyses were conducted using *SPSS version 24.0* and *Mplus version 7.4* (Muthén & Muthén, 1998-2012). *SPSS* was used to compute descriptive statistics of the overall student sample and the four student samples based on a student’s race and academic track. *SPSS* was also used to compute odds-ratios for determining the likelihood of a high-achieving Latina/o student being enrolled in the basic track than a high-achieving White student. Additionally, *SPSS* was used to conduct a logistic regression to determine whether after controlling for academic and demographic variables if Latina/o students were less likely to be enrolled in the honors/AP track.

**Using LCA in this Study.** *Mplus* was used to conduct the latent class analysis (LCA). Four LCA models were conducted with the following samples: (1) Latina/o students in the honors/AP track; (2) White students in the honors/AP track (3) Latina/o students in the basic track; (4) White students in the basic track. Analyses used data from the School Networks of Encouragement instrument (Witenko et al., 2016). When conducting the LCA

models, the three-step approach (Nylund-Gibson et al., 2014) was used because it reduces classification error when including covariates in the model. In LCA covariates are used to help mitigate the error associated with class assignment (Nylund-Gibson et al., 2014). While statistical models do their best to accurately assign individuals to the correct latent class, there is some error that occurs in this process (Masyn, 2013). Adding covariates is a helpful tool for reducing the error of improperly assigning an individual to one latent class over another latent class.

The three-step approach was used because it reduces model error; if the researcher does not fix the classes prior to adding covariates, then the covariates will be treated as class indicators, which changes the emergent classes in unintended ways. However, in this study, because GPA would influence whether someone would encourage a student to enroll in honors/AP courses (e.g., a student who has a C in basic math, would not be encouraged to take honors/AP math), GPA was added in the first step and thus fully controlled for in the creation of the latent classes. Data on students' GPA was provided as part of the official school district data. The decision was made to use the "*Non-Weighted Total GPA*," as this would provide a more equitable analysis between those students enrolled in the honors/AP track and those enrolled in the basic track.

In this study, the first step created classes based on the nine sources of encouragement and the covariate GPA. In the second step, the researcher fixed the measurement parameters of the classes that emerged while accounting for error, and in the third step the covariates of parental education level, gender, involvement in a school sport, and involvement in a school extracurricular activity were added.

Additionally, LCAs can be thought of as “a multivariate data reduction technique for categorical response variables,” (Masyn, 2013, p. 556). The SNE data used in this study has nine binary indicators (nine potential sources of encouragement), where students either selected “yes, received encouragement,” or “no, did not receive encouragement” from a potential source of support. To compute the possible number of combinations of sources of encouragement students can access, the binary options (2) was taken to the exponent of possible sources of encouragement (9) which results in  $(2^9) = 512$  possible combination. Since discussing over 500 combinations of encouragement would be counterproductive, LCA is a tool that can determine if there are interesting patterns in the ways students are accessing these different sources of encouragement. LCA results provide researchers with a method to discuss a plethora of data in a meaningful way, such as clustering these 500 plus combinations of encouragement into approximate 3-7 meaningful classes of encouragement.

## **Chapter 4: Results**

This chapter presents the results to the research questions posed in Chapter 3. First, results comparing the differences across the academic tracks are presented. Then, the unique demographic characteristics of Latina/o and White students within each academic track are provided using in-depth analyses of multiple student demographic variables. Further, findings from odds-ratios and a logistic regression are provided. Lastly, findings from both univariate analyses and multivariate LCA modeling using nine sources of encouragement are discussed.

### **Two Academic Tracks Divided by Race**

Table 1 displays the counts of students in each of the academic tracks at Riverland High School disaggregated by race. As seen in Table 1, there were disproportionate rates of enrollment in the honors/AP track and in the basic track between Latina/o and White students. Looking at the enrollment numbers in English and math courses, it is apparent that more White students are enrolled in honors/AP courses. While 344 White students were enrolled in both an English and a math honors/AP course, only 85 Latina/o students were enrolled in both an English and a math honors/AP course. Conversely, while 405 Latina/o students were enrolled in both a basic English and basic math course, while only 93 White students were enrolled in the basic courses. The unequal representation of Latina/o and White students was more present when looking at students who were enrolled in both English and math courses; however, there was more equitable distribution when comparing whether students were enrolled in one of the two courses (either English only or math only). For example, 116 Latina/o students and 168 White students were enrolled in only a honors/AP English course, and not a honors/AP math course. Additionally, very few students, regardless

of race, were enrolled in only an honors/AP math course: 12 Latina/o students and 11 White students.

Table 1

*School Track Enrollment Numbers in English and Math Courses*

<i>Course Placement</i>	<i>Latina/o</i>	<i>White</i>
Both English/Math Honors/AP	85	344
Honor/AP English Only	116	168
Honors/AP Math Only	12	11
Honors/AP Track	213	523
Both English/Math Basic	405	93

As seen in Figure 1, the two academic tracks at Riverland High School were disproportionately represented according to the student’s race, with 85% of Latina/o students in the basic track compared to 15% of White students in the basic track. Additionally, 65% of White students and 35% of Latina/o students were enrolled in the honors/AP track. Table 2 shows the results of a chi-square analyses which found that the disproportionate representation of Latina/o and White students in the basic and honors/AP track were statistically significant: basic track ( $\chi^2 = 239.253, p = <.001$ ); honors/AP track ( $\chi^2 = 323.261, p = <.001$ ).

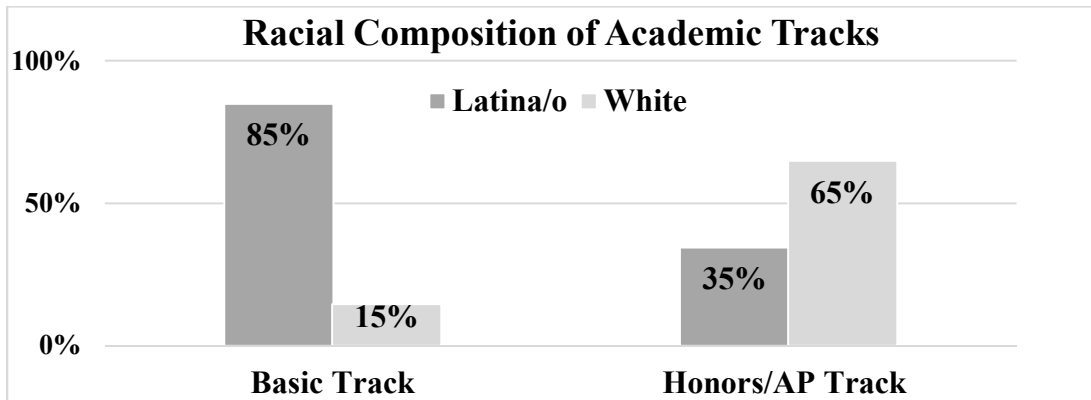


Figure 1. Proportion of Latina/o and White students the honors/AP and basic tracks.



The statistical findings in Figure 1 and Table 2 clearly show that the two academic tracks at Riverland High School that are divided by race, with a greater proportion of White students in the honors/AP track and a greater proportion of Latina/o students in the basic track. Given this finding, the subsequent sets analyses and results provide detailed descriptions of the composition of the different academic tracks, whether other factors beyond race contribute to track placement, and how student’s encouragement into honors/AP courses varies based on track placement and race. Each research question proposed in Chapter 3 with the corresponding findings are provided next.

Table 2.

*School Track Enrollment by Race*

<i>Track Placement</i>	<i>Latina/o</i>	<i>n</i>	<i>White</i>	<i>n</i>	$\chi^2$	<i>p-value</i>
Honors/AP Track***	33.3%	219	82.1%	546	323.261	< .001
Basic Track***	87.0%	567	46.50%	299	239.253	< .001

\*\*\* $p < .001$

**Research Question 1: Controlling for academic and demographic variables, are there disproportionate rates of enrollment into the honors/AP track for Latina/o and White students?**

A logistic regression was run with enrollment in honors/AP track as the dependent variable and parent education, GPA, and race as the independent variables to test whether parent education, GPA, or race influence whether a student was enrolled in the honors/AP track. Results indicated that when controlling for parents’ high school graduation (1 = graduated, 0 = not graduated) and race, students with higher GPAs are 7.1 times more likely to be placed in the honors/AP track than the basic track. A logistic regression was conducted that also included an interaction between race and GPA; however, the interaction between

race and GPA was not significant ( $p = .428$ ). As a result, the original model without the interaction term was interpreted and results are displayed in Table 3. The results indicate that when controlling for parents' education level and GPA, a student is more likely to be placed into the honors/AP track if they are White.

Table 3

*Logistic Regression: Enrolled in Honors/AP Track*

Covariates	<i>B</i>	<i>SE</i>	<i>OR</i>	<i>p</i> -value
Intercept	-5.76	0.46	0.01	<.001
Parent Education	-0.19	0.21	0.83	0.371
GPA	1.96*	0.15	7.10	<.001
Race	1.31*	0.21	0.27	<.001

Additionally, an odds ratio was computed to determine if, when controlling for GPA, Latina/o students are less likely to enroll in the honors/AP track. Considering only students with a GPA of 3.0 or greater and the odds ratio found that Latina/o students with a GPA of 3.0 or greater are 5.61 times more likely to be placed in the basic track (not the honors/AP track) than White students with a GPA of 3.0 or greater.

