EXPLAINING THE DISABILITY GAP IN ACCESS TO POSTSECONDARY EDUCATION: THE ROLE OF SOCIAL FACTORS

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Abstract

Recent changes in the U.S. economy have made access to postsecondary education a major factor in socioeconomic success. This has led to increasing rates of college attendance. However, this trend has masked major differences across demographic groups. While researchers have focused on income and racial gaps in college enrollment, students with disabilities have also struggled to enroll relative to other students. Research on students with disabilities has often attributed this disparity to the disability rather than the social forces that tend to influence other forms of social inequality in educational attainment. Using *generalized linear latent and mixed models (gllamm)* on the Education Longitudinal Study, a national sample of high school students, this research attempts to understand whether, and why, students with disabilities are at a disadvantage compared with other students in the postsecondary access process (application, admissions, and enrollment). While they are less likely to attend postsecondary education upon high school graduation, it is unclear whether that is due to their disability or other factors, such as socio-demographic and academic characteristics that resemble those of other students whose educational attainment prospects are also bleak, a lack of self-determination in creating their own trajectory, or as a result of the high schools they attend, which might not have the resources and environment (i.e. academic press and student demographics) needed to help students achieve postsecondary access. We also consider whether postsecondary access for students with disabilities is associated with their experience as special education students, an experience that is institutionally imposed on most students with disabilities. Results show that for students with disabilities and those who received special education services, the likelihood of postsecondary access is heavily contingent on completing the application stage.

Furthermore, although disability and the receipt of special education services plays a significant and negative role in postsecondary access, these influences are explained by differences in the academic profiles of students with disabilities relative to other students. These findings support the notion that the disability gap in postsecondary access is not just a medical phenomenon but one rooted in the social processes of being a student with a disability.

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Chapter I

I. Introduction

a. Statement of the Problem

Education scholars and policymakers have long chronicled the influence of postsecondary education (i.e. any schooling beyond the high school level) in shaping the life trajectories of individuals (Cohn and Geske 1992). In fact, recent transformations in the economy and labor market have made a postsecondary education a near prerequisite for occupational and economic success (Julian and Kominski 2011). Given the increasing relevance of a postsecondary education, it is not surprising that rates of postsecondary attendance have increased. Between 1967 and 2007, the enrollment rates of 18- to 24-year-olds in postsecondary degree-granting institutions (PSI) increased from 25.5% to 38.7% (Current Population Survey 2008). However, this increase in attendance has masked major differences across demographic groups. For example, 42.6% of White 18 to 24-year olds were enrolled in college in 2008 compared to 33.1% of Blacks, and 22.6% of Hispanics.

While scholars have paid attention to these racial/ethnic gaps in enrollment, high school students with disabilities (SWDs) have also struggled to transition to postsecondary education relative to the general student population. Studies show that as few as 19% of out-of-high school SWDs enroll in a postsecondary institution (PSI) (Newman 2005). Furthermore, general education students are three times more likely to attend a PSI than are special education students (Cameto et al. 2004). To address this gap in postsecondary access, the Federal government, via the Individuals with Disabilities Act (IDEA), has mandated transition services for SWDs whose identified disability has posed academic challenges. Transition services are a coordinated set of programs that facilitate the school to post-school

transition for such students (IDEA 1990). The coordinated set of activities is based upon the individual student's needs, taking into account the student's capacity, preferences, and interests. These activities often include instruction, community experience, the planning of employment and other post-school adult living objectives, and, the acquisition of daily living skills. The goal of transition services is post-secondary education, independent living, community participation, a specific job or career, and/or integrated community living. As part of the first goal, teachers and counselors are required to focus on postsecondary admissions requirements if a student seeks to pursue further education (Sitlington, Clark, & Kolstoe 2000).

Many policymakers point to IDEA as a major reason for increasing postsecondary attendance among SWDs. In fact, the number of SWDs attending post-secondary institutions has tripled since the 1970s (Garza 2005). Other researchers attribute increasing enrollments among SWDs to three major trends. First, more students are being diagnosed with learning disabilities (LD). Many of these students enroll in a PSI. Between 1988 and 1998 the proportion of college freshmen reporting a LD has increased 41% (Garza 2005). This trend seems to have changed the profile (in terms of specific developmental, social, and cognitive traits, as well as family and community conditions) of who constitutes a SWD. Many of the LD students who might not have been diagnosed in earlier decades are now highly likely to enroll in a PSI. Second, the high school completion of SWDs increased 17 percentage points between 1987 and 2003 (Office of Special Education Programs 2005). In addition, the percentage of adults with disabilities who completed high school increased 15 percentage points between 1986 and 2004 (National Organization on Disability 2004). Finally, increases in postsecondary enrollment among SWDs have resulted from an increase in the number of

PSIs that provide services to assist SWDs. About 98% of PSIs now provide supports such as specialized tutorial services and alternative exam formats (Heath Resource Center 2003).

Despite this progress, SWDs continue to lag behind students without disabilities in postsecondary access. It is important to better understand why this is the case, but the study of SWDs and their postsecondary transition is a fairly unchartered area of research. SWDs are conspicuously absent in the literature on postsecondary access. While the number of postsecondary eligible students identified as having a disability has been increasing, less than 1% of the articles published in top higher education journals focus on students with disabilities or disability related issues (Pena 2011). Of those studies, few have looked past descriptive statistics on the special education population to explore the extent to which disability may influence postsecondary opportunities and the factors that make it more difficult for SWDs to transition to postsecondary institutions.

Until recently, the disability postsecondary gap has been attributed to the disabling impairment, whether cognitive or physical. However, medical explanations are limited in that they neglect how social contexts, especially within schools, can influence the opportunities SWDs have to gain postsecondary access. While disability scholars have embraced this notion, the appreciation for this paradigm has been slow to develop in educational and sociological studies that focus on populations with disabilities. The purpose of this study is to build on this foundation by 1) examining how disability adds to educational inequities, 2) exploring how patterns of postsecondary access for SWDs are similar or dissimilar to students without disabilities, and 3) increasing our understanding of what factors best predict postsecondary access for SWDs. In examining the ways that disability intersects with social factors in the educational system for SWDs, this research can contribute to the theoretical

body of knowledge about postsecondary access for this population along with informing policies that directly impact SWDs.

b. Background

Research on postsecondary access points to an array of factors that may account for differential postsecondary access based on disability status. Many of these involve risk factors that explain differences in postsecondary access among the general student population. Furthermore, SWDs have similar profiles to those students in the general population who have lower levels of educational attainment. That is, they tend to be low-SES, minority, and have lower levels of academic preparedness and achievement. Roughly 25% of high school SWDs live in poverty compared with 20% of students without a disability (NLTS2 2004). Also, Black students constitute 15% of the general student population compared with 21% of the population of SWDs (OSEP 2003).

While demographic characteristics and school-related experiences may create social and academic barriers to postsecondary access for SWDs, they may not fully account for the fact that SWDs have lower postsecondary enrollment rates than minority and low-SES students or general education students with similar academic profiles. The current literature on disability alludes to other factors potential contributing to the disability gap in postsecondary access: 1) self-determination, 2) school-level characteristics, and 3) special education services.

i. *Self-Determination*

With access to postsecondary opportunities problematic for many SWDs, attention has turned to how the personal qualities of SWDs might influence the high school to

postsecondary transition. Prominent among those is self-determination. Although the self-determination construct has been used in various disciplines for decades, its application to disability has been fairly new. Field et al. (1998) define self-determination as the skills, knowledge, and beliefs that enable a person to engage in goal-directed, self-regulated, and autonomous behavior. When acting on these skills and attitudes, individuals have greater ability to control their lives and assume the role of successful adults in society. Self-determination is important to disability issues because it highlights the idea that SWDs must overcome distinctive obstacles in realizing their goals. Moreover, when SWDs show they can make things happen and take responsibility for planning and decision-making, they change perceptions and gain acceptance.

With respect to postsecondary access, self-determination is perceived as important because it can help SWDs navigate the college bureaucracy for disability services. Yet, many SWDs demonstrate limited self-determination (Trainor 2005). Since SWDs are often in special education, rarely do they directly engage in their own education or advocate on their behalf. Services are provided to them upon identification, and a dossier that identifies their needs follows them throughout their educational careers. This passivity in their education limits their potential to be self-determined as they try to transition to college. Meanwhile, SWDs not in special education may also fail to acquire self-determination skills if they are in environments where parents and/or teachers are likely to provide an overabundance of assistance or do things on their behalf.

This lower self-determination can increase barriers to postsecondary access for SWDs. First, lower self-determination may reduce the tendency of SWDs to want to attend and apply to a PSI. Since students with lower levels of self-determination tend to have less confidence

in their abilities, they may not view a postsecondary education as a viable alternative. Second, less self-determination may make it difficult for SWDs to be proactive during the application process. Thus, their applications may not be filled out correctly or sufficiently, thereby reducing their chances of admission. SWDs with lower self-determination may also not be as self-aware and have problems understanding their own abilities and limitations (Wehmeyer 1992). This may result in SWDs applying to PSIs for which they may have greater difficulty meeting eligibility requirements, or applying to fewer colleges thinking they will gain admission. Finally, lower self-determination may make it difficult for SWDs to obtain adequate and appropriate information regarding financial aid, thereby reducing their chances of receiving sufficient aid and influencing their enrollment decisions. The same applies to gathering information about disability services. SWDs may find out only after gaining admissions that a PSI offers insufficient support services, a circumstance which might have been avoided had the student been more proactive in obtaining information. So, while a student may have intentions to enroll, these constraints may force him/her to reconsider.

ii. School-level Characteristics

Given that SWDs share similar profiles to those students in the general population who have lower levels of educational attainment, it is likely that schools also play a role in postsecondary access for SWDs. In other words, a student with a particular disability is more likely to attend a low resource school whose organizational characteristics and practices affect postsecondary access presumably for all students. Three characteristics of secondary

schools are potentially important for postsecondary access: 1) *academic press*, 2) *school resources*, and 3) *student demographic composition*.

Academic press is the degree to which schools are guided by achievement oriented values, goals, and norms (McDill, Natriello, and Pallas 1986; Pace and Stern 1958). The extent of academic press in a given high school may have significant consequences for the postsecondary attendance of all its students. Attending a school with lower academic press may result in lower educational aspirations for all students relative to attending a high school with higher academic press. Students may be less likely to want to graduate with a high school diploma or take more rigorous coursework, including advanced placement classes. These schools ultimately may fail to instill in students the significance of a postsecondary education. Second, students that are enrolled in low academic press schools could be less academically qualified for college. Specifically, schools with lower academic press may not push all students to do their best in terms of course grades or test scores. Taken together, these circumstances make it more difficult for any student to qualify for academic scholarships, thus impacting postsecondary enrollment.

For SWDs, the effects of low academic press could be further compounded in an environment that encourages self-contained classrooms over inclusion and greater exposure to the general education curriculum. This also means that opportunities to engage in college preparatory work are minimized. The quality and availability of postsecondary transition programs may also be negatively impacted at these schools, thus making it difficult for SWDs to learn self-determination skills.

School resources refer to the assets that schools have to enhance student achievement (i.e. finances, teachers, etc.). A lack of quality instructional resources (i.e. teacher quality,

teaching materials, etc.) may create an environment that makes it difficult for schools to help students become academically prepared for postsecondary education. Fewer quality resources can lead to difficulties for students in gathering information. Schools with fewer quality resources may be less equipped to provide information on admissions criteria, financial aid, and transition services. Also, schools with less quality resources may also deter academic preparation enough to negatively affect financial aid, thereby lowering the likelihood of postsecondary enrollment despite admissions.

A lack of resources can also influence programs that impact SWDs as above. Brinckerhoff (1996) addressed the postsecondary choice and transition process for students with learning disabilities in relation to school resources. Although the transition planning process is federally mandated for SWDs, its scope and content are greatly dependent on the institutional resources at the student's school. Ideally, SWDs should have counselors who will work intensely with them on not only developing individualized learning strategies, but on postsecondary preparation. High school counselors should also play an active role in helping students understand their disability along with how they can use their strengths to compensate for their weakness. For this to be a reality for students, they must attend schools with financial resources adequate to have staff that can devote this amount of time and attention to each student, and be knowledgeable about postsecondary options, the application process, transition issues for SWDs, and the specific negative views of disability that students are likely to internalize.

Student demographic composition refers to the features of a school's student body that affect the academic environment. In particular, SES and special education composition may influence the educational experiences of all students, including SWDs. Higher SES schools

are more likely to have resources to not only help their students academically, but to also help their students move on to postsecondary education (McDonough 1997). Studies show that SWDs attending schools with a lower percentage of low-SES students are more likely to apply to and attend college than SWDs attending schools with a higher proportion of low-SES students (Horn and Kojaku 2001; Wagner et al. 1993).

With regards to special education student composition, SWDs in schools with a larger share of these students may be less likely to apply to or be accepted to a PSI. This is because such schools may be less likely to provide a more inclusive education for SWDs, thereby limiting exposure to college preparatory or advanced placement courses. Furthermore, being in a school where a larger percentage of students are in special education and low SES may make it less likely those students will engage with peers who aspire to a postsecondary education, thereby reducing the chance that SWDs will view a postsecondary education as an option.

iii. Special Education Services

Perhaps the most unique aspect of the education of SWDs is that a large subset receives special education services. In fact, while the label and diagnosis of disabilities is often times subjective and even socially constructed, the phrase "students with disabilities" still (in practice, or common parlance) is used to refer to a specific population of students who gain access to specialized educational resources and supports, as opposed to students who learn differently or who face challenges in the formal educational system, but who have not been diagnosed. This distinction is important because it turns disability into a programmatic effect and overlaid on school generated labels and diagnosis.

Moreover, the characteristics and educational experiences of special education students differ from other SWDs in ways that likely affect their access to postsecondary education. One possibility is that special education placement results in less advantageous educational experiences for SWDs receiving special education services. For example, although present-day special education students are spending more time in general instruction than would have been typical in past decades, they are still more likely than their general instruction counterparts to be in a non-academic track in high school (AYPF 2003). Nearly 42% of special education students spend more than a fifth of their time outside general instruction (Office Special Education Programs 2005). While special education students are now less often exempt from standardized testing, they continue to perform at lower than average levels (Office Special Education Programs 2004). Meanwhile, despite improving graduation rates, special education students still drop out of high school at twice the rate of their peers (Office Special Education Programs 2005).

Many argue that these adverse outcomes are the result of a system that holds special education students to lesser academic standards and expectations. For example, in terms of graduation requirements only 19 states require all students to earn the same type of diploma, as a result only 48% of SWDs graduate high school with a standard diploma nationally (Office Special Education Programs 2003). Other states allow SWDs to obtain a standard diploma without completing all requirements by reducing the number of credits needed, offering alternate courses in place of required course credits, or lowering performance criteria (Hechinger and Golden 2007). Meanwhile, other students obtain an IEP diploma or a certificate of completion. This diploma is awarded to those who are 21 years old or have completed at least 12 years of school and met the goals in their IEP. The continued use of

IEP diplomas is a concern because colleges devalue the IEP diploma in their admissions. For example, in New York State, four-year colleges by law cannot accept any student without a Regents diploma, local diploma, or a GED.

Despite these disadvantages, however, special education students may have an edge over other SWDs with respect to moving through the postsecondary process. Special education students may have parents who are better able to negotiate for special services for their child (Ong-Dean 2009). Special education placement, in many instances, is partly dependent on the family's ability to advocate for the services the student needs. If these families are better able to advocate for their students and have more knowledge about the supports their children will need to be successful in school, then students in special education should be in a unique position to leverage their resources, knowledge, and advocacy to navigate the postsecondary process. For example, these parents may effectively advocate for their children to be placed in college preparatory courses or postsecondary transition programs. Thus, even though these students would still have to cope with their disability, they would be in a position of opportunity compared to their other disabled peers whose families may not know the full spectrum of postsecondary resources that their students are entitled to or who are not able to effectively advocate for them.

These competing tensions highlight the importance of distinguishing between special education students and other students with disabilities. Special education services may have effects that are unique from having a disability; and yet given the large percentage of SWDs in special education, these services may also be contributing significantly to the disability postsecondary gap.

c. Summary

In sum, the idea that self-determination, school characteristics, and special education services, along with traditional factors such as socio-demographics and school-related experiences contribute to variations in postsecondary access between and among SWDs suggests that social factors are important in determining postsecondary access for SWDs. That is, disability status may not directly limit postsecondary access after taking into account these influences. This view, however, does not minimize the importance of disability or special education on postsecondary access. Disabilities can vary in both their physiological and cognitive severity as well as the ways in which society responds to students with such impairments. However, recognizing the importance of social factors directs attention to circumstances outside a student's disability as a vital piece in understanding the shortfall in postsecondary access for SWDs.

Such a perspective also challenges the idea that disability itself is the root cause of disparities in educational outcomes among SWDs. Specifically, postsecondary access for SWDs is a function of disability or special education services in so far as having a disability or being in special education is associated with certain levels of self-determination and the types of high schools attended, as well as students' demographic background and academic profiles. Thus, each of these factors (i.e., self-determination, type of high school attended, etc.) potentially contributes to the relationship between disability (or, alternatively, special education services) and postsecondary access.

d. Significance of the Dissertation

The research presented here moves beyond disability-centered explanations of the relatively low postsecondary enrollment rates of SWDs by exploring the social and organizational foundations of postsecondary access for SWDs, and how such factors reinforce social disparities in educational outcomes. Until recently, the discourse on disability and educational outcomes has misattributed the effects of these social and organizational factors to the disability. The main purpose of this dissertation is to adjust for these factors in order to clarify how it is that disability status affects postsecondary access. In doing so, it will also identify those factors that contribute most to the disability gap in postsecondary access. This research also will consider whether receiving special education services places SWDs at a disadvantage in terms of postsecondary access above what would be expected given their demographic and academic profiles.

Despite current research on disability and education, abundant obstacles and gaps in our understanding remain. Such gaps in knowledge imply that policy changes leading to continued progress for SWDs often lack supporting evidence. In order to offer a broader knowledge base for such recommendations and policies, it is essential to have a deeper understanding of the circumstances surrounding postsecondary access for SWDs.

e. Structure of the Dissertation

This dissertation contains this introductory chapter and five subsequent chapters. Chapter II begins by outlining some of the relevant theoretical models used to explain the postsecondary access process. This is followed by a survey of the empirical and theoretical literature on the relationship between self-determination, school characteristics, special education services, and postsecondary access. Specifically, this section illustrates how each

of these factors influences postsecondary access for SWDs. In doing so, this chapter also argues that the relationship between self-determination and educational attainment for SWDs may not be limited to success at the college level. Rather, self-determination may emerge as an important tool for educational attainment early in adolescence as high school students develop postsecondary aspirations, move through the application process, and gain postsecondary access. Chapter III summarizes the key research questions that guide this research. Chapter IV outlines the data and analysis plan used in this dissertation. Chapter V reviews the results of the study for the disability and special education research questions, including descriptive analysis and regression models. Finally, Chapter VI discusses the findings and their implications for public policy and further research.

Chapter II

II. Literature Review

This chapter is organized into four sections. The first section summarizes the major theoretical perspectives that explain how students attain college access. This is followed by a review of previous studies regarding factors that influence postsecondary access for SWDs. The third section describes research relating to three sets of variables important to this study: 1) self-determination, 2) school-level characteristics, and 3) special education services. Finally, this chapter provides an overview of the limitations of current research and how this dissertation attempts to fill these gaps.

a. Theoretical Perspectives on Postsecondary Choice

Researchers have long relied on status attainment and rational choice models of decision-making to examine how students decide to attend a PSI. Status attainment models focus on how students interact with the school environment to influence postsecondary choices (Hossler, Schmit, and Vesper 1999; McDonough 1997). These models consider the effects of SES on educational aspirations and attainment. Meanwhile, rational choice models assume that students make postsecondary decisions by weighing the costs and benefits of alternatives, and then selecting the option that maximizes value based on their inclinations and expectations (Manski and Wise 1983).

McDonough (1997) illustrates the limitations of rational choice models. She shows that students consider a limited set of postsecondary alternatives, and that these alternatives are mainly dictated by school and family circumstances. Through a college preparatory mission and curriculum, the roles and behaviors of school staff, and assumptions about students'

social background and ability, schools shape students' postsecondary expectations and the set of options that students consider. McDonough (1997) also shows how choice varies by SES due to differences in resources, the constraints families place on the choice process, and the messages that students receive about postsecondary options. Relatedly, Freeman (1997) found that Black high school students were more skeptical about their ability to afford college and about whether its benefits merited the costs. He also noted poor school building conditions and weak encouragement from teachers as potential barriers to college access.

Though rational choice models do not presume that students have exact and absolute information, students nonetheless assess postsecondary options based on accessible information regarding the costs and benefits of each alternative (DesJardins and Toutkoushian 2005). Yet, many students not only lack information about college but also have varying access to such information (Kane 1999). Also, the decision-making process may be limited by cognitive ability, time, resources, family preferences and knowledge, as well as school policies, culture, and resources (McDonough 2005).

The conceptual model for this study draws on the multilevel model of postsecondary choice developed by Perna (2006). Acknowledging the shortcomings of rational choice models, Perna (2006) proposed a framework that integrates elements of rational choice and social factors, acknowledging that different layers of context impact a student's postsecondary decision-making by offering access to resources and opportunities. The four layers of context in the model are 1) the student/family, 2) the school/community, 3) higher education, and 4) social, economic, and policy realms. Drawing from rational choice models, Perna's (2006) framework recognizes that college decisions derive from cost-benefit analysis. Possible benefits may include monetary and nonmonetary rewards, while potential

costs include the direct costs of attending and forgone earnings. Perna's framework also assumes that postsecondary choice is influenced by academic and financial resources. Unlike previous applications of rational choice models, though, Perna's (2006) framework presumes that the choice process occurs in the context of an individual's student and family context. Furthermore, although rational choice models stress financial and academic resources, an integrated approach assumes that students may also draw on political, social, and psychological resources.

Perna's model (2006) also recognizes the roles of other layers of context in influencing postsecondary decisions. For instance, the higher education context assumes that PSIs themselves may affect choice by offering information to students about postsecondary options, actively recruiting them, or having support systems in place. The social, economic, and policy layer of the framework acknowledges the role of public policies such as financial aid and civil rights legislation, in impacting postsecondary choice (Perna 2006).

Using the work of McDonough (1997), Perna also offers a basis by which we can understand how postsecondary access is impacted by the social and organizational culture of high schools. McDonough argues that while students' aspirations are partially influenced by their SES and race as conveyed by their families and neighborhoods, they are also influenced by the values schools convey about postsecondary access (i.e. academic press).

The main focus of this dissertation is on the student, family, school, and community contextual layers specified in Perna's framework. However, it is also important to recognize, while not directly addressed in this dissertation, that postsecondary access for SWDs may also be influenced by Perna's third (higher education) and fourth (social, economic, and policy) context layers. For example, at the higher education layer, many PSIs lack physical

and programmatic accessibility for SWDs, thus limiting the number of viable postsecondary opportunities for such students. Meanwhile, at the policy level the implementation of high school and postsecondary transition services has opened up new postsecondary opportunities for SWDs.

b. Research on Postsecondary Access for Students with Disabilities

Despite research and years of government intervention, the low postsecondary enrollment rate for SWDs remains a major issue in education. This issue is further complicated by consistently high dropout rates among high school SWDs (Wagner, et al. 1993), as well as physical and academic barriers at colleges that make PSIs a more difficult and a less attractive option for SWDs (Rosenfeld 2002). Many studies have examined factors that influence postsecondary access for the general student population, yet few have addressed factors affecting SWDs specifically. Even fewer studies have compared outcomes for SWDs with those of their non-disabled peers, instead focusing only on students in special education. However, several studies have highlighted the significance of certain family background characteristics and school-related experiences in influencing postsecondary access for SWDs.

i. Socio-demographic Characteristics

Studies have identified several background characteristics of SWDs that have bearing on postsecondary access. First, males and certain minority groups, specifically Black students, are overrepresented in the population of high school SWDs who are receiving special education services. SWDs are also more likely to come from families where neither parent has attended college, a factor that has also been linked to lower rates of college enrollment

(Marder, et al. 2003). Finally, SWDs are more likely than are students without disabilities to come from families living below the poverty threshold (Marder, et al 2003). Combined, these factors contribute to lower levels of parental postsecondary aspirations for SWDs. Wagner et al. (2007) found that among students whose parents did not expect their child to go on to college, those with a disability were less likely to do so. This finding goes beyond just lower aspirations. It suggests differential sensitivity. SWDs may be better able to gain postsecondary access in the absence of parental support.

ii. School-related Experiences

Much research has established the importance of academic credentials at all stages of the postsecondary access. Thus, it is no revelation that for SWDs, achievements in high school play a large role in their chances of going on to a PSI. For example, using the NCES college qualification index, Horn, Berktold, and Bobbitt (1999) found that 56.3% of SWDs (compared to 37.3% of non-SWDs) who had graduated high school were deemed "not qualified," and only 14.7% of SWDs (31.4% of non-SWDs) were considered "very" to "highly qualified" based on an index score of grades (GPA >2.7), rank in school (>54th percentile), NELS composite test scores (>56th percentile), and SAT (>820)/ACT (>19) scores. Furthermore, SWDs were twice as likely to take remedial English and math classes as compared to their peers without disabilities (54% vs. 26%), while only 31.4% of SWDs took at least one advanced placement course as compared to 46.4% of their peers without disabilities.

With respect to particular disabilities, students with learning disabilities (LD) were more likely to be in general education or vocational track, while students not diagnosed with LD

were more likely to be in a college track (Cardoza and Rueda 1986). Wagner et al. (1998) also found that GPA had a significant and positive relationship in the college enrollment of students with LD. In addition, Miller et al. (1990) found that students with LD who enrolled in college had higher scores in reading and math tests than their peers with LD who did not enroll in college.

c. The Role of Self-determination, School-level Characteristics, and Special Education Services in Postsecondary Access

Using the conceptual and empirical advancements on disability, this review details research on three key factors that are central to the arguments laid out in this dissertation regarding postsecondary access for SWDs: 1) self-determination, 2) school-level characteristics, and 3) special education services.

i. Research on Self-determination

Self-determination was a term first used by the disability community and their advocates in reference to SWDs' right to control their own lives (Williams 1989). Within this context, self-determination is frequently synonymous with empowerment. This has given way to defining self-determination in terms of specific behaviors like problem-solving, assertiveness or decision-making. However, this conceptualization becomes problematic as it implies that the occurrence and non-occurrence of any behavior can be self-determined. This problem has been exacerbated by the tendency to attribute the description "self-determined" only to successful people who act in successful ways. To circumvent the problems associated with defining self-determination as a set of behaviors, Wehmeyer (1992) defined this construct according to characteristics of actions or events. Self-determination refers to "acting as the

primary causal agent in one's life and making decisions regarding one's quality of life free from undue external influence or interference" (Wehmeyer 1992).

An act or event is self-determined if the individual's action(s) reflect four characteristics: 1) behavioral autonomy; 2) self-regulation; 3) psychological empowerment; and 4) self-realization (Wehmeyer, Kelchner and Richards 1994). *Behavioral autonomy* arises when students act independently according to their own preferences, interests, and abilities (Wehmeyer 1992). *Self-regulation* is a response system that allows students to assess their surroundings and ranges of responses for dealing with those surroundings to make decisions about how to act, assess the consequences of their actions, and amend their plans as needed (Whitman 1990). *Psychological empowerment* are the various dimensions of perceived control, which includes the cognitive (personal efficacy), personality (locus of control), and motivational domains of perceived control (Zimmerman 1990). People who are self-determined act based on their beliefs that they have the capacity to perform behaviors needed to influence outcomes in their environment and if they perform such behaviors, anticipated outcomes will result. *Self-realization* occurs when students use a comprehensive, and accurate, knowledge of themselves and their strengths and limitations to capitalize on this knowledge in a beneficial way. Self-knowledge forms through experience with and interpretation of one's environment and is influenced by evaluations of others, reinforcements, and attributions of one's own behavior.

Disability research suggests that SWDs often demonstrate limited self-determination. Carter, et al. (2006) examined the capacities of SWDs to express self-determined actions and found that teachers rated these students as having few self-determination skills. Scholars, though, have only recently begun to examine factors that influence self-determination among

SWDs. For example, factors such as the receipt of special education services, curriculum and instruction, and involvement in the IEP process have been shown to influence students' opportunities to demonstrate skills that enhance self-determination. Other studies have measured school-level programmatic effects on levels of self-determination. Hoffman and Field (1995) found that SWDs in self-determination training made significant gains on measures of self-determination. Powers et al. (2001) noted similar results with students who received the TAKE CHARGE self-determination curriculum. Zhang (2001) evaluated the impact of the Next S.T.E.P. curriculum on the self-determination of high school students with learning disabilities. The treatment group improved considerably in posttest measures of self-determination compared with the control group.

Finally, research has linked the physiological characteristics of disability to the likelihood of engaging in self-determined actions. This can occur in two ways. First, the extent to which students possess critical social skills may affect their ability to execute self-determined actions (Black and Ornelles 2001; Gresham, Sugai, and Horner 2001). Self-determination usually occurs within a social context through interactions with others, and it may be influenced by a student's ability to effectively interact with peers and adults. Since many students with emotional and behavioral disabilities (EBD) and LD show deficits in social skills (i.e. communication, assertiveness, decision-making, etc.), they may also experience difficulties in acting autonomously. Nota et al. (2007) found that social skills ratings predicted overall levels of self-determination for those with intellectual disabilities. Second, students with EBD and LD who exhibit high levels of challenging behaviors (Lane et al. 2006). Problem behaviors (i.e. aggression, anxiety, etc.) have been linked to special education (Lane and Menzies 2005), which may limit opportunities to engage in decision

making, self-advocacy and other skills that contribute to self-determination. While prior studies have not examined the extent to which problem behaviors in students influence self-determination, the lower enrollment rates of students with problem behaviors suggest many of these students leave high school without the skills to effectively manage their lives (Wagner and Davis 2006).

ii. Research on School-level Characteristics

In part, disabilities can be said to inhere in the student, and schools are but one place where academic and learning deficiencies are identified, yet schools both determine who is defined as disabled and shape the learning opportunities and outcomes for SWDs. Previous research, however, has provided a limited view of the role of schools in the educational outcomes of SWDs. Yet, the educational challenges and inequities faced by SWDs not only reflect the demographics of SES and race, but as well are rooted in the cultural, structural, and compositional characteristics of schools.

One of the key aspects of schooling as it relates to postsecondary access is academic press. Academic press is the degree to which schools are driven by achievement oriented values, goals, and norms (McDill, Natriello, and Pallas 1986; Pace and Stern 1958). These elements develop as schools raise their expectations and assume responsibility for learning (Murphy et al. 1982). Academic press is manifest in school policies, practices, expectations, norms, and rewards that together establish an academic culture experienced by teachers and students. This presses the students in the school to strive to succeed in school. According to Lee and Smith (1999), there are two ways that schools press students toward high academic

achievement: 1) teachers' expectations of student performance and 2) internal/external imposed standards.

Rosenthal & Jacobson's (1968) influential Pygmalion study began a chain of scholarship about whether and how teachers' expectations influence students' learning. However, teachers' expectations can also be understood as an organizational property of schools. Expectations that are discussed among teachers influence communal support for academic objectives. Thus, teacher expectations cultivate or stifle press toward achievement-oriented goals (Baker, et al. 1997; Darling-Hammond et al. 1983). The standards set by schools and outside entities can also serve as academic press (Lee and Smith 1999). Internally, for example, a principal may set a goal that all students must take certain courses to obtain a high school diploma. Externally, government standards for curriculum and instruction may help schools generate best practices (King and Mathers 1997).