**Research Question 2: What are the descriptive characteristics of the Latina/o students and White students enrolled in the honors/AP track and basic track?**

The variables used to describe students enrolled in honors/AP and basic tracks were gender, school involvement, employment status, home language, GPA, and parent education level. In the following subsections, the findings of each descriptive variable are explained. Descriptive statistics are displayed in Table 4.

**Gender.** Both Latina and White female students are more likely to be in the honors/AP track than the basic track. As seen in Table 4, specifically, 57% of the Latina/o

honors/AP track sample was female and 54% of the White honors/AP track sample was female. The largest gender disparity was found between male and female White students in the basic track, with 66% of the White basic track sample being male students.

**School involvement.** School involvement was measured by two variables: (a) participation in a school sport, and (b) participation in a school extracurricular activity. As seen in Table 4, a greater proportion of White students in both honors/AP and basic tracks were involved in school sports compared to Latina/o students. Specifically, in the honors/AP track, 58% of White students were involved in schools sports compared to 37% of Latina/o students. While there were differences between Latina/o and White students regarding their involvement in a school sport, this was not the case for involvement in a school extracurricular activity. As seen in Table 4, both Latina/o and White students participated in extracurricular activities at similar rates; however, differences were found between the honors/AP and basic tracks. While 34% of Latina/o students and 35% of White students in the honors/AP track participated in a school extracurricular activity, only 19% of Latina/o students and 20% of White students in the basic track did so.

Table 4

*Percent and Count of Student Characteristics by Academic Tracks and Race*

	Honors/AP Track				Basic Track			
	Latina/o	<i>n</i>	White	<i>n</i>	Latina/o	<i>n</i>	White	<i>n</i>
Gender								
Male	43%	92	47%	243	53%	213	66%	61
Female	57%	121	54%	280	47%	189	34%	31
School Involvement								
Sports	37%	79	58%	300	31%	125	45%	42
Extracurricular Activity	34%	72	35%	185	19%	78	20%	19
Employment Status								
Employed	15%	33	33%	172	16%	65	23%	21
Home Language								
English Only	23%	49	93%	488	15%	62	91%	85
Spanish Only	9%	20	0%	0	19%	78	0%	0
English & Spanish	66%	141	2%	9	64%	261	4%	4

**Employment.** As seen in Table 4, in both the honors/AP track and the basic track, a greater proportion of White students were employed than Latina/o students. Specifically, in the honors/AP track, 33% of White students were employed compared to 15% of Latina/o students. In the basic track, 23% of White students were employed compared to 16% of Latina/o students.

**Home language.** The vast majority of White students spoke only English at home, (93% in the honors/AP track and 91% in the basic track). In contrast, the majority of Latina/o students in both the honors/AP track and basic track lived in a bilingual home, where both English and Spanish were spoken. As seen in Table 4, 66% of Latina/o students in the honors/AP track spoke both Spanish and English at home and 64% of Latina/o students in the basic track spoke both Spanish and English at home.

There was one home language difference between Latina/o students in the honors/AP track and Latina/o students in the basic track worth noting. A greater proportion of Latina/o

students (23%) in the honors/AP track spoke only English at home, while a greater proportion of Latina/o students (19%) in the basic track spoke only Spanish at home. It is important to remember that English language development students (i.e., those not proficient in English) were not included in this sample; thus, while these students spoke only Spanish at home, they were also proficient in English.

**Grade point average (GPA).** Two independent sample *t*-tests were used to compare (a) the mean GPAs of Latina/o and White students in the honors/AP track, and (b) the GPAs of Latina/o and White students in the basic track. The average GPAs for Latina/o students in both academic tracks were significantly lower than the average GPAs of White students. As seen in Table 5, the mean GPA for Latina/o students in the honors/AP track was 3.07 compared to 3.50 for White students; ( $t(333.37) = -9.74, p = < .001$ ). The mean GPA for Latina/o students in the basic track was 2.33 compared to 2.74 for White students; ( $t(494) = -5.39, p = < .001$ ).

Table 5

*Average GPA of Academic Tracks by Race*

	Latina/o			White			<i>(df)</i>	<i>t</i> -test
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>N</i>		
Honors/AP Track	3.07	0.57	213	3.50	0.47	523	333.37	-9.74***
Basic Track	2.33	0.67	403	2.74	0.65	93	494	-5.39***

\*\*\* $p < .001$

**Parent educational level.** Parent education levels were inversely related between Latina/o students and White students, where a greater proportion of White students had parents with higher levels of educational attainment. For example, as seen in Table 6, only one White student (0.2%) in the honors/AP track had a parent with less than a high school diploma, compared to 66 Latina/o students (33%) in the honors/AP track. However, there were some

parent educational level difference between academic tracks and race that are explained in the following subsections.

Table 6

*Parent Educational Level by Academic Track Placement and Race*

Parent Educational Level	Honors/AP Track				Basic Track			
	Latina/o	<i>n</i>	White	<i>n</i>	Latina/o	<i>n</i>	White	<i>n</i>
K-8th	15%	30	0%	0	20%	67	0%	0
Some High School	18%	36	0.2%	1	30%	98	1%	1
High School Diploma/GED	21%	41	2%	10	17%	57	4%	3
Some College	22%	43	6%	31	22%	74	22%	18
Associate's Degree	9%	17	7%	34	7%	22	12%	10
Bachelor's Degree	10%	19	44%	229	3%	9	42%	35
Advanced Degree	6%	12	41%	213	1%	4	19%	16

**Parental education for Latina/o students.** As seen in Table 6, when comparing only Latina/o students, the findings revealed that a greater proportion of Latina/o students in the basic track (50%) had a parent/guardian who never graduated high school, compared to 33% of Latina/o students in the honors/AP track. However, it is important to note that for Latina/o students in the honors/AP track, their parent/guardian education levels were more evenly distributed across educational levels than White students in the honors/AP track. As seen in Table 6, 15% had a K-8 education, 18% had some high school, 21% had a high school diploma, 22% had some college, 9% had an associate’s degree, 10% had a bachelor’s degree, and 6% had an advanced degree. In contrast, of White students in the honors/AP track, only 2% had only a high school diploma, while 6% had some college, 7% had an associate’s degree, 44% had a bachelor’s degree, and 41% had an advanced degree.

**Research Question 3: What proportion of each source encouraged Latina/o and White students in both the honors/AP and basic tracks to enroll in honors/AP courses?**

The answers to this research question provide an understanding of who encouraged Latina/o and White students to enroll in honors/AP courses. To address this question, I used a univariate approach, meaning that the statistical process compares each variable individually. As a result, the findings are interpreted as, “on average,” *this* group of students received more encouragement than *that* group of students for one particular source of encouragement. It is important to highlight that for this question I took a univariate approach because Research Question 5 asks a similar question; however, a multivariate approach will be used. This means that the analyses will combine all sources of encouragement versus analyzing each source of encouragement individually. To best understand the proportions in Table 7, this section will first compare proportions between the honors/AP track and the basic track. Second, comparisons will be made between Latina/o and White students. Last, a summary of the comparisons will be provided.

**Honors/AP track v. basic track.** As seen in Table 7, when comparing students in the honors/AP track with students in the basic track, a greater proportion of students in the honors/AP track received encouragement from all sources of encouragement to enroll in honors/AP courses compared to students in the basic track. The one source where this was an exception was the source program counselor, where a greater proportion of Latina/o students in the basic track (47%,  $n = 192$ ) received encouragement to enroll in honors/AP courses from a program counselor than Latina/o students in the honors/AP track (45%,  $n = 96$ ).

Table 7

*Proportion of Students Who Received Encouragement to Enroll in Honors/AP Courses From Nine Potential Sources of Encouragement*

	Honors/AP Track				Basic Track			
	Latina/o	<i>N</i>	White	<i>n</i>	Latina/o	<i>n</i>	White	<i>N</i>
Parent	90%	191	<b>98%</b>	511	79%	319	<b>88%</b>	82
Teacher	79%	168	<b>82%</b>	430	67%	272	<b>72%</b>	67
Guidance Counselor	<b>88%</b>	187	78%	407	<b>71%</b>	287	67%	62
AP Friend	84%	178	<b>88%</b>	462	<b>63%</b>	254	59%	55
College Recruiter	<b>53%</b>	113	44%	231	<b>49%</b>	198	40%	37
College/Career Counselor	<b>57%</b>	122	47%	245	<b>51%</b>	205	41%	38
Program Counselor	<b>45%</b>	96	27%	142	<b>47%</b>	192	32%	30
AVID Teacher	<b>50%</b>	107	8%	42	<b>43%</b>	174	19%	18
Club Advisor	<b>30%</b>	64	14%	74	<b>30%</b>	122	18%	17

*Note.* Bolded values indicate which racial group had a higher percentage of encouragement from each sources of encouragement within each academic track.

**Honors/AP track: Latina/o v. White students.** When comparing Latina/o and White students in the honors/AP track, Latina/o students received a greater proportion of encouragement to enroll in honors/AP courses from six sources of encouragement: (a) guidance counselor, (b) college recruiter, (c) college/career counselor, (d) program counselor, (e) AVID teacher, and (f) club advisor. White students received a greater proportion of encouragement than Latina/o students from three sources: (a) parent, (b) teacher, and (c) AP friend. As seen in Table 7, although a greater proportion of White students (98%) receive encouragement from their parent(s) than Latina/o students (90%), it should be noted that for both groups, receiving encouragement from a parent was the most popular source among all nine sources.