Many studies have addressed the effects of disability labels on teachers' expectations for SWDs (Algozzine and Sutherland 1977; Dunn 1968; Foster and Ysseldyke 1976; Taylor, Smiley, and Ziegler 1983). This research notes that teachers hold lower expectations for SWDs than non-disabled students of comparable ability at the primary and secondary levels. Meanwhile, although research linking academic press to college access for SWDs is limited, the connections are clear. With respect to teacher expectations, studies indicate that teacher expectations are mainly influenced by students' academic performance (Alexander and Entwisle 1988; Kuklinski and Weinstein 2001). While this initially seems like a reasonable association, it can have greater implications for students whose disabilities are developmental or cognitive in nature. In fact, in school, such disabilities are likely to manifest themselves in terms of poor academic performance relative to the general student population. Hence, low

teacher expectations may magnify already existing inequalities based on disability that can ultimately impact postsecondary access.

In addition to the setting of standards, the implications of academic press for educational practice are also significant. Internally, schools may be allowed to set policies on curriculum and instruction that could establish high achievement-oriented goals for all students. For SWDs, setting high standards may mean that more interventions for struggling students are tried, with special education services used as a last resort. For students already in special education, it may also signify that the school values inclusion and students spend most of their classroom time in the least restricted environment. Externally, the push toward standards-based reform has generally meant that schools must demand more and see better results from their students or be held accountable.

While there has been a push to include SWDs in standards-based reform, there are concerns that, in fact, schools have become less inclusive as a result of high-stakes testing. Schools may be less willing to enroll SWDs if having a large number of these students will lower the average achievement scores for the school. On the other hand, greater participation in standards reform may increase SWD's exposure to the general curriculum (Thompson and Thurlow 2001).

School resources also have implications for postsecondary access. Since the Coleman Report (Coleman, et al. 1966), scholars have tried to connect school resources to educational outcomes. Studies suggest that school resources can affect academic achievement (Elliott 1998). Furthermore, studies suggest that school resources can contribute to educational disparities across groups. Hanushek and Rivkin (2002) found that the unequal distributions of

inexperienced teachers in schools explained much of the increased Black-White achievement gap between grades 3 and 8.

These findings have implications for the relationship between school resources and postsecondary access for SWDs. For example, given that SWDs are disproportionally low-SES and Black, they may be more likely to attend schools with teachers who have lower qualifications and are more likely to be teaching subjects outside their specialty (Ingersoll 2002). This can impact the achievement of SWDs negatively, as they benefit from teachers experienced in teaching students with different rates of learning and abilities[1]. Even for SWDs not in special education, poor instruction can place such students at greater risk for lowered teacher expectations, poor academic achievement, and less favorable college access. Poor teacher quality may also negatively affect the effectiveness of transition services for SWDs and thus limit SWD's acquisition of self-determination skills.

Finally, researchers have recognized that the compositional characteristics of a school's student body can affect individual educational outcomes. However, research on the subject at the high school level has been inconclusive. Jencks and Mayer (1990) found that a high school's mean SES has a small impact on how much students learn in high school. Chubb and Moe (1990), on the other hand, found strong effects of school SES on test score gains. More recently, Carbonaro and Gamoran (2002) found no impact of the percent of students on free/reduced lunch on reading achievement gains in high school.

Nevertheless, there are three important implications for postsecondary access resulting from demographic composition. First, students with low achievement and aspirations can produce an environment of failure in schools (Jencks & Mayer 1990). This can have a

[1] The issue of quality may be extended to counselors who are responsible for providing students with information and advice on college options.

negative effect on students because it means that the schools are centered on lower expectations, less challenging curriculum, and lower overall academic press. Second, Jencks, & Mayer (1990) and Coleman et al. (1966) suggest that disadvantaged students may be more susceptible to these influences because they lack positive influences outside of school. Last, the effects of composition may operate through their association with school resources. For example, students in low-SES schools may have fewer qualified teachers and other problems that limit student learning. Schools in high-SES communities end up with better trained teachers and more challenging curriculum because these schools are more responsive to the demands of higher-SES residents, and because these schools are seen as better places to teach (Hanushek, Kain, & Rivkin 2004).

Regardless of SES differences, school demographic composition, especially with respect to the proportion of students in special education, can have a distinct influence on the educational experiences of SWDs. School policies and other school characteristics can affect degree to which a student is referred to and placed into special education, as well as the degree to which SWDs may be isolated in special education classrooms. Schools are likely to differ markedly in the proportion of SWDs enrolled at their school. Thus, a SWD who is identified for special education may be more likely to be in a school with a larger share of SWDs in special education than a SWD who is not in special education.

iii. Research on Special Education Services

Research on special education effects have traditionally focused on whether or not less restrictive settings have an impact on academic achievement and preparation. For example, a meta-analysis by Carlberg and Kavale (1980) reported that students in special education with

developmental delays performed academically as well as those placed in general education classrooms. They also concluded that students in special classes with learning or behavior disorders had a moderate academic advantage over those in general education classrooms. More recent studies show that students placed in general instruction perform better academically than students in restricted settings. For instance, Rea, McLaughlin, and Walther-Thomas (2002) found that compared to students in schools with pull-out programs, students in inclusive schools earned higher grades, achieved higher scores on standardized tests, committed no more behavioral infractions, and had better attendance. Meanwhile, Morgan et al. (2008) found that special education services had negative or statistically non-significant effects on SWD's reading and mathematics skills. At the high school level, students in special education encounter difficulties when placed in general education classes. Blackorby and Wagner (1997) found that one in three high school students in special education failed general education classes, a higher rate than for high school students not in special education.

Outside of research that indicates that special education services may negatively impact academic performance as well as access to the general curriculum and advanced coursework, few studies have looked at other ways that special education services may affect postsecondary access. For example, special education is thought to have a stigmatizing influence on students, such that they are more likely to act-out or socially withdraw (La Greca and Stone 1990; Valas 2001). In fact, Morgan et al. (2008), in a study of elementary school students, found that special education had negative or statistically non-significant effects on students' externalizing or internalizing problem behaviors. That is, overall, special

education did not decrease, and sometimes increased, the rate at which children engaged in these behaviors.

Finally, school graduation policies often are predicated on the assumption that not all students will be able to meet the academic requirements for a standard diploma. This has led to an increase in the number of high school exit options for students who fail to meet general diploma requirements. Thurlow and Thompson (2000) note that offering a range of exit options such as an IEP diploma recognizes that students learn in a variety of ways, particularly for SWDs. These certificates may also decrease the likelihood of special education students dropping out or aging out of public education since they are able to complete public education with credentials indicating that they have attended school and met particular competencies. On the other hand, researchers found that the absence of a standard high school diploma can affect students' acceptance into college (Kaufman and Chapman 2004; Zafft, Hart, and Zimbrich 2004). Furthermore, students in special education exit high school with nontraditional certificates significantly more often than the rest of the student population (Gaumer-Erickson, et. al. 2007). Nationally in 2006, 2% of high school completers exited with certificates, while 15% of special education completers received certificates. Students in special education comprised 78% of all students receiving certificates.

While alternative certification options may enhance graduation prospects, their implications for students' ability to continue into postsecondary education are quite adverse. Gaumer, Erickson, and Morningstar (2009), based on a purposive sample of 22 colleges in two states, found that PSIs placed little value on alternative exit certificates and viewed these documents as far inferior to the high school diploma. In fact, when it came to postsecondary

admissions, students who earned modified diplomas, special education diplomas, certificates of completion, or certificates of attendance were treated just like students who had dropped out of high school.

Research on the effects of special education services on student outcomes has been quite limited, especially with respect to postsecondary access. Furthermore, studies of outcomes for special education students are often characterized by methodological problems. For example, sample sizes are often small. In addition, comparison groups are not likely to be analogous because students who are educated in more restrictive settings are likely to differ from other students in significant but unmeasured ways, such as being more disruptive (Hocutt 1996). Making matters more difficult, most school systems rarely collect data on the academic experience of students in special education and continue to exclude them from standardized testing.

d. Limitations of Previous Research

Scholars and policymakers have long relied upon descriptive statistics and have failed to develop an adequate framework with which to characterize the relationship between disability and postsecondary access. Much of the literature is premised on the assumption that SWDs have less access to PSIs due to their disability, thereby ignoring an array of possible structural and psychological factors that are likely to generate disability differences in educational attainment. Prior studies on disability and postsecondary access have been hampered by several limitations. First, researchers often use special education as a proxy for disability. This is not surprising given that many SWDs have an IEP. However, defining disability via special education excludes SWDs who are not in special education, either

because the student does not have a condition deemed to impact learning or the student has a condition that has gone undiagnosed by school professionals[2].

Moreover, using special education as a substitute for disability status generates selection bias. Since receipt of special education services is contingent on disability status, identifying students in a sample as disabled based on receipt of such services can underestimate both special education and disability effects on postsecondary access. In this instance, SWDs are not only underrepresented in a given sample, but the number of general education students is overstated. To gauge the true effects of special education on a given educational outcome, special education students should be compared to the sample of *students with disabilities NOT receiving special education services*.

Second, studies that link disability to postsecondary access have been confounded by socio-demographic characteristics. Since a greater proportion of SWDs are either poor, Black, or both, neglecting these aspects of the disability profile can lead to an overestimation of disability's distinctive effects on postsecondary access. Disability can be linked to socio-demographic characteristics in a variety of ways. Poverty can lead to malnutrition and lead poisoning, which can bring about cognitive impairments. Making matters worse, many families of low-SES background lack health insurance and the resources to pay for health care. Poor and Black families also tend to have low levels of education, and thus less knowledge about disease and disability prevention. In schools, students who are either poor

[2] While researchers have focused their attention students with IEPs under IDEA, federal legislation also identifies a second type of SWD-the 504 student. Section 504 is legislation that mandates that SWDs have an equal opportunity to partake in all programs receiving federal funds. One major difference between Section 504 and the IDEA is their definitions of disability. Students must qualify in 1 of the 13 disability classifications and need special education to be eligible under the IDEA (IDEA 2006). In contrast, eligibility for section 504 services is for a student who has a physical or mental impairment that limits one or more major life activities (Section 504 of the Rehabilitation Act 2008). Although the disability definitions for Section 504 and the IDEA differ, a student eligible under the IDEA is also covered by Section 504. Conversely, some students not covered by the IDEA are eligible under Section 504.

or Black are more likely to struggle with behavior or academics, leading to a higher likelihood of being diagnosed with a behavioral disorder or learning disability. Moreover, biased perceptions about students and culturally biased diagnostic tests may influence diagnosis of disability for poor and Black students (Watkins, Lewis, and Chou 2001).

A student's disability status may also influence the socioeconomic circumstances of his/her family. For example, the high costs of caring for a child with a disability may place an undue financial strain on parents. These economic hardships would not only stretch a family's available resources but potential educational and career decisions as well. Some parents may opt to alter school or career paths in order to address immediate financial and care needs of their disabled child. These tensions, along with the emotional toll of dealing with disability issues, have proven detrimental to family stability. Parents of children with disabilities tend to have higher rates of separation and divorce (Hodapp and Krasner 1995).

Third, studies examining the effects on disability and postsecondary access have not considered application and admissions as prerequisite stages to postsecondary attendance. Focusing only on enrollment neglects some of the more systemic reasons that SWDs do not enroll in a PSI. For example, SWDs may not have enrollment rates comparable to the general population because they do not apply to PSIs at the same rate, either because they lack college aspirations or the proper academic qualifications. Also, SWDs may not have enrollment rates similar to other students because they are not admitted to a PSI at the same rate, either because of weak academic preparation or because of a mismatch between the types of PSIs SWDs apply to and their own qualifications (i.e. applying to PSIs where the student may be vastly under-qualified). The latter can occur because SWDs may not be gathering the proper information about admissions requirements or be sufficiently self-aware

of their own admission potential. Finally, SWDs may apply to a PSI and gain admission to them at similar rates to the general student population, but may decide to delay enrollment or not enroll altogether owing to financial barriers (Bozick and DeLuca 2005) or the discovery of impediments at the schools to which they have been admitted that limit access.

Finally, research on disability and postsecondary access has, so far, failed to consider self-determination and opportunities to self-determine as a precursor to postsecondary access. Furthermore, the strong focus on in the literature on self-determination during college and high school neglects the fact that self-determination is a developmental process, and influenced by a variety of contexts. In disability research, theories of self-determination have been used mainly to explain differences in postsecondary success and completion for SWDs relative to their non-disabled peers. The idea is that students with higher levels of self-determination are better equipped to navigate the PSI bureaucracy and obtain the necessary educational services and supports (Izzo & Lamb 2002; Wehmeyer 1992). However, self-advocacy skills are important at all grade levels. Whereas education practitioners point to the need for self-advocacy skills at the college level, other scholars have emphasized the importance of developing such skills early on to assist prior transitions. Doll, et al. (1996), for instance, suggests that self-determination can begin during elementary school but change in high school as students' desires and needs develop.

Although there is evidence supporting the positive effects of teaching self-determination skills, Algozzine, et al., (2001) found that programs to teach self-advocacy skills most often focused on SWDs in high school or college and not in earlier grades. In particular, many SWDs generally are not taught self-determination skills until at some point in high school, long after college aspirations have been established. This creates a misperception of how

self-determination can manifest itself in SWDs. Clearly, not all SWDs choose to forego a postsecondary education. Hence, SWDs who are successful in gaining postsecondary access may possess higher levels of self-determination. In other words, self-determination and the opportunities to self-determine that make students successful at the postsecondary level may also be important for postsecondary access by helping them navigate the application process and enhancing their postsecondary aspirations.

Though not explicitly about self-determination, Plank and Jordan (2001), focusing on talent loss, allude to one of the ways that self-determination may be important to postsecondary access. They note how acquiring information on the application process is vital to enrollment. For example, if students access information on postsecondary financing, they may choose not to attend a certain PSI or become more resourceful and seek ways to make postsecondary enrollment a reality. Likewise, gathering information on prerequisites or other requirements early in school puts students at an advantage when applying to PSIs (Plank and Jordan 2001; Rosenbaum, et al. 1996). Gathering information, in these cases, is facilitated when students exhibit more self-determination.

Chapter III

III. Research Questions

As noted in Chapter II, there are significant weaknesses in the research regarding the relationship between disability and postsecondary access. A review of the literature suggests that these limitations stem from how disability and self-determination are conceptualized, leading to the neglect of how social forces may influence postsecondary access for SWDs. As a corrective, this dissertation does the following: 1) examines the effect of disability on postsecondary enrollment and the steps leading up to enrollment (application, admissions, and then enrollment) adjusting for demographic characteristics and school-related experiences; 2) analyzes the influence of self-determination on the postsecondary access gap between SWDs and non-SWDs; 3) addresses the role played by schools in the postsecondary access gap between SWDs and non-SWDs, and 4) assesses whether special education services makes a difference in postsecondary access for SWDs apart from the fact of their disability. Drawing on the disability and education literature, this study will address the following research questions:

a. Disability Status

1) What is the relationship between disability status and postsecondary access?
2) Does self-determination account for the relationship between disability status and postsecondary access?
3) Do differences in individual demographic and school-related experience covariates account for the relationship between disability status and postsecondary access?

4) Over and above disability status and the modeled individual-level traits, are school-level characteristics systematically associated with postsecondary access? Furthermore, do school-level characteristics moderate or alter the strength of association between disability status and postsecondary access?

Each of the above questions examines the unconditional and conditional relationship between disability status and all three measures of postsecondary access (application, admissions, and enrollment).

b. Special Education Services

1) What is the relationship between special education status and postsecondary access for SWDs?
2) Does self-determination account for the relationship between special education services and postsecondary access for SWDs?
3) Do differences in individual demographic and school-related experience covariates account for the relationship between special education services and postsecondary access for SWDs?
4) Over and above the receipt of special education services and the modeled individual-level traits, are school-level characteristics systematically associated with postsecondary access for SWDs? Furthermore, do school-level characteristics moderate or alter the strength of association between special education services and postsecondary access for SWDs?

The above research questions examine the unconditional and conditional relationship between receiving special education services and all three measures of postsecondary access (application, admissions, and enrollment).

c. Analytic Approach

The objective of this research is to understand whether, and to some extent why, SWDs are at a disadvantage relative to non-SWDs in postsecondary access. As reviewed in Chapter 1, we know they are less likely to go on to postsecondary education upon high school graduation, but it us unclear whether that is due to their disability status or to other considerations, such as socio-demographic and academic profiles that resemble those of non-SWDs students whose prospects for postsecondary access are also bleak. If we find that their disability status is distinctively disadvantageous, we will then explore what it is about SWDs and the circumstances of their schooling that might be at issue. It is also possible that they may lack empowerment in charting their own path. This would point to something about their psychological profile, captured in this research by the construct "self-determination." The lack of postsecondary access could also result from the schools they attend, which might not have the resources and environment (i.e. academic press, student demographics) needed to help students achieve postsecondary access. Finally, as a last consideration, we will consider whether postsecondary access for SWDs has something to do with their experience as special education students, an experience that is institutionally imposed on some SWDs, but not all.

To achieve grasp on these issues, we turn to five sets of supplementary measures pertaining to:

1. Measures of self-determination including *behavioral autonomy, self-regulation, psychological empowerment, and self-realization*.
2. The students' socio-demographic profile, including *race, SES, gender, parents' level of education, and family structure*.
3. The students' academic profile, including *grade point average, college/academic track, involvement in extra-curricular activities, grade retention, expectations for college (student), expectations for college (parent), expectation for college (teachers).*
4. A profile of their schools' resources, including measures of *academic press, school resources, and student demographics*.
5. A measure that distinguishes those students with a disability who receive special education services from those not in special education.

The first three measures are used to examine whether the observed association between a students' disability status and odds of postsecondary access is, to some degree, spurious. By that we mean that disability and postsecondary access have few causal linkages, yet it may be incorrectly assumed that they do, resulting from the presence of a certain third, unseen or confounding factor(s). The fourth measure is used to test the possibility that the schools students attend moderate or accentuate the association between disability status and postsecondary access. Here, we mean that the school resource profile affects the direction and/or strength of the association between disability status and postsecondary access. Finally, the fifth measure will be used to test whether the same associations established by the

inclusion of the first four measures also hold when comparing SWDs who receive special education services to other SWDs.

Measures of self-determination are used to adjust for the four elements of self-determination (i.e. behavioral autonomy, self-regulation, psychological empowerment, and self-realization) in regression models predicting postsecondary access. Research on disability and educational outcomes has focused primarily on the provision of educational interventions or on characteristics of the disability diagnosis. Only recently has research turned toward the way SWDs with disabilities are socialized, especially in schools, and its consequences for their psychological profiles. The research on self-determination has highlighted the need to consider confounding psychological factors when looking at the relationship between disability and educational outcomes. Ignoring the lower levels of self-determination traditionally found in SWDs, may lead researchers and practitioners to mistakenly attribute the effects of self-determination on postsecondary access to disability status.

Including measures representing a student's socio-demographic profile also allow us to correct for the part of the association between disability status and postsecondary access that is spurious. The fact that disability and socio-demographic characteristics are so entwined can lead to mistaken conclusions about the depressed educational outcomes for SWDs. Without understanding that certain socio-demographic characteristics are associated with postsecondary access, and that SWDs are more likely to possess those characteristics for any given number of reasons, researchers and practitioners may misattribute postsecondary access outcomes to the disability itself. For example, SES may be correlated with both the likelihood of disability and postsecondary access. Not accounting for student socio-

demographic characteristics may overstate the influence of disability status on postsecondary access.

Unfavorable school-related experiences have also been implicated in the lack of postsecondary access of SWDs. Historically, SWDs have struggled with access to the general curriculum, academic performance, and low expectations from parents and teachers. Since disability and school-relates experiences are also so inextricably linked, researchers and practitioners may, again, misattribute the lack of postsecondary access to the disability itself without understanding that particular school-related experiences are associated with the likelihood of postsecondary access, and that SWDs are more likely to have these experiences for a variety of reasons.

Since SWDs and socio-demographic risk characteristics are highly correlated, it is likely that we are to find many SWDs in schools with lower levels of academic press and school resources, and higher ratios of poor and disabled students. Furthermore, It is possible that school-level characteristics moderate the relationship between disability status and postsecondary status. In other words, levels of academic press, school resources, and student demographics may have different effects for SWDs than non-SWDs. For example, given that many SWDs require a great deal of instructional supports, attending a school with fewer resources may have more pronounced negative effects on SWDs than non-SWDs in relation to postsecondary access.

Each of the factors explored here are assumed to be outside the causal pathway from disability status to postsecondary access. For instance, SWDs are likely to have lower levels of self-determination not as a direct result of having a disability but through a combination of socialization factors such as expectations and the level of supports provided to them by

others. Similarly, while certain socio-demographic profiles such as being in poverty may elevate the chance of disability, poverty in itself does not cause disability. Poverty may lead to things such as a lack of access to health care which can influence the likelihood of disability in children. With respect to academics and other school-related experiences, disability may affect cognitive function which can influence academic performance and expectations, but teachers and their assessment tools may also be biased against SWDs which could be reflected in their performance. Finally, school-level characteristics are treated as moderators because, although school characteristics may be associated with disability status, that association may change depending on a school's academic press, level of resources, or demographic characteristics.

To end with, we explore the extent to which the limited postsecondary access of SWDs can be explained by their propensity to receive special education services. We presume that the same associations hypothesized between disability status and postsecondary access hold true for special education services and postsecondary access. Although having a disability and receiving special education services are qualitatively different experiences with the prior based on a medical condition and the latter rooted in educational programming, both experiences are similar in how they are associated to the socialization process of these students. So, while these factors are not an intrinsic part of the causal pathway to postsecondary access, they play an important part in helping us understand the postsecondary access process for SWDs.

Chapter IV

IV. Data and Methodology

The analysis in this dissertation uses data from the Education Longitudinal Study of 2002/06 (ELS:02/06). This chapter provides an overview of the ELS:02/06 dataset, including its design, sampling procedures, instrumentation, and methods for identifying students with disabilities in the sample. The chapter also describes the variables that are used in the study and provides a rationale for variable selection. Finally, the last section of this chapter discusses the methodology used to answer each of the four research questions outlined in the previous chapter.

a. Sample

ELS:02/06 is a longitudinal study that follows a nationally representative cohort of high school students from the time they were high school 10th graders (2002) through 12th grade (2004) and into college or the labor market (2006)[3]. By surveying the same students over time, it is possible to record the changes occurring in their lives, and to comprehend how earlier achievements, aspirations and experience influence trajectories and outcomes in subsequent years. In Wave 1 of data collection (2002), ELS:02/06 measured students' tested achievement and gathered data on their attitudes and experiences. These same students were surveyed and tested again in Wave 2 (2004) to measure achievement gains and changes in their education status between grades 10 and 12. In Wave 3 (2006), two years after high

[3] In 2004, the sample was augmented to make it representative of seniors.

school graduation, data were collected on college application, admissions, enrollment, financial aid, employment and earnings, and living situation.

Data were collected from students, school records, parents, teachers, and school personnel. School-level data are derived from a school administrator questionnaire, a library media center questionnaire, a facilities checklist, and the aggregation of student data to the school level. Student-level data consist of a student questionnaire and assessment data, as well as reports from students, teachers, and parents. Regarding sampling, schools were selected with probability proportional to size. In the spring term of 2002 (Wave 1), the ELS:02/06 base-year study began with a national probability sample of 752 public, Catholic, and other private schools, representing approximately 23,000 schools, as well as 17,591 representing approximately 3.6 million students. All 10th graders in an eligible school were eligible for selection minus foreign exchange students. Of the 17,591 eligible selected sophomores, 15,362 completed a base-year questionnaire, as did 13,488 parents, 7,135 teachers, 743 principals, and 718 librarians. The ELS sample was replenished for the first follow-up (Wave 2)[4]. Out of the replenished sample, about 14,000 students completed interviews for the second follow-up[5].

b. Variables and Measures

i. Postsecondary Access

[4] To maintain representativeness of the sample for the first follow-up, the ELS added new students to replace those who did not complete the follow-up. This "freshened" cohort includes students who were enrolled in a grade other than 10, were out of the country in 2002, or are immigrants (Ingels et al. 2007).
[5] Approximate sample sizes are reported because the second follow-up data are restricted-use data. Generally, exact sample size of such a dataset is not published (Ingels et al. 2007).

A complete list of variable definitions is given in **Table 1**. This study examines postsecondary access at the initial application stage, admissions, and enrollment. Looking at all three stages allow us to determine which is most problematic for SWDs. Data for each dependent measure are based on the Wave 3 interview (2006) of the ELS data two years after the panel's on-time high school graduation.

[Insert Table 1 about here]

The dependent variable for ***application*** is a researcher-constructed dichotomous measure of postsecondary application which indicates whether the student has ever applied to a postsecondary institution (PSI), coded (0) No PSI Application, and (1) Applied to PSI. In cases where there was missing data (10%), whether a student applied to a PSI or not was determined from admissions and enrollment data. If a student was found to have been admitted or attended a PSI, that student was considered to have applied to a PSI. Due to a lack of data, this measure does not differentiate based on the rigor of the application process. Some schools required a more formal application, while others simply required registering for courses. What are being gauged here are the effort and intent students made to enroll in a PSI.

PSIs include schools that are less than 2-year vocational-technical or trade school programs, 2-year, or 4-year and above programs. These schools were aggregated into a binary measure for two reasons. First, doing so maintained a level of consistency across each dependent variable, given that detailed PSI data were only available for the enrollment phase.

There was no way of knowing whether a given student applied to or was admitted to a particular type of PSI. Similarly, given that, for some students, application was determined by enrollment at a particular type of institution, it could not be determined whether they had also applied to some other institutional type. Second, given the vastly low rates of SWDs attending any PSI as reported in previous studies, this broader distinction was of greater interest.

The dependent variable for ***admissions*** is a researcher-constructed dichotomous measure of PSI admissions which indicates whether the student has ever been admitted to at least one PSI, coded (0) No PSI Admissions, and (1) Admitted to at Least One PSI. Data for this measure is derived from a variable created by ELS staff which summarizes the percentage of applied-to schools at which the respondent was accepted. Respondents with 0% acceptance were coded as (0), and respondents above 0% acceptance were coded as (1). In instances of missing data (20%), whether a respondent was admitted to a PSI was determined from enrollment data. If a respondent was found to have attended a PSI, that respondent was considered to have been accepted to PSI. The remaining cases were dropped.

Finally, the dependent variable for ***enrollment*** is a researcher-constructed dichotomous measure of PSI enrollment which indicates whether the student ever enrolled in a PSI coded (0) No PSI Enrollment, and (1) PSI Enrollment. Data for this measure is derived from a question posed to all second follow-up respondents by ELS staff which asks: "Since you received your high school diploma, have you attended a college, university, vocational-technical or trade school where you took courses for credit?"

ii. Disability Status and Special Education Services

Disability status is constructed from four sources: 1) parent self-report data of student disability, 2) teacher self-report of disability, 3) school IEP records, and 4) student self-report data of special education services. The parent self-report measure of disability is based on responses to the following question from Wave 1 of the parent questionnaire "In your opinion, does your tenth grader have a learning, physical, or emotional disability?" The teacher report of disability is based on responses to the following question from Wave 1 of the teacher questionnaire for English and math teachers. "In your opinion, does this student have a learning-, physical-, or emotional disability that affects his/her school work?" School IEP data are based on Wave 1 IEP status derived from 10^{th} grade enrollment lists or subsequent sampled student rosters provided by school personnel. Student self-report data on special education derive from the following question posed by ELS staff: "Have you ever been in any of the following kinds of courses or programs in high school? (Special Education Program)".

Table 2 provides the percentage of students that would be classified as having a disability given each of the four disability definitions plus a measure that counts disability as meeting at least one of the four definitions. Of the three definitions, the teacher definition (19.4%) garnered the highest disability rate, indicating that teachers are more likely to consider a student as having a disability than parents (13.2%) or the school's special education identification system/self-report (15.6%). This makes sense given that a) teachers work closely with students in an environment where learning difficulties are likely to manifest themselves, or b) teachers might be more likely to show bias, and are reacting differently toward those students they are not reaching and engaging effectively.

[Insert Table 2 about here]

Disability and its effects on postsecondary access not only stem from the professional diagnosis of a given medical condition, but also from the way in which schools, parents, and teachers perceive and label physical, behavioral, and learning difference. For instance, although special education may make postsecondary access for SWDs especially challenging, it does not account for other disability-related barriers such students may face. Teachers may place lower expectation on students they believe to have disabilities. Parents may fail to instill postsecondary aspirations in children they perceive as having a disability. Students, in turn, could internalize these perceptions thereby impacting their decisions regarding postsecondary opportunities. Thus, it is not enough to recognize a student as having a disability based on receiving special education services, as has been done in previous research. The data in **Table 3** highlight the importance of making this distinction.

Table 3 shows the level of agreement between special education and parent/teacher indicators of disability. While the data show significant agreement among the two groups (83.7%), there were some noteworthy disagreements among the indicators. Of the parents and/or teachers who believed the student had a disability that impacted learning only 42.6% of those students had ever received special education services. Conversely, of all students in the sample who had ever received special education services, approximately 17.4% had parents and/or teachers who believed the student did not have a disability. These disparities indicate that while many SWDs go undetected by the special education system, there also are many SWDs receiving special education services whose parents and/or teachers hold

opposing viewpoints[6][7]. Ultimately, while special education is a significant part of the disability experience in schools, the research questions driving this dissertation are not simply rooted in programs and services, but in labels and stereotypes, and their impact on postsecondary access for SWDs.

[Insert Table 3 about here]

Given this premise, this study employs an inclusive measure of disability. Disability status is coded as 1=Yes, 0=No, where "Yes" indicates an affirmative response to any of the three measures noted above. Using an aggregate classification of disability where a student must meet at least one the three definitions generates a disability rate of 29.0%. How each of these three scenarios contribute to the overall sample and rate used throughout this study is displayed in **Table 4**. Here, we find that using the inclusive definition of disability, the majority of SWDs are identified by a single source (58.5%), with teacher perceptions of disability accounting for 44.4% of the total. For a fourth of SWD cases (23.6%) two sources align in identifying the student as having a disability. In this case, these two sources most often were teachers and special education services (54.4%). Thus, school-related personnel including teachers and special education evaluation teams were most likely to be in

[6] Unfortunately, data are only available regarding beliefs about disability in a particular student. There is nothing that tells us about the origin of those beliefs. It is possible that parent and teacher beliefs about a student's disability status are based on the previous special education history of the student. However, the high levels of disagreement among parents, teachers, and special education history indicates that, perhaps, many of these teachers are developing these beliefs regardless of prior special education placement.

[7] Parent and teacher opinions play an important role in special education, and whether or not a parent or teacher is successful in negotiating a particular placement is based on a variety of factors including disability type and severity, school resources, parental resources, teacher reputation and expertise, etc.

agreement about a student's disability status. Finally, there is consensus across all three sources for fewer than a fifth of those identified as SWDs.

[Insert Table 4 about here]

The distribution of cases tells us that schools remain a significant place where disability labels are developed either through formal special education procedures or how certain teachers may perceive particular under-performing students. Still, there is evidence also to support the notion that disability labels are being cultivated through non-formal channels through parent perceptions and again through teacher perceptions. Using an inclusive definition of disability allows this study to consider separately the effects of more formal and programmatic definitions of the disability label separate from those based on perception or not considered to impact academic achievement. Hence, a student is deemed to have received special education services in high school (***special education services***) if he or she had an IEP in the 10th grade or self-reported having taken special education coursework in 9th or 10th grade (53.8% of SWDs).

iii. Self-determination

The indicators of self-determination are informed by the Arc's Self-Determination Scale (Wehmeyer & Kelchner 1995). This scale, based on self-determination theory, seeks to

identify the characteristics that make an action or event self-determined (Wehmeyer 1992)[8]**.** Self-determination is measured by generating four indices based on the dimensions of self-determination: 1) behavioral autonomy, 2) self-regulation, 3) psychological empowerment, and 4) self-realization. There is no direct measure of self-determination available in ELS: 02/06. Instead, this outcome is measured through the expression of attitudes and abilities that reflect individual self-determination with respect to educational achievement and attainment. For each measure, items were calibrated such that higher values signified a student possessing more of that self-determination dimension. Items were summed and the resulting distribution rescaled to have a mean of zero and a standard deviation of one.