**Basic track: Latina/o v. White students.** Within the basic track, Latina/o students had higher proportions of encouragement to enroll in honors/AP courses than White students for seven sources: (a) guidance counselor, (b) AP friend, (c) college recruiter, (d)



college/career counselor, (e) program counselor, (f) AVID teacher, and (g) club advisor. Similar to the results in the honors/AP track, White students in the basic track received a greater proportion of encouragement from their parent(s) and teacher than Latina/o students. Similar to findings in the honors/AP track, although a smaller proportion of Latina/o students (79%) received encouragement from their parent(s) than White students (88%), for both groups, parent(s) was the highest endorsed source of encouragement among the nine sources.

**Research Question 5: What are the main profiles of encouragement that Latina/o and White students in the honors/AP and basic tracks received to enroll in honors/AP courses?**

Findings to this research question will be explained in four sections. First, the fit statistics for each LCA model will be discussed. Second, after an explanation of the models selected based on the fit statistics, entropy levels will be provided as a means for providing further evidence for the selection of the chosen model, as entropy determines overall goodness of model fit. Third, figures and explanations of the item-probability plots for the four student groups will be discussed, with common findings regarding the common latent classes that emerged. After each of the four item-probability plots are analyzed, a final section will combine all results and show differences and similarities among the LCA models for the four groups of students.

**LCA fit statistics.** In the first step of the 3-step modeling process, the latent classes were estimated freely without any influence of covariates. The following fit statistics refer to this first step of the modeling process. Table 8 provides the fit statistics for the four student groups that were analyzed. Bolded statistics indicate the best model fit for that particular fit

criteria. After an explanation of the different models selected based on the fit statistics, the emergent latent classes will be discussed.

***Latina/o honors/AP students.*** Table 8 shows the fit statistics for Latina/o students enrolled in the honors/AP track. As seen in Table 8, the BIC, BF and cmP suggests a three-class model, however the BLRT and LMRT indicate a four-class model as being the best model. The BF and cmP are often supplementary fit statistics and are highly related with the BIC. Hence, these findings can be interpreted as only one primary fit statistic, the BIC, indicated a three-class solution, while two primary fit statistics, the BLRT and LMRT indicated a four-class solution. Further, an examination of the item probability plots revealed the four-class solution showed the *Parental/Few Sources* class, which disappeared in the three-class solution. Given the importance of identifying students who have few sources of encouragement in their networks, and that it has statistical support from the BLRT and LMR, the four-class solution was selected.

***White honors/AP track.*** As seen in Table 8 the fit statistics for White students enrolled in the honors/AP track shows that a four-class model is the best-fitting model. Although the BF and cmP suggest a three-class model, the BIC, BLRT, and LMRT, (which are stronger fit statistics than the BF and cmP) recommend a four-class model. As a result, the four-class model was selected for the White honors/AP student sample.

***Latina/o basic track.*** Table 8 shows the fit statistics for Latina/o students enrolled in the basic track. Although the BLRT suggests a four-class model, the BIC, LMRT, BF, and cmP suggest a three-class model. As a result a three-class model was selected for the Latina/o basic student sample.

Table 8

*Fit Statistics for Latent Class Analysis Models*

LCA Models	Number of Classes	Log Likelihood	BIC	<i>p</i> -value of BLRT	<i>p</i> -value of LMRT	BF	cmP
Latina/o Honors Track	1	-1071.85	2191.94	-	-	<.0001	<.0001
	2	-953.58	2009.03	<.0001	<.0001	0.799	0.440
	3	-926.55	<b>2008.58</b>	<.0001	0.008	<b>&gt;10</b>	<b>0.550</b>
	4	-911.05	2031.19	<b>&lt;.0001</b>	<b>0.005</b>	-	<.0001
	5	-904.96	2072.63	1.000	0.592	-	<.0001
White Honors Track	1	-2152.73	4361.80	-	-	<.0001	<.0001
	2	-1914.28	3947.50	<.0001	0.000	<.0001	<.0001
	3	-1841.62	3864.77	<.0001	0.001	<b>&gt;10</b>	<b>0.999</b>
	4	-1821.37	<b>3886.87</b>	<b>&lt;.0001</b>	<b>0.002</b>	-	<.0001
	5	-1812.05	3930.83	0.162	0.043	-	<.0001
Latina/o Basic Track	1	-2343.65	4741.33	-	-	<.0001	<.0001
	2	-1885.90	3885.86	<.0001	<.0001	<.0001	<.0001
	3	-1812.66	<b>3799.42</b>	<.0001	<b>&lt;.0001</b>	<b>&gt;10</b>	<b>0.999</b>
	4	-1795.69	3825.54	<b>&lt;.0001</b>	0.201	-	<.0001
	5	-1785.42	3865.03	1.000	0.199	-	<.0001
White Basic Track	1	-484.82	1010.43	-	-	<.0001	<.0001
	2	-413.66	913.43	<.0001	0.091	0.021	0.020
	3	-387.12	<b>905.69</b>	<.0001	<b>0.001</b>	<b>&gt;10</b>	<b>0.980</b>
	4	-375.60	927.98	<b>0.030</b>	0.100	-	<.0001
	5	-369.89	961.89	0.667	0.563	-	<.0001

*Note.* BIC = Bayesian Information Criterion; ABIC = Adjusted BIC; BLRT = Bootstrap Likelihood Ratio Test; LMRT = Lo-Mendell-Rubin Adjusted Likelihood Ratio Test; BF = Bayes Factor; cmP = Correct Model Probability. Bolded values indicate the preferred model by the given fit index.

**White basic track.** Similar to the Latina/o basic track sample, the White basic track sample resulted in similar fit statistics. As seen in Table 8, the BLRT suggests a four-class model, however the BIC, LMRT, BF, and cmP indicate that a three-class model is the best fit. As a result a three-class model was selected for the White basic track student sample.

**Summary of fit statistics.** Four samples of LCA models were analyzed using the fit statistics: BIC, BLRT, LMRT, BF, and cmP. While some fit statistics had conflicting results, (e.g., some fit statistics pointed to a three-class model, while other pointed to a four-class

model), in all samples, only one primary fit statistic (e.g., either the BIC, BLRT, or LMRT) had a conflicting result. As a result, the model fit indices in conjunction with the item probability plots were used in selecting either a three-class or four-class model. One finding that should be highlighted is that regardless of whether a student identified as Latina/o or White, the honors/AP track samples resulted in a four-class model, while the basic track samples resulted in a three-class model.

**Entropy.** After selecting the models based on the above model fit criteria, entropy was assessed to determine overall model fit. Although there is no established set criteria for entropy levels, higher entropy levels (e.g., closer to 1) provide good model fit overall (Jung & Wickrama, 2008). As seen in Table 9, the entropy levels for all four models selected had entropy greater than .80, indicating the models have good overall fit.

The entropy for the four-class model selected for Latina/o students in the honors/AP track had an entropy level of .81. Similar results were found for the four-class model selected for White students in the honors/AP track, which had an entropy level of .80. Entropy levels remained high for the models selected in the basic track, with the three-class model for Latina/o students having an entropy level of .83, and the three-class model for White students having an entropy of .86—the highest entropy level of all selected models. These entropy levels indicate that the models selected provided good overall fit. A detailed explanation of the different latent classes is discussed next with the corresponding item probability plots for each of the four samples.

Table 9

*Entropy Levels*

LCA Models	Number of Classes	Entropy
Latina/o Honors/AP Track	1	-
	2	0.76
	3	0.78
	<b>4</b>	<b>0.81</b>
	5	0.82
White Honors/AP Track	1	-
	2	0.83
	3	0.72
	<b>4</b>	<b>0.80</b>
	5	0.75
Latina/o Basic Track	1	-
	2	0.89
	<b>3</b>	<b>0.83</b>
	4	0.82
	5	0.86
White Basic Track	1	-
	2	0.82
	<b>3</b>	<b>0.86</b>
	4	0.87
	5	0.82

*\*Note.* Bolded values correspond to the number of classes that were selected based on the fit indices.

**Item Probability Plots**

The item probability plots are used to interpret the probability of the student sample that endorsed a particular survey item. When examining the item probability plots, the lines indicate the latent class that emerged from the latent class analysis. The numbers on the vertical axis note the probability of students who said they received encouragement from a particular source of encouragement, with 1.0 indicating that 100% of students stated they received encouragement. For example, Figure 2 shows the item probability plot for Latina/o students in the honors/AP track. The plot shows a blue line at the top of the graph indicating

that more than 90% of students in this latent class stated that they received encouragement from all sources of encouragement, except a club advisor. The small dip of the blue line for the source club advisor should be interpreted that there was an approximately 80% probability of students in this blue class stating that they received support from a club advisor.

Before each item probability is explained in detail, it should be noted that the item probability plots in this study revealed similar emergent classes across all four student groups: Latina/o; White; honors/AP track; basic track. In other words, the result of the independent analysis of the four groups resulted in profiles of student encouragement classes that were the same regardless of the students' race or academic track placement. Although the profiles were the same across student groups, one latent class did not emerge for students enrolled in the basic track. The *Traditional & College* class did not emerge for students in the basic track. A detailed explanation for the reasons of this phenomenon is explained next. Additionally, the four classes that emerged with their corresponding labels and definitions will be explained in the following section.

### **Emergent Classes: Prominent Profiles of Encouragement to Enroll in Honors/AP Courses**

This section provides an explanation of the four classes that emerged and the names of the classes that were created based on the latent class analysis models.

**Traditional.** This class is composed of students who received encouragement to enroll in honors/AP courses from their parents, teacher, guidance counselor, and a friend in honors/AP course. This was labeled the *Traditional* class because traditionally social network

researchers only focus on these sources of encouragement. The *Traditional* class is denoted by a green line in the item probability plots.

**Traditional and College.** This class is composed of students who received encouragement to enroll in honors/AP courses by the aforementioned traditional sources (parent, teacher, guidance counselor, and AP friend) *and* personnel that support students with college access (college recruiter, college/career counselor, and program counselor). As a result, the *Traditional and College* class of students has received encouragement from seven sources of encouragement. The *Traditional and College* class is denoted by a red line in the item probability plots.

**Traditional, College, and Extensive.** This class is composed of students who received encouragement to enroll in honors/AP courses by all sources in their network. Hence, this class is a combination of the *Traditional* sources (parent, teacher, guidance counselor, and AP friend) *and* personnel that support students with college access (college recruiter, college/career counselor, and program counselor) *and Extensive* sources, which included the school's AVID teacher and club advisor. In total, these students received encouragement to enroll in honors/AP courses from all nine sources that were included in the LCA models. In other words, everyone encouraged these students to enroll in honors/AP courses. The *Traditional, College, Extensive* class is denoted by a blue line in the item probability plots.

**Parental/Few Sources.** In contrast to the above classes, the *Parental/Few Sources* class is composed of students who received encouragement from very few sources, or the greatest proportion of encouragement to enroll in honors/AP courses came from their parents. The *Parental/Few Sources* class is denoted by a purple line in the item probability plots.

Now that the emergent classes have been explained, in the following sections each student sample will be discussed individually with the corresponding item probability plots and related findings for that particular student sample.

**Latina/o honors/AP track.** The item probability plot in Figure 2 presented the four emergent classes of students, or four prominent profiles of encouragement. As stated earlier, four classes emerged for Latina/o students in the honors/AP track. The majority of Latina/o students in the honors/AP track 39% ( $n = 84$ ) were identified in the *Traditional and College* class (indicated by the red line) because they received encouragement to enroll in honors/AP courses by traditional sources (parent, teacher, guidance counselor, and AP friend) and college sources (college recruiter, college/career counselor, and program counselor).

The second most popular class that emerged with 33% ( $n = 70$ ) was the *Traditional* class (indicated by the green line), which is students who only received encouragement from their parents, teacher, guidance counselor, and a friend in a honors/AP course.

The third most popular class with 19% ( $n = 41$ ) of Latina/o students in the honors/AP track was the *Traditional, College, Extensive* (indicated by the blue line), which are students who have received encouragement to enroll in honors/AP courses by every person in their network. In contrast, the fourth class, labeled *Few/Parental Sources* (indicated by the purple line) had very few Latina/o students enrolled in honors/AP. These are students who received encouragement from few sources of support. Only 9% ( $n = 18$ ) Latina/o students in the honors/AP track emerged in this class.

**White honors/AP track.** Similar to Latina/o students in the honors/AP track, as seen in Figure 3, item probability plots for White students in the honors/AP track provided four



similar profiles of encouragement, however the proportion in each class differed from the Latina/o student sample.

The majority of White students in the honors/AP track, 60% ( $n = 315$ ) were identified in the *Traditional* class (indicated by the green line). The second most popular class was the *Traditional and College* class (indicated by the red line) with 22% ( $n = 116$ ) of White students in the honors/AP track emerging in this class. The third most popular class with 10% ( $n = 50$ ) of White students in the honors/AP track was the *Parental/Few Sources* (indicated by the purple line), which, for the White students, resulted in the greatest encouragement coming from their parents. The fewest number of White honors/AP students emerged in the *Traditional, College, and Extensive* class (indicated by the blue line) with only 8% ( $n = 42$ ).

**Latina/o basic track.** In contrast to the above item probability plots for Latina/o and White students in the honors/AP track that showed four-classes, the item probability plots for the basic track for both Latina/o and White students resulted in a three-class solution. In the basic track, the class that did not emerge was the *Traditional and College* class (indicated by the red line in the other plots). As seen in Figure 4, for Latina/o students in the basic track, the most popular way in which students received encouragement to enroll in honors/AP courses was through the *Traditional* sources of encouragement (indicated by the green line); 41% ( $n = 166$ ) of Latina/o students in the basic track emerged in this class. The second most popular class to emerge from the model was the *Traditional, College, Extensive* (indicated by the blue line), which accounted for 38% ( $n = 153$ ) of Latina/o students in the basic track. The smallest class to emerge was the *Parental/Few Sources* (indicated by the purple line), which accounted for 21% ( $n = 86$ ) of Latina/o students in the basic track.

**White basic track.** Similar to the Latina/o basic track item probability plot, as seen in Figure 5, White students in the basic track had three prominent ways of receiving encouragement to enroll in honors/AP courses. The class with the greatest proportion was the *Traditional* class (indicated by the green line), in which 45% ( $n = 42$ ) of White students in the basic track received encouragement to enroll in honors/AP courses. This class was followed by the *Parental/Few Sources* class (indicated by the purple line), with 41% ( $n = 38$ ) of White students in the basic track assigned to this class. The fewest number of White students in the basic track emerged in the *Traditional, College, Extensive* class (indicated by the blue line) with only 14% ( $n = 13$ )

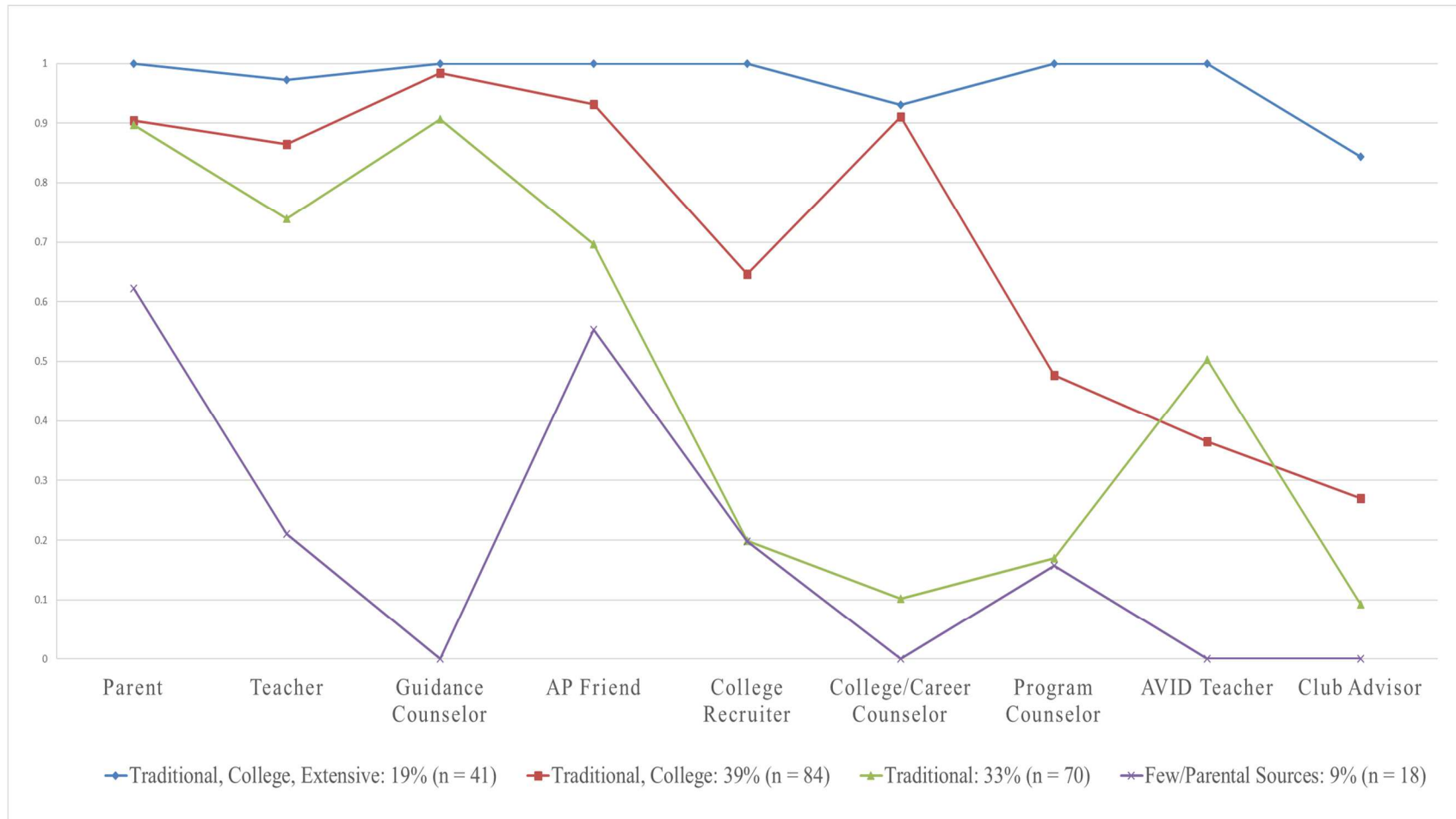
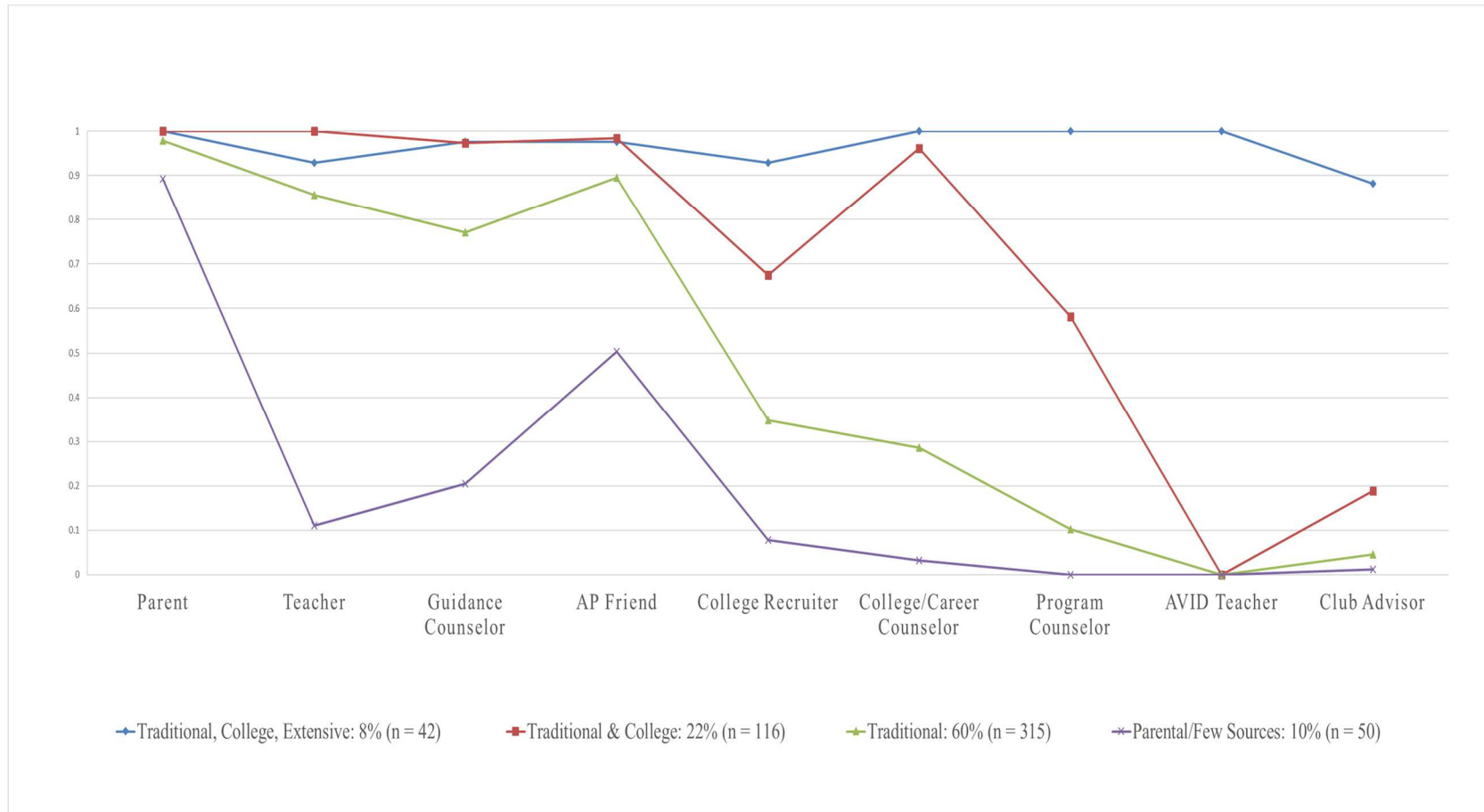