The Arc's Self-Determination Scale measures ***behavioral autonomy*** conceptually as independence and acting on basis of preference, beliefs, interests and abilities. The measure employed here tallies participation in the following actions and replies regarding beliefs during Wave 1: 1) how often visits with friends at local hangout, 2) how often works on hobbies, 3) how often volunteers or performs community service, 4) how often talks on phone with friends, 5) required to work around the house, 6) ever worked for pay not around house, 7) studies to increase job opportunities, 8) education is important to get a job later, and 9) learns skills for job in school. Each item was reduced to a dichotomous indicator so no single item would dominate the composite. Conceptually, the first six items represent one's

[8] This study is also concerned with the opportunities students have to display self-determination skills. In fact, another scale, the AIR Self-Determination Scale, was developed based on self-determined learning theory, proposed by Mithaug, et al. (2003), and Wolman et al. (1994). However, these instruments are quite elaborate and complex, requiring a more targeted study of self-determination than what can be provided through ELS:02/06. Where possible, though, this study will highlight school-level factors that may influence students' opportunities to self-determine.

ability to be independent; the latter three items reflect the ability to act according to one's preferences, beliefs, interests and abilities (α=.71)[9].

The Arc's Self-Determination Scale measures ***self-regulation*** conceptually as interpersonal goal-setting and task performance and, cognitive problem-solving[10]. The measure of self-regulation employed here tallies items pertaining to intentions, actions, and in one instance, a teacher assessment during Wave 1: 1) plans to take SAT/ACT (i.e. yes/no), 2) plans to continue education after high school (i.e. yes/no), 3) went to an outside source for college information (i.e. yes/no), 4) how often discussed school courses with parents (i.e. never, sometimes, often), 5) how often discussed grades with parents (i.e. never, sometimes, often), 6) how often discussed prep for ACT / SAT with parents (i.e. never, sometimes, often), 7) how often discussed going to college with parents (i.e. never, sometimes, often), 8) how often discussed troubling things with parents(i.e. never, sometimes, often), and 9) English/math teacher thinks student is exceptionally passive (yes/no). Each item was reduced to a dichotomous indicator so not all items would contribute equally to the composite measure. The first seven items represent goal-setting and task performance activities, while the latter two items reflect a certain level of cognitive problem solving skills (α=.73).

For the indices of ***psychological empowerment*** (α=.81) and ***self-realization***(α=.79), two proxies generated by ELS: 02/06 staff through principal factor analysis are used. The Control Expectation scale is used as a proxy for the psychological empowerment dimension, and

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[9] Cronbach's alpha is a measure of internal consistency or how closely related a set of items are as a group. A "high" alpha value of is evidence that the items measure a latent construct.

[10] In the Arc's Self-Determination Scale these constructs are measured through open-ended items that ask students to describe how they would reconcile conflicting situations, as well as what their future goals are in terms of career, living arrangements, and transportation. While no measures were available in the ELS data that mirror the types of items posed to assess problem-solving and goal setting, there are items that inquire about problem-solving behavior and measure goal-setting and task performance in terms of academic and occupational aspirations.

measures the respondent's success expectations in Wave 1. Higher values represent greater expectations of success in academic learning. The items used to measure psychological empowerment are as follows: 1) can learn something really hard (i.e. yes/no), 2) can get no bad grades if decides to (i.e. yes/no), 3) can get no problems wrong if decides to (i.e. yes/no), and 4) can learn something well if wants to (i.e. yes/no). This scale is similar to psychological empowerment dimension in that it measures the level of self-efficacy and control students feel they have over their academic outcomes[11].

The Action Control: General Effort and Persistence scale measures the respondent's self-rated effort and persistence in Wave 1 and is employed as a proxy for the self-realization dimension. The items used to measure self-realization are as follows: 1) remembers most important things when studies (i.e. yes/no), 2) works as hard as possible when studies (i.e. yes/no), 3) keeps studying even if material is difficult, and (i.e. yes/no) 4) does best to learn what studies, and 5) puts forth best effort when studying (i.e. yes/no). Essentially, this scale is like the self-realization dimension in that it measures a respondent's awareness of their own strengths and limitations[12]. Higher values represent greater ratings of effort and persistence.

Self-determination, as measured throughout this dissertation, is done with reference to academic performance and postsecondary access. This differs from the Arc's construct and scale, which are more generic. This distinction is important because assessing self-determination through the lens of academic performance and postsecondary access respects that facets of self-determination are context-specific. That is, individuals do not always

[11] The Arc's Self-Determination Scale measures psychological empowerment conceptually through 16 various items pertaining to self-efficacy beliefs.
[12] The Arc's Self-Determination Scale measures self-realization conceptually through 14 items pertaining to self-awareness and self-knowledge about one's abilities and limitations.

express self-determined behavior in every situation. Whether or not someone participates in self-determined actions or events depends on their goals, beliefs, and values, as well as the opportunities they may have to express that behavior. These measures will reveal specifically whether students showed self-determination trying to attain postsecondary access.

iv. School-level Characteristics

To examine the degree to which postsecondary access is related to aspects of schooling, three types of additional measures are considered: 1) academic press, 2) school resources, and 3) student demographic composition.

Two measures are used to represent academic press. The first is the ***Academic Climate Scale*** (α=.73) constructed by ELS: 02/06 staff. This variable is a scale of the Wave 1 school administrator's perceptions of the school's academic climate. Higher values represent perceptions of a more academically-oriented climate. The variable, created through principal factor analysis, was constructed using the following survey rating scale items: 1) student morale is high, 2) teachers press students to achieve, 3) teacher morale is high, 4) learning is high priority for students, and 5) students expected to do homework. Administrators were asked to indicate to what extent each of the five listed characteristics described their school climate response options ranged from "not at all accurate" (0) to "very accurate" (4). The second measure of academic press is a rating item that asks school administrators to what extent does the statement ***"Many teachers are negative about students"*** reflects an accurate characterization of their school. Higher ratings indicate greater agreement with the statement.

To analyze the effect of school resources on college access for SWDs, five measures are used based on administrative reports. The first is the dichotomous variable ***percent full-time***

teachers certified coded as 1 if a school had over 90% of their full-time teachers certified and 0 otherwise. The second variable is a dichotomous measure ***percent full-time teachers teach out of field*** coded as 1 if a school had greater than 5% of their full-time teachers teach classes that were outside their field of certification and 0 otherwise. A third variable, ***percent good/excellent teachers***, is a dichotomous measure of the percent of teachers rated as good/excellent by the school administrator over the previous three years, coded as 1 if over 75% of teachers over the last year were considered good/excellent teachers and 0 otherwise. Each of the three variables above was converted from discrete variables to binary measures based on their distribution[13]. Although such conversion causes a loss of information, the cutoff points allow for ease of interpretation. ***Total school enrollment*** is a series of dummy variables for each category of the ELS constructed variable enrollment size in Wave 1 (*Medium 1000-1999; Larger >2000),* with *Small <1000* as the reference category.

A ***learning hindrance scale*** was also created by the researcher using items in the ELS: 02/06 administrators' self-report survey to measure the extent to which learning is hindered by a school's lack of resources. Greater values indicate a greater hindrance of learning due to a lack of school resources. The following scale items were summed to generate the scale: 1) learning hindered by poor condition of buildings, 2)learning hindered by poor heating/air /light, 3) learning hindered by poor science labs, 4) learning hindered by poor fine arts facilities, 5) learning hindered by lack of space, 6) learning hindered by poor library, 7) learning hindered by lack of texts / supplies, 8) learning hindered by too few computers, 9)

[13] Cutoff scores were determined by analyzing receiver operating characteristics (ROC). ROC curves are a graphical plot which illustrates the performance of a binary classifier system as its discrimination threshold is varied (Fawcett 2004). It is created by plotting the fraction of true positives out of the positives (TPR = true positive rate or sensitivity) vs. the fraction of false positives out of the negatives (FPR = false positive rate or specificity), at various threshold settings. Since there are no moral or economic costs associated with the tradeoff, we select the point on the curve that maximizes sensitivity and specificity.

learning hindered by lack of multi-media, 10) learning hindered by lack of discipline/safety, and 11) learning hindered by poor voc/tech equipment/facilities. Items were measured on a 1 to 4 scale with 1 being not at all and 4 being a lot.

Finally, two measures are used to reflect the demographic composition of the student body of each school. ***School percent free-reduced lunch*** is a categorical variable (depicted as a series of dummy variables: Low 0-20%; Medium 21-75%; High 76-100%) that measures the percent of students that receive either free or reduced priced lunch. Because participation in this program is based on household income, this variable is used, as is often the case, as a proxy for the socioeconomic composition of the school. The variable was converted from a discrete variable to a categorical measure based on the distribution of the data to allow for ease of interpretation. ***School percent students receiving special education services*** is a categorical variable (depicted as a series of dummy variables: Low 0-10%; Medium 10.01-20.00%; Higher Over 20%) that measures the percent of the student body that receives special education services for students with disabilities. The variable was converted from a discrete variable to a categorical measure based on national rates for students receiving special education services (13.5% in 2002) and to allow for ease of interpretation.

v. Student Demographics

The following measures represent the demographic profiles for each of the students in the sample.

a) ***Gender***: a dummy variable coded 1 for *males* and 0 for *females*.
b) ***Race/ethnicity***: a series of dummy variables for *Hispanic, Black/African-American, and Other*, with *White* as the reference group.

c) ***Socioeconomic status***: constructed as a composite continuous variable from parent questionnaire data and student reported substitutions, when parent data are not available, a measure of student's parent or guardian's socioeconomic status during Wave 1. It is based on five equally weighted, standardized components: father's/guardian's education, mother's/guardian's education, family income, father's/guardian's occupation, and mother's/guardian's occupation[14].

d) ***Family structure***: a dummy variable indicating a student's family living situation during Wave 1, coded 1 for *two-parent/guardian* and 0 for *single-parent/guardian*.

e) ***Family income***: a series of dummy variables for each category of family income in the year prior to Wave 1, (*Middle Income $35,001-$75,000; High Income >$75,000*) with *Low Income (0=0-$35,000)* as the reference category[15].

f) ***Parents' level of education***: a dummy variable indicating any parent/guardian's highest educational attainment by Wave 1, collapsed into 1 for *some postsecondary education* and 0 for *no postsecondary education*[16]. This variable is coded as a binary dummy to emphasize that parents who attended a PSI may be more likely to have children that do the same.

vi. School-related experiences

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[14] 1989 General Social Survey (GSS) occupational prestige scores

[15] Although, family income is taken into account via the measure of socioeconomic status, it is also included as a separate control variable due the independent effects that family income may have on postsecondary access. For example, families with higher income may be more likely to send their children to college regardless of educational attainment or occupation. The categories were constructed based on the poverty level figures for 2001 and a family of four individuals.

[16] Like family income, parents' level of education is also included as a separate control variable due to the independent effects that it may have on postsecondary access. For instance, families that have higher educational attainment may be more likely to send their children to college regardless of family income or occupation. This variable is also coded as a binary dummy to emphasize that parents who attended a PSI may be more likely to have children that do the same.

The following measures represent the academic profiles for each of the students in the sample.

a) ***12th grade High school grade point average***: a series of dummy variables constructed by ELS for each category of grade point average based on school records (1=*Average GPA 2.01-3.00/2=Higher GPA 3.01-4.00*) with 0=*Lower GPA 0.00-2.00* as the reference category.

b) ***In College/Academic track***: student self-reported dummy variable in Wave 2 indicating whether or not a student was in a college or academic track during high school, coded 1 for yes and 0 for no.

c) ***Ever participated in college preparatory program***: a student self-reported dummy variable in Wave 2 indicating whether or not a student participated in a college preparatory program (i.e. Upward Bound, Talent Search, etc.) during high school, coded 1 for *yes* and 0 for *no*. Unlike (b) participating in a college preparatory program does not denote a type of curriculum but is a targeted effort to educate at-risk students on the merits of a postsecondary education.

d) ***Participated in extra-curricular activities***: a student self-reported dummy variable indicating whether or not a student participated in any extra-curricular activities during the year prior to their high school graduation (Wave 2), coded 1 for *yes* and 0 for *no.*

e) ***Standardized test composite score-math/reading***: a continuous composite score in Wave 1 that indicates the average of math and reading of spring 10th grade achievement scores, re-standardized to a national mean of 50.0 and standard deviation

of 10.0. The standardized score provides a norm-referenced measurement of achievement, that is, an estimate of achievement relative to the population as a whole. The test was administered by ELS to all students. SWDs, who due to their disability could not take the exam, were not included in the sample. There were 163 such students.

f) ***Ever held back a grade***: a parent/student self-report composite dummy variable in Wave 1 indicating from either source whether or not a student was ever retained a grade prior to high school, coded 1 for *yes* and 0 for *no*.

g) ***"Do you (10th grader) expect to attend college"***: a Wave 1 student self-reported dummy variable indicating whether or not a student expects to attend college, coded 1 for *yes* and 0 for *no*.

h) ***"Do you (parent) expect your 10th grader to attend college"***: a Wave 1 parent self-reported dummy variable that controls for whether or not a student's parent expects him/her to attend college, coded 1 for yes and 0 for no.

i) ***Has the parent provided advice about applying to college/school*** : a parent self-reported dummy variable indicating whether or not a parent ever provided advice to the student about applying to colleges in Wave 1, coded 1 for *yes* and 0 for *no*.

j) ***Number of teachers that expect 10th grader to attend college***: a researcher constructed variable based on two teacher self-reported items in Wave 1 that ask the student's English and math teachers whether they expect that student to attend college. The variable is coded as 2 if *both teachers expect the student to attend college*, 1 if *only one teacher agrees*, and 0 if *no teacher believes the student will*

attend college. If only one teacher report was available, the case was coded as missing (10% of cases).

In models predicting college admissions, two controls are included. The first control indicates the number of PSIs each student applied to. This accounts for the fact that the likelihood of admissions is dependant on the number PSIs applied to. The second control indicates the number of open enrollment schools each student applied to. These cases can be identified through F2IOPNAP, which indicates which institutions have open admissions policies. This measure is included to account for the fact that applying to such schools makes it very likely that one will be admitted to a PSI. In models predicting enrollment, an additional control variable was included indicating the number of PSIs each student was accepted to. Including this measure adjusts for the possibility that being accepted to more PSIs increases one's chances of enrolling in one.

c. Sample

Knowing the sample is essential to understanding the outcome of a study because the choice of sample and sampling procedure impact the generalizability of the findings to the relevant population. Given the fact that students are nested within schools, this dissertation is focused on both student and school samples. With respect to the student sample, not all of the students who participated in ELS (02/06) are included in the study. **Table 5** describes the restrictions made to obtain the final ELS (02/06) sample and the number and percentage of respondents lost due to each restriction. Several restrictions were made that reduced the

sample to 4,681 students[17]. The first restriction placed on the sample was to exclude students who were not in a public school. This was done because over 90% of all students, and an even larger proportion of SWDs and special education students, are in public school. Students from the sample who did not respond to the Wave 1 and Wave 3 survey were also excluded. The Wave 1 survey provides data for many of the key predictor and control variables measured in the 10th grade, while Wave 3 is the source of the outcome variables related to postsecondary access.

[Insert Table 5 about here]

Three additional restrictions were then applied to arrive at the final analytic sample(s). First, the sample only included high school graduates who completed high school between the spring of 2003 and the fall of 2004. This was done because generally high school completion is necessary for postsecondary attendance. The time period was selected to include students who may have completed high school at least a year early or a year after the Wave 2 survey. Second, the sample was restricted to students who had stayed in the same high school throughout their secondary education. This was done to facilitate the analysis of school effects on sampled students from sampled schools. Similarly, students who had received general equivalency diplomas were not included in the sample because there was no way of knowing whether they had received their diploma at their initial high school.

[17] Three different samples are used in this study, each reflecting the three stages of postsecondary access. This number (n=4681) represents the sample of public high school graduates who are in a position to apply to a PSI, and for which there are disability and special education data. The second sample (n=4,088) is equivalent to all students in the first sample minus those who did not apply to a PSI. Finally, the third sample (n= 4,006) consists of all students in the second sample minus those who were not accepted to a PSI

Students were also dropped from the sample if they lacked data on either the disability status or the special education indicators. Finally, students who had missing data on the three binary dependent variables (application, admissions, or enrollment) were excluded from the analytic samples. The final overall samples of n=4681 (application), n=4088 (admissions), and n=4006 (enrollment), each represent approximately 30% of the entire sample.

It should be noted that the admissions sample represents 87.3% of the application sample and that the enrollment sample represents 97.9% of the admissions sample. Overall, 85.5% of students who applied to a PSI ended up enrolling. Although these numbers do appear rather high, consider that nationally for students who graduated between January and October 2003 approximately 65% of high school graduates were enrolled in a 2-year or 4-year certificate/degree program at a PSI by October 2003 (U.S. Bureau of Labor Statistics, 2003). The figures in this dissertation are higher likely due to the sample restrictions, missing data, and the operationalization of key variables. For example, logical imputation was used to infer application data from enrollment data, while application to a PSI included schools that had less than 2-year programs or were open enrollment. Thus, caution is merited when interpreting these trends as reflective of national patterns in postsecondary access.

Regarding the school sample, selection was based solely on whether or not a student qualified for entry into the sample. Thus, each school in the restricted sample had at least one sampled student. As shown in table 4, after placing the aforementioned restrictions on the student sample the number of schools for each of the three samples was reduced from n=752 to n=565, 553, and 552.

i. Selection Bias

The procedures for selecting the analytic sample raise two important concerns about sample selection bias. If exclusion from or selection into the sample is not random, the estimates of the coefficients could be biased. First, given the restrictions placed on the student sample, the subsequent analysis may not account for the fact that students with certain characteristics may be more likely to graduate high school and have limited school mobility. To evaluate this, I examined differences in all of the variables used in the analysis between students who were excluded and students who were included in the sample. **Table 6** presents the results of this analysis. As shown in the table, students who are not included in the sample are slightly more likely than students who are included to have not applied or enrolled in a PSI. There was no significant difference between excluded and included students in terms of postsecondary acceptance

In terms of disability status, students not included in the study were significantly more likely to have a disability than did students who were included in each of the three samples. However, this pattern is not surprising given that high school dropouts were excluded from the sample as well as students who transferred from the sampled schools. SWDs are overrepresented in both and so disproportionally subject to exclusion. Additionally, excluded students were more likely to have a lower grade point average, be male, be non-white, have lower socioeconomic status, come from single-parent homes, have lower standardized test scores, be held back a grade, and have lower college expectations, all more characteristic of SWDs than non-SWDs.

To determine the extent to which dropouts and transfer students are contributing to differences between the excluded and included students, **Table 6** also compares the included sample with the excluded sample omitting high school dropouts and transfer students. If the

exclusion of high school dropouts and transfer students are adding to the disparity between the excluded and included students, removing them from the excluded sample should make the two groups appear more alike. Based on the table, there is evidence that the restrictions placed on the sample may be contributing to differences in the samples based on disability and other demographic characteristics. For example, when excluding dropouts and transfers from the excluded sample for each out outcome, the percentage point gap of SWDs between the two samples, although still significantly different, drops as much as 15 percentage points. Looking at the demographic and academic characteristics related to both disability and the sample restrictions, we also find that although statistically significant differences remain, the gap among these variables is considerably reduced[18].

[Insert Table 6 about here]

Sample restrictions may also lead to selection bias within the sample of SWDs. In other words, SWDs in the sample may differ in some ways from those not selected for study. **Table 7** shows differences between SWDs selected and not selected for study based on selected characteristics. Here, we see that excluded SWDs were less likely than SWDs who are included to have applied or enrolled in a PSI. There was no significant difference between excluded and included students in terms of postsecondary acceptance. In the application sample, SWDs who were not included in the study were significantly less likely to have been placed in special education than SWDs who were included. There were no

[18] In large samples, t-tests for differences in means can become especially sensitive to sample sizes, thus making it more likely that differences in a variable for the samples being compared will be statistically significant.

significant differences in special education services between included and excluded SWDs in the admissions and enrollment samples.

[Insert Table 7 about here]

SWDs excluded from the sample also had lower levels of psychological empowerment and self-realization than included SWDs in all three samples. In terms of demographic control variables, for all three samples, excluded SWDs were more likely to be male, lower-income, and have a parent with no college experience. With respect to school-related experiences, excluded SWDs were significantly more likely to have lower GPAs, lower expectations to go to college, and a parent with low college expectations.

Sample bias based on the restrictions imposed on the student sample can also occur within the school sample since this sample is selected based on eligible students. In fact, the exclusion of parochial and private schools make it likely that differences will exist between excluded and included schools in terms of academic press, school resources, and student demographic characteristics. **Table 8** shows the differences on school variables for excluded (n=186) and sampled schools (n=565). Excluded schools have higher academic press, are less likely to be hindered by a lack of resources, be low SES, and have a smaller percentage of students receiving special education services.

[Insert Table 8 about here]

To determine the extent to which parochial (n=95) and private schools (n=76) are contributing to differences among the school variables between the excluded and included schools, Table 8 also compares the included sample with a new excluded sample that does not include parochial and private schools, thereby comparing only excluded and included public schools. If the exclusion of parochial and private schools is adding to the disparity between the excluded and included schools, removing them from the excluded sample should make the two groups appear more similar. According to the table, there is evidence that the restrictions placed on the student sample may be contributing to differences in the schools samples based on school-level characteristics. For example, when excluding parochial and private schools from the excluded school sample, there are no longer statistically significant differences for the measures of academic press, school resources, or school demographics.

The second issue pertaining to selection bias is a function of this study's treatment of postsecondary access. Much like educational attainment, postsecondary access may also be defined by a set of event stages. With entry into each stage (application, acceptance, and enrollment) conditional on the outcome of the previous stage, the sample becomes more selective. Researchers in education have employed a number of techniques to account for selection bias of the types described above including the widely-applied Heckman (1976) correction –a two-stage procedure where the first stage formulates a model to estimate the probability of selection, and the second stage corrects for selection by including the predicted probability as an explanatory variable in the model for the dependent variable of interest. While methods such as the Heckman correction represent a useful way of dealing with selection bias, the researcher's ability to address selection bias on unobserved variables is ultimately limited by the quality of the data, the questions being addressed, and the statistical

methods being used. Given the data's complex design and hierarchical data structure, the use of more advanced techniques, such as the Heckman correction, is not practical.

All that said, given the propensity for SWDs to drop out of high school either due to their unique characteristics or other associated traits, the estimates presented in this study are likely to understate the true impact of disability status and special education services on postsecondary access. Including an extensive number of controls helps account for this selection. However, the indications of selection bias involving students and schools will mean that we need to be guarded with respect to the findings of this study. Particularly, caution should be taken when generalizing the findings to the entire population of U.S. 10th graders in 2002. Rather, these results indicate that the analytical student and school samples are more likely to be generalizable to college-ready U.S. public school students and the types of high schools they are likely to attend.

ii. Missing Data

Missing data are always a critical issue with complex survey data collected over several waves. Before providing detail on procedures used to deal with missing data in this study, it is important to note that the ELS:02/06 staff used its own imputation procedures for reducing the number of missing cases for certain variables. Sometimes imputation was employed using data from the school roster when it was not reported by the student. Sometimes, multiple variables were used to estimate the missing data for the chosen variable (for more information see the ELS:02: Base-year to first follow-up data file documentation 2002).

Even after missing data were imputed by ELS: 02/06 staff, the three analytic samples used here were still left with some level of missing data due to item non-response within a

particular wave of data collection. To address this problem, multiple imputation techniques were applied. The objective of multiple imputation is not to estimate the true value for the missing observation of a particular variable. Instead, it maximizes use of the observed data, while producing coefficient estimates and standard errors that account for the uncertainty due to the amount of missing data in the sample. Multiple imputation uses statistical techniques to create multiple, complete datasets with imputed values substituted for each missing value based on the available data and the relationships among the variables in the sample (Allison 2008; Allison 2001). This technique is most appropriate when data are missing completely at random (MCAR) or when they are missing at random (MAR).

Although, the extent of missing data for the measures used in this study varied depending on the variable (.06%-32%), it is safe to assume that the data, in some cases, are at worst missing at random. Data can be considered as MAR if missingness is dependent on observed covariates, whereas with MCAR, there is no discernible pattern to the missing values. For example, students who are disabled might be less inclined to report their postsecondary expectations, and thus reported postsecondary expectations will be related to disability. MAR is a problem because it biases estimates. Multiple imputation uses information on observed data to make inferences about missing data, and dealing with the MAR problem by producing meaningful and relatively unbiased estimates.

For this study, the Stata application and the user-supported ICE command were employed to conduct multiple imputation analysis. The ICE command performs a type of multiple imputation known as Imputation by Chained Equations (ICE). This technique uses regression procedures to estimate the missing values for each variable, beginning with the variable with the least missing data. First, ICE randomly replaces missing values from the observed values

in the dataset. Second, it regresses that variable against the other variables in the dataset, and then estimates values for the missing variable based on the resulting regression equation[19]. It repeats this process focusing on the variable with the next least missing data, retaining the imputed values from the previous step. This process is repeated until all missing values are imputed[20]**.** Finally, this process is repeated to create the number of imputed datasets needed for the analysis[21].

With the imputed dataset, Stata can run a variety of statistical commands using the MIM function. MIM runs the specific command for each of the imputed datasets and then combines the results using Rubin's Rule, a procedure that calculates coefficient estimates and standard errors that account for the uncertainty due to the missing values (Rubin 1987). For each of the three dependant variable samples, a total of 20 imputed datasets were created and then used in all the regression modeling[22]. The number of imputations was calculated using the relative efficiency (RE) index based on a 20% rate of missing data to achieve 99% efficiency (Rubin 1987).

iii. Data Quality of Disability

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[19] The student and school samples for each outcome of college access were imputed separately using all relevant predictors as well as the dependent variable. Although there is some debate over this technique, failure to include the dependent variable implies that the imputed values for the predictors will not be associated with the dependent variable, net of other variables in the imputation model (Schafer 1997; Allison 2001).

[20] Multiple imputation procedures, particularly ICE, have not yet been made to account for design features of complex survey data. While ICE can accommodate sampling weights, it cannot address issues of stratification or clustering. For this study, regressions using ICE were conducted using both sampling weights and dummy variables for both region and urbanicity to take into account sample stratification.

[21] For each Ml dataset, the initial draw of values that start the process is done at random. As a result, the imputed values vary across the different Ml datasets.

[22] Twenty datasets each were generated for the student and school samples for each of the three analytic samples, and then merged using both school and student identifiers.

Here I discuss the limitations of studying disability issues using national datasets. For one, disability is rarely a focal point in data collection. This means that the identification of SWDs can be limited. It also leads to an abundance of missing data as SWDs are frequently left out of samples altogether, either because they do not meet requirements for entry into a study or little effort is made to track them. This is an issue given the difficulties SWDs face with attendance due to lack of transportation or other disability related issues. Schools that specifically cater to SWDs may also be excluded from datasets and studies because they are viewed as outliers and not reflective of the general student population.

To alleviate some of these issues, scholars have turned to datasets that specifically focus on SWDs, namely the National Longitudinal Transitional Study (NLTS/NLTS2), which collects data from a sample of special education students nationwide. While its contributions to disability research have been seminal, this data only focus on a segment of the disabled student population, those in special education. Thus, despite its value in asking pointed items related to the disability and special education experience, any findings can only be generalizeable to SWDs in special education. More importantly, it is impossible to draw comparisons between SWDs and non-SWDs. Thus, such data would not inform why SWDs have a certain educational outcome in comparison to the general student population.

Despite issues of missing data and a reliance on self-reports, the ELS: 02/06 provides a major advantage over other datasets in the study of postsecondary transitions for SWDs. The various disability and special education identifiers allow for more appropriate ways to capture this population in a sample that includes many general education students. This makes possible a study that compares both groups in order to explain why SWDs have lower rates of postsecondary access.

iv. Sample Weights

Due to the complexity of the ELS: 02/06 sampling design, the data must be weighted and standard errors corrected for design effects before drawing inferences from the data[23]. Since the ELS: 02 database is a multi-level sample scheme which oversampled certain student groups to address attrition, the applied weights should properly reflect the number of students in the population that the sample is meant to represent. In this study, ELS: 02/06 sampling weights were applied at both the student and school level. The student weight is a panel weight meant to be representative of all 10th graders in U.S. high schools in 2002. Meanwhile, school level data were also weighted based on the 2002 data. The data are weighted for all descriptive and regression analyses. For the first two questions, the variables are weighted at the student level. In the last question, both student- and school-level weights are applied[24].

Sampling weights must also be recalibrated to take into account the multi-level structure of the data. Although commonly accepted methods of computing sampling weights for estimating single-level models have been developed, there is little agreement on the best method to construct sampling weights for multilevel analysis (Chantala, Suchindran, and Blanchette 2005). Because multilevel weights need to be constructed differently than sampling weights used for single-level models, the analyses rescales weights as

[23] Issues that must be addressed before drawing inferences from the data are stratification and clustering of the ELS: 02/06 sample. To do this, I used survey (svy) commands in STATA when possible to conduct all descriptive and regression analyses. These commands use Taylor-series linearization methods to produce correct standard errors for samples that were drawn using a stratified cluster design (StataCorp 2001).

[24] Prior to applying the weights, the weights are normalized according the analytic sample size.

recommended by Pfefferman et. al. (1998). The two weight components computed for this design are:

- *Level 2 weight component*. Each school in the sample will have a weight equal to the number of schools in the sample represented by that school and is computed as follows: $lvl2\_wt_j = 1/\{Pr(\text{school j selected}\}$
- *Level 1 weight component*. Each student selected from school j will have a sampling weight that is equal to the number of students within school j represented by that student, and is computed as follows:

$$lvl1\_wt_{i|j} = 1/\{Pr(\text{student i selected} \mid \text{school j selected})\}$$

d. Analysis Plan

To address the research questions this study employs multilevel analysis using the generalized linear latent and mixed models, or "GLLAMM" program of Stata (Rabe-Hesketh and Skrondal 2006). Multilevel analysis was selected because of the multi-level sampling methods used in the study. Ignoring the clustered nature of the data and using single-level analytical methods, such as ordinary least squares regression, increases the risk of committing type I errors (probability of rejecting the null hypothesis when the null hypothesis is true). (Snijders and Bosker 1999). In contrast, multilevel analysis incorporates the nested nature of the data and produces more accurate estimates of standard errors. Moreover, multilevel analysis was necessary because the study explicitly tests multilevel propositions such as the influence of school-level variables on student-level outcomes.

The *gllamm* program with the logit link function is used to incorporate the nested structure and distribution of the data. It also allows specification of probability weights at

each level to account for oversampling of certain students. GLLAMM uses a pseudo-likelihood approach, and standard errors are obtained by using the sandwich estimator which takes into account clustering among primary sampling units (Rabe-Hesketh & Skrondal 2006)[25][26]. Another advantage of *gllamm* is its ability to handle missing data and work with imputed datasets. Programs such as HLM can only work with imputed datasets at level-1 with no missing data at higher levels. Using the MIM commands in Stata, *gllamm* is able to estimate multiple regression models using datasets imputed at more than one level using ICE, thus preserving cases with missing data at all levels.