Figure 2. Item probability plot for the latent class analysis of sources of encouragement to enroll in honors/AP courses for Latina/o students in the honors/AP track.



*Figure 3.* Item probability plot for the latent class analysis of sources of encouragement to enroll in honors/AP courses for White students in the honors/AP track.

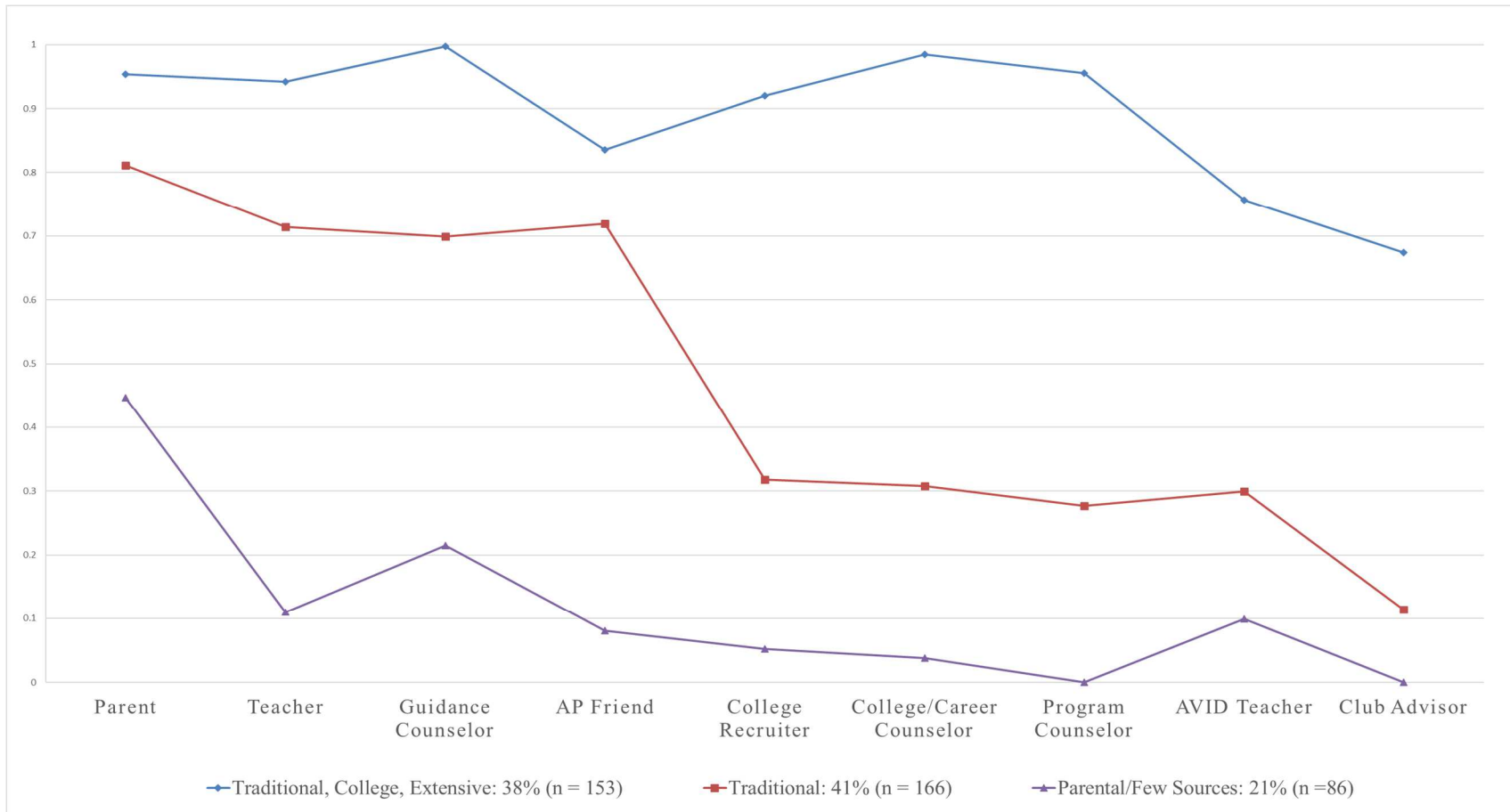


Figure 4. Item probability plot for the latent class analysis of sources of encouragement to enroll in honors/AP courses for Latina/o students in the basic track.

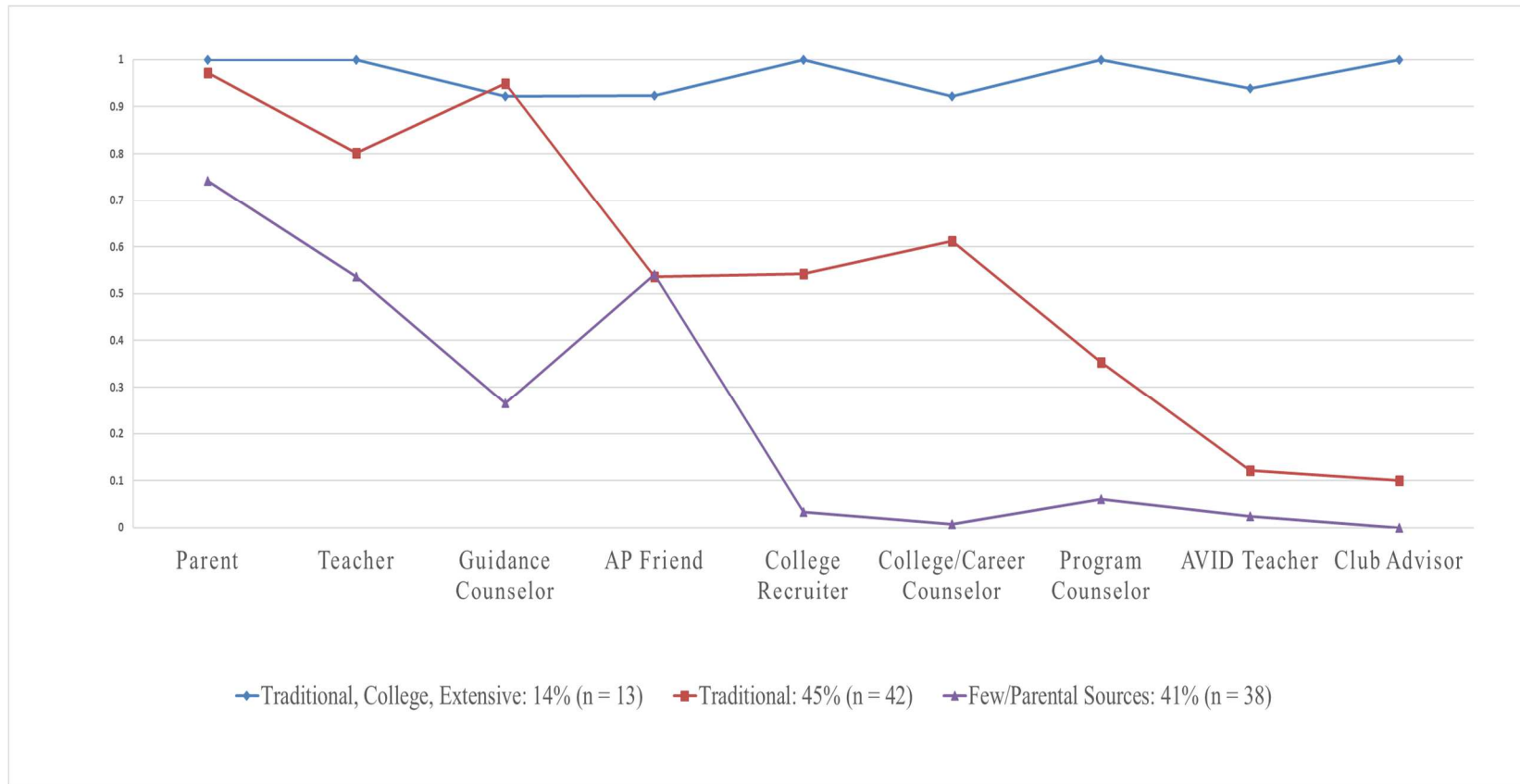


Figure 5. Item probability plot for the latent class analysis of sources of encouragement to enroll in honors/AP courses for White students in the basic track.

**Comparing four LCA models.** This section summarizes the findings presented in Figures 2, 3, 4, and 5 in a comparative analysis. First, the different classes that emerged between students in the honors/AP track and those in the basic track, regardless of race, are compared. Second, within each academic track, the classes that emerged for Latina/o and White students are compared.

**Honors/AP v. basic tracks.** Students in the honors/AP track and students in the basic track had different profiles of encouragement. While students in the honors/AP track had four profiles of receiving encouragement to enroll in honors/AP courses, students in the basic track had only three. The profile that was missing in the basic track was the *Traditional and College* class. This *Traditional and College* class that was present in the honors/AP track includes not only traditional sources (parent, teacher, guidance counselor, and peers), but also personnel that focus on college access (college recruiter, college/career counselor, and program counselor).

**Honors/AP: Latina/o v. White.** When comparing the profiles of encouragement for Latina/os in the honors/AP track with White students in the honors/AP track, important differences between the proportion of Latina/o students and the proportion of White students in each emergent class were found. As seen in Table 10, the greatest proportion of Latina/o students in the honors/AP track (39%) received encouragement from the *Traditional and College* sources. In contrast the greatest proportion of White students in the honors/AP track (60%) received encouragement from *Traditional* sources.

Table 10

*Class Proportions by Race and Academic Track*

Latent Classes: Sources of Encouragement	Honors/AP				Basic			
	Latina/o	<i>n</i>	White	<i>n</i>	Latina/o	<i>n</i>	White	<i>n</i>
Traditional, College, Extensive	19%	41	8%	42	38%	153	14%	13
Traditional	33%	70	<b>60%</b>	315	<b>41%</b>	166	<b>45%</b>	42
Traditional & College	<b>39%</b>	84	22%	116	-	-	-	-
Parental/Few Sources	9%	18	10%	50	21%	86	41%	38

*Note.* Bolded values indicate the greatest proportion for each track.

Proportional differences are also noted in the *Traditional, College, Extensive* class with 19% of Latina/o students in the honors/AP courses receiving encouragement from all sources of encouragement, whereas only 8% of White students received encouragement from all sources. This finding adds to the previous finding that Latina/o students are receiving encouragement from extended sources beyond the traditionally measured roles of parents, teacher, guidance counselor, and peer. As seen in Table 10, one similarity between Latina/o and White students in the honors/AP track is that few students were in the *Parental/Few Sources* class: 9% of Latina/o students and 10% of White students were classified into this class.

**Basic Track: Latina/o v. White.** In the basic track, both Latina/o and White students received the greatest proportion of encouragement to enroll in honors/AP courses from *Traditional* sources. As seen in Table 10, specifically, 41% of Latina/os and 45% of White students in the basic track received encouragement from these *Traditional* sources. There were greater differences between Latina/o and White students with respect to the *Traditional, College, Extensive* class, where 38% of Latina/os and 14% of White students were assigned to this class, and the *Parental/Few Sources*, where 21% of Latina/os and 41% of White



students received *Parental/Few Sources*. When examining the differences between the *Traditional, College, Extensive* class and the *Parental/Few Sources* class, the findings show that while Latina/o students are more likely to access support from multiple sources, White students are more likely to receive encouragement from only their parents.

**Research Question 5: What is the descriptive composition of the emergent classes for the four samples: (a) Latina/o honors/AP track, (b) White honors/AP track; (c) Latina/o basic track, and (d) White basic track?**

This section discusses whether particular student characteristics (e.g., GPA, gender, parent education levels, and participation in school sports and school activities) influenced whether a student has a greater probability of being in one of the three emergent classes over the reference class. In this study, the reference class is the *Traditional, College, Extensive*.

**Covariates.** Once the emergent classes were identified, covariates were entered into the modeling process to determine whether there were any differences in students being identified into a particular latent class based on the descriptive composition of the student. The following covariates were analyzed: (a) parent education level, (b) gender, (c) involvement in a school sport, and (d) involvement in a school extracurricular activity. As seen in Table 11, three covariates were found to be statistically significant.

Latina/o students in the honors/AP track were less likely to be in the *Traditional* class and less likely to be in the *Parental/Few Sources* class than the *Traditional, College, Extensive* class if they were involved in an extracurricular school activity. In other words, Latina/o students in the honors/AP track who participated in an extracurricular activity were more likely to be in the *Traditional, College, Extensive* class, with access to multiple sources of support. Additionally, Latina/o students in the basic track who participated in a school

extracurricular activity were less likely to be in the *Parental/Few Sources* class than that *Traditional, College, Extensive* class. While involvement in a school activity had a positive influence for Latina/o students, for White students in the honors/AP track it was involvement in a school sport that resulted in students being in the *Traditional, College, Extensive* class, with access to multiple sources of encouragement. It should also be noted that although there was a statistically significant result for White students whose parents graduated from high school, because the sample was positively skewed and the odd-ratio was greater than 1,000, this result is not being reported.

These results show that involvement in school, whether through an extracurricular activity or school sport are important factors in determining whether students will be in the *Traditional, College, Extensive* class, which provides encouragement to students from every person on their social network.

Table 10

*Log Odds Coefficients and Odds Ratio for the Four-Class Model with GPA as a Predictor Using the Traditional, College, and Extensive Sources as the Reference Class.*

		Honors/AP Track				Basic Track			
		Latina/o		White		Latina/o		White	
<i>Latent Classes:</i>									
<i>Sources of Encouragement</i>	Effect	Logit	OR	Logit	OR	Logit	OR	Logit	OR
<i>Traditional &amp; College</i>									
	HS Graduate	-0.31	0.73	0.74	2.10	-	-	-	-
	Gender	-0.18	0.84	-0.05	0.95	-	-	-	-
	School Sports	0.94	2.55	-0.23	0.79	-	-	-	-
	School Activity	-0.29	0.75	0.50	1.65	-	-	-	-
<i>Traditional</i>									
	HS Graduate	-0.10	0.91	0.34	1.40	0.32	1.38	1.47	4.34
	Gender	-0.22	0.80	0.18	1.20	0.13	1.14	0.09	1.10
	School Sports	0.24	1.27	<b>-0.80*</b>	0.47	-0.05	0.95	0.56	1.75
	School Activity	<b>-1.17*</b>	0.31	0.37	1.44	-0.19	0.83	0.90	2.46
<i>Parental/Few Sources</i>									
	HS Graduate	0.14	1.15	-	-	0.66	1.93	0.45	1.57
	Gender	-0.74	0.48	-0.25	0.78	-0.24	0.78	0.61	1.85
	School Sports	0.24	1.27	0.91	2.48	-0.56	0.57	1.46	4.32
	School Activity	<b>-2.20*</b>	0.11	-0.12	0.89	<b>-0.91*</b>	0.40	-1.07	0.34

*Note.* \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ . Results for each sample are presented in this table for simplicity, but were run independently.