Despite its many advantages, *gllamm* does have two important limitations that should be noted. The first limitation is that it does not take into account stratification in which the population is organized into distinct categories or "strata" for the purposes of sampling an independent and random sub-population. Ignoring stratification can lead to an overestimate of standard errors. This is because stratification makes certain that no part of the sampling frame goes unrepresented. Although this limitation is of concern when working with complex survey data, the limitations posed by other methods and programs (i.e. not dealing with missing data, probability weights, clustering, etc.) would pose greater threats to the validity of the results. Thus, *gllamm* offers the best method for estimating multilevel models that address issues of both missing data and design features of complex survey data such as probability weights and clustering. A second limitation of *gllamm* is that estimating regression models, especially with random effects and many predictors, can be extremely time intensive. To reduce this burden, for each set of models a model with fewer quadrature

[25] The default of seven integration points is employed.
[26] The "adapt" option was specified so that adaptive Gaussian quadrature, instead of the ordinary quadrature, was applied, because the adaptive quadrature works better for dichotomous outcomes (Rabe-Hesketh, Skrondal, and Pickles 2004).

points is estimated, and then these estimates are used as starting values for the model with more quadrature points (Rabe-Hesketh, Skrondal and Pickles 2004)[27].

i. Disability Status

For each stage of the postsecondary access process (application, admissions, and enrollment) this dissertation will estimate a model to answer each of the following four research questions[28].

1. What is the relationship between disability status and postsecondary access?

Model 1 includes disability as the sole predictor with a between-school variance component. This tells us whether there is an association between disability status and postsecondary access taking into account the variation of postsecondary access across schools.

2. Does self-determination account for the relationship between disability status and postsecondary access?

Model 2 adds a cluster of variables representing each of the four dimensions of self-determination (i.e. behavioral autonomy, self-regulation, psychological empowerment, and self-realization). The measures are included to examine whether the observed association between a students' disability status and odds of postsecondary access is to some degree, spurious. Ignoring the lower levels of self-determination commonly observed in SWDs, may

[27] Adaptive quadrature is used to evaluate the means and standard deviations. This necessitates several iterations (quadratures) with each iteration resulting in an improved evaluation of the log-likelihood.
[28] Prior to analysis, a null model is run for each outcome with no student or school level predictors to determine whether there is significant variation in college access.

lead researchers and practitioners to misappropriate the effects of self-determination on postsecondary access to disability status.

3. Do differences in individual demographic and school-related experience covariates account for the relationship between disability status and postsecondary access?

Model 3 introduces level-1 student demographic characteristics to account for the fact that part of the effect of disability status on postsecondary access may be spurious due to common associations of those two variables with student demographic characteristics. Neglecting the less advantageous demographic profiles commonly seen in SWDs may lead researchers and practitioners to misappropriate the effects of social demographics on postsecondary access to disability status.

Model 4 considers possible school-related experience effects as potential confounders in the relationship between disability status and postsecondary access. The measures are included to examine whether the observed association between a students' disability status and odds of postsecondary access is spurious. Not accounting for the less favorable academic profiles frequently detected in SWDs, may lead researchers and practitioners to inappropriately attribute the effects of these profiles on postsecondary access to disability status.

The general level-1 model for postsecondary access (i.e. application, admissions, and enrollment) representing questions 1-3 can be written as follows.

$$\text{Logit}\,[\Pr Y_{\text{postsecondary access } ij}=1] = \beta_{0j} + \beta_{10}X_{ij} \qquad \textbf{(eq. 1)}$$

$$\beta_{0j} = \gamma_{00} + \mu_{0j} \qquad \mu_{0j} \sim N(0, \sigma^2_{u0})$$

where X_{ij} is the vector of individual-level variables, and β_{10} is the vector of their corresponding regression coefficients.

4. Over and above disability status and the modeled individual-level traits, are school-level characteristics systematically associated with postsecondary access? Furthermore, do school-level characteristics moderate or alter the strength of association between disability status and postsecondary access?

Model 5 introduces all level-2 school predictors into the model. The model can be written as follows:

$$\text{Logit}\,[\Pr Y_{\text{postsecondary access } ij}=1] = \beta_{0j} + \beta_{10}X_{ij} \qquad \textbf{(eq. 2)}$$

$$\beta_{0j} = \gamma_{00} + \gamma_{01}\, Z_j + \mu_{0j} \qquad \mu_{0j} \sim N(0, \sigma^2_{u0})$$

where Z_j is the vector of school-level variables, and γ_{01} is the corresponding vector of regression coefficients. This will determine whether the school-level variables significantly explain parts of the between-school variation in postsecondary access.

ii. Disability Status as a Random Component

To determine the extent to which the strength and/or direction of the relationship between disability status and postsecondary access is affected by school-level characteristics, two additional models are estimated for each outcome. Model 6 adds a random component for disability status (D_{ij}) to Model 5. The model is estimated as follows:

$$\text{Logit}\,[\Pr Y_{\text{postsecondary access } ij}=1] = \beta_{0j} + \beta_{1j}D_{ij} + \beta{*}X \qquad \textbf{(eq. 3)}$$

$\beta_{0j} = \gamma_{00} + \gamma_{01}*Z_j + u_{0j}$ $\quad u_{0j} \sim N(0, \sigma^2_{u0})$

$\beta_{1j} = \gamma_{10} + u_{1j}$ $\quad u_{1j} \sim N(0, \sigma^2_{u1})$

$\text{cov}(\mu_{0j}, \mu_{1j}) = \sigma_{u01}$

In this random coefficient model, the level-1 coefficient for disability status is allowed to randomly vary between schools. All other level-1 slopes (represented by the vector, $\underline{\boldsymbol{\beta}}$, and corresponding to other student-level covariates) are modeled as fixed – that is, not varying between schools. If Model 6 reveals significant between-school variation in the disability slope, we will have reason to search for school-level characteristics that might systematically explain some of this variation. That search is facilitated by Model 7.

Model 7 adds school-level characteristics (Z_j) to the prediction of the level-1 disability slope (β_{1j}). With this model, cross-level interactions have been introduced and the model represents an investigation of moderation. For example, if the association between disability status and postsecondary access is conditioned by a school's level of academic press, this will be revealed by a significant coefficient within the vector $\underline{\boldsymbol{\gamma_{11}}}$, specifically the coefficient that represents the cross-level interaction between a school's academic press and an individual student's disability status.

$\text{Logit}[\Pr Y_{\text{postsecondary access ij}}=1] = \beta_{0j} + \beta_{1j}D_{ij} + \beta*X$ **(eq. 4)**

$\beta_{0j} = \gamma_{00} + \gamma_{01}*Z_j + u_{0j}$ $\quad u_{0j} \sim N(0, \sigma^2_{u0})$

$\beta_{1j} = \gamma_{10} + \gamma_{11}*Z_j + u_{1j}$ $\quad u_{1j} \sim N(0, \sigma^2_{u1})$

$\text{cov}(\mu_{0j}, \mu_{1j}) = \sigma_{u01}$

iii. Special Education Services

1) What is the relationship between special education status and postsecondary access for SWDs?
2) Does self-determination account for the relationship between special education services and postsecondary access for SWDs?
3) Do differences in individual demographic and school-related experience covariates account for the relationship between special education services and postsecondary access for SWDs?
4) Over and above the receipt of special education services and the modeled individual-level traits, are school-level characteristics systematically associated with postsecondary access for SWDs? Furthermore, do school-level characteristics moderate or alter the strength of association between special education services and postsecondary access for SWDs?

The analysis plan to address the research questions related to special education services follows the same model building specifications, logic, and hypothesized association as for the disability status research questions. Each set of measures are treated predominately as confounding variables. The initial model serves to compare postsecondary access outcomes between students receiving special education services and other SWDs. Although having a disability and receiving special education services are unique experiences in their own right, both experiences are similar in how their effects are influenced by the socialization of these students at home and at school.

From a methodological standpoint there is one key difference in this analysis plan. The sample is restricted to SWDs. This is because only students with real or perceived disabilities can be selected into special education. Not accounting for this distinction may bias estimates

and understate the effects of special education services on postsecondary access due to including students who had no risk of being placed. Despite restricting the sample to only SWDs, we must still use the entire sample to calculate the standard errors rather than excluding them outright (Cochran 1977; Rao 2003). Yet, as noted earlier *gllamm* does not support the *svy* commands in Stata (i.e. subpop). To get around this issue, the weights for cases outside the subpopulation (i.e. non-SWDs) are zeroed out (West, Berglund, and Heeringa 2008).

Chapter V

V. Findings

a. Disability Status

This section summarizes the results pertaining to the relationship between disability status and postsecondary access (application, admissions, & enrollment).

i. Descriptive Findings

Table 9 compares postsecondary access rates by disability status. From this table, we see that SWDs differ significantly from non-SWDs in terms of application, admissions, and the high school completion and postsecondary application stages. Only 76.1% of SWDs complete high school compared to 94.2% of non-SWDs, and 75.3% of SWDs apply to college compared with 92.2% of non-SWDs. At the admissions and enrollment stage, differences are slighter. Approximately, 95.5% of SWDs who apply to college are accepted relative to 98.8% of non-SWDs, while 94.3% of SWDs who are accepted to college actually enroll compared with 97.4% of non-SWDs.

[Insert Table 9 about here]

These data highlight what is likely to be a large part of the disability gap in postsecondary access. SWDs are much less likely to obtain a standard high school diploma than non-SWDs, and they are less likely to apply to postsecondary education. Although the focus of

this dissertation is on students who complete high school, it is worth noting some key explanations for the disability gap in high school graduation. Many researchers have posited explanations for this difference that are similar to those outlined throughout this dissertation including lower academic achievement, lower academic expectations, and the demographic profiles of SWDs. However, other researchers point out that barriers to high school graduation for SWDs may be related to government policies and school-level programs. For example, since the onset of high-stakes exit exams, such exams have produced higher rates of dropouts of high school SWDs (Goodman, et al. 2011). As graduation requirements are standardized and diploma options have become limited, individual options for specialized instruction are being eliminated.

Furthermore, while inclusion has many benefits, it is not clear whether the benefits outweigh the consequences for those who cannot meet the requirements necessary for a standard high school diploma. Although the special education literature is replete with effective strategies and interventions to use with SWDs in inclusive settings, there seems to be a disconnect between best practices and implementation as evidenced by the low graduation rates for SWDs in inclusive settings (Goodman, et al. 2011).

Ultimately, the high rates of high school non-completers among SWDs remain an important factor for why this group of students is less likely to attain postsecondary access. However, these disparities based on disability status remain even among high school graduates who are presumed to be the most highly functioning SWDs. This finding is important because while it calls attention to the dropout problem among SWDs, it also highlights the significance of studying the postsecondary access process to determine the mechanisms by which SWDs filter out of postsecondary attendance.

Table 9 also compares the postsecondary access between SWDs and non-SWDs based on the institutions enrolled. While this analysis does not yet control for other factors such as demographic and academic profiles, several trends do emerge that detail the postsecondary experiences of SWDs. SWDs (55.7%) are significantly more likely to enroll in 2-year PSIs than non-SWDs (32.0%) and significantly less likely to enroll in 4-year PSIs (38.8% to 66.1%). Although, 2-year programs represent a significant means for improving the educational attainment of SWDs, these stark differences further illustrate the challenges that SWDs face in the postsecondary arena. For example, Long and Kurlaender (2008) found that community college students were 36% less likely to obtain a bachelor's degree than similar students who started at four-year colleges. Furthermore, among students in 2-year PSIs who expressed an intention to obtain a four-year bachelor's degree, only 26 percent had such a degree nine years later. The negative effect of starting postsecondary education at a 2-year PSI remained even after controlling for students' race, gender, age, ability (measured by ACT scores) and family income.

Table 10 provides descriptive information on the three samples for each of the student-level variable clusters. The table shows some noticeable differences across samples with respect to these indicators that illustrate the extent to which SWDs are disadvantaged in the postsecondary access process. For example the proportion of SWDs decreases moving from the sample of high school graduates (29.4%) to the sample of accepted students (24.7%). This reflects not only a decrease in the percentage of SWDs as the overall pool of students becomes smaller, but an increase in the share of non-SWDs. So, as students move through the postsecondary access process, non-SWDs gain an advantage over SWDs in terms of postsecondary access.

With respect to self-determination, every dimension score increases moving from the sample of high school graduates to the sample of accepted students with the exception of *behavioral autonomy*, which decreases slightly from the sample of high school graduates to the sample of students that apply to a PSI. However, the score was lower in the sample of accepted students. Overall, this indicates that exhibiting higher levels of self-determination is an important factor in moving along the postsecondary access process. Students showing lower levels of self-determination are filtered out of the process.

[Insert Table 10 about here]

Table 10 also shows socio-demographic differences across samples that would be expected of students as they inch closer to attaining postsecondary access. For example, the percentage of female and White students, as well as the average SES all increase going from the sample of high school graduates towards the sample of accepted students. Academic characteristics also differ across the three samples. The percentage of students with higher GPAs, in a college/academic track, participate in extra-curricular activities, and expect to go to college all increase moving from the sample of high school graduates towards the sample of accepted students. Though the differences are sometimes small, each of these trends indicates that as students move through the successive stages leading to postsecondary access, their demographic and academic profiles become more advantageous. Students with characteristics less favorable to postsecondary access are screened out.

Overall, the results in **Table 10** underline the importance among the steps involved in attaining postsecondary access. We now know that high school graduates are not only

screened out throughout the postsecondary access process, but that the biggest challenge is getting students to apply to a PSI. Once students do so, their chances of enrolling in a PSI improve. Furthermore, we know that students with less advantageous demographic and academic profiles are more likely to screen out as they move through the postsecondary process. Most importantly, SWDs appear to be the most negatively affected by this attrition relative to other students. Ultimately, these trends tell us that while admissions and enrollment outcomes may play an important in the disability gap in postsecondary access, particular attention should be paid to factors that influence the application stage for both groups.

Table 11 offers descriptive information on the three samples for each of the school-level independent variables used in the study. The table, like the previous one, also supports the idea that students with less advantageous demographic and academic profiles are more likely to screen out as they move through the postsecondary process. However, here we also observe some important differences across samples with respect to the types of high schools attended by students. For example, with respect to academic press, the average Academic Climate Scale Score increase as we move from the sample of schools of potential PSI applicants towards the sample of schools of potential college enrollees. However, the measures for school resources remain relatively stable across samples, with only minor increases in each. With respect to school demographics, the percentage of schools with high a percentage of students receiving free lunch or special education services decrease moving from the sample of schools of potential PSI applicants towards the sample of schools of potential college enrollees.

[Insert Table 11 about here]

Tables 12 and **13** present descriptive data on individual and school-level characteristics across the three samples by disability status, including standardized differences which measure how large differences are between SWDs and non-SWDs across measures of different units. These differences were calculated using Hedges g for continuous variables by taking the difference in means between two groups and dividing that number by their combined (pooled) standard deviation. Intuitively, this tells us how many standard deviations difference there is between the means of the SWD group and the non-SWD group. By focusing on standard deviations, we can provide a standardized measure of difference[29]. For binary variables, odds ratios (i.e., the probability of an event occurring in the treatment group divided by probability of an event occurring in the comparison group) were calculated to determine differences.

In each sample, SWDs did not fare as well as non-SWDs with respect to each of the student-level variable clusters. SWDs have significantly lower scores on each of the self-determination dimensions than non-SWDs across samples. The biggest differences are consistently in terms of self-regulation (Δ=.350→.310) and psychological empowerment (Δ=.418→.366). These results on self-determination reveal an important finding. Self-determination characteristics, especially those such as self-efficacy, locus of control, and having a general belief in one's own abilities (i.e. psychological empowerment) as well as the ability to be self-directed and exhibit college-going behavior (i.e. self-regulation) are traits that distinguish non-SWDs from SWDs. Yet, while these differences diminish as we move

[29] Hedges' G has been shown to upwardly bias effect sizes, so a small sample size correction is applied as noted in Hedges (1981).

from one sample to the next, the changes in difference are rather small indicating that self-determination may have little impact on postsecondary acceptance and enrollment.

SWDs are also more likely than non-SWDS to come from disadvantaged backgrounds. In each sample, SWDs are more likely to be male (Δ=.527→.407), Black/African-American (Δ=.667→.552), low-SES (Δ=.321→.218), and come from single-parent families (Δ=.590→.454). The differences in these demographic traits are larger than those of the self-determination constructs indicating that SWDs differ more than non-SWD with respect to their demographic profiles than self-determination levels. In addition, as we move across analytic samples these differences narrow, but differences remain in the small to medium range for the sample of accepted students. Thus, demographics play an integral role in distinguishing SWDs from non-SWDs, as well as in influencing the postsecondary access process.

SWDs also did not do as well with respect to school-related experiences in comparison to non-SWDs. Their GPAs are lower (Δ=.142→.122), they are less likely to enroll in a college/academic track (Δ=.243→.212), and also less likely to participate in extra-curricular activities (Δ=.326→.270). Furthermore, SWDs are less likely to have college expectations for themselves (Δ=.339→.297), from their parents for them (Δ=.311→.265) and from their teachers for them (Δ=1.053→.924). Differences, for the most part, indicate that while less favorable educational experiences are more typical of SWDs, these differences are quite small[30]. In addition, these differences do not diminish much across samples indicating that

[30] Cohen (1988) proposed rules of thumb for interpreting effect sizes: a "small" effect size is .20, a "medium" effect size is .50, and a "large" effect size is .80. As Cohen warned, however, these rules of thumb may be different for each field of study

these educational experiences influence the postsecondary access process mainly through the application stage.

[Insert Table 12 about here]

Across the postsecondary access process, SWDs also differ from non-SWDs in terms of the high schools they attend (Table 13). SWDs are slightly more likely to attend high schools with lower academic press (Δ=.139→.098). They are also more likely to attend high schools with fewer resources where teachers are less likely to be certified (Δ=.400→.318) and rated as good/excellent (Δ=.373→.300). In terms of school demographics, there are few significant differences by disability status in terms of total enrollment, school SES or the percentage of students receiving special education services. The fact that differences were largest for instructional resources was surprising given the resources and pedagogical attention allocated to educating SWDs. Furthermore, it appears that such instructional resources have an impact on the postsecondary access process beyond high school graduation as evidenced by the diminishing standardized differences across samples.

[Insert Table 13 about here]

The descriptive data suggests that SWDs have more disadvantaged educational experiences than non-SWDs. These characteristics make SWDs less viable candidates for continued postsecondary education and may impact their desire to think of themselves as

viable candidates. This leads to significant differences in application rates among the two groups. Still, what leads to disability disparities in postsecondary access, especially at the application stage, remains unclear. Aside from differences in educational experiences, the descriptive data also confirm what other studies have reported: SWDs have lower levels of self-determination, come from less advantaged backgrounds, and attend high schools with lower academic press and resources.

It appears from the descriptive data that the largest disparity in the postsecondary access process comparing SWDs and non-SWDs occurs at the application stage. In fact, although statistically significant differences remain at the admissions and enrollment stages, once an SWD applies to a PSI, the chances of that student enrolling is almost on par with their non-disabled peers. A small share of that, of course, may be due to selection because SWDs and non-SWDs who enroll in college are somewhat more alike than those who apply increasingly on several key dimensions, as noted by the changes in differences in SES and parental expectations for college. Nonetheless, the dissimilarity between the two groups remains relatively large across the stages of postsecondary access. For this reason, we turn to regression analysis to provide further insight into what accounts for these disparities.

ii. Findings from GLLAMM Logistic Regression Models

This section considers the explanatory relationship between disability and postsecondary access. For each outcome of postsecondary access (application, admissions, and enrollment) we estimate five nested two-level logistic regression models. The first model includes disability status as the sole predictor, controlling for the variance in postsecondary access across schools. This analysis offers a baseline measure of the overall association between

disability status and postsecondary access. The next four models, in a step-wise fashion, add the four dimensions of self-determination as predictors, level-1 demographic control variables, level-1 school experience control variables, and finally all school-level predictors. In this analysis, a student's log odds of postsecondary access vary across schools. Individual students are the first level and the high schools which these students attended are the second level. An individual student's odds of postsecondary access are modeled as a function of a school mean and a random error (assumed to have a Bernoulli distribution with a mean of zero and a constant variance). Using a consecutive series of models, additional variables are added to previously estimated models. Missing data are imputed and standard errors are corrected for clustering at the individual and school levels while data are weighted using probability weights to correct for disproportionate sampling of students. Stratification due to ELS: 02/06 sampling design is not accounted for.

1. Research Question 1: What is the relationship between disability status and postsecondary access?

The analysis starts with the null model (not shown), which estimates the intercept and the between school level variances but does not include any independent variables. If the intercept is zero (equivalent to having no intercept in the model), the resulting model implies that the response function must be exactly zero when all the predictors are set to zero. For a logistic model it means that the logit (or log odds) is zero, which implies that the event probability, or probability of applying to, being admitted to, or enrolling in a PSI is 0.5. The between school level variance represents the extent to which the odds of the outcome vary across schools. In this analysis, the log odds of postsecondary access vary across schools at

all three stages. Specifically, for the model predicting postsecondary application, the intercept is significantly different from zero with a value of 2.132. A student's log odd of applying to a PSI has a variance of 0.733 across schools. For the model predicting postsecondary admissions, the intercept was significant and has a value of 4.040. A student's log odd of being admitted to a PSI has a variance of 0.366 across schools. Finally, for the model predicting postsecondary enrollment, the intercept is significant with a value of 3.651. A student's log odd of enrolling in a PSI has a variance of 0.643 across schools.

Table 14 summarizes the relationship between disability status and postsecondary access across the various models that reflect the association between disability status in grade 10 and the log odds of attaining postsecondary access. The estimates generated by these models reflect both the unconditional and conditional association between disability status and postsecondary access, accounting for differences in self-determination, student demographics, school-related experiences, and school-level characteristics. We focus solely on the estimated coefficient and standard errors for disability status to highlight how the association between disability status and postsecondary access change across both the stages of access, and upon the inclusion of other variables.

[Insert Table 14 about here]

For the unconditional model (**Model 1**), the coefficient for disability status is negative and statistically significant across all stages of postsecondary access. Students identified as disabled in 10th grade are less likely to obtain postsecondary access either because they fail to

apply, gain admissions, or enroll. The biggest barrier toward postsecondary access occurs at the application stage where, based on a coefficient (log odds) of -1.440, having a disability decreases the odds of applying to a PSI by 76.3% [(exp (-1.440)-1)*100]. However, SWDs do not fare much better relative to non-SWDs with respect to their odds of admission (75.1% decrease), and enrolling in a PSI (55.9% decrease). At each stage, the between school variance component is also significant, indicating that disability status alone does not explain the variation in postsecondary access across schools.

These initial *gllamm* estimates support the descriptive patterns noted in the previous section that applying to a PSI is a significant barrier for SWDs. However, contrary to what the descriptive data show, the negative impact of disability status on admissions is also quite large. This difference in findings might be due the volatility (or dramatic changes in odds that come with small changes in probability) one gets when baseline probabilities are very close to 1. Still, the main point of these baseline estimates is that SWDs are largely disadvantaged in the first two stages of the postsecondary process and less so at the enrollment stage.

Model 2 tests whether self-determination (i.e. behavioral autonomy, self-regulation, psychological empowerment, and self-realization) is a confounding factor in the relationship between disability status and postsecondary access. After adding these measures to models of each outcome, the coefficient for disability status remains negative and significant at each stage of the postsecondary process. However, the strength of this association decreases. With differences in self-determination controlled, having a disability reduces the odds of postsecondary application by 68.0% [(exp (-1.140)-1)*100] from 76.3%, the odds of admission by 72.3% from 75.1%, and the odds of enrolling in a PSI by 51.4% from 55.9%. That these reductions are small across all stages indicates that only a small share of the

association between disability status and postsecondary access is attributable to differences in self-determination.

Model 3 adds a cluster of variables representing students' individual student demographic profiles including SES, race, gender, family structure, income, and parents' level of education. The purpose of including these measures is to see how much of the association between disability and postsecondary access is attributable to differences in social background. Examining this circumstance is important given the propensity for SWDs to come from social backgrounds that pose challenges to postsecondary access. After adding these measures to models of each outcome, the coefficient for disability status is still negative and significant at each stage of the postsecondary process. The strength of the association between disability status and postsecondary access, however, is reduced. Net of these other considerations, having a disability reduces the odds of application by 65.5% [(exp (-1.064)-1)*100] from 68.0%, the odds of admissions by 68.5% from 72.3%, the odds of enrolling in a PSI by 47.2% from 51.4%. These small reductions in odds indicate that differences in students' demographic characteristics account very little for the association between disability status and postsecondary access. SWDs remain disadvantaged at all stages of the postsecondary process regardless of their background characteristics.

Model 4 considers the relationship between disability status and postsecondary access after accounting for differences in individual school-related experiences including student, parent, and teacher expectations, GPA, college track, parental advice about college, grade retention, math/reading standardized test composite score, participation in a college preparatory program, and participation in extra-curricular activities. This cluster of variables is included to determine whether the academic profiles of SWDs may be limiting their

prospects at various stages in the postsecondary access process. Exploring this issue is important given that SWDs tend to have less favorable academic profiles than other students.

After including measures of school-related experiences to models of each outcome, the coefficient for disability status is no longer statistically significant at any stage of the postsecondary process. Thus, school-related experiences are able to explain away the remaining disability status related differences in postsecondary access. This finding is important because it illustrates that much of the disadvantage that SWDs have with respect to attaining postsecondary access stems from their experiences as students rather than their experiences as socially and economically disadvantaged youth.

Model 5 displays *gllamm* regression results for the disability coefficient after accounting for all level-2 school predictors (i.e. academic press, school resources, and school demographic composition). With level-2 variables included, disability status remains non-significant in predicting application and enrollment. However, with respect to admissions, the size of the disability status coefficient increases and becomes statistically significant. Having a disability reduces the odds of admission to at least one PSI by 44.7%. The change in odds and significance after adding school-level predictors indicates the presence of suppressor associations. Essentially, the odds of SWDs being admitted to a PSI would be even lower were it not for the kinds of schools they attend.

2. Research Question 2: Does self-determination account for the relationship between disability status and postsecondary access?

Table 14 shows that after adding self-determination measures to models of postsecondary access, the coefficient for disability status remains negative and significant at each stage of

the postsecondary process. However, the strength of the association between disability status and postsecondary access is reduced. **Table 15** indicates that specific elements of self-determination are instrumental in accounting for disability disparities in the postsecondary process. At the application stage, self-regulation and psychological empowerment have the only significant influence of the four measures. A one standard deviation increase in self-regulation (a student's ability to examine the environment and make decisions about how to act; having postsecondary-oriented goals) and psychological empowerment (a student's belief in their ability to act in a self-determined way and influence outcomes) increases the odds of applying to a PSI by 62.4% and 43.5% respectively.

Surprisingly, behavioral autonomy (students act in a way in which they are responsible for their own self-care and direction) and self-realization (individuals know their strengths and limitation and behave accordingly) have no significant impact on postsecondary application. While unexpected, this finding suggests that, for many high school graduates, making the decision to apply to a PSI is a certain one. That is, students when making the decision to apply, make that decision regardless of their interests, preferences, or level of independence. In addition, high school graduates make the decision to apply to a PSI irrespective of how well they understand their own abilities. Ultimately, the decision to apply to a PSI rests on a determined plan to attend a PSI for some students, with little sense of autonomy and comprehension of their own capabilities, while for others it rests on a strong belief that they have the ability to succeed or control outcomes at the postsecondary level.

At the admissions stage only self-regulation is statistically significant. A one standard deviation increase in self-regulation increases the odds of being admitted to at least one PSI by 94.1%. This finding is expected given that the students who are most driven to attend a

PSI are likely to do more to achieve that objective. More importantly, while other facets of self-determination can potentially influence postsecondary acceptance (i.e. greater self-realization can help students apply to PSIs that are a better match for their abilities), being more self-regulated (i.e. seeking advice on academic performance, exam preparation, and PSI application) is more likely to present itself in a student's PSI application.

Finally, at the enrollment stage, behavioral autonomy and psychological empowerment have the only significant influence. A one standard deviation increase in psychological empowerment increases the odds of enrolling in a PSI by 37.9%. However, a one standard deviation increase in behavioral autonomy decreases the odds of enrolling in a PSI by 17.1%. While this finding might seem surprising, it is likely that students who are too autonomous might be more likely to make decisions that go against what is expected of them. Therefore, a student who has been accepted to a PSI, but also has more behavioral autonomy might decide to forego enrollment because that student is less likely to be influenced by outside factors.

[Insert Table 15 about here]

3. Research Question 3: Do differences in individual demographic and school-related experience covariates account for the relationship between disability status and postsecondary access?

In **Table 14**, we found that after adding measures of students' individual student demographic profiles to models of each outcome, the estimated coefficient for disability status was still negative and significant at each stage of the postsecondary process, but

reduced. **Table 16** suggests that despite accounting for only a small part of the association between disability status and postsecondary access, the results regarding specific student demographic variables are worth highlighting as they indicate which elements account for disability differences in postsecondary access. For example, being male is significantly and negatively associated with applying and enrolling in a PSI, but not admissions. Being Hispanic is significant and positively associated with application and enrollment, but negatively associated with admissions indicating that while Hispanic students may be interested in attending a PSI, they may not have the qualifications to attend. SES has a significant and positive estimated coefficient at all stages of postsecondary access, especially at the admissions stage where a one standard deviation increase in SES increases the odds of being admitted to at least one college by 153.5% [(exp (.930)-1)*100].

Other demographic characteristics, including family structure, parents' level of education, and family income, also have significant estimated coefficients in aspects of postsecondary access. Coming from a higher income household relative to a low-income household has a positive and significant estimated in models for all postsecondary outcomes. Parental level of education, however, only has significant and positive estimated coefficients in models estimating postsecondary application and enrollment. Meanwhile, being from a two-parent/guardian household depresses the likelihood of admissions, but is of no consequence with respect to the other two outcomes.

[Insert Table 16 about here]

Table 14 indicated that after including measures of school-related experiences to models of each outcome, the coefficient for disability status was no longer statistically significant at any stage of the postsecondary process. Several variables play an important role in accounting for the association between disability status and postsecondary access **(Table 17)**. At the application stage, grade retention prior to 10th grade, parental and teacher expectations for college, having a higher GPA than a 3.0, and participating in extra-curricular activities prior to application all have a positive and significant estimated coefficients at the application stage. At the admissions stage, being in a college/academic track and participating in extra-curricular activities prior to application are positive and statistically significant. However, being provided advice on college by the parent in 10th grade is negative and statistically significant. Finally, at the enrollment stage, parental expectations for college, having a higher GPA than a 3.0, and being in a college/academic track are positive and statistically significant. Meanwhile, being provided advice on college by the parent in 10th grade is negative and statistically significant.

[Insert Table 17 about here]

4. Research Question 4: Over and above disability status and the modeled individual-level traits, are school-level characteristics systematically associated with postsecondary access? Furthermore, do school-level characteristics moderate or alter the strength of association between disability status and postsecondary access?

As in **Table 14**, **Table 18** displays *gllamm* regression results that include all level-2 school predictors (i.e. academic press, school resources, and school demographic composition). With level-2 variables included, disability status remains non-significant in predicting application and enrollment. With respect to admissions, the size of the disability status coefficient increases and becomes statistically significant. Due to the specification of the multi-level model, it is not appropriate to interpret this change in the disability status coefficient as mediation due to the inclusion of school-level traits. Rather, the inclusion of school-level traits has changed the interpretation of the estimated model's intercept as well as its variance-covariance structure. These changes can result in the altered coefficient of disability status, as well as its significance level. It is appropriate to view table 18 as examining whether or not school-level characteristics systematically are associated with postsecondary access over and above disability status and the modeled individual-level traits. As evidenced by table 18, this does appear to be the case.

[Insert Table 18 about here]

Given the focus of this dissertation, perhaps more interesting and relevant results are displayed in **Tables 19** and **20**. The models investigate whether school-level characteristics moderate or alter the strength of association between disability status and postsecondary access. That is, regardless of whether school-level characteristics are, on their own, significant predictors of postsecondary access, it may be the case that the relationship between disability and postsecondary access is contingent on the schools attended by students. To test the hypothesis of school-specific effects, we estimate models that add a

random coefficient for disability, allowing us to that relax the assumption that the association between disability status and postsecondary access is the same for all schools. We then add cross-level interaction terms between disability status and the school-level variables to determine whether these school-level characteristics help explain the variation in the relationship between disability status and postsecondary access across high schools.