## **Chapter 5: Discussion**

This study aimed to describe the academic tracking experiences of Latina/o and White students at a large high school. One unique aspect of this study is that the student composition at the school was approximately 50% Latina/o and 50% White. Given that the school is located in a city with a mix of Latina/o and White students, and some schools in the district are racially segregated, this equal representation of Latina/o and White students at Riverland High School at first glance may appear impressive. However, a closer examination of the student composition of the high school courses revealed that there were two schools within this school: the honors/AP courses were composed of mostly White students and the basic courses were composed of mostly Latina/o students. Uncovering these racially segregated courses within a racially diverse school was important because it reveals hidden structures of institutional racism that are often overlooked in schools with a racially diverse student population.

This study, however, does not end with another finding that U.S public schools track students into particular courses based on their race—whether that is overtly or covertly. Instead, this study offers a possible mechanism to ameliorate academic tracking. A special aspect of this solution is that it does not require major funding, the signature of a politician, parental approval, or any official requirements. It is a solution that all human beings have access to, including young Latina/o adolescents. It is something as simple as one person encouraging another: a network of encouragement that can circumvent the structural mechanisms of racism.

The idea that people encouraging a student has positive effects does not exceed commonsense, however, the fact that these small moments of encouragement can be incredibly powerful in circumventing institutional structures of oppression is an impressive finding. This study shows the power of networks of encouragement by describing the ways in which Latina/o students use their networks of encouragement to enroll in honors/AP courses. A breakdown of these findings is provided in the following subsections.

### **Academic Tracking.**

Firstly, this study provides further evidence documenting the unrelenting phenomenon of racialized academic tracking in U.S. public schools (Ballón, 2008; Conchas, 2001; Corra et al., 2011; Davis, 2012; Lewis & Diamond, 2015; Oakes & Guiton, 1995; Oakes, 1985; Tenenbaum & Ruck, 2007). At Riverland High School, about 2/3 of White students were enrolled in the honors/AP track, while only about 1/3 of Latina/o students were in the honors/AP track. A skeptical critique of these numbers may be that proportion of Latina/o and Whites students in the school were not equal, and therefore the reason for the unequal representation is a result of unequal samples sizes.

However, another important contribution of this study is that the student population at Riverland High School was evenly split between Latina/o and White students. In fact, the samples in this study were Latina/o  $n_L = 658$ ; White  $n_w = 664$ , a remarkably equivalent sample size for comparing two student groups. The equivalent samples sizes are important because researchers have noted that students who are minorities at their school underperform compared to students who have a significant number of peers with similar demographic characteristics (Benner & Wang, 2014).

Because both Latina/o and White students in this study are equally represented at Riverland High School, they have an equal probability of being admitted into the advanced track. However, despite this equal representation of Latina/o and White students at Riverland High School, Latina/o students were underrepresented in the honors/AP track. Given the disproportionate representation of Latina/o and White students in the honors/AP track, this study explored whether other factors beyond a student's race were contributing to this unequal representation. As a result the following research question was asked:

*Research Question 1: Controlling for academic and demographic variables are there disproportionate rates of enrollment into the honors/AP track for Latina/o and White students?*

Results from a logistic regression found that after controlling for a student's parental education level and GPA, White students were 73% more likely to be placed in the honors/AP track. While the logistic regression included all students, even those who may be failing a course, another statistical analysis was performed with only high-achieving students.

A subsample of students with a GPA of 3.0 or greater was created in order to isolate high-achieving students in the analyses. Using this subsample of high-achieving students, results from an odds ratio found that Latina/o students with a GPA of 3.0 or greater were 5.61 times more likely to be placed in the basic track (not the honors/AP track) than White students with a GPA of 3.0 or greater. These results support similar findings that course assignment is not purely based on meritocratic academic measures (Lucas, 2001; Useem, 1992; Vanfossen et al., 1987; Wells & Serna, 1996; Yonezawa et al., 2002), but in fact race does matter (Artiles & Trent, 1994; Ballón, 2008; Blanchett, 2006; Conchas, 2001; Corra et

al., 2011; Lewis & Diamond, 2015; A. L. Sullivan & Artiles, 2011; Welner & Oakes, 1996; D. Zhang et al., 2014).

After establishing that Riverland High School had two academic tracks that differed by race, and further that race was a contributing factor in whether a student was placed in the honors/AP track or the basic track, questions regarding the descriptive composition of the different academic tracks emerged. The second research question answered these questions.

*Q2: What are the descriptive characteristics of Latina/o students and White students enrolled in the honors/AP track and basic track?*

### **Descriptive Statistics: Student Characteristics of the Honors/AP and Basic Tracks.**

Descriptive statistics were computed to examine the student demographics of those enrolled in the honors/AP and basic tracks. While the statistical differences were already discussed in chapter 4, in the following sections, unique findings as it relates to existing literature and the proposed research questions are discussed.

**Summary of Descriptive Statistics.** For both Latina/o and White students, a greater proportion of students who were female, involved in sports, involved in extracurricular activities, were employed, had a parent with at least a high school diploma, had a GPA of 3.0 or greater, and who either spoke English only or both Spanish and English at home were enrolled in the honors/AP track. Some of these findings have already been supported by existing research, such as female students enrolling in advanced courses at higher rates than male students (*Program Summary Report*, 2016), or students with higher GPAs being assigned to more advanced courses (Rubin et al., 2006). However, some descriptive statistical differences between Latina/o and White students garner further discussion because

either few researchers have examined these differences or they conflict with previous research findings.

### **Employment**

This study found that a greater proportion of White students in the honors/AP track (33%) were employed than Latina/o students (15%). This finding contrasts with a common discourse among teachers and high school administrators that the reason so few Latina/o students are represented in the honors/AP track is because these students are working multiple jobs to support their families.

Other researchers using the NELS:88 dataset study of 25,000 students in 1,000 schools had similar findings to this study, where Latina/o students are about 1/3 less likely to be employed than White students in the 10<sup>th</sup> grade (Warren & Lee, 2003).

Other researchers have noted that when analyzing student employment levels by immigration status, there is greater variability among racial groups. Perreira, Harris Mullan, & Lee (2007) who used data from the National Longitudinal Study of Adolescent Health that included 11,744 students, found that while 23% of first-generation Mexican students worked, only 8% of Mexican students who were third generation and beyond worked. In contrast, while only 8% of first generation White students worked, 77% of third generation and beyond worked. These statistics highlight the importance of considering the vast variability of demographic characteristics within the Latina/o student population, such as U.S. generational status.

While research has shown that students who work more than 20 hours a week are more likely to drop out, researchers have noted that it is important to look at employment status with a student's social-psychological connection to either school or work (Warren &



Lee, 2003). If a student is successful in school and values their education, being employed has less of an affect on whether they will drop out. In contrast a student who is not succeeding in school, and deems work as more important is more likely to drop out (Warren & Lee, 2003).

When discussing racial educational inequalities, some educators prefer to rationalize these inequalities through meritocratic rational, such as poor grades, poor parental involvement, or poor student behavior. This study provides evidence that the rational of Latina/o students working too much is just another false belief in an effort to avoid discussing race.

In fact, the statistics from this study show that a greater proportion of White students are employed in honors/AP courses than Latina/o students, indicating that with a strong school connection, being employed in not a deterrent to educational success. If educators are truly concerned that a student may not be succeeding in school because of their job, placing them in honors/AP courses where students have high educational aspirations and exhibit a strong school connection may actually reduce the effects of the student dropping out because the students will now be surrounded by peers who value their schooling more so than their jobs.

### **Home Language**

While the the vast majority of White students in both the honors/AP track (93%), and basic track (91%) spoke only English at home, the majority of Latina/os in both academic tracks spoke both English and Spanish at home: 66% in the honors/AP track and 64% in the basic track.

While this study is unable to determine the extent of bilingualism of the students who spoke both English and Spanish at home, (e.g. some students may read and write in Spanish, while others may understand Spanish, but are unable to speak Spanish), these statistics still provide important information regarding the level of bilingualism in this school. Additionally, these statistics show that speaking two languages has a null effect; an equal proportion of these bilingual students were represented in both the honors/AP and basic tracks.

Although being bilingual was not related to track placement, for Latina/o students whose home language was only English or only Spanish there was connection to their track placement. A greater proportion of Latina/o students who only spoke Spanish at home were enrolled in the basic track (19%) compared with (9%) in the honors/AP track.

Researchers have noted that parents who do not speak English experience greater barriers in accessing institutional information necessary to navigate the U.S. public school system (Behnke, Piercy, & Diversi, 2004; Ceja, 2006), including information about honors/AP courses (Auerbach, 2002). These numbers further highlight the need for schools to develop more effective practices for disseminating information to Spanish-speaking homes, and informing Spanish-speaking parents/guardians of the importance and benefits of honors/AP courses.

Although only 9% of Latina/o students who speak only Spanish at home were enrolled in honors/AP courses, this statistic can also be viewed in a positive light, by acknowledging that some students are able to access the hidden institutional knowledge of the benefits of honors/AP courses and gain entrance into these prestigious courses.

#### **Parent Education Level.**

While the vast majority of White students have a parent with a high school diploma or higher, and the majority Latina/o students have a parent with a high school diploma or less, when disaggregating these statistics based on multiple parent educational levels, interesting nuances emerge that are worth discussing. While researchers have found a correlation with a parent's education level and their child's academic track placement (Kelly, 2004; Lareau, 1987), this study found that for Latina/o students whose parents do not have high educational attainment levels, some of their children are still accessing the honors/AP track.

Specifically, this study found that while only 2% of White students in the honors/AP track had a parent who did not earn a high school diploma, 33% of Latina/o students in the honors/AP track had a parent who did not earn a high school diploma. These findings are important because they show that students whose parents don't have high levels of educational attainment are still able to access the most advanced high school courses.

Although White, high SES parents use their influence to garner the best courses, teachers, and educational tracks for their children (Ball, 1981; Oakes & Guiton, 1995; Wells & Serna, 1996), this study finds that Latina/o students whose parents have low educational attainment levels are still accessing the best courses, teachers, and academic tracks. This finding supports the work of social capital and social network scholars who have argued that having multiple people in a students' network who provide support is more beneficial than having only a few (Bourdieu, 1986; Stanton-Salazar, 2001, 2010).

Since 33% of Latina/o student in the honors/AP track had a parent who never graduated high school, there is a high probability that their parents lacked the institutional knowledge of navigating a high school curriculum, and the benefits afforded to students in

the honors/AP track. As a result these students may not have relied on their parents for encouragement to enroll in honors/AP courses, but instead reached out to other members in their social network, such as a program counselor or peer.

Research has shown that when a person is unable to access the necessary support from one person, they will attempt to connect with other members in their social network in order to receive the necessary support (Stanton-Salazar, 2001). These parental education findings should be viewed positively, and provide evidence for tempering the discourse that parental education levels determine a student's educational outcome. Instead these findings show that it is important to invest in other resources, such as a college and career counselor, or a program such as the AVID program, in order to help connect students with other adults who can provide the necessary support when a parent does not have the information or experience to do so.

### **School Involvement and School Connectedness.**

Extracurricular activities and sports participation were used as a measure for students' school involvement and school connectedness. While a similar proportion of Latina/o and White students participated in extracurricular activities in both the honors/AP track and the basic track, a greater proportion of Latina/o and White students in the honors/AP track participated in extracurricular activities. While about 20% of students in the basic track participated in an school-based extracurricular activity, about 35% of students in the honors/AP track did so. These findings add to literature that involvement in school extracurricular activities/clubs is beneficial for students (Gardner et al., 2008; Lee, 2002; J L Mahoney & Cairns, 1997; Marsh & Kleitman, 2002; Sciarra, Seirup, & Sposato, 2016). Further, this study adds to the literature on the benefits of student involvement in

extracurricular activities by showing that a greater proportion of honors/AP students were involvement in school activities.

Additionally, there were differences between Latina/o and White students participating in a school sport. Regardless of the academic track, a greater proportion of White students participated in a school sport. Additionally, both White and Latina/o students in the honors/AP track participated in a school sport at higher rates than both White and Latina/o students in the basic track. As a result, involvement in school sports may foster greater school connectedness and access to the social support needed to access the more advanced track, which previous research has supported (Broh, 2002; Eccles et al., 2003; Stanton-Salazar, 2001).

Further in schools where access to school sports is limited or non-existent, these findings indicate that school-based extracurricular activities can provide similar benefits. Given that participation in school sports is often prohibitively expensive and many urban schools lack the geographical space to offer sports, a shift toward schools providing more extracurricular school activities may prove to help ameliorate the educational inequalities that exist between rich and poor schools.

In fact, Marsh and Kleitman (2002) study of 12,084 high school students using the NELS:88 dataset, found that participation in a school's extracurricular activities provided greater benefits to students from lower SES backgrounds and helped ameliorate the educational achievement gap between low and high SES students. These students showed improvement between 10<sup>th</sup> and 12<sup>th</sup> grades on standardized test scores, class grades, homework completion, had higher self-esteem, and greater educational and occupational aspirations. Additionally, Gardner et al. (2008) found that these benefits continue past high

school; students who participated in extracurricular activities in high school were 49% more likely to complete a college degree.

This study provides further evidence for the importance of school-based extracurricular activities. This study expands the benefits of participation in extracurricular activities to students having a larger social network who provide students with encouragement to enroll in honors/AP courses.

### **Beyond The Tracks: Social Support Networks.**

This study went beyond establishing that schools can act as racially biased institutions by participating in racialized academic tracking. Instead this study provides evidence for how students may engage with adults and peers in their lives to receive the necessary encouragement to enroll in honors/AP courses. As a result the following research question offered a comparative analysis of prominent classes of encouragement for enrolling in honors/AP for Latina/o and White students:

*Research Question 3: What are the prominent classes of encouragement that Latina/o and White students received based on whether they were enrolled in the honors/AP track or the basic track?*

Latent class analysis was used to determine the most prominent classes of encouragement from nine potential sources of support. One interesting finding is that while both White and Latina/o students in the honors/AP track had four classes of encouragement for enrolling in honors/AP courses, White and Latina/o students in the basic track had only three classes of encouragement. Specifically, the four classes of encouragement that emerged for students in the honors/AP track were (1) *Traditional*; (2) *Traditional & College*; (3) *Traditional, College, Extensive*; (4) *Parental/Few Sources*. The class that was missing for

students in the basic track was the *Traditional & College* class. This missing class of encouragement is an especially important finding because it shows that students in the honors/AP track are accessing college counselors, while those in the basic track are not. This finding also supports previous research arguing that programs that focus on increasing college access for underrepresented populations, such as Latina/os, are of critical importance for improving overall educational success (Gándara & Moreno, 2002; Mehan et al., 1996; Ohrt, Lambie, & Leva, 2009).

**Most prominent classes per academic track and racial group.** Another important finding that garners discussion are the latent classes that had the greatest proportion of students for Latina/o and White students in both the honors/AP track and the basic track. For Latina/o students in the honors/AP track, the largest class was the *Traditional & College* with 39%. This finding adds further evidence to the importance of college personnel providing encouragement. In contrast, for White students in the honors/AP track, the largest latent class was the *Traditional* class with 60%. This supports previous research that White students are likely to receive support from traditionally measured sources of encouragement (Witenko et al., 2016).

Of the three latent classes that emerged in the basic track, the largest class for both Latina/o and White students was the *Traditional* class. These findings provide evidence that traditional sources of encouragement are insufficient in helping enroll more Latina/o students into the honors/AP courses, and that the combination of *Traditional & College* sources of encouragement proved to be most beneficial.

**Parental/Few Sources.** Another important finding is that the latent class *Parental/Few Sources* exhibited a slight difference between White and Latina/o students.

While approximately 60% of Latina/o students in the honors/AP track and approximately 50% of Latina/o students in the basic track were in the *Parental/Few Sources* class, approximately 90% of White students in the honors/AP track, and approximately 70% of Latina/o students in the basic track were in the *Parental/Few Sources* class. These difference may be related to demographic differences between parents of Latina/o and White students, in which a greater proportion of Latina/o parents have lower educational attainment levels and thus may not be aware of academic tracking in high schools and the benefits of honors/AP courses. This finding supports the previous findings that indicate that schools must find ways to better inform parents about the different educational tracks within a school.

**Demographic Differences between Latent Classes.** There were three statistically significant differences among the latent classes that require further discussion.

**Latina/o Honors/AP Students.** Latina/o students in the honors/AP track were less likely to be in the *Traditional* class or the *Parental/Few Sources* class than the *Traditional, College, Extensive* class if they were involved in an extracurricular school activity. This finding highlights the importance of participating in school-based extracurricular activities because it connects Latina/o high school students to multiple sources of encouragement.

Additionally, Latina/o students in the basic track who participated in a school extracurricular activity were more likely to be in the *Traditional, College, Extensive* class than the *Parental/Few Sources* class. Again this is a positive finding, in that it adds further evidence of the role of extracurricular activities in connecting Latina/o students to multiple sources of encouragement.



**White Honors/AP Students.** White students enrolled in the honors/AP track were 80% less likely to be identified in the *Traditional* class than the *Traditional, College, Extensive* class if they participated in sports. This finding is important in that it shows there are differences between White and Latina/o students in how different activities connect them to more sources of encouragement. While Latina/o students received an added benefit for participating in extracurricular activities, for White students in honors/AP courses that added benefit emerged when they participated in a school sport.

### **Limitations**

One limitation of this study is that it focuses on only one high school with only Latina/o and White students. As a result, the generalizability of the findings should be limited to high schools with a similar student demographic. Another limitation is that because the sample sizes were small for the statistical analysis, not all 20 sources from the Student Networks of Encouragement instrument were used. Different findings may have emerged had the sample size been sufficient to include all 20 sources of encouragement. Another limitation emerged regarding students' employment rates. The survey asked whether students were employed in a part-time or full-time job, however, some students may do domestic work that affects their studies, yet the student did not select this domestic labor as a part-time job.

### **Future Research**

Future studies may want to consider using a larger sample size to test whether similar latent classes emerged when using all 20 sources of encouragement. Additionally, while this study found that there were differences in profiles of encouragement between students in honors/AP courses and those in basic courses, future studies should look at how these students connected to these varying sources of support. Understanding the ways in which

these students accessed honors/AP courses could help policymakers devise plans for helping underrepresented students gain access to honors/AP courses. Another possible future study should consider how different levels of bilingualism in a students' home affect course placement. Lastly, several feminist scholars have asked whether emotional capital transfers into social capital. Using a feminist framework, researchers may want to consider "encouragement" as a form of emotional capital, and test whether it transmits into social, economic, and/or symbolic capital.

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