Table 19 displays the results from the logistic regressions predicting postsecondary access as an outcome of disability status, and self-determination with a random component for disability status. This random component indicates the extent to which the association between disability status and postsecondary access varies across schools. If the random component is statistically significant, then schools vary with respect to how disability status influences college application, admission, or enrollment.

[Insert Table 19 about here]

Findings from **Table 19** suggest that the association between disability status and postsecondary access only varies across schools at the application stage. Thus, whether disability status affects postsecondary application depends upon the high school such a student attends. The random component for disability is not statistically significant at either the admissions or enrollment stages. The relationship between disability status and postsecondary admissions and enrollment is, hence, likely not dependent on the schools attended by these students.

Knowing that the relationship between disability status and postsecondary application is moderated by the schools students attend, the next step is to consider what types of schools might be implicated in this relationship. To do this, we re-estimate the model for

postsecondary application, which included a random component for disability. This time, however, we include a set of cross-level interaction terms between disability and each of the school-level indicators. If the relationship between disability and postsecondary application can be explained by these indicators, the random component for disability should no longer be statistically significant.

Table 20 presents the results of this regression that includes cross-level interaction terms along with a random component for disability. These results indicate that the school-level variable clusters (school academic press, school resources, or school demographics) play but a minor role in driving the relationship between disability status and postsecondary application. While both variance components decrease slightly after including the interaction terms, there remains a significant association between the schools attended by students and the relationship between disability status and postsecondary application. That none of the school indicators explain away school-level differences in the association between disability status and postsecondary application indicates that this relationship is likely due to other school-level differences.

[Insert Table 20 about here]

b. Special Education Services

This section summarizes the results pertaining to the association between receiving special education services and postsecondary access (application, admissions, & enrollment) for SWDs. Analyzing these relationships is important given that a large share SWDs are likely to be receiving special education services. In the overall sample of SWDs that were high school graduates, 52.9% received special education services in high school. This places

SWDs at a disadvantage during the postsecondary process by limiting access to the general education curriculum, diminishing SWDs' self-determination, and creating a social stigma which can reduce their academic expectations among themselves and others.

i. Descriptive Findings

In addition to the overall challenges of SWDs in attaining postsecondary access, the data show that SWDs in special education have even greater obstacles. **Table 21** compares postsecondary access rates by special education status for the sub-sample of SWDs. From this table, we can see that special education students differ significantly from non-special education students in terms of application, admissions, and enrollment as well as high school completion. As in the previous analysis, the largest differences occur at the postsecondary application stage where only 71.2% of SWDs who receive special education services apply to a PSI compared with 79.8% of other SWDs and 92.2% who are non-disabled. At the admissions and enrollment stage, differences were less prominent. Approximately, 94.0% of SWDs who receive special education services who apply to a PSI are accepted relative to 96.9% of other SWDs and 98.8% who are non-disabled, while 93.6% of SWDs who receive special education services who are accepted to at least one PSI actually enroll compared with 95.0% of other SWDs and 97.4% who are non-disabled.

Table 21 also shows no statistically significant differences between SWDs who received special education services and SWDs in general education based on the institutions enrolled indicating that SWDs who received special education services are just as likely as other SWDs to attend 4-year and 2-year PSIs. In other words, SWDs whether having received

special education services or not, were still more likely to attend a 2-year PSIs and less likely to attend a 4-year PSI than non-SWDs.

[Insert Table 21 about here]

Table 22 and 23 present individual and school-level characteristics across the three stages of postsecondary access based on differences in special education status, including standardized differences which quantify how large differences are between SWDs who receive special education services and other SWDs in terms of the other variables used in the analysis. In each sample, SWDs who received special education services did not fare as well as SWDs in general education with respect to each of the student-level variable clusters. For example the proportion of SWDs decreases as we move from the sample of high school graduates (52.9%) towards the sample of accepted students (49.7%). This reflects not only a decrease in the percentage of SWDs who received special education services as the overall pool of students becomes smaller, but an increase in the share of other SWDs. So, as students move through the postsecondary access process, SWDs who never received special education services gain an advantage over SWDs who received special education services in terms of postsecondary access.

[Insert Table 22 about here]

Both groups also differ with respect to measures of self-determination. For SWDs who graduated high school, students who received special education services have significantly lower scores on the behavioral autonomy (Δ=.245→.147) and self-regulation (Δ=.320→.329) dimensions than SWDs in general instruction. These results on self-determination uncover a key finding. Self-determination characteristics, especially those such as the ability to be self-reflective and make important and complex decisions (i.e. self-regulation) and the ability to behave autonomously without outside influence (i.e. behavioral autonomy) are traits that distinguish SWDs who received special education services from other SWDs. Yet, while these differences diminish as we move through the postsecondary access process, the differences are small indicating that self-determination may have little value in explaining differences in postsecondary access across the two groups.

SWDs who received special education services are more likely than other SWDs to come from disadvantaged backgrounds. In each sample, SWDs who received special education services are more likely to be male (Δ=.239→.182), Black (Δ=.322→.251), low-SES (Δ=.396→.283), come from single-parent families (Δ=.248→.193), and have a parent with at least some college (Δ=.156→.124). The differences in these demographic traits are somewhat smaller than those of the self-determination constructs indicating that SWDs who received special education services differ more than other SWDs with respect to their self-determination levels than demographic profiles. This finding is counter to the general sample where SWDs differ more from non-SWDs in terms of their demographic characteristics. It also supports the notion that receiving special education services may limit self-determination in SWDs. Moving across the stages of postsecondary access, differences in demographic characteristics narrow, but remain in the small to medium range. Ultimately,

demographics play an essential role in distinguishing SWDs from non-SWDs, as well as in influencing the postsecondary access process.

SWDs who received special education services were also less likely to have advantageous academic experiences. Although, their GPAs are higher (Δ=.080→.067), SWDs receiving special education services are less often enrolled in a college/academic track (Δ=.109→.091), more likely to be retained a grade (Δ=.591→.434), and have lower standardized test scores in reading and math (Δ=1.20→1.07). Finally, these students are significantly less likely to expect to attend college (Δ=.145→.123) and for their parents to expect college of them (Δ=.136→.100). Differences, for the most part, indicate that while less favorable educational experiences are more typical of SWDs who received special education services, these differences are quite small. In addition, these differences do not diminish much across the postsecondary access process, indicating that while they are statistically significant, the sample of SWDs receiving special education services may not be all that different from the sample of other SWDs when it comes to school-related experiences.

Moving through the stages of the postsecondary access process, SWDs who received special education services also differ from other SWDs in the kinds of high schools each attended (**Table 23**). SWDs who received special education services attended high schools with greater resources, where more teachers are certified (Δ=.180→.136) and rated as good/excellent (Δ=.164→.123). While these findings may indicate an advantage for SWDs who received special education services, they do not reveal whether these students were taught by more qualified teachers. In other words, these findings may also reflect resource inequalities between SWDs in special education and other SWDs.

In terms of school demographics, only the percentage of students receiving special education services was statistically significant. SWDs receiving special education services are slightly more likely to be in schools that have a higher percentage of students receiving special education services (Δ=.232→.153). There was no significant differences between the two groups in terms of academic press measures.

[Insert Table 23 about here]

The descriptive data suggest that SWDs who received special education services have more disadvantaged educational experiences and profiles than other SWDs. The findings are likely the result of students who struggle academically and behaviorally being more likely to receive special education services, thereby making these students less viable candidates for continued postsecondary education. It has also impacted whether they think of themselves as candidates, leading to significant differences in postsecondary application rates among the two groups. To provide a better understanding of what might be leading to these disparities, and at what point in the postsecondary process these disparities are more salient, we turn to regression analysis.

ii. Findings from GLLAMM Regression Models

This section considers the explanatory relationship between special education services and postsecondary access for SWDs. For each outcome of postsecondary access (application, admissions, and enrollment) we estimate five nested two-level logistic regression models. The regression models presented here follow the same logic as the models reviewed in the

previous section (null model to conditional model including school-level predictors). The key differences are that the analytic samples consist of only SWDs and a dummy variable is used to distinguish those who receive special education services from those who do not.

1. Research Question 1: What is the relationship between special education status and postsecondary access for SWDs?

The analysis begins with the null model (not shown), a model that estimates the intercept and the between school level variances but does not include any predictors. Again, if the intercept is zero, the resulting model implies that the response function must be exactly zero when all the predictors are set to zero. The between school level variance represents the extent to which the log odds of application, admissions, and enrollment vary across schools. In this analysis, results show that the chances of applying, being accepted to, or enrolling in a PSI vary significantly across schools for SWDs in the absence of any explanatory variables. Specifically, for the model predicting postsecondary application, the intercept is significant and has a value of 2.052. An SWD's log odd of applying to a PSI has a variance of 0.612 across schools. For the model predicting admissions, the intercept is significant and has a value of 3.120. An SWD's log odd of being admitted to a PSI has a variance of 0.422 across schools. Finally, for the model predicting postsecondary enrollment, the intercept is significant and has a value of 3.411. An SWD's log odd of enrolling in a PSI has a variance of 0.522 across schools.

The first groups of models (**Table 24**) summarize the relationship between special education services and the log odds of attaining postsecondary access. Estimates from these models reflect the unconditional relationship between receipt of special education services

and postsecondary access, as well as how that conditional relationship changes when measures of self-determination, student demographics, school-related experiences, and school-level characteristics are controlled. We focus here only on the estimated coefficient and standard errors for special education services to demonstrate how they change across both the stages of access, and upon including other variables.

In the unconditional model (**Model 1**), we see that the coefficient for special education status is only statistically significant at the application stage. SWDs who received special education are less likely to obtain postsecondary access because they failed to apply to a PSI. Based on a coefficient (log odds) of -.576, receiving special education services decreases the odds of applying to a PSI by 43.8% [(exp (-0.576)-1)*100]. The between school variance component remains significant for application and enrollment but not for admissions, indicating that special education services alone do not explain the variation in postsecondary access across high schools with respect to these two outcomes.

[Insert Table 24 about here]

Model 2 includes measures of self-determination to determine whether differences in self-determination may help explain their different application likelihoods. After adding these measures to models of each outcome, the coefficient for special education services remains negative and significant at the application stage. However, its strength is slightly reduced. Receiving special education services reduces the odds of postsecondary application by 42.2% [(exp (-0.549)-1)*100] from 43.8%. That the reduction is small at the application stage

indicates that self-determination does little to explain the association between special education status and postsecondary access.

Model 3 adds individual student demographic characteristics to the model, including SES, race, gender, family structure, income, and parents' level of education. This is done to determine the degree they explain the relationship between special education services and postsecondary access. After adding these measures to models of each outcome, the coefficient for special education services is still negative and significant at the application stage of the postsecondary process. Its strength, however, is reduced. Having received special education services reduces the odds of postsecondary application by 36.1% [(exp (-0.448)-1)*100] from 42.2%. This small reduction at the application stage indicates that differences in demographic profiles do little to explain the association between special education services and postsecondary access. There are no significant changes to special education services in the admissions and enrollment stages upon including demographic predictors.

Model 4 accounts for differences in individual school-related experiences, including student, parent, and teacher expectations, GPA, college track, parental advice about college, grade retention, math/reading standardized test composite score, participation in a college preparatory program, and participation in extra-curricular activities. After including measures of school-related experiences to models for each outcome, the coefficient for special education services is no longer significant at the application stage. Thus, school-related experiences are able to explain any special education related differences in postsecondary access. This finding is significant because it illustrates that school-related experiences are just as important for SWDs as they are for the general student population in determining postsecondary application, and ultimately postsecondary access. They also suggest that the

disadvantage SWDs who received special education services experience in attaining postsecondary access can be traced more to their experiences as academically struggling students rather than to their profile as socially and economically disadvantaged students.

Model 5 introduces all level-2 school predictors to the model. After including all level-2 school characteristic variables, special education services continues to be non-significant in predicting postsecondary access. Given that the association between special education services and each of the three postsecondary outcomes can be explained by individual-level factors, it appears that this relationship is not influenced much by where students attended school. This holds for school-level academic press, school resources, and school demographics.

2. Research Question 2: Does self-determination account for the relationship between special education status and postsecondary access for SWDs?

Table 25 shows that after adding self-determination measures to models of each outcome, the coefficient for special education services remains negative and significant at the application stage. These self-determination measures also have significant associations with postsecondary application for SWDs. As in the general sample of students, self-regulation and psychological empowerment has the only significant influence of the four measures. A one standard deviation increase in self-regulation and psychological empowerment increases the odds of applying to a PSI by 38.5% and 44.6% respectively. The fact that behavioral autonomy and self-realization have no significant impact on postsecondary application suggests that, for even for SWDs that graduate high school, making the decision to apply to a PSI is a definitive one. SWDs when making the decision to apply make that decision

regardless of their level of independence. Furthermore, SWDs make the decision to apply regardless of how well they understand themselves and their surroundings. Ultimately, the decision to apply to a PSI rests on a determined plan to attend a PSI for some SWDs, while for others it rests on a strong belief that the student has the ability to succeed or control outcomes at the postsecondary level.

[Insert Table 25 about here]

3. Research Question 3: Do differences in individual demographic and school-related experience covariates account for the relationship between special education status and postsecondary access for SWDs?

Table 26 indicates that upon adding individual student demographic characteristics to the model, the coefficient for special education services is still negative and significant at the application stage of the postsecondary process. There are no significant changes to the special education services variable in the admissions and enrollment stages upon including demographic predictors. The results regarding the relationship between student demographic profiles and postsecondary access are also worth noting as they inform us of the factors that influence postsecondary decisions for SWDs. For example, females, Hispanics, and SWDs from higher SES backgrounds are significantly less likely to apply to a PSI. Other demographic characteristics such as family structure, parents' level of education, and family income have non-significant or sporadic associations with postsecondary access for SWDs.

[Insert Table 26 about here]

Table 27 reminds us that after including measures of school-related experiences to models for each outcome, the coefficient for special education status is no longer significant at the application stage. Thus, school-related experiences are able to explain away any remaining special education related differences in postsecondary access. The odds of postsecondary access for SWDs are also directly influenced by school-related experiences after controlling for demographic factors. At the application stage, standardized math/reading composite score, parental, self, and teacher expectations for college all have a positive and significant association with postsecondary application. Meanwhile, being retained a grade at least once and being provided parental advice about college each have a negative estimated coefficient.

[Insert Table 27 about here]

4. Research Question 4: Over and above the receipt of special education services and the modeled individual-level traits, are school-level characteristics systematically associated with postsecondary access for SWDs? Furthermore, do school-level characteristics moderate or alter the strength of association between special education services and postsecondary access for SWDs?

Table 28 introduces all level-2 school predictors to the model. After including all level-2 school characteristic variables, special education services continues to be non-significant in predicting postsecondary access. Due to the specification of the multi-level model, it is not appropriate to interpret this change in the special education services coefficient as mediation due to the inclusion of school-level traits. Instead, the inclusion of school-level traits has changed the interpretation of the estimated model's intercept as well as its variance-covariance structure. These changes can lead to the altered coefficient of special education services, and its significance level. It is appropriate to view table 28 as examining whether or not school-level characteristics systematically are associated with post-secondary access over and above special education services and the modeled individual-level traits. As evidenced by table 18, this does appear to be the case. School-level characteristics have a direct influence on postsecondary access for SWDs. At the application stage in terms of school resources, attending a school where over 90% of full-time teachers are certified have a positive and significant association with applying to a PSI. Attending these schools increases the odds of applying to a PSI by 213.4% [(exp 1.143)-1)*100] for SWDs. For school-level student demographics, attending a school that had a medium percentage (10.01-20.0%) of students receiving special education services has a negative and significant association with applying to a PSI relative to attending a school with low percentage (10% or less) of such students. Attending such schools decreases the odds of applying to a PSI by 40.1% relative to those who attended schools with a low percentage of students receiving special education services after controlling for all other factors.

[Insert Table 28 about here]

In addition to the direct associations noted above between school-level characteristics and postsecondary access for SWDs, it is also possible that the relationship between special education services and postsecondary access is dependent on the schools attended by SWDs or that the effect of special education services on postsecondary access varies by school. To test this possibility, we added a random component for special education status. The addition of this parameter relaxes the assumption that the effect of special education services on postsecondary access is fixed across all schools. However, results showed that the random effect was not significant at any stage of the postsecondary process. Thus, the effect of special education services on postsecondary access did not vary across schools.

This section has explored the relationship between disability status and postsecondary access through the use of *gllamm* regression techniques. Initial results indicated a strong negative association between disability status and postsecondary access. More specifically, SWDs in the 10th grade had significantly reduced odds of applying to a PSI, being accepted to at least one PSI and enrolling in a PSI soon after high school graduation. However, these relationships did not hold once other confounding factors, mainly variables regarding school-related experiences, were taken into account, and school characteristics barely registered any consequential results. This section also provided further insight into the relationship between disability status and postsecondary access by considering the impact of being labeled as needing special education services. Initial results indicated a strong negative association between special education services and only postsecondary application. More specifically, students who received special education services had significantly reduced odds of applying

to a PSI, but not being accepted to at least one PSI or enrolling in a PSI soon after high school graduation. However, the relationship between special education services and postsecondary application did not hold once other selection factors, mainly variables regarding school-related experiences, were taken into account.

Chapter VI

VI. Discussion and Conclusion

a. Main Findings

Students with disabilities are far less likely to enroll in postsecondary institutions than are students without disabilities (Newman et al. 2010). This gap has persisted despite increases in postsecondary enrollment among SWDs. Few studies have explored why this disparity exists. Research on postsecondary access for SWDs has been primarily descriptive in nature and focused on medically-centered explanations such as limited cognitive function and difficulties in carrying out activities of daily living. While the long-lasting impact of disability on education is indisputable, the focus on such explanations has often neglected the importance of social factors that have traditionally been found to influence postsecondary access for all students. This dissertation clarifies the relationship between disability status and postsecondary access by taking into account key correlates of postsecondary access. Specifically, this research considers self-determination, demographic characteristics, school-related experiences, school-level characteristics, and the receipt of special education services. To better understand the point in the postsecondary access process that is most problematic for SWDs, three stages of the attendance process are examined: application, admissions, and enrollment.

Descriptive and multivariate analysis revealed five major findings, each with its own policy implications.

i. *Many students with disabilities do not attain postsecondary access because they fail to successfully complete the application stage.*

Postsecondary access is a complex process. During the years leading up to enrollment, students considering a postsecondary education must develop aspirations for postsecondary education, meet graduation requirements, research postsecondary options, complete college applications, wait on admissions decisions, and weigh enrollment options. Many studies have focused on the development of postsecondary aspirations and enrollment decisions, but few have looked systematically at the stages that filter out students from postsecondary access. Nor has research considered the way these stages distinctly present obstacles that SWDs must overcome in order to gain access to a postsecondary education. Rather than regard application and admissions as secondary to postsecondary access, each of these stages was considered as a serious barrier to postsecondary access for SWDs.

Results showed that, for the sample of college bound 10th graders, disability status had a strong influence on postsecondary access. However, postsecondary access rates were not uniform across the three stages of postsecondary access. Disability status was most consequential at the application stage, at which point only 75.3% of high school graduates who were also SWDs applied to a postsecondary institution compared with 92.2% of high school graduates who were non-SWDs. Furthermore, though this dissertation only considered high school graduates, SWDs also were significantly less likely than other students to graduate high school, presenting yet another barrier to postsecondary access.

Disability disparities in postsecondary access, however, could not be explained solely by differences in high school graduation rates, as disability differences in postsecondary access

persisted among SWDs having a high school diploma. This compels us to inquire- What causes SWDs who finish high school to not attain postsecondary access? The decreasing numbers of students completing each of the stages of postsecondary access reveals them to be barriers with the decreases more pronounced among SWDs than other students. A greater share of SWDs dropped off at each stage than non-SWDs. This was particularly true at the application stage, where SWDs dropped off at nearly three times the rate of other students (24.7% vs 7.8%).

Not all was bleak for the postsecondary prospects of SWDs, however. The successful completion of the application stage was highly predictive of admissions and enrollment, suggesting that there is a certain amount of push students gain as they move through the postsecondary access process. Since postsecondary enrollment rates were so high given application and acceptance, a student's decision to apply to a PSI was equivalent to deciding whether he or she would enroll in a PSI. Over 95% of students who applied to a PSI were admitted to at least one institution, and nearly the same percentage of students enrolled. SWDs were significantly less likely to apply to a PSI, yet admissions and enrollment rates for SWDs nearly reached non-SWD levels, indicating that this thrust is stronger for SWDs. Results from *gllamm* logistic regressions corroborate this pattern, as disability became less of a factor moving through the postsecondary access process.

Overall, these results confirm that the trajectory students follow from postsecondary application to finally enrolling is not straightforward. There is much to be gleaned from this sequence of stages that can help explain why SWDs who graduate high school do not ultimately achieve postsecondary access. The issue is compounded when we take into account that choices and actions related to postsecondary education are not independent

(Klasik 2011). Students who want to pursue postsecondary education must complete the long and difficult postsecondary application process. This requires that they overcome a number of obstacles (i.e. taking standardized tests, obtaining letters of recommendation, applying for financial aid, etc), each with its own trade-offs. The failure to complete any one of these requirements limits students' odds of gaining access to many PSIs. Thus, each requirement obliges students to rethink their decision to pursue postsecondary education.

In addition, the locus of decision-making differs at each step along the way. At application, it is the students, their parents, and help from high school staff that are part of the decision-making process. For acceptance it is whomever makes admissions decisions. This provides us with a higher education institutional perspective which is quite important, as it speaks to whether postsecondary institutions harbor biases against SWDs. For enrollment it is an amalgam made up of parents and their children in light of advice from high school staff and in weighing what the PSI has to offer. Hence, at each stage, the central actors shift about, and the respective roles of high school and college likely shift also.

This decision-making process can be particularly difficult for SWDs. For example, like all students, SWDs likely weigh the cost of studying for and taking the SAT or ACT against not only the benefits of attending a PSI, but also the effort they have put into the completion of other activities in the application process. If a SWD had difficulties visiting PSIs due to accessibility issues, he or she might be less likely to devote time to the SAT, especially given that SWDs traditionally struggle on standardized tests. All of these decisions must be made in light of the risk that the student will not complete postsecondary education and so fail to reap any returns from his or her investment. To the degree that SWDs make different decisions than other students when confronted with these circumstances, it is key to

understand how the achievement of these stages ultimately leads to postsecondary access for SWDs.

As a result of findings from this study, effective policies should recognize the importance of each of these stages in the postsecondary process and give special attention to helpings SWDs get through them successfully. Especially, it is important to recognize the impact that successfully making it through the application stage has on admissions and enrollment. Due to this significance, programs that target SWDs as soon as they enter high school, help develop their college aspirations, and support their postsecondary search and application are likely to be most successful. More effective postsecondary counseling as soon as SWDs enter high school (Plank and Jordan 2001) should be part of this plan, including training guidance counselors on the challenges SWDs face in the postsecondary access process.

ii. Self-determination does not appear as important for postsecondary access as it does for postsecondary success.

Much research on postsecondary outcomes for SWDs has focused on the role that self-determination plays in getting students to graduate college. Since various mechanisms in primary and secondary school such as IEPs, 504 plans, and the sympathetic attitudes of school staff and even parents may preclude SWDs from learning to advocate on their own behalf with respect to their education, they may be less prepared to do so in college where these mechanisms are less likely to be in place. Outcomes from this body of research have led policymakers and education practitioners to develop programs that foster these self-determination skills in high school SWDs. Although this dissertation focuses on postsecondary access, rather than postsecondary success, self-determination skills may be

just as important for getting SWDs into college as it is for getting them through college. Activities such as applying to college, obtaining the right information, academic preparation, and applying for financial aid all require a certain amount of self-determination that may be lacking in many SWDs.

Results from this study indicate that self-determination, as measured in this dissertation, while having some association with postsecondary access, accounted for only a small part of the association between disability status and postsecondary access. That is, postsecondary access gaps between SWDs and other students were barely reduced when comparing students of similar levels of self-determination. Self-determination, while having some association with postsecondary access, also accounted for only a small share of the association between receipt of special education services and postsecondary application. These findings offer little support for the notion that self-determination is distinctively important for the postsecondary access of SWDs and students receiving special education services, despite research that supports its significance for postsecondary success.

There could be two reasons for this. First, self-determination may simply matter more for postsecondary success than access. A student with a disability may require greater self-determination to be successful at a PSI than in obtaining access to one. In fact, one key difference between high school and postsecondary education for SWDs is that laws governing public education through high school such as IDEA are meant to ensure the *success* of SWDs (a precursor to postsecondary access), while the ADA and Section 504 legislations are only meant to ensure *access* to a postsecondary education. Therefore, SWDs, especially those who received special education services, must put more energy into postsecondary success than access.

Second, self-determination may not entirely explain disability differences in postsecondary access due to selection. In other words, the differences in self-determination between SWDs and non-SWDs may be understated because the sample is limited to college eligible students (i.e. non-dropouts, less mobile students). For example, according to Table 5, students who were excluded from each of the three samples as a result of being a high school dropout or transferring to a different high school had lower levels of self-determination than students included in each of the three analytic samples. Thus, students with particularly low levels of self-determination were eliminated from the study.

Ultimately, this study shows that greater self-determination in SWDs is not enough to achieve access to postsecondary education. This should cause policymakers and education practitioners to rethink their development of transition programs for SWDs. Transition programs, it seems, should focus not only on building self-determination skills, but on preparing SWDs for the postsecondary access process, particularly the application stage.

iii. School-related experiences account more for the disability gap than student demographics or where SWDs attended high school.

To determine what factors account for the disability gap in postsecondary access, this study explored disability differences in self-determination, student demographics, school-related experiences, and school-level characteristics. Results showed that the postsecondary gaps between SWDs and other students are only slightly reduced when comparing students of similar self-determination levels and background characteristics. Disability status had a significant influence on postsecondary access despite the fact that SWDs were more likely to come from disadvantaged backgrounds. The odds of postsecondary access were only slightly

reduced by when accounting for differences in gender, race/ethnicity, SES, family structure, and parents' level of education.

This finding indicates that student demographics do not drive the relationship between disability status and postsecondary access. Why might this be the case? One possibility is that the association between disability status and demographic characteristics has attenuated. Recent trends in disability identification have shown that diagnosis for autism, Attention Deficit Hyperactivity Disorder, and specific learning disabilities have increased significantly over the last decade. The majority of these diagnoses involve children from more affluent and non-minority backgrounds (Ong-Dean 2009), which likely helps explain in the present instance the student demographic profile has little bearing on the postsecondary access of SWDs.

On the other hand, school-related experiences do seem to matter. In fact, the addition of indicators related to school-related experiences eliminated disability-based gaps at all stages of the postsecondary access process. This finding indicates that SWDs may face challenges in postsecondary access based on their experiences at school and their academic profiles. Given the continual struggles of SWDs to excel academically and become engaged in school as noted by research and anecdotal evidence, it is not surprising that academic profiles consisting of items such as standardized test scores, curriculum track, participation in a college preparatory program, participation in extra-curricular activities, grade retention, and expectations for college contribute significantly to disability disparities in postsecondary applications. SWDs exhibit weaker academic preparation for postsecondary education.

This dissertation also considered the impact of school-level characteristics on the association between disability status and postsecondary access. Although disability status

was no longer significant for application and enrollment after considering self-determination, and students' demographic and academic profiles, the results did uncover three key things about the relationship between school-level characteristics postsecondary access. First, the same indicators that accounted for the association between disability status and postsecondary access remained significant upon controlling for attributes of their high schools. Thus, where students went to school in terms of academic press, resources, and demographics did not explain why academic profiles matter for postsecondary access. Second, disability status became marginally significant at the admissions stage after including school-level measures. This signifies that the odds of SWDs being admitted to a PSI would have been even lower were it not for the fact that SWDs who applied to college are likely to attend schools with stronger academic press and greater resources. Third, the estimated coefficient for disability status only varies across schools with respect to the application stage. Postsecondary admissions and enrollment, on the other hand, are not dependent on the schools attended by students. Though school-level variables (school academic press, school resources, or school demographics) play a small role in driving the relationship between disability status and postsecondary application, they did not account for the school-to-school differences in the association between disability status and postsecondary application. The relationship is thus likely due to other school-level differences.

What else might be at issue? One likely explanation is that schools serve student populations that differ academically. If some high schools serve students who arrive better prepared academically, for example, we would expect these schools to have higher postsecondary application rates. Although this study considered the possibility that high

schools would differ, on average, in terms of demographic characteristics, it did not take into account the fact that students with lower levels of prior achievement are, in general, less likely to continue on into college when they attend high schools with peers of higher levels of achievement. At the student level, results showed that school-related experiences such as achievement and expectations explained a significant share of the association between disability status and postsecondary access. However, school-aggregated achievement, which was not controlled for in the analysis, can have a similar impact through peer effects as SWDs are less likely to gain postsecondary access if their peers do not offer examples of college-going behavior. School aggregated achievement can also influence elements of school culture such as teacher attitudes, expectations, and motivation.

Schools also differ in how well they support students in pursuit of postsecondary education and not accounting for this too could contribute to the lack of any significant school-level coefficients. It is one thing to say that a school expects students to get good grades or that there are school resources available. However, whether such encouragement and resources are used to encourage postsecondary attendance, and the steps required, is another matter. Research has examined the effects of concrete practices within high schools. Hill (2008), for example, grouped schools into three types: (1) traditional, (2) clearing-house, and (3) brokering. High schools characterized as traditional encouraged college visits and assisted with college applications but had limited outreach to parents. Clearinghouse schools directed considerable resources to college planning, provided direct assistance with college applications, and conducted outreach to college representatives but did limited parental outreach. Brokering schools had all of these traits and did substantial outreach to parents, thereby generating norms for making use of these other resources.

Hill (2008) suggests that the resources high schools dedicate to postsecondary planning and the extent to which school personnel are active in promoting postsecondary access influence postsecondary enrollment and the postsecondary access process. The evidence is supportive. Controlling for student background characteristics, students in brokering schools were more likely to enroll in postsecondary education. However, brokering schools were less likely to serve minority populations and those of low SES, and so were less often available to the neediest students.

iv. Parental expectations carry significant weight in the postsecondary access process for SWDs

Parental expectations for college are related to a student's college attendance. This holds for the general student population as well as SWDs (Berkner and Chavez 1997; Hossler and Stage 1992; Sewell and Shah 1968). The research presented here contributes to this literature. Parental expectations for college (at 10^{th} grade) were not only important for explaining the disability gap in postsecondary access but were also important for postsecondary access for SWDs. These results held true regardless of children's background or academic performance.

What makes parental expectations so significant for the postsecondary access of SWDs? While parents of students with low academic performance (Sewell, Haller, and Portes 1969), or who have fewer economic resources (Hogan 1985) typically have lower educational expectations for their children, the expectations developed by parents of SWDs emerge from the additional obstacles they observe that impede their children's academic success. First, during high school, most students begin to make plans for transitioning into adulthood, such as postsecondary education or employment. These early aspirations have a profound effect

on later educational attainment (Sewell et al. 1969). However, SWDs may face difficulties in planning for the future and as a result suffer from reduced agency throughout the life course (Shanahan 2000). Second, special accommodations or services may not be readily available in high school and be even more difficult to access once in college. If that is perceived it would be expected to dampen parental expectations. Third, SWDs who have difficulty with traditional standardized assessments may perform poorly in school (Sewell, Haller, and Ohlendorf 1970). Finally, high school graduation and postsecondary enrollment opportunities may be further limited for SWDs due to placement in special education programs where the focus is, primarily on diagnosing disabilities and labeling students. Such labeling often assumes a public nature, frequently bringing to the attention of others the fact that SWDs, at least sometimes, spend time in special settings, receive specialized services, or engage in other separate activities.

These circumstances are major signals that inform the educational choices made by parents of SWDs. Thus, parents may not envision college as a suitable life course pathway for their children. Parents, as fundamental socializing agents, offer information and encouragement about everyday decisions as well as advice about the future timing of life events. Parental expectations are important in helping SWDs assess their abilities and make choices about education. These expectations may, in turn, be adopted by SWDs, altering their ideas about their own agency in the transition to adulthood and creating a new projected life course.

The findings surrounding parental expectations for college have important policy implications for SWDs, parents, education stakeholders, and disability professionals. In considering educational outcomes for SWDs, greater attention should be paid to the

institutional barriers that lead to parents' diminished expectations. First, improvements need to be made to school transition programs for SWDs such that parents become more involved and have greater trust in the services being provided. According to data from the latest National Longitudinal Transitional Study (NLTS2) of students with disabilities, approximately 20% of high school SWDs were in programs that were only somewhat well-suited or not-at-all well suited to meet their transition goals (Cameto, Levine, and Wagner 2004). Furthermore, over 60% students with developmental delays or visual impairments had parents who reported that the transition planning process was less than "very useful". Part of parents' negative perceptions of transition programs may be due to their lack of awareness. The NLTS2 also found that school staff did not provide information about post-school services and programs to over 40% of parents of SWDs. Ensuring that programs and services are aligned with students' transition goals as well as getting parents more involved in the process would help improve parents' understanding of their children's potential.

Second, many PSIs may not provide SWDs with the academic support and accommodations needed to succeed, thereby influencing parents' perceptions of how successful their children will be. In college, SWDs have many services available to them. ADA and Section 504 mandate that PSIs offer SWDs an equal opportunity to learn so long as it does not alter the course of study or produce extreme hardship to the institution (Brinckerhoff, Shaw, and McGuire 1992). Janiga and Costenbader (2002) found that 98% of PSIs with SWDs provided at least one form of support. However, depending on the service, rates varied considerably. For example, 88% of all PSIs offered extended time on tests, while only 58% provided adaptive technology. Even if SWDs received services from the institution, they still faced obstacles from faculty. Although research has found that faculty

members are willing to assist SWDs in their classes (Murray, Flannery, and Wren 2008), not all SWDs agree with this assessment. According to a study by Kurth and Mellard (2002), the majority of SWDs indicated that faculty believed they were incompetent, or that SWDs should not be enrolled in their courses. Other students felt that faculty were unwilling to provide certain accommodations, or that the service provided was ineffective. Despite whether such observations can be verified, these perceptions affect the discourse on postsecondary access for SWDs. As these narratives have made their way to parents, it is not surprising that some parents of SWDs may think postsecondary education is improbable for their child. Thus, the potential barriers many SWDs face in postsecondary education are important to understand, as they inform how parents and SWDs think about accessibility. They also illustrate the need for policies that support effective and adequate accommodations, and faculty education for working with SWDs.

A third hurdle that SWDs face that may influence parental expectations for postsecondary education is their underperformance on standardized tests. Aside from report card marks, standardized tests are perhaps the most important way parents receive messages about their children's academic performance. As accountability policies have increased, so has the focus on standardized tests. Nearly half of all states now employ standardized high school exit exams with graduation at stake (McIntosh 2012). Furthermore, graduation rates are considerably lower for SWDs in states that have standardized exit exams compared with states that do not (U.S Department of Education 2012; Thurlow, Vang, and Cormier 2010; Unpublished AFC Analysis 2013). While SWDs continue to struggle with these exams, making allowances for how to appropriately measure SWDs' performance has challenged the idea of standardization. For certain SWDs, their test scores may be misleadingly low (Koretz

2008). For example, for SWDs with limited vision, a specialized computer screen can serve as a corrective lens that makes the test more manageable. With accommodations, the student's actual proficiency is more truly reflected in the test score. The issues become more problematic when the hurdles caused by the student's disability are related to the knowledge and skills being assessed. For instance, in testing reading comprehension in LD students, one possible adaptation is to read the test aloud to sidestep the reading problem. Still, this would change the test to an oral language comprehension task.

These issues have been the source of much frustration when students make genuine gains in their knowledge, but cannot show those gains on a test. Providing alternate means for students to show they have met state standards is critical to increasing graduation rates and opening up postsecondary opportunities. Performance-based assessments and portfolios have shown some promise in this area (Adamson and Darling Hammond 2010). Parents can then also develop educational expectations based on the academic performance of their child rather than the effectiveness of the assessment. But to be effective the assessments must recognize the diversity in learning styles and reflect a student's true potential.

Finally, perhaps no communication about a student's potential is as open to parents as being identified for special education services. Students generally receive such services after a teacher has referred a student for an evaluation and the evaluation team has assessed the student as in need of special interventions. Parents are expected to be involved throughout the process and to learn about their child's limitations. The types of services vary based on the student's needs. However, many of these services are administered in separate and/or specialized settings. The fact that the special education process is so dependant upon identification of academic and behavioral weaknesses, the labeling of such weaknesses, and

the academic isolation that follows all reinforce to parents that the challenges faced by their child are rather severe.

Adding to these beliefs is the notion that special education is considered by many to be ineffective and many students once labeled never return to general instruction on a full-time basis. These dire circumstances paint a bleak picture to parents about their child's postsecondary education prospects. Results from the regression analysis for the sample of SWDs support these concerns. Parental expectations is not only instrumental in the postsecondary access of SWDs, but differences in these expectation levels helped to explain any access gaps between students who received special education services and other SWDs.

One promising solution to this dilemma is Response to Intervention (RTI). RTI is a multi-tier approach to the early identification and support of students with learning and behavior needs (Van Der Heyden, Witt, and Barnett 2005). The RTI process begins with high-quality instruction and universal screening of all children in the general education classroom. Struggling learners are provided with interventions at increasing levels of intensity to improve their learning. RTI is less about labeling and more about getting appropriate services to students as soon as possible. There is no hasty referral process and interventions are done by the general instruction teacher and alongside peers. Referrals for special education are done only as a last resort. RTI can help reduce the stigma of special education identification that contributes to the educational expectations of parents of SWDs, while also promising to improve the academic performance of SWDs in the long term by identifying and addressing issues early on. That improvement in performance alone might have the biggest impact on parental expectations for postsecondary education.

v. Students with disabilities who received special education services fare only slightly worse than other SWDs in the postsecondary access process.

Not all SWDs receive special education services, as to receive special education services a student must first be diagnosed as having disability. To clarify the relationship between receiving special education services and postsecondary access, we examined only the sample of SWDs. The issue is whether SWDs who received special education services have different characteristics and experiences than other SWDs, and whether they also differ in postsecondary access. Results showed that, for this sample of college bound 10th grade SWDs, receiving special education services had a modest influence on postsecondary access for SWDs. Although the receipt of special education services was initially important at the application stage, it was of little consequence for postsecondary admissions and enrollment. SWDs who received special education services were less likely than other SWDs to have applied for postsecondary education. These findings were expected given the obstacles that special education students confront in high school and in postsecondary access. What was not expected given the challenges that many special education students face is that receiving special education services had no additional bearing on the postsecondary admissions and enrollment prospects of SWDs. One possibility for these findings is that students who receive special education services and are college bound are likely to apply to institutions that can address their instructional needs. Such schools might be more likely to accept SWDs who receive special education services. These students may also be applying to 2-year institutions, as depicted in **Table 9**, which tend to have lower admission standards than other institutions. Having been accepted to a school that can ensure their needs are met or that is

less selective in its admissions might make it easier for some special education students to enroll.

Another possible explanation for this trend is that postsecondary institutions do not consider the special education experience in admissions decisions. This seems reasonable given the fact that the sample of SWDs in this study all received a standard high school diploma, including those who had received special education services. This is somewhat uncharacteristic of students in special education, as not only do many not graduate high school, but many remain in school beyond four years only to obtain a certificate of attendance or IEP diploma, which in most states is not considered a standard high school credential. Thus, the high school diploma may have signaled to PSIs that these students fulfilled general education coursework and testing requirements and are capable of succeeding at the postsecondary level. So, while these SWDs who received special education services may have had more disadvantaged academic profiles than other SWDs, these differences did not lead to any significant admissions disparities between the two groups.

In terms of postsecondary enrollment, it is also likely that special education had no bearing on the outcome because, again, the analysis sample was limited to high school graduates. Since SWDs in special education must overcome more social and academic hurdles, it is likely that those who graduate high school with a standard diploma and apply to college are especially driven to gain postsecondary access.

Finally, it should be noted that these results could derive from measurement error. Recall that identifying SWDs outside the special education apparatus was not altogether straightforward. There was limited agreement about disability status across all three sources.

For example, we have no way of knowing whether a parent or teacher perceived the child as having disability because they were receiving or had received special education services despite the fact that data from school records indicate otherwise. Similarly, student self-report data about prior participation in special education programs may not be the most reliable source for special education data. It is possible that these measurement limitations contributed to these unexpected results.

Meanwhile, the fact that receipt of special education services had the most significant consequence for postsecondary application again underscores the application stage as a hurdle for SWDs. Unlike the admissions and enrollment stages, in the application stage the differences in academic profiles comparing the two groups of SWDs do seem to matter. The odds of applying to postsecondary education were significantly reduced for SWDs who received special education services. It was not until covariates representing school-related experiences were introduced into the analysis that this association waned. Of these school-related experiences, parent expectations had the strongest association, thus reaffirming its significance to the postsecondary application stage. Most importantly, these results signify that even the most successful students receiving special education services struggle at the application stage.

From a policy perspective, the analysis regarding special education services illustrates the need to focus programmatically on issues related to postsecondary application. As this study shows, efforts should be geared toward not only SWDs in special education who traditionally struggle academically, but also those who appear to be college bound. Overall, efforts should be made to boost the academic profiles of students receiving special education services. This has historically been an arduous endeavor. However, it seems that for this

particular group of SWDs, programs that socially and academically support students in special education who are in more inclusive settings, as well as improve instruction, would help reduce the postsecondary gap.

b. Limitations and Areas for Future Research

Against the limited and dated literature with respect to SWDs and postsecondary education, this study is distinct in using a nationally representative data set. The findings from this study provide a basis for future research in the field, focused on differences in educational attainment between SWDs and their counterparts. However, areas for potential research derive from the limitations in employing a secondary data set.

First, this study has analyzed disability as a distinct construct ignoring all variations of the disability experience. SWDs may differ with respect to disability type or disability severity, thus influencing the decision these students make about postsecondary education. These differences can lead to variations in how parents internalize the educational prospects of their child as well as how well students achieve in school. They may also influence how schools respond to these students through biases in educational expectations, the amount of resources provided, and differences in special education placements and services. Ultimately, the disability gap in postsecondary access may be concentrated in the experiences of particular groups of SWDs. For example, it could be that students with learning disabilities, who tend to struggle academically, confront greater barriers to postsecondary access than students with physical disabilities who may not have cognitive impairments but must deal with physical access. Knowing whether this is the case could help inform policy and programmatic

interventions. Subsequent research should explore this variation in disability experiences with respect to postsecondary access for the benefit of all students with disabilities.

Second, although, this dissertation explored disparities in postsecondary access among high school graduates, it is clear from this study that the antecedents to these differences manifest much sooner. The fact that SWDs are significantly less likely to finish high school compared to non-SWDs indicates that high school completion is a major obstacle to postsecondary access for SWDs. This is not unexpected given that school-related experiences are less favorable for SWDs than other students. Subsequent studies should take into account high school completion as part of the overall postsecondary access process. In particular, future research ought to consider the role of school-related experiences in the disability gap in high school completion. Doing so would clarify the true magnitude of these factors in influencing postsecondary access for SWDs.

Third, future research should consider differences in postsecondary destinations. The descriptive analysis has identified a few key differences in the types of institutions students attend based on their disability status. SWD's for example, are more likely to attend community colleges than other students. Future research might want to explore differences by institution type. Doing so might help us better understand the role that socio-demographic and school-related factors play in postsecondary access. Specifically, knowing more about postsecondary destinations could add more to the story that academic predictors are more important to application than for access, and that students and their parents may be giving more weight to the academic profile than in fact is warranted.

Fourth, future research should contemplate employing more accurate measures of self-determination. Although the self-determination measures in this study had reasonable levels

of reliability, they were not developed to measure self-determination specifically. That may explain, in part, why self-determination had only a small influence on postsecondary access for all students and SWDs. Future research should consider gathering specific data with the intent of measuring self-determination, or make use of formal self-determination scales in conjunction with other research methods.

Fifth, future studies should think about more appropriate measures for school characteristics than the ones considered here in explaining the gap in postsecondary access for SWDs. Many of these measures had little influence on postsecondary access after taking into account individual characteristics. Yet, we know from this study that the association between disability status and postsecondary application does vary by school. Further study should explore either alternative measures for academic press, resources, and school composition or consider other possible school influences on the disability postsecondary access gap. For example, it might be worth exploring school-level factors that are related to the disability academic experience. These may include the type of special education settings available, staff attitudes about disability, testing accommodations provided, and availability of transition programs and other academic supports provided to SWDs.

Sixth, as a technical matter, although every effort was made to take into account the structure and distribution of the data, one aspect that was not considered was zero (or one) inflation. That is, the dependent variables contained an excessive number of zeros (or ones). If not properly modeled, the presence of excess zeros (or ones) can invalidate the distributional assumptions of the analysis, jeopardizing the integrity of the scientific inferences (Tu 2006). In this research, the likelihood of a dependent variable noting the observance of a positive event (i.e. enrollment) was as high as 96%. Future research should

consider using GLLAMM to estimate zero (or one)-inflated regression models in cases where the likelihood of postsecondary access is high overall.

Finally, this dissertation employed a multivariate structure to depict a cohort of students whose postsecondary stage achievement has been rarely analyzed. This methodology moves beyond prior descriptive research of postsecondary access in that it systematically predicts the odds of stage achievement controlling for various student and school-level characteristics and taking into account the achievement of the previous stage. While this permits a thorough accounting of disability differences and the measurement of associations between stage achievement and a range of other factors, it does not allow conclusions about causality. Future research should consider more carefully the causal relationships that drive these results, particularly at the application stage. Although, we have stopped short of establishing causality, it nevertheless is useful to rigorously describe postsecondary access outcomes by examining the steps that ultimately lead up to postsecondary enrollment, and some of the contingencies that come into play along the way.

c. Conclusion

This study has attempted to clarify the relationship between disability status and postsecondary access by identifying the stages of the postsecondary access process that pose the biggest challenge for students with disabilities. It is clear from the evidence presented here that students with disabilities, regardless of whether they have received special education services or not, struggle most with postsecondary application, even after having obtained a high school degree. In trying to find out why such a disparity exists, this dissertation directed attention to social factors rather than the disability diagnosis. Results

confirmed the significance of school-related factors as contributing to the postsecondary gap. Specifically, students with weak academic preparation are less likely to apply to college, perhaps by reducing their aspirations.

These results support the importance of academic factors in the postsecondary access process, thereby highlighting the significance of considering social factors in studies of students with disabilities. In the end, what seems to matter most for the postsecondary access of students perceived as having a disability is what matters for all students. Advantageous academic experiences facilitate access to postsecondary education. Where the disability seems to matter is in how these academic experiences emerge and play out. Differences in things such as test performance and parental expectations for college are more pronounced among students with disabilities than other students, irrespective of whether they have received special education services. Future inquiries should more thoroughly address how disability influences a student's academic experiences in secondary education.

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Tables

Table 1: Variable descriptive information

Variable	Description
Postsecondary Access	
Application	=1 if student ever applied to a postsecondary institution
Admissions	=1 if student was accepted to at least one college
Enrollment	=1 if student has ever enrolled in college
Disability Status and Special Education Services	
Disability Status	=1 if "Yes" to any of the following: 1) Parent: "In your opinion, does your tenth grader have a learning, physical, or emotional disability?", 2)Teacher: "In your opinion, does this student have a learning-, physical-, or emotional disability that affects his/her school work?", 3) School: Does the student have an IEP? (From enrollment lists), and 4) Student: "Have you ever been in any of the following kinds of courses or programs in high school? (Special Education Program)".
Special Education Services	=1 if "Yes" to any of the following: 1) School: Does the student have an IEP? (From enrollment lists), and 2) Student: "Have you ever been in any of the following kinds of courses or programs in high school? (Special Education Program)".
Self-determination	
Behavioral autonomy	Standardized scale score of the variety of participation in the following nine actions and events during Wave 1 (10^{th} grade): 1) how often visits with friends at local hangout, 2) how often works on hobbies, 3) how often volunteers or performs community service, 4) how often talks on phone with friends, 5) required to work around the house, 6) ever worked for pay not around house, 7) studies to increase job opportunities, 8) education is important to get a job later, and 9) learns skills for job in school.
Self-regulation	Standardized scale score of the variety of participation in the following nine actions and events during Wave 1 (10^{th} grade): 1) plans to take SAT/ACT, 2) plans to continue education after high school, 3) went to an

Variable	Description
	outside source for college information, 4) how often discussed school courses with parents, 5) how often discussed grades with parents, 6) how often discussed prep for ACT / SAT with parents, 7) how often discussed going to college with parents, 8) how often discussed troubling things with parents, and 9) English/math teacher thinks student is exceptionally passive.
Psychological Empowerment	The Control Expectation scale is used as a proxy for the psychological empowerment dimension, and measures the respondent's success expectations in Wave 1. Higher values represent greater expectations of success in academic learning. The items used to measure psychological empowerment are as follows: 1) can learn something really hard, 2) can get no bad grades if decides to, 3) Can get no problems wrong if decides to, and 4) can learn something well if wants to.
Self-realization	The Action Control: General Effort and Persistence scale is employed as a proxy for the self-realization dimension, and measures the respondent's self-rated effort and persistence in Wave 1. Higher standardized values represent greater ratings of effort and persistence. The items used to measure psychological empowerment are as follows: 1) remembers most important things when studies, 2) works as hard as possible when studies, 3) keeps studying even if material is difficult, and 4) does best to learn what studies, and 5) Puts forth best effort when studying.
Student Demographics (Demographic Profile)	
Gender	
Male	=1 if student is male
Female	=0 if student is female
Race/Ethnicity	
White	=1 if the student is White
Hispanic	=1 if the student is Hispanic
Black/African-American	=1 if the student is Black/African-American

Variable	Description
Other	=1 if the student is of other race/ethnicity
Socioeconomic Status	Composite continuous variable constructed from parent questionnaire data and student substitutions, and measures student's parent or guardian's socioeconomic status during Wave 1. It is based on five equally weighted, standardized components: father's/guardian's education, mother's/ guardian's education, family income, father's/guardian's occupation, and mother's/guardian's occupation
Family Structure	
Two-parent/guardian	=1 if student lives with two parents or guardians
Single-parent/guardian	=0 if student lives with a single parent or guardian
Family Income	
Low Income (0-$35,000)–reference category	=1 if the student's family income was up to $35,000
Middle Income ($35,001-$75,000)	=1 if the student's family income was between $35,001 and $75,000
Higher Income (>$75,000)	=1 if the student's family income was greater than $75,000
Parent's Level of Education	
Some College	=1 if at least one parent of the student attended college
No College	=1 if no parent of the student attended college
School-related Experiences (Academic Profiles)	
High school grade point average	
Low GPA (0-2.00)–reference category	=1 if the student's high school grade point average is up to a 2.00
Average GPA (2.01-3.00)	=1 if the student's high school grade point average is between 2.01 and 3.00
High GPA (3.01-4.00)	=1 if the student's high school grade point average is between 3.01 and 4.00
In College/Academic track	=1 if the student was in a college or academic track in high school
Ever Participated in College Preparatory Program	=1 if the student participated in a college preparatory program (i.e. Upward Bound, Talent Search, etc.)
Participated in Extra-curricular Activities	=1 if a student participated in any extra-curricular activities during the year prior to their high school graduation

Variable	Description
Standardized Test Composite Score-Math/Reading	Composite score that indicates the average of the math and reading standardized scores, re-standardized to a national mean of 50.0 and standard deviation of 10.0. The standardized score provides a norm-referenced measurement of achievement, that is, an estimate of achievement relative to the population (spring 2002 10th graders) as a whole.
Ever Held Back a Grade	=1 if the student was ever retained a grade prior to high school
Does the 10th Grader Expect to Attend College	=1 if the student expects to go to college after high school
Does Parent Expect 10th Grader Expect to Attend College	=1 if the student's parent expects the student to go to college after high school
Has the Parent Provided Advice about Applying to College/school	=1 if the student's parent provided advice to the student about applying to college
Number of Teachers that Expect 10th grader to Attend College	Research constructed variable based on two items that ask each student's English and math teacher whether they expect that student to attend college. The variable is coded as 2 if both teachers expect the student to attend college, 1 if only one teacher agrees, and 0 if no teacher believes the student will attend college.
Other	
Number of postsecondary institutions applied to	Total number of institutions applied to by the student
Number of open enrollment postsecondary institutions applied to	Total number of institutions applied to by the student that had an open enrollment/admissions policy
Number of postsecondary institutions accepted to	Total number of institutions accepted to by the student
School-level Characteristics	
Academic Press	
Academic Climate	This variable is a scale of the Wave 1 school administrator's perceptions of the school's academic climate. Higher standardized values represent perceptions of a more academically-oriented climate. The variable, created through principal factor analysis, was constructed using the following

Variable	Description
	survey rating scale items: 1) student morale is high, 2) teachers press students to achieve, 3) teacher morale is high, 4) learning is high priority for students, and 5) students expected to do homework.
Many Teachers Negative About Students	Rating scale item that asks school administrators to what extent does the statement "Many teachers are negative about students" reflect an accurate characterization of their school. Higher ratings indicate greater agreement with the statement.
School Resources	
Percent Full-time Teachers Certified	=1 if school had over 90% of their full-time teachers certified
Percent Full-time Teachers Teach Out of Field	=1 if school had greater than 5% of their full-time teachers teach classes that were outside their field of certification
Percent Good/Excellent Teachers	=1 if over 75% of teachers over the last years were considered good/excellent teachers by school administrator over the previous three years
Learning Hindrance	This variable is a scale that measures the extent to which learning is hindered by a school's lack of resources. Greater standardized values indicate a greater hindrance of learning due to a lack of school resources. The following scale items were summed to generate the scale: 1) learning hindered by poor condition of buildings, 2)learning hindered by poor heating/air /light, 3) learning hindered by poor science labs, 4) learning hindered by poor fine arts facilities, 5) learning hindered by lack of space, 6) learning hindered by poor library, 7) learning hindered by lack of texts / supplies, 8) learning hindered by too few computers, 9) learning hindered by lack of multi-media, 10) learning hindered by lack of discipline/safety, and 11) learning hindered by poor voc/tech equipment / facilities
Student Demographic Composition	
School Percent Free-reduced Lunch	
Low (0-20%)–reference category	=1 if the school had up to 20% of students participating in the free or reduced lunch program

Variable	Description
Medium (21-75%)	=1 if the school had between 21% and 75% of students participating in the free or reduced lunch program
High (76-100%)	=1 if the school had between 76% and 100% of students participating in the free or reduced lunch program
School Percent Receiving Special Education Services	
Low (0-10%)–reference category	=1 if the school had up to 10% of students receiving special education services
Medium (11-20%)	=1 if the school had between 11% and 20% of students receiving special education services
High (21-100%)	=1 if the school had between 21% and 100% of students receiving special education services
Total School Enrollment	
Small (<1000) –reference category	=1 if the school had a total enrollment of less than 1000 students
Medium (1000-1999)	=1 if the school had a total enrollment between 1000 and 1999 students
Larger (>2000)	=1 if the school had a total enrollment of at least 2000 students

Table 2: Percent disabled, by source of disability definition

Definition Source	%
Special Education *IEP records + Student Response to: "Have you ever been in any of the following kinds of courses or programs in high school? (Special Education Program)"*	15.6%
Parent *"In your opinion, does your tenth grader have a learning, physical, or emotional disability?"*	13.2%
Teacher *"In your opinion, does this student have a learning, physical, or emotional disability that affects his/her school work?"*	19.4%
Inclusive Definition *Special Education or Parent or Teacher*	29.0%

Note: Data are un-weighted. Percentages for may not add to 100 percent due to rounding and missing data.

Table 3: Level of agreement between special education and parent/teacher indicators of disability

		Ever received special education services in high school? (Student response and IEP records)		
Does the student have a disability that impacts their learning? (Parent & teacher)		*No*	*Yes*	*Total*
	No (count)	3,324	100	3,424
	% Within "No Disability"	97.1	2.9	100.0
	% Within "No Special Education"	83.8	17.4	75.5
	Yes (count)	639	474	1,113
	% Within "Disability"	*57.4*	*42.6*	*100.0*
	%Within "Special Education"	16.1	82.6	24.5

Note: Data are un-weighted. Percentages may not add to 100 percent due to rounding and missing data.

Table 4: Distribution of cases, by disability definition

# of Yes	Disability Definition	% of Disability	% of Cases
1		58.5%	
	Special Education		30.7%
	Parent		24.9%
	Teacher		44.4%
2		23.6%	
	Special Education & Parent		17.8%
	Special Education & Teacher		54.4%
	Parent & Teacher		27.8%
3		17.9%	
	Special Education & Parent & Teacher		100%

Note: Data are un-weighted. Percentages may not add to 100 percent due to rounding and missing data.

Table 5: Sample restrictions to ELS (02/06) data

	Student (N)	School (N)
Original sample	16,197	752
Application Sample		
Public School Students	12,765	580
Completed Questionnaires in Wave 1 and Wave 3	10,436	580
Completed High School between Spring 03- Fall 04	9,288	580
Completed High School in Base Year School	7,982	580
Valid Data on Disability	4,951	567
Valid Data on College Access (Application, Admissions, & Enrollment)	4,739	566
Valid Data on Special Education	**4,681**	**565**
Admissions Sample		
Applied to College	**4,088**	**553**
Enrollment Sample		
Accepted to College	**4,006**	**552**

Table 6: Comparison of excluded and included student sample

	Application			Admissions			Enrollment		
	Included	Excluded	Excluded minus dropouts and transfers	Included	Excluded	Excluded minus dropouts, transfers, & non-applicants	Included	Excluded	Excluded minus dropouts, transfers, non-applicants, & rejects
	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %
Application									
Ever applied to postsecondary institution	87.3%	82.9%***	92.3%***	--	--	--	--	--	--
Admissions									
Ever accepted to at least one postsecondary institution	--	--	--	98.0%	97.7%	98.7%*	--	--	--
Enrollment									
Ever enrolled in a postsecondary institution	--	--	--	--	--		96.5%	95.3%**	96.7%
Disability Status									
Disabled	29.0%	45.4%***	33.4%***	25.0%	46.6%***	31.9%***	24.4%	46.7%***	31.7%***
Special Education Services									
Ever in Special Education	15.3%	9.3%***	5.7%***	12.7%	10.7%**	5.5%***	12.1%	10.9%*	5.5%***
Self-Determination									
Behavioral Autonomy	.029	-.001*	.029	.059	-.032***	.029	.059	-.032***	.029
Self-regulation	.044	-.029***	.044	.080	-.070***	.080	.117	-.070***	.080
Psychological Empowerment	.082	.008***	.097	.151	-.017***	.119	.153	-.017***	.119
Self-realization	.089	.010***	.105	.148	-.010***	.127	.151	-.010***	.126

	Application			Admissions			Enrollment		
	Included	Excluded	Excluded minus dropouts and transfers	Included	Excluded	Excluded minus dropouts, transfers, & non-applicants	Included	Excluded	Excluded minus dropouts, transfers, non-applicants, & rejects
	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %
Student Demographics									
Gender									
Female	53.6%	48.7%***	49.9%***	55.8%	48.2%***	49.6%***	55.9%	48.2%***	49.6%***
Male	46.4%	51.3%***	50.1%***	44.2%	51.8%***	50.4%***	44.1%	51.8%***	50.4%***
Race/Ethnicity									
White (Non-Hispanic)	64.4%	54.1%***	58.4%***	63.4%	54.6%***	58.8%***	63.8%	54.5%***	59.2%***
Hispanic	11.9%	15.7%***	13.5%***	11.3%	15.7%***	13.1%***	11.0%	15.8%***	13.0%***
Black/African-American	11.2%	14.2%***	11.9%***	11.2%	14.0%***	11.7%***	11.1%	14.0%***	11.4%***
Other	13.5%	16.0%***	16.2%***	14.1%	15.7%***	16.4%***	14.2%	15.6%***	16.4%***
Socioeconomic Status	.215	-.087***	-.050	.257	-.087***	-.009***	.265	-.087***	-.002***
Family Structure									
Single-Parent/Guardian	20.6%	24.6%***	23.3%***	20.0%	24.7%***	21.1%	19.9%	24.6%***	20.9%
Two-Parent/Guardian	79.4%	75.4%***	76.7%***	80.0%	75.3%***	78.9%	80.1%	75.4%***	79.1%
Total Family Income (2001)									
Lower Income (0-$35,000)	30.1%	33.7%***	28.5%***	27.7%	34.3%***	26.9%***	27.2%	34.4%***	26.6%***
Middle Income ($35,001-$75,000)	43.6%	37.3%***	37.9%***	43.4%	37.7%***	38.0%***	43.6%	37.7%***	38.0%***
Higher Income (>$75,000)	26.3%	29.0%***	33.6%***	28.9%	28.0%***	35.1%***	29.3%	27.9%***	35.4%***
Parents' Level of Education									
High School Graduate or Less	24.8%	26.7%*	22.3%**	21.5%	27.8%***	20.5%	21.0%	27.9%***	20.4%
Some College	75.2%	73.3%*	77.7%**	78.5%	72.2%***	79.5%	79.0%	72.1%***	79.6%

	Application			Admissions			Enrollment		
	Included	Excluded	Excluded minus dropouts and transfers	Included	Excluded	Excluded minus dropouts, transfers, & non-applicants	Included	Excluded	Excluded minus dropouts, transfers, non-applicants, & rejects
	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %
School-related Experiences									
High School GPA									
Lower GPA (0.00-2.00)	9.61%	23.4%***	12.5%***	6.9%	23.7%***	11.2%***	6.7%	23.7%***	10.9%***
Average GPA (2.01-3.00)	42.7%	40.3%***	42.1%***	40.6%	41.2%***	41.4%***	40.2%	41.3%***	41.3%***
Higher GPA (3.01-4.00)	47.7%	36.3%***	45.4%***	52.4%	35.1%***	47.4%***	53.1%	35.0%***	47.8%***
In College/Academic Track	55.3%	56.3%	63.4%***	60.1%	54.6%***	66.0%***	60.7%	54.5%***	66.2%***
Ever Participated in College Preparatory Program	29.1%	34.6%***	27.2%*	29.7%	33.9%***	27.1%**	29.7%	33.9%***	27.1%
Participated in Extra-curricular activities (year prior to college)	72.7%	71.0%*	71.0%*	76.1%	69.7%***	75.6%	76.6%	69.5%***	75.8%
Standardized test composite score-math/reading	51.7	48.6***	50.4***	52.8	48.5***	51.1***	53.0	48.4***	51.2***
Ever held back a grade (prior to 10th grade)	10.5%	13.0%***	7.9%***	8.0%	14.0%***	7.3%	7.7%	14.1%***	7.2%
Does 10th grader expect to attend college?	86.0%	82.0%***	87.1%	89.6%	80.8%***	88.4%	90.0%	80.8%***	88.5%*
Does parent expect 10th grader to attend college?	94.8%	91.2%***	95.9%*	97.5%	90.5%***	96.7%*	97.7%	90.5%***	96.7%**
Have you ever provided advice	75.0%	74.9%	76.9%*	76.8%	74.1%***	77.5%	76.9%	74.1%***	77.5%

	Application			Admissions			Enrollment		
	Included	Excluded	Excluded minus dropouts and transfers	Included	Excluded	Excluded minus dropouts, transfers, & non-applicants	Included	Excluded	Excluded minus dropouts, transfers, non-applicants, & rejects
	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %
about applying to college/school (10th grade)?									
# of teachers that expect 10th grader to attend college	1.7	1.60***	1.79***	1.81	1.56***	1.81	1.82	1.56***	1.82

Note: Data are not weighted. Percentages for dummy variables may not add to 100 percent due to rounding and missing data.
*** Excluded different from included $p < .001$
** Excluded different from included $p < .01$
* Excluded different from included $p < .05$

Table 7: Comparison of excluded and included student sample, students with disabilities

	Application		Admissions		Enrollment	
	Included	Excluded	Included	Excluded	Included	Excluded
	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %
Application						
Ever applied to postsecondary institution	75.3%	64.4%***	--	--	--	--
Admissions						
Ever accepted to at least one postsecondary institution	--	--	95.5%	95.6%	--	--
Enrollment						
Ever enrolled in a postsecondary institution	--	--	--	--	94.3%	91.4%*
Special Education Services						
Ever in Special Education	53.0%	46.2%***	50.2%	48.2%	49.4%	48.6%
Self-Determination						
Behavioral Autonomy	-.171	-.175	-.153	-.221***	-.136	-.216***
Self-regulation	-.446	-.331***	-.379	-.360*	-.369	-.364
Psychological Empowerment	-.240	-.331***	-.146	-.363***	-.122	-.361***
Self-realization	-.176	-.276***	-.086	-.306***	-.067	-.305***
Student Demographics						
Gender						
Female	44.7%	39.1%***	46.6%	38.5%***	46.6%	38.8%***
Male	56.3%	60.9%***	53.4%	61.4%***	53.4%	61.2%***
Race/Ethnicity						
White (Non-Hispanic)	61.9%	52.4%***	61.4%	53.6%**	61.5%	53.6%**
Hispanic	14.4%	18.1%**	14.0%	17.9%*	13.9%	17.9%*
Black/African-American	15.3%	16.6%*	16.0%	16.1%***	16.0%	16.1%***
Other	8.4%	12.9%**	8.6%	12.4%**	8.6%	12.4%**

	Application		Admissions		Enrollment	
	Included	Excluded	Included	Excluded	Included	Excluded
	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %
Socioeconomic Status	-.098	-.096	.042	-.095**	.074	-.097***
Family Structure						
Single-Parent/Guardian	27.1%	30.5%*	26.5%	30.2%*	26.3%	30.2%**
Two-Parent/Guardian	72.9%	69.5%*	73.5%	69.8%*	73.7%	69.8%**
Total Family Income (2001)						
Lower Income (0-$35,000)	37.8%	43.4%**	33.6%	44.4%***	32.8%	44.7%***
Middle Income ($35,001-$75,000)	40.0%	34.3%**	40.1%	35.2%**	40.4%	35.1%**
Higher Income (>$75,000)	22.2%	22.2%	26.3%	20.4%**	26.8%	20.3%**
Parents' Level of Education						
High School Graduate or Less	29.6%	32.6%*	24.9%	34.4%**	24.3%	34.6%**
Some College	70.4%	67.4%*	75.1%	65.6%**	75.7%	65.5%**
School-related Experiences						
High School GPA						
Lower GPA (0.00-2.00)	20.8%	45.8%***	17.6%	43.7%***	17.2%	43.4%***
Average GPA (2.01-3.00)	56.6%	42.2%***	57.3%	44.3%***	57.6%	44.5%***
Higher GPA (3.01-4.00)	22.6%	12.1%***	25.1%	12.0%***	25.2%	12.1%***
In College/Academic Track	35.8%	40.0%**	41.0%	37.3%**	41.9%	37.1%**
Ever Participated in College Preparatory Program	32.3%	46.1%***	33.2%	42.6%***	33.1%	42.3%***
Participated in Extra-curricular activities (year prior to college)	61.3%	60.5%	65.2%	58.3%**	66.0%	58.0%***
Standardized test composite score-math/reading	44.7	42.1*	46.3	41.8**	46.6	41.7**
Ever held back a grade (prior to 10th grade)	25.3%	28.1%*	20.0%	30.0%***	19.9%	30.0%***

	Application		Admissions		Enrollment	
	Included	Excluded	Included	Excluded	Included	Excluded
	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %
Does 10th grader expect to attend college?	75.2%	67.2%**	81.4%	65.5%***	82.0%	65.5%***
Does parent expect 10th grader to attend college?	86.9%	77.8%**	93.9%	76.4%***	94.3%	76.4%***
Have you ever provided advice about applying to college/school (10th grade)?	67.1%	67.9%	70.3%	66.5%**	69.8%	66.8%**
# of teachers that expect 10th grader to attend college	1.3	1.1***	1.4	1.1***	1.5	1.1***

N= Number of students
Note: Data are not weighted. Percentages for dummy variables may not add to 100 percent due to rounding and missing data.
*** Excluded different from included $p < .001$
** Excluded different from included $p < .01$
* Excluded different from included $p < .05$

Table 8: Comparison of excluded and included school sample

	Application			Admissions			Enrollment		
	Included	Excluded	Excluded minus private & parochial schools	Included	Excluded	Excluded minus private & parochial schools	Included	Excluded	Excluded minus private & parochial schools
	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %
Academic Press									
Academic Climate/Press	-.178	.570***	-.504	-.158	.472***	-.941**	-.158	.466***	-.913**
Many teachers are negative about students (Wave 2)	1.2	1.1**	1.2	1.2	1.1*	1.3	1.2	1.1*	1.3
School Resources									
Learning Hindered by Lack of Resources	.090	-.268***	.868*	.075	-.221**	.837**	.075	-.221**	.744*
>75% Teachers Rated Good/Excellent	67.8%	80.2%**	58.3%	68.1%	78.9%**	57.1%	68.0%	79.1%*	59.1%
>90% Full-time Teachers are Certified	88.7%	38.6%***	69.2%	89.4%	39.9%***	64.0%*	89.4%	40.2%***	65.4%*
>5% Full-time Teachers Teach Out of Field	9.3%	17.7%**	25.0%	9.5%	16.7%*	11.8%	9.5%	16.6%*	11.1%
School Demographics									
School Percent Free Lunch (Wave 2)									
Low (0-20%)	32.9%	88.4%***	26.7%	33.7%	83.2%***	15.4%**	33.7%	82.7%***	14.8%**
Medium (21-75%)	59.8%	7.5%***	53.3%	59.5%	11.4%***	61.5%**	59.4%	11.9%***	63.0%**
High (76-100%)	7.3%	4.1%***	20.0%	6.8%	5.4%***	23.1%**	6.8%	5.4%***	22.2%**
% of Students Receiving Special Education Services									
Lower (10% or less)	37.6%	92.5%***	60.0%	38.2%	87.6%***	38.5%	38.3%	87.1%***	37.0%
Medium (10.01-20.00%)	51.4%	7.5%***	40.0%	51.1%	10.8%***	50.0%	51.0%	11.3%***	51.2%

	Application			Admissions			Enrollment		
	Included	Excluded	Excluded minus private & parochial schools	Included	Excluded	Excluded minus private & parochial schools	Included	Excluded	Excluded minus private & parochial schools
	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %
Higher (Over 20%)	11.0%	0.0%***	0.00%	10.7%	1.6%***	11.5%	10.7%	1.6%***	11.1%
Total School Enrollment (Wave 1)									
Small <1000	38.1%	81.9%***	44.4%	38.3%	78.8%***	36.8%	38.4%	78.3%***	35.0%
Medium (1000-1999)	41.7%	15.5%***	11.1%	41.7%	17.0%***	26.3%	41.2%	17.5%***	30.0%
Larger >2000	20.2%	2.6%***	44.4%	20.0%	4.2%***	36.8%	20.0%	4.2%***	35.0%

Note: Data are not weighted. Percentages for dummy variables may not add to 100 percent due to rounding and missing data.
*** Excluded different from included $p < .001$
** Excluded different from included $p < .01$
* Excluded different from included $p < .05$

Table 9: Comparison of students with disabilities and non- students with disabilities, by postsecondary access (Application, Admission, & Enrollment)

	SWD		Non-SWD	
High School Non-completer (% of entire ELS sample)	18.1%***		4.6%	
High School Traditional Completer (% of High School completers)	76.1%***		94.2%	
Application Ever applied to postsecondary institution (% of sampled High School Traditional completers)	75.3%***		92.2%	
Admission Accepted by a postsecondary institution (% of sampled PSI applicants)	95.5%***		98.8%	
Enrollment *Enrolled in a postsecondary institution (% of sampled students accepted to at least one PSI)*	94.3%***		97.4%	
Four or more years (% of sampled students enrolled in a PSI)		38.8%***		66.1%
At least 2 but less than 4 (% of sampled students enrolled in a PSI)		55.7%***		32.0%
Less than 2 years (% of sampled students enrolled in a PSI)		5.5%***		1.9%

Note: Data are weighted. Percentages may not add to 100 percent due to rounding and missing data.
*** SWD different from non-SWD $p < .001$
** SWD different from non-SWD $p < .01$
*SWD different from non-SWD $p < .05$

Table 10: Descriptive statistics (Student), by sample

	Application		Admissions		Enrollment	
	Mean or %	S.D.	Mean or %	S.D.	Mean or %	S.D.
Disability Status						
Disabled	29.0%		25.4%		24.7%	
Self-Determination						
Behavioral Autonomy	-.013	.003	-.017	.003	-.011	.003
Self-regulation	-.119	.001	-.084	.005	-.078	.002
Psychological Empowerment	.038	.001	.114	.003	.121	.004
Self-realization	.042	.102	.105	.009	.111	.100
Student Demographics						
Gender						
Female	52.1%		54.2%		54.4%	
Male	47.9%		45.8%		45.6%	
Race/Ethnicity						
White (Non-Hispanic)	69.4%		69.9%		70.3%	
Hispanic	12.1%		11.6%		11.3%	
Black/African-American	11.2%		11.0%		10.9%	
Other	7.4%		7.6%		7.5%	
Socioeconomic Status	.103	.009	.191	.006	.209	.080
Family Structure						
Single-Parent/Guardian	21.3%		20.6%		20.5%	
Two-Parent/Guardian	78.7%		79.4%		79.5%	
Total Family Income (2001)						
Lower Income (0-$35,000)	28.9%		26.4%		25.6%	
Middle Income ($35,001-$75,000)	43.4%		43.2%		43.1%	
Higher Income (>$75,000)	27.8%		30.4%		30.9%	

	Application		Admissions		Enrollment	
	Mean or %	S.D.	Mean or %	S.D.	Mean or %	S.D.
Parents' Level of Education						
High School Graduate or Less	24.5%		21.3%		20.8%	
Some College	75.5%		78.7%		79.2%	
School-related Experiences						
High School GPA						
Lower GPA (0.00-2.00)	9.9%		7.3%		7.0%	
Average GPA (2.01-3.00)	42.1%		40.3%		39.9%	
Higher GPA (3.01-4.00)	47.9%		52.4%		53.1%	
In College/Academic Track	54.1%		58.7%		59.3%	
Ever Participated in College Preparatory Program	28.9%		29.2%		29.1%	
Participated in Extra-curricular activities (Wave 2)	71.8%		75.2%		75.8%	
Standardized test composite score-math/reading	51.7	13.3	52.8	12.6	53.0	12.1
Ever held back a grade (prior to 10th grade)	11.2%		8.3%		8.1%	
10th graders that expects to go to college	85.9%		89.3%		89.6%	
Parent(s) expect their 10th grader to go to college	94.2%		97.4%		97.5%	
Parent(s) ever provided advice about applying to college/school (Wave 1)?	73.7%		75.6%		75.7%	
# of teachers that expect the 10th grader to attend college	1.7		1.8		1.8	

S.D. = Standard deviation
N= Number of students
Note: Data are weighted. Percentages for dummy variables may not add to 100 percent due to rounding and missing data.

Table 11: Descriptive statistics (School), by sample

	Application		Admissions		Enrollment	
	Mean or %	S.D.	Mean or %	S.D.	Mean or %	S.D.
Academic Press						
Academic Climate/Press	-.230	.090	-.194	.007	-.190	.060
Many teachers are negative about students (Wave 2)	1.2	.406	1.2	.407	1.2	.407
School Resources						
Learning Hindered by Lack of Resources	.010	.006	.010	.005	.011	.003
>75% Teachers Rated Good/Excellent	72.8%		73.5%		73.5%	
>90% Full-time Teachers are Certified	93.3%		93.9%		94.0%	
>5% Full-time Teachers Teach Out of Field	14.0%		13.9%		14.1%	
School Demographics						
School Percent Free Lunch (Wave 2)						
Low (0-20%)	27.9%		29.2%		29.6%	
Medium (21-75%)	64.0%		62.9%		62.8%	
High (76-100%)	8.1%		7.9%		7.6%	
% of Students Receiving Special Education Services						
Lower (10% or less)	35.0%		36.8%		36.6%	
Medium (10.01-20.00%)	53.8%		52.7%		53.0%	
Higher (Over 20%)	11.3%		10.6%		10.4%	
Total School Enrollment (Wave 1)						
Small <1000	76.3%		75.3%		75.1%	
Medium (1000-1999)	19.1%		19.8%		19.9%	
Larger >2000	4.6%		5.0%		4.9%	

Note: Data are weighted. Percentages for dummy variables may not add to 100 percent due to rounding and missing data.

Table 12: Comparison of students with disabilities and non- students with disabilities (Student), by sample

	Application			Admissions			Enrollment		
	SWD	*Non-SWD*	*Std. Difference*	*SWD*	*Non-SWD*	*Std. Difference*	*SWD*	*Non-SWD*	*Std. Difference*
Self-Determination									
Behavioral Autonomy	-.171***	.053	.213	-.153***	.030	.125	-.136***	.030	.129
Self-regulation	-.446***	.017	.350	-.379***	.016	.322	-.369***	.018	.310
Psychological Empowerment	-.240***	.153	.418	-.146***	.203	.371	-.122***	.201	.366
Self-realization	-.176***	.132	.331	-.086***	.170	.272	-.067***	.169	.263
Student Demographics									
Gender									
Female	44.7%***	55.6%	.320	46.6%***	56.8%	.274	46.6%***	57.0%	.262
Male	56.3%***	44.4%	.527	53.4%***	43.2%	.418	53.4%***	43.0%	.407
Race/Ethnicity									
White (Non-Hispanic)	61.9%	72.5%	.347	61.4%	72.7%	.277	61.5%	73.1%	.266
Hispanic	14.4%**	11.1%	.547	14.0%*	10.8%	.445	13.9%*	10.5%	.438
Black/African-American	15.3%***	9.5%	.667	16.0%***	9.3%	.576	16.0%***	9.3%	.552
Other	8.4%	6.9%	.414	8.6%	7.2%	.360	8.6%	7.1%	.350
Socioeconomic Status	-.098***	.186	.321	.042***	.242	.244	.074***	.253	.218
Family Structure									
Single-Parent/Guardian	27.1%***	18.9%	.590	26.5%***	18.6%	.476	26.3%***	18.6%	.454
Two-Parent/Guardian	72.9%***	81.1%	.368	73.5%***	81.4%	.303	73.7%***	81.4%	.293
Total Family Income (2001)									
Lower Income (0-	37.8%**	25.1%	.600	33.6%**	23.9%	.464	32.8%*	23.7%	.436

	Application			Admissions			Enrollment		
	SWD	*Non-SWD*	*Std. Difference*	*SWD*	*Non-SWD*	*Std. Difference*	*SWD*	*Non-SWD*	*Std. Difference*
$35,000)									
Middle Income ($35,001-$75,000)	40.0%*	44.8%	.365	40.1%*	44.3%	.301	40.4%	44.1%	.295
Higher Income (>$75,000)	22.2%***	30.1%	.299	26.3%**	31.8%	.274	26.8%**	32.2%	.268
Parents' Level of Education									
High School Graduate or Less	29.6%***	22.4%	.561	24.9%**	20.1%	.431	24.3%**	19.7%	.409
Some College	70.4%***	77.6%	.364	75.1%**	79.9%	.310	75.7%**	80.3%	.301
School-related experiences									
High School GPA									
Lower GPA (0.00-2.00)	20.8%***	5.4%	1.427	17.6%***	3.8%	1.374	17.2%***	3.7%	1.304
Average GPA (2.01-3.00)	56.6%***	36.1%	.647	57.3%***	34.5%	.565	57.6%***	34.1%	.552
Higher GPA (3.01-4.00)	22.6%***	58.5%	.142	25.1%***	61.7%	.126	25.2%***	62.2%	.122
In College/Academic Track	35.8%***	61.7%	.243	41.0%***	64.8%	.217	41.9%***	65.1%	.212
Ever Participated in College Preparatory Program	32.3%**	27.4%	.456	33.2%*	27.9%	.385	33.1%*	27.8%	.326
Participated in Extra-curricular activities (year prior to college application)	61.3%***	76.1%	.326	65.2%***	78.7%	.277	66.0%***	79.0%	.270
Standardized test	44.7***	54.6	1.099	46.3***	55.1	.993	46.6***	55.1	.967

	Application			Admissions			Enrollment		
	SWD	*Non-SWD*	*Std. Difference*	*SWD*	*Non-SWD*	*Std. Difference*	*SWD*	*Non-SWD*	*Std. Difference*
composite score-math/reading									
Ever held back a grade (prior to 10th grade)	25.3%***	5.3%	1.516	20.0%***	4.3%	1.190	19.9%***	4.3%	1.146
10th graders that expects to go to college	75.2%***	90.4%	.339	81.4%***	92.1%	.297	82.0%***	92.1%	.288
Parent(s) expect their 10th grader to go to college	86.9%***	97.2%	.311	93.9%***	98.6%	.272	94.3%***	98.6%	.265
Parent(s) ever provided advice about applying to college/school (10th grade)?	67.1%***	76.4%	.306	70.3%***	77.4%	.263	69.8%***	77.6%	.252
# of teachers that expect the 10th grader to attend college	1.3***	1.8	1.053	1.4***	1.9	.924	1.5***	1.9	.924

Note: Data are weighted. Percentages for dummy variables may not add to 100 percent due to rounding and missing data. Std. Differences are calculated using Hedges' g for continuous variables and odds ratio for categorical variables.

*** SWD different from non-SWD $p < .001$

** SWD different from non-SWD $p < .01$

*SWD different from non-SWD $p < .05$

Table 13: Comparison of students with disabilities and non- students with disabilities (School), by sample

	Application			Admissions			Enrollment		
	SWD	*Non-SWD*	*Std. Difference*	*SWD*	*Non-SWD*	*Std. Difference*	*SWD*	*Non-SWD*	*Std. Difference*
Academic Press									
Academic Climate/Press	-.345**	-.184	.139	-.271***	-.171	.102	-.267***	-.168	.098
Many teachers are negative about students (Wave 2)	1.3*	1.2	-.106	1.3*	1.2	-.106	1.3*	1.2	-.108
School Resources									
Learning Hindered by Lack of Resources	.034*	-.001	-.057	.036**	.003	-.056	.038**	.004	-.050
>75% Teachers Rated Good/Excellent	68.6%*	74.4%	.373	69.8%*	74.7%	.302	69.3%*	74.7%	.300
>90% Full-time Teachers are Certified	89.7%*	94.7%	.400	90.3%*	95.0%	.330	89.9%*	95.1%	.318
>5% Full-time Teachers Teach Out of Field	13.1%	14.4%	.416	11.8%	14.6%	.308	12.1%	14.7%	.303
School Composition									
School Percent Free Lunch (Wave 2)									
Low (0-20%)	23.7%	29.7%	.343	26.7%	30.0%	.301	27.4%	30.3%	.293
Medium (21-75%)	66.1%	63.1%	.427	63.6%	62.7%	.337	62.7%	62.8%	.322
High (76-100%)	10.2%	7.2%	.541	9.7%	7.3%	.444	9.9%	6.9%	.462
% of Students Receiving Special Education Services									
Lower (10% or less)	29.2%**	37.3%	.332	31.8%*	38.2%	.294	31.7%*	38.0%	.285
Medium (10.01-20.00%)	58.6%*	51.8%	.432	57.4%	51.3%	.347	58.2%	51.5%	.336
Higher (Over 20%)	12.2%	10.9%	.492	10.8%	10.5%	.351	10.1%	10.5%	.331
Total School Enrollment									

	Application			Admissions			Enrollment		
	SWD	*Non-SWD*	*Std. Difference*	*SWD*	*Non-SWD*	*Std. Difference*	*SWD*	*Non-SWD*	*Std. Difference*
(Wave 1)									
Small <1000	77.0%	76.1%	.394	73.5%	75.8%	.294	73.3%	75.7%	.282
Medium (1000-1999)	18.1%	19.4%	.376	20.4%	19.6%	.317	20.7%	19.7%	.307
Larger >2000	4.9%	4.5%	.406	6.1%*	4.6%	.365	6.0%*	4.6%	.355

Note: Data are weighted. Percentages for dummy variables may not add to 100 percent due to rounding and missing data. Std. Differences are calculated using Hedges' g for continuous variables and odds ratio for categorical variables.

*** SWD different from non-SWD $p < .001$

** SWD different from non-SWD $p < .01$

*SWD different from non-SWD $p < .05$

Table 14: Disability coefficients for *gllamm* regressions of postsecondary access on disability status

Model	Application		Admissions		Enrollment	
(1) SWD/Non-SWD	-1.440*** (0.102)		-1.392*** (0.259)		-0.819*** (0.207)	
(2) SWD /Non-SWD + Self-determination	-1.140*** (0.118)		-1.285*** (0.291)		-0.722*** (0.133)	
(3) SWD/Non-SWD + Self-determination + Student demographics	-1.064*** (0.089)		-1.155*** (0.371)		-0.639*** (0.103)	
(4) SWD/Non-SWD + Self-determination + Student demographics + School-related experiences	-1.047 (0.553)		-0.505 (0.302)		-0.236 (0.170)	
(5) SWD/Non-SWD + Self-determination + Student demographics + School-related experiences + School-level characteristics *redicting*	-1.011 (0.122)		-0.592* (0.308)		-0.252 (0.186)	

Note: Data are weighted. Models predicting admissions include controls for the total number of institutions applied to by the student and the total number of institutions applied to by the student that had an open enrollment/admissions policy. Models predicting enrollment include a control for the total number of institutions accepted to by the student.
*** $p < .001$,** $p < .01$,* $p < .05$

Table 15: *gllamm* regressions of postsecondary access on disability status and self-determination

	Application	Admissions	Enrollment
Level-1			
Disability Status			
Disabled	-1.140***	-1.285***	-0.722***
	(0.118)	(0.291)	(0.133)
Self-Determination			
Behavioral Autonomy	0.025	-0.106	-0.187*
	(0.088)	(0.164)	(0.107
Self-regulation	0.485***	0.663***	0.154
	(0.029)	(0.168)	(0.096)
Psych. Empowerment	0.361***	0.135	0.322**
	(0.051)	(0.32)	(0.140)
Self-realization	-0.029	-0.101	-0.186
	(0.034)	(0.179)	(0.149)
Variance component			
School-level random variance	0.641***	0.114*	0.759**
	(0.036)	(0.676)	(0.312)

Note: Data are weighted. Models predicting admissions include controls for the total number of institutions applied to by the student and the total number of institutions applied to by the student that had an open enrollment/admissions policy. Models predicting enrollment include a control for the total number of institutions accepted to by the student.
*** $p < .001$,** $p < .01$,* $p < .05$

Table 16: *gllamm* regressions of postsecondary access on disability status and demographic characteristics (suppressed)

	Application	Admissions	Enrollment
Level-1			
Disability Status			
Disabled	-1.064***	-1.155***	-0.639***
	(0.089)	(0.371)	(0.103)
Student Demographics			
Gender			
Male	-0.669***	-0.353	-0.386**
	(0.146)	(0.371)	(0.166)
Race/Ethnicity			
Hispanic	0.367**	-0.208***	0.306**
	(0.163)	(0.070)	(0.119)
Black/African-American	0.268	-0.153	-0.174
	(0.188)	(0.148)	(0.400)
Other	0.509***	-0.274*	-0.192***
	(0.044)	(0.163)	(0.041)
Socioeconomic Status	0.544***	0.930***	0.418***
	(0.078)	(0.201)	(0.115)
Family Structure			
Two-Parent/Guardian	-0.093	-0.528***	-0.219
	(0.076)	(0.175)	(0.304)
Total Family Income (2001)			
Middle Income ($35,001-$75,000)	0.022	-0.256**	0.290*
	(0.204)	(0.119)	(0.168)
Higher Income (>$75,000)	0.654***	0.157**	0.317**
	(0.093)	(0.0628)	(0.142)
Parents' Level of Education			
Some College	0.373***	-0.126	0.181***
	(0.039)	(0.327)	(0.054)
Variance component			
School-level random variance	0.533***	0.178***	0.576*
	(0.030)	(-0.035)	(0.392)

Note: Data are weighted. Coefficients for self-determination are not shown. For full table, please see Auxiliary **Tables 1-3 in Appendix A**. Models predicting admissions include controls for the total number of institutions applied to by the student and the total number of institutions applied to by the student that had an open enrollment/admissions policy. Models predicting enrollment include a control for the total number of institutions accepted to by the student.

*** $p < .001$,** $p < .01$,* $p < .05$

Table 17: *gllamm* regressions of postsecondary access on disability status and school-related experiences (suppressed)

	Application	Admissions	Enrollment
Level-1			
Disability Status			
Disabled	-1.047	-0.505	-0.236
	(0.553)	(0.302)	(0.170)
School-related experiences			
Standardized test composite score-math/reading	0.013	0.057***	0.007**
	(0.016)	(0.004)	(0.003)
Ever held back a grade (prior to 10th grade)	-0.753***	0.163	-0.349*
	(0.25)	(0.303)	(0.190)
Does 10th grader expect to attend college?	0.747	-0.149	0.003
	(0.444)	(0.132)	(0.240)
Does parent expect 10th grader to attend college?	1.252***	0.354	0.839**
	(0.237)	(0.548)	(0.334)
Have you ever provided advice about applying to college/school (10th grade)?	-0.215	-0.658**	-0.234**
	(0.284)	(0.251)	(0.111)
# of teachers that expect 10th grader to attend college	0.740***	0.206	-0.013
	(0.200)	(0.208)	(0.183)
High School GPA			
Average GPA (2.01-3.00)	0.592	-0.0188	0.621
	(0.400)	(0.325)	(0.704)
Higher GPA (3.01-4.00)	1.285**	0.330	1.134*
	(0.507)	(0.290)	(0.611)
In College/Academic Track	0.313	0.620***	0.185***
	(0.518)	(0.0756)	(0.058)
Ever Participated in College Preparatory Program	0.039	-0.142	-0.465
	(0.231)	(0.193)	(0.355)
Participated in Extra-curricular activities (year prior to college)	0.335**	0.623***	0.076
	(0.143)	(0.151)	(0.084)
Variance component			
School-level random variance	2.060*	0.004	0.436
	(0.778)	(0.579)	(0.427)

Note: Data are weighted. Coefficients for self-determination and demographics are not shown. For full table, please see **Auxiliary Tables 1-3 in Appendix A**. Models predicting admissions include controls for the total number of institutions applied to by the student and the total number of institutions applied to by the student that had an open enrollment/admissions policy. Models predicting enrollment include a control for the total number of institutions accepted to by the student.

*** $p < .001$,** $p < .01$,* $p < .05$

Table 18: *gllamm* regressions of postsecondary access on disability status and school-level characteristics (suppressed)

	Application	Admissions	Enrollment
Level-1			
Disability Status			
Disabled	-1.011	-0.592*	-0.252
	(0.122)	(0.308)	(0.186)
Level-2			
Academic Press			
Academic Climate/Press	-0.012	0.131	-0.037
	(0.018)	(0.350)	(0.070)
Many teachers are negative about students (Wave 2)	0.092**	0.002	-0.094
	(0.042)	(0.239)	(0.100)
School Resources			
Learning Hindered by Lack of Resources	-0.005	-0.090	0.073
	(0.101)	(0.175)	(0.069)
>75% Teachers Rated Good/Excellent	-0.052	-0.235***	-0.332
	(0.221)	(0.036)	(0.331)
>90% Full-time Teachers are Certified	0.413***	-0.376	-0.463*
	(0.125)	(0.285)	(0.236)
>5% Full-time Teachers Teach Out of Field	-0.056	0.084	-0.282
	(0.074)	(0.258)	(0.237)
School Demographics			
Total School Enrollment (Wave 1)			
Medium (1000-1999)	0.051	0.395***	0.012
	(0.166)	(0.068)	(0.093)
Larger >2000	0.253***	0.548*	0.525***
	(0.060)	(0.302)	(0.149)
School Percent Free Lunch (Wave 2)			
Medium (21-75%)	-0.045	0.137	-0.365**
	(0.189)	(0.258)	(0.146)
High (76-100%)	0.289	-0.208	-0.382
	(0.299)	(0.143)	(0.453)
% of Students Receiving Special Education Services			
Medium (10.01-20.00%)	-0.134	0.081	0.318*
	(0.146)	(0.158)	(0.164)
Higher (Over 20%)	-0.587***	0.346***	-0.007
	(0.141)	(0.038)	(0.164)

	Application	Admissions	Enrollment
Variance component			
School-level random variance	0.490***	0.218	0.271

Note: Data are weighted. Coefficients for self-determination, demographics, and school-related experiences are not shown. For full table, please see **Auxiliary Tables 1-3 in Appendix A**. Models predicting admissions include controls for the total number of institutions applied to by the student and the total number of institutions applied to by the student that had an open enrollment/admissions policy. Models predicting enrollment include a control for the total number of institutions accepted to by the student.
*** $p < .001$,** $p < .01$,* $p < .05$

Table 19: *gllamm* regressions of postsecondary access on disability status with random effect for disability (suppressed)

	Application	Admission	Enrollment
Level-1			
Disability Status			
Disabled	0.040	-0.363	-0.486
	(0.166)	(0.833)	(0.49)
Variance component			
School-level random variance	0.602***	0.546***	0.579
	(0.068)	(0.229)	0.567
Random effect (Disability)	0.760***	0.428	0.001
	(0.101)	(0.548)	(0.001)

Note: Data are weighted. Coefficients for self-determination, demographics, and school-related experiences are not shown. For full table, please see auxiliary **Table 4 in Appendix A**. Models predicting admissions include controls for the total number of institutions applied to by the student and the total number of institutions applied to by the student that had an open enrollment/admissions policy. Models predicting enrollment include a control for the total number of institutions accepted to by the student.
*** $p < .001$,** $p < .01$,* $p < .05$

Table 20: *gllamm* regressions of postsecondary application on disability status and school-level characteristics with random effect for disability and interactions between disability and school-level characteristics (suppressed)

	Application
Level-1	
Disability Status	
Disabled	-.562
	(.315)
Academic Press	
Academic Climate/Press	-.023
	(.050)
Many teachers are negative about students (Wave 2)	-.034
	(.145)
Level-2	
School Resources	
Learning Hindered by Lack of Resources	-.014
	(.179)
>75% Teachers Rated Good/Excellent	-.206
	(.118)
>90% Full-time Teachers are Certified	.105
	(.254)
>5% Full-time Teachers Teach Out of Field	.366*
	(.186)
School Demographics	
Total School Enrollment (Wave 1)	
Medium (1000-1999)	-.021
	(.134)
Larger >2000	.045
	(.373)
Percent Free/Reduced Lunch (Wave 2)	
Medium (21-75%)	.057
	(.075)
High (76-100%)	.629
	(.452)
Percent of Students Receiving Special Education Services	
Medium (10.01-20.00%)	-.062

	Application
	(.239)
Higher (Over 20%)	-.475***
	(.081)
Cross-level Interactions	
Academic Press	
Disability* Academic Climate/Press	.130***
	(.023)
Disability* Many teachers are negative about students (Wave 2)	.250
	(.181)
School Resources	
Disability*>75% Teachers Rated Good/Excellent	.353***
	(.078)
Disability* Learning Hindered by Lack of Resources	.015
	(.154)
Disability*>90% Full-time Teachers are Certified	.657**
	(.215)
Disability*>5% Full-time Teachers Teach Out of Field	-.693***
	(.145)
School Demographics	
Total School Enrollment (Wave 1)	
Disability* Medium (1000-1999)	.048
	(.139)
Disability* Larger (>2000)	.381
	(.750)
School Percent Free/Reduced Lunch (Wave 2)	
Disability* Medium (21-75%)	-.390
	(.597)
Disability* High (76-100%)	-.463
	(.348)

	Application
Percent of Students Receiving Special Education Services	
Disability* Medium (10.01-20.00%)	-.335***
	(.053)
Disability* Higher (Over 20%)	-.440
	(.660)
Variance component	
School-level random variance	.507***
	(.121)
Random effect (Disability)	.733***
	(.132)

Note: Data are weighted. Coefficients for self-determination , demographics, and school-related experiences are not shown. For full table, please see Auxiliary **Table 5 in Appendix A**.
*** $p < .001$,** $p < .01$,* $p < .05$

Table 21: Comparison of students receiving special education services and other students with disabilities, by postsecondary access (Application, Admission, and Enrollment)

	Special Education Students		Other SWDs	
High School Non-completer (% of entire ELS sample)	16.8%		18.2%	
High School Traditional Completer (% of High School completers)	76.5%		76.6%	
Application *Ever applied to postsecondary institution (% of sampled High School Traditional completers)*	71.2%***		79.8%	
Admission *Accepted by a postsecondary institution (% of sampled PSI applicants)*	94.0%*		96.9%	
Enrollment *Enrolled in a postsecondary institution (% of sampled students accepted to at least one PSI)*	93.6%		95.0%	
Four or more years (% of sampled students enrolled in a PSI)		40.5%		37.2%
At least 2 but less than 4 (% of sampled students enrolled in a PSI)		52.4%		59.0%
Less than 2 years (% of sampled students enrolled in a PSI)		7.1%		3.9%

Note: Data are weighted. Percentages may not add to 100 percent due to rounding and missing data.
*** Special education students different from other SWDs $p < .001$
** Special education students different from other SWDs $p < .01$
* Special education students different from other SWDs $p < .05$

Table 22: Comparison of students receiving special education services and other students with disabilities (Student), by sample

	Application			Admissions			Enrollment		
	Special Education SWDs	Other SWDs	Std. Difference	Special Education SWDs	Other SWDs	Std. Difference	Special Education SWDs	Other SWDs	Std. Difference
Self-Determination									
Behavioral Autonomy	-.212*	-.126	.245	-.111	-.080	.137	-.111	-.079	.147
Self-regulation	-.515*	-.367	.320	-.359	-.265	.334	-.346	-.241	.329
Psychological Empowerment	-.251	-.227	.357	-.130	-.151	.301	-.134	.127	.316
Self-realization	-.178	-.174	.300	-.070*	-.108	.223	-.076	-.088	.231
Student Demographics									
Gender									
Female	40.6%**	47.1%	.135	43.6%**	49.7%	.114	43.0%*	50.1%	.105
Male	59.4%**	52.9%	.239	56.4%**	50.3%	.188	57.0%*	49.9%	.182
Race/Ethnicity									
White (Non-Hispanic)	61.0%**	63.0%	.150	59.4%***	63.4%	.113	59.4%**	63.5%	.107
Hispanic	12.6%**	16.4%	.214	12.6%***	15.4%	.179	12.8%**	15.0%	.176
Black/African-American	17.0%**	13.3%	.322	18.1%***	13.8%	.273	17.7%*	14.3%	.251
Other	9.4%**	7.3%	.202	9.9%***	7.4%	.180	10.1%*	7.2%	.174
Socioeconomic Status	-.195***	.011	.396	-.025***	.109	.315	.012***	.134	.283
Family Structure									
Single-Parent/Guardian	28.4%	25.7%	.248	29.5%**	23.4%	.207	29.3%*	23.4%	.193
Two-Parent/Guardian	71.6%	74.3%	.165	70.5%**	76.6%	.131	70.7%*	76.6%	.125
Total Family Income (2001)									

	Application			Admissions			Enrollment		
	Special Education SWDs	Other SWDs	Std. Difference	Special Education SWDs	Other SWDs	Std. Difference	Special Education SWDs	Other SWDs	Std. Difference
Lower Income (0-$35,000)	40.1%**	35.2%	.275	34.9%*	31.9%	.212	34.3%*	31.3%	.194
Middle Income ($35,001-$75,000)	39.8%**	40.2%	.160	40.0%*	40.6%	.128	40.1%*	40.8%	.124
Higher Income (>$75,000)	20.1%**	24.6%	.121	25.1%*	27.5%	.113	25.6%*	27.9%	.110
Parents' Level of Education									
High School Graduate or Less	32.3%***	26.7%	.265	27.2%**	22.6%	.206	26.7%*	21.9%	.195
Some College	67.7%***	73.3%	.156	72.8%**	77.4%	.130	73.3%*	78.1%	.124
School-related experiences									
High School GPA									
Lower GPA (0.00-2.00)	19.2%**	22.3%	.403	15.8%**	19.1%	.358	15.8%*	18.5%	.344
Average GPA (2.01-3.00)	54.9%**	58.7%	.250	55.7%**	59.5%	.211	55.1%**	60.3%	.200
Higher GPA (3.01-4.00)	25.9%**	19.0%	.080	28.5%**	21.4%	.069	29.1%*	21.2%	.067
In College/Academic Track	33.0%***	38.9%	.109	37.7%***	44.3%	.093	38.9%**	44.9%	.091
Ever Participated in College Preparatory Program	37.9%***	26.0%	.250	38.8%***	27.5%	.201	38.4%**	28.4%	.188
Participated in Extra-curricular activities (year prior to college	61.1%	61.6%	.150	65.0%	65.3%	.126	65.6%	66.5%	.120

	Application			Admissions			Enrollment		
	Special Education SWDs	Other SWDs	Std. Difference	Special Education SWDs	Other SWDs	Std. Difference	Special Education SWDs	Other SWDs	Std. Difference
application)									
Standardized test composite score-math/reading	42.5*	47.2	1.199	44.3*	48.3	1.105	44.7	48.5	1.067
Ever held back a grade (prior to 10th grade)	29.7%***	20.4%	.591	23.6%***	16.1%	.474	22.8%**	16.5%	.434
10th graders that expects to go to college	71.3%**	79.6%	.145	80.2%	82.5%	.128	80.9%	83.1%	.123
Parent(s) expect their 10th grader to go to college	83.6%***	90.6%	.136	92.7%*	95.3%	.116	93.3%	95.7%	.100
Parent(s) ever provided advice about applying to college/school (10th grade)?	63.5%**	71.1%	.132	68.2%*	72.5%	.111	67.7%*	72.6%	.104
# of teachers that expect the 10th grader to attend college	1.2*	1.4	1.035	1.4	1.5	.870	1.4	1.5	.856

Note: Data are weighted. Percentages for dummy variables may not add to 100 percent due to rounding and missing data. Std. Differences are calculated using Hedges' g for continuous variables and odds ratio for categorical variables.

*** Special education students different from other SWDs $p < .001$

** Special education students different from other SWDs $p < .01$

* Special education students different from other SWDs $p < .05$

Table 23: Comparison of students receiving special education services and other students with disabilities (School), by sample

	Application			Admissions			Enrollment		
	Special Education SWDs	Other SWDs	Std. Difference	Special Education SWDs	Other SWDs	Std. Difference	Special Education SWDs	Other SWDs	Std. Difference
Academic Press									
Academic Climate/Press	-.190	-.195	.114	-.133	-.167	.063	-.126	-.158	.054
Many teachers are negative about students (Wave 2)	1.21	1.24	-.081	1.19	1.24	-.039	1.18	1.25	-.029
School Resources									
Learning Hindered by Lack of Resources	.091	.055	-.088	.083	.056	-.097	.073	.049	-.093
>75% Teachers Rated Good/Excellent	71.5%**	68.5%	.164	72.7%**	69.2%	.129	72.8%**	68.9%	.123
>90% Full-time Teachers are Certified	92.8%**	91.0%**	.180	93.3%**	92.5%	.144	93.1%	92.6%	.136
>5% Full-time Teachers Teach Out of Field	7.9%**	10.5%**	.148	7.9%**	9.0%	.123	8.3%	8.6%	.125
School Demographics									
School Percent Free Lunch (Wave 2)									
Low (0-20%)	37.7%	36.0%	.157	41.1%	39.0%	.133	42.1%	38.8%	.129
Medium (21-75%)	55.4%	57.9%	.183	52.1%	54.9%	.142	51.1%	55.0%	.132
High (76-100%)	6.9%	6.1%	.268	6.8%	6.1%	.218	6.8%	6.2%	.230
% of Students Receiving Special Education Services									
Lower (10% or less)	30.4%**	38.4%	.138	32.5%***	41.5%	.117	37.1%**	41.8	.111
Medium (10.01-20.00%)	55.3%**	50.4%	.194	55.5%***	48.8%	.155	55.9%**	48.5%	.149
Higher (Over 20%)	14.3%**	11.2%	.232	12.0%***	9.7%	.164	11.8%**	9.7%	.153

	Application			Admissions			Enrollment		
	Special Education SWDs	Other SWDs	Std. Difference	Special Education SWDs	Other SWDs	Std. Difference	Special Education SWDs	Other SWDs	Std. Difference
Total School Enrollment (Wave 1)									
Small <1000	38.2%	37.6%	.174	34.7%	34.5%	.123	34.2%	34.3%	.115
Medium (1000-1999)	42.3%	43.1%	.161	43.3%	44.3%	.132	43.4%	44.7%	.125
Larger >2000	19.5%	19.3%	.187	22.0%	21.2%	.169	22.4%	21.0%	.164

Note: Data are weighted. Percentages for dummy variables may not add to 100 percent due to rounding and missing data. Std. Differences are calculated using Hedges' g for continuous variables and odds ratio for categorical variables.

*** Special education students different from other SWDs $p < .001$

** Special education students different from other SWDs $p < .01$

* Special education students different from other SWDs $p < .05$

Table 24: Special education coefficients for *gllamm* regressions of postsecondary access on special education services

Model	Application		Admissions		Enrollment	
(1) SE/Other SWD	-0.576*** (0.088)		-0.353 (0.755)		-0.246 (0.555)	
(2) SE/Other SWD + Self-determination	-0.549*** (0.155)		-0.360 (0.572)		-0.225 (0.523)	
(3) SE/Other SWD + Self-determination + Student demographics	-0.448*** (0.145)		-0.280 (0.667)		-0.017 (0.456)	
(4) SE/Other SWD + Self-determination + Student demographics + School-related experiences	-0.081 (0.062)		-0.245 (0.373)		-0.079 (0.503	
(5) SE/Other SWD + Self-determination + Student demographics + School-related experiences + School-level characteristics	-0.083 (0.107		-0.350 (0.751)		-0.029 (0.51)	

Note: Data are weighted. Models predicting admissions include controls for the total number of institutions applied to by the student and the total number of institutions applied to by the student that had an open enrollment/admissions policy. Models predicting enrollment include a control for the total number of institutions accepted to by the student.
*** $p < .001$,** $p < .01$,* $p < .05$

Table 25: *gllamm* regressions of postsecondary access on special education services and self-determination

	Application	Admissions	Enrollment
Level-1			
Special Education Services			
Ever received special education services	-0.549***	-0.360	-0.225
	(0.155)	(0.572	(0.523)
Self-Determination			
Behavioral Autonomy	0.0313	-0.174***	0.0441
	(0.156)	(0.060)	(0.077)
Self-regulation	0.326**	0.753***	0.343***
	(0.157)	(0.046)	(0.090)
Psych. Empowerment	0.369**	0.277***	0.198
	(0.176)	(0.040)	(0.214)
Self-realization	-0.234	-0.450	-0.523***
	(0.198)	(0.390)	(0.0621)
Variance component			
School-level random variance	0.484***	0.001	0.430***
	(0.207)	(0.001)	(0.097)

Note: Data are weighted. Models predicting admissions include controls for the total number of institutions applied to by the student and the total number of institutions applied to by the student that had an open enrollment/admissions policy. Models predicting enrollment include a control for the total number of institutions accepted to by the student.
*** $p < .001$,** $p < .01$,* $p < .05$

Table 26: *gllamm* regressions of postsecondary access on special education services and demographic characteristics (suppressed)

	Application	Admissions	Enrollment
Level-1			
Special Education Services			
Ever received special education services	-0.448***	-0.280	-0.017
	(0.145)	(0.667	(0.456)
Student Demographics			
Gender			
Male	-0.552***	-0.0763	-0.257***
	(0.106)	(0.229)	(0.092)
Race/Ethnicity			
Hispanic	0.578***	0.115	2.750**
	(0.094)	(0.796)	(1.249)
Black/African-American	0.462	0.673*	-0.152
	(0.588)	(0.381)	(0.253)
Other	0.036	0.835	-0.044
	(0.356)	(0.9)	(0.173)
Socioeconomic Status	0.338***	1.957**	0.840***
	(0.050)	(0.972)	(0.015)
Family Structure			
Two-Parent/Guardian	0.165	-0.663***	0.016
	(0.265)	(0.231)	(0.035)
Total Family Income (2001)			
Middle Income ($35,001-$75,000)	0.233	-0.930**	-0.782
	(0.394)	(0.449)	(1.313)
Higher Income (>$75,000)	0.655**	-1.491	-1.009***
	(0.312)	(0.002)	(0.360)
Parents' Level of Education			
Some College	0.274	-1.219**	-0.027
	(0.193)	(0.540)	(0.635)
Variance component			
School-level random variance	0.720***	0.001	0.280
	(0.210)	(0.001)	(0.846)

Note: Data are weighted. Coefficients for self-determination are not shown. For full table, please see **Auxiliary Tables 6-8 in Appendix A**. Models predicting admissions include controls for the total number of institutions applied to by the student and the total number of institutions applied to by the student that had an open enrollment/admissions policy. Models predicting enrollment include a control for the total number of institutions accepted to by the student.

*** $p < .001$,** $p < .01$,* $p < .05$

Table 27: *gllamm* regressions of postsecondary access on special education services and school-related experiences (suppressed)

	Application	Admissions	Enrollment
Level-1			
Special Education Services			
Ever received special education services	-0.081	-0.245	-0.079
	(0.062)	(0.373	(0.503
School-related experiences			
Standardized test composite score-math/reading	0.057***	0.130***	-0.003
	(0.019)	(0.023)	(0.014)
Ever held back a grade (prior to 10th grade)	-0.561***	-0.548	0.119
	(0.132)	(0.796)	(0.440)
Does 10th grader expect to attend college?	0.246***	-1.280*	-0.298
	(0.066)	(0.644)	(0.208)
Does parent expect 10th grader to attend college?	1.095***	0.617	1.581***
	(0.0189)	(0.252)	(0.353)
Have you ever provided advice about applying to college/school (10th grade)?	-0.576***	0.875*	0.037
	(0.190)	(0.388)	(0.485)
# of teachers that expect 10th grader to attend college	1.051***	-0.181*	0.145
	(0.037)	(0.095)	(0.289)
High School GPA			
Average GPA (2.01-3.00)	0.075	1.645***	0.275
	(0.099)	(0.430)	(0.912)
Higher GPA (3.01-4.00)	-0.231	2.983***	0.514
	(0.215)	(0.494)	(0.388)
In College/Academic Track	0.299	0.110	-0.480
	(0.381)	(0.249)	(0.395)
Ever Participated in College Preparatory Program	-0.354	-1.001	-0.232
	(0.281)	(0.641)	(0.506)
Participated in Extra-curricular activities (year prior to college)	-0.073	1.160***	0.504**
	(0.129)	(0.218)	(0.241)
Variance component			
School-level random variance	0.112	0.616	0.010
	(0.758)	(0.380)	(0.294)

Note: Data are weighted. Coefficients for self-determination and demographics are not shown. For full table, please see **Auxiliary Tables 6-8 in Appendix A**. Models predicting admissions include controls for the total number of institutions applied to by the student and the total number of institutions applied to by the student that had an open enrollment/admissions policy. Models predicting enrollment include a control for the total number of institutions accepted to by the student. *** $p < .001$,** $p < .01$,* $p < .05$

Table 28: *gllamm* regressions of postsecondary access on special education services and school-level characteristics (suppressed)

	Application	Admissions	Enrollment
Level-1			
Special Education Services			
Ever received special education services	-0.083	-0.350	-0.029
	(0.107	(0.751	(0.51)
Level-2			
Academic Press			
Academic Climate/Press	0.11	-0.913***	0.224
	(0.154)	(0.228)	(0.228)
Many teachers are negative about students (Wave 2)	0.469	0.088	-0.052
	(0.362)	(0.676)	(0.235)
School Resources			
Learning Hindered by Lack of Resources	-0.161	0.156	0.604
	(0.163)	(0.116)	(0.608)
>75% Teachers Rated Good/Excellent	-0.0207	-0.556	-0.431
	(0.174)	(0.860)	(0.317)
>90% Full-time Teachers are Certified	1.143***	0.729*	-3.540**
	(0.274)	(0.384)	(0.547)
>5% Full-time Teachers Teach Out of Field	-0.044	-0.944***	4.120***
	(0.409)	(0.022)	(0.357)
School Demographics			
Total School Enrollment (Wave 1)			
Medium (1000-1999)	0.277	0.067	-0.090
	(0.485)	(0.339)	(0.150)
Larger >2000	0.534	0.064	-0.650*
	(0.840)	(0.357)	(0.389)
School Percent Free Lunch (Wave 2)			
Medium (21-75%)	0.040	1.087**	0.059
	(0.341)	(0.362)	(0.180)
High (76-100%)	0.269	0.506	-1.250***
	(0.387)	(0.207)	(0.250)

	Application	Admissions	Enrollment
% of Students Receiving Special Education Services			
Medium (10.01-20.00%)	-0.512**	-0.550	0.665***
	(0.211)	(0.510)	(0.014)
Higher (Over 20%)	-0.388	0.764	-0.610**
	(0.461)	(0.146)	(0.253)
Variance component			
School-level random variance	0.001	0.000	0.001
	(0.525)	(0.001)	(0.001)

Note: Data are weighted. Coefficients for self-determination, demographics, and school-related experiences are not shown. For full table, please see Auxiliary **Tables 6-8 in Appendix A**. Models predicting admissions include controls for the total number of institutions applied to by the student and the total number of institutions applied to by the student that had an open enrollment/admissions policy. Models predicting enrollment include a control for the total number of institutions accepted to by the student.
*** $p < .001$,** $p < .01$,* $p < .05$

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Appendix A: Auxiliary Tables

Auxiliary Table 1: GLLAMM regressions of postsecondary application on disability status, self-determination, and school characteristics

	Application				
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
	Disability Status	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
Level-1					
Disability Status					
Disabled	-1.440***	-1.140***	-1.064***	-1.047	-1.011
	(0.102)	(0.118)	(0.089)	(0.553)	(0.122)
Self-Determination					
Behavioral Autonomy		0.025	-0.004	0.021	-0.0647
		(0.088)	(0.072)	(0.186)	(0.086)
Self-regulation		0.485***	0.334***	0.089	0.117
		(0.029)	(0.095)	(0.153)	(0.076)
Psych. Empowerment		0.361***	0.417***	0.205	0.158***
		(0.051)	(0.061)	(0.212)	(0.052)
Self-realization		-0.029	-0.06	-0.098	-0.015
		(0.034)	(0.086)	(0.228)	(0.054)
Student Demographics					
Gender					
Male			-0.669***	-0.611***	-0.480***
			(0.146)	(0.206)	(0.149)
Race/Ethnicity					
Hispanic			0.367**	0.145	0.498***
			(0.163)	(0.538)	(0.106)
Black/African-American			0.268	0.512	0.682**
			(0.188)	(0.314)	(0.299)
Other			0.509***	0.375	0.548***
			(0.0443)	(0.319)	(0.055)
Socioeconomic Status			0.544***	0.61	0.282***

	Application				
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
	Disability Status	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
			(0.078)	(0.472)	(0.046)
Family Structure					
Two-Parent/Guardian			-0.093	-0.154	-0.138
			(0.076)	(0.359)	(0.117)
Total Family Income (2001)					
Middle Income ($35,001-$75,000)			0.022	-0.232	-0.087
			(0.204)	(0.349)	(0.264)
Higher Income (>$75,000)			0.654***	0.483*	0.475***
			(0.093)	(0.274)	(0.170)
Parents' Level of Education					
Some College			0.373***	0.0981	0.267**
			(0.039)	(0.308)	(0.129)
School-related Experiences					
Standardized test composite score-math/reading				0.0129	0.026**
				(0.0158)	(0.011)
Ever held back a grade (prior to 10th grade)				-0.753***	-0.648***
				(0.25)	(0.077)
Does 10th grader expect to attend college?				0.747	0.438***
				(0.444)	(0.073)
Does parent expect 10th grader to attend college?				1.252***	1.241***
				(0.237)	(0.126)
Have you ever provided advice about applying to college/school (10th grade)?				-0.215	-0.070
				(0.284)	(0.104)
# of teachers that expect 10th grader to attend college				0.740***	0.609***
				(0.200)	(0.020)
High School GPA					
Average GPA (2.01-3.00)				0.592	0.471***

	Application				
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
	Disability Status	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
				(0.400)	(0.098)
Higher GPA (3.01-4.00)				1.285**	1.035***
				(0.507)	(0.242)
In College/Academic Track				0.313	0.549***
				(0.518)	(0.112)
Ever Participated in College Preparatory Program				0.0389	-0.174
				(0.231)	(0.121)
Participated in Extra-curricular activities (year prior to college)				0.335**	0.364***
				(0.143)	(0.124)
Level-2					
Academic Press					
Academic Climate/Press					-0.012
					(0.018)
Many teachers are negative about students (Wave 2)					0.092**
					(0.042)
School Resources					
Learning Hindered by Lack of Resources					-0.005
					(0.101)
>75% Teachers Rated Good/Excellent					-0.052
					(0.221)
>90% Full-time Teachers are Certified					0.413***
					(0.125)
>5% Full-time Teachers Teach Out of Field					-0.056
					(0.074)
School Demographics					
Total School Enrollment (Wave 1)					
Medium (1000-1999)					0.051
					(0.166)

	Application				
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
	Disability Status	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
Larger >2000					0.253***
					(0.060)
School Percent Free Lunch (Wave 2)					
Medium (21-75%)					-0.045
					(0.189)
High (76-100%)					0.289
					(0.299)
% of Students Receiving Special Education Services					
Medium (10.01-20.00%)					-0.134
					(0.146)
Higher (Over 20%)					-0.587***
					(0.141)
Variance component					
School-level random variance	0.667***	0.641***	0.533***	2.060*	0.490***
	(0.0731)	(0.036)	(0.030)	(0.778)	(0.042)

Note: Data are weighted.
*** $p < .001$,** $p < .01$,* $p < .05$

Auxiliary Table 2: GLLAMM regressions of postsecondary admissions on disability status, self-determination, and school characteristics

	Admissions				
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
	Disability Status	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
Level-1					
Disability Status					
Disabled	-1.392***	-1.285***	-1.155***	-0.505	-0.592*
	(0.259)	(0.291)	(0.371)	(0.302)	(0.308)
Self-Determination					
Behavioral Autonomy		-0.106	-0.227***	-0.215	-0.128***
		(0.164)	(0.05)	(0.158)	(0.049)
Self-regulation		0.663***	0.687***	0.460**	0.268**
		(0.168)	(0.225)	(0.196)	(0.126)
Psych. Empowerment		0.135	-0.151	-0.347**	-0.249**
		(0.32)	(0.093)	(0.164)	(0.120)
Self-realization		-0.101	-0.153	0.082	0.167
		(0.179)	(0.186)	(0.186)	(0.104)
Student Demographics					
Gender					
Male			-0.353	-0.421	-0.437
			(0.371)	(0.377)	(0.355)
Race/Ethnicity					
Hispanic			-0.208***	0.0576	-0.111
			(0.0700)	(0.122)	(0.136)
Black/African-American			-0.153	0.388*	0.473*
			(0.148)	(0.216)	(0.269)
Other			-0.274*	-0.142	-0.172
			(0.163)	(0.244)	(0.300)
Socioeconomic Status			0.930***	0.906***	0.937***
			(0.201)	(0.301)	(0.329)
Family Structure					
Two-Parent/Guardian			-0.528***	-0.561*	-0.667**
			(0.175)	(0.292)	(0.333)

	Admissions				
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
	Disability Status	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
Total Family Income (2001)					
Middle Income ($35,001-$75,000)			-0.256**	-0.342***	-0.269***
			(0.119)	(0.0902)	(0.0348)
Higher Income (>$75,000)			0.157**	0.0825	0.108
			(0.0628)	(0.204)	(0.195)
Parents' Level of Education					
Some College			-0.126	-0.222	-0.272
			(0.327)	(0.500)	(0.512)
School-related experiences					
Standardized test composite score-math/reading				0.057***	0.058***
				(0.004)	(0.003)
Ever held back a grade (prior to 10th grade)				0.163	0.402*
				(0.303)	(0.236)
Does 10th grader expect to attend college?				-0.149	-0.0487
				(0.132)	(0.0746)
Does parent expect 10th grader to attend college?				0.354	0.173
				(0.548)	(0.693)
Have you ever provided advice about applying to college/school (10th grade)?				-0.658**	-0.486*
				(0.251)	(0.268)
# of teachers that expect 10th grader to attend college				0.206	0.158
				(0.208)	(0.132)
High School GPA					
Average GPA (2.01-3.00)				-0.0188	0.0213
				(0.325)	(0.309)
Higher GPA (3.01-4.00)				0.330	0.366
				(0.290)	(0.284)
In College/Academic Track				0.620***	0.647***
				(0.0756)	(0.0216)
Ever Participated in College Preparatory Program				-0.142	-0.207
				(0.193)	(0.230)
Participated in Extra-curricular activities (year prior to college)				0.623***	0.706***

	Admissions				
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
	Disability Status	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
				(0.151)	(0.115)
Level-2					
Academic Press					
Academic Climate/Press					0.131
					(0.350)
Many teachers are negative about students (Wave 2)					0.002
					(0.239)
School Resources					
Learning Hindered by Lack of Resources					-0.090
					(0.175)
>75% Teachers Rated Good/Excellent					-0.235***
					(0.036)
>90% Full-time Teachers are Certified					-0.376
					(0.285)
>5% Full-time Teachers Teach Out of Field					0.084
					(0.258)
School Demographics					
Total School Enrollment (Wave 1)					
Medium (1000-1999)					0.395***
					(0.068)
Larger >2000					0.548*
					(0.302)
School Percent Free Lunch (Wave 2)					
Medium (21-75%)					0.137
					(0.258)
High (76-100%)					-0.208
					(0.143)
% of Students Receiving Special Education Services					
Medium (10.01-20.00%)					0.081
					(0.158)

	Admissions				
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
	Disability Status	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
Higher (Over 20%)					0.346*** (0.038)
Variance component					
School-level random variance	0.437*** (0.124)	1.11 (0.676)	-0.178*** (-0.035)	0.004 (0.579)	0.218 (0.326)

Note: Data are weighted. Models include controls for the total number of institutions applied to by the student and the total number of institutions applied to by the student that had an open enrollment/admissions policy.
*** $p < .001$,** $p < .01$,* $p < .05$

Auxiliary Table 3: GLLAMM regressions of postsecondary enrollment on disability status, self-determination, and school characteristics

	Enrollment				
	Model 1	Model 2	Model 3	Model 4	Model 5
	Disability Status	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
Level-1					
Disability Status					
Disabled	-0.819***	-0.722***	-0.639***	-0.236	-0.252
	(0.207)	(0.133)	(0.103)	(0.170)	(0.186)
Self-Determination					
Behavioral Autonomy		-0.187*	-0.201*	-0.136*	-0.137
		(0.107	(0.103)	(0.080)	(0.082)
Self-regulation		0.154	0.039	0.008	0.001
		(0.0961)	(0.070)	(0.082)	(0.085)
Psych. Empowerment		0.322**	0.321*	0.152	0.141
		(0.140)	(0.182)	(0.23)	(0.222)
Self-realization		-0.186	-0.153	-0.127	-0.102
		(0.149)	(0.186)	(0.202)	(0.188)
Student Demographics					
Gender					
Male			-0.386**	-0.301	-0.300
			(0.166)	(0.258)	(0.253)
Race/Ethnicity					
Hispanic			0.306**	0.471***	0.319***
			(0.119)	(0.0490)	(0.0782)
Black/African-American			-0.174	0.202	0.244
			(0.400)	(0.221)	(0.169)
Other			-0.192***	-0.118	-0.163
			(0.0414)	(0.114)	(0.109)
Socioeconomic Status			0.418***	0.382***	0.373***
			(0.115)	(0.077)	(0.096)
Family Structure					
Two-Parent/Guardian			-0.219	-0.248	-0.253
			(0.304)	(0.327)	(0.337)
Total Family Income (2001)					
Middle Income ($35,001-$75,000)			0.290*	0.258	0.251

	Enrollment				
	Model 1	Model 2	Model 3	Model 4	Model 5
	Disability Status	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
			(0.168)	(0.179)	(0.175)
Higher Income (>$75,000)			0.317**	0.263**	0.211*
			(0.142)	(0.119)	(0.120)
Parents' Level of Education					
Some College			0.181***	0.125***	0.106**
			(0.054)	(0.037)	(0.039)
School-related experiences					
Standardized test composite score-math/reading				0.007**	0.008**
				(0.003)	(0.003)
Ever held back a grade (prior to 10th grade)				-0.349*	-0.357*
				(0.190)	(0.185)
Does 10th grader expect to attend college?				0.003	0.020
				(0.240)	(0.229)
Does parent expect 10th grader to attend college?				0.839**	0.826**
				(0.334)	(0.373)
Have you ever provided advice about applying to college/school (10th grade)?				-0.234**	-0.221*
				(0.111)	(0.111)
# of teachers that expect 10th grader to attend college				-0.0129	-0.0376
				(0.183)	(0.171)
High School GPA					
Average GPA (2.01-3.00)				0.621	0.654
				(0.704)	(0.629)
Higher GPA (3.01-4.00)				1.134*	1.174**
				(0.611)	(0.568)
In College/Academic Track				0.185***	0.151***
				(0.058)	(0.052)
Ever Participated in College Preparatory Program				-0.465	-0.432
				(0.355)	(0.341)
Participated in Extra-curricular activities (year prior to college)				0.076	0.103
				(0.084)	(0.069)
Level-2					

	Enrollment				
	Model 1	Model 2	Model 3	Model 4	Model 5
	Disability Status	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
Academic Press					
Academic Climate/Press					-0.037
					(0.070)
Many teachers are negative about students (Wave 2)					-0.094
					(0.100)
School Resources					
Learning Hindered by Lack of Resources					0.073
					(0.069)
>75% Teachers Rated Good/Excellent					-0.332
					(0.331)
>90% Full-time Teachers are Certified					-0.463*
					(0.236)
>5% Full-time Teachers Teach Out of Field					-0.282
					(0.237)
School Demographics					
Total School Enrollment (Wave 1)					
Medium (1000-1999)					0.012
					(0.093)
Larger >2000					0.525***
					(0.149)
School Percent Free Lunch (Wave 2)					
Medium (21-75%)					-0.365**
					(0.146)
High (76-100%)					-0.382
					(0.453)
% of Students Receiving Special Education Services					
Medium (10.01-20.00%)					0.318*
					(0.164)
Higher (Over 20%)					-0.007
					(0.164)

	Enrollment				
	Model 1	Model 2	Model 3	Model 4	Model 5
	Disability Status	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
Variance component					
School-level random variance	0.579**	0.759**	0.576*	0.436	0.271
	(0.309)	(0.312)	(0.392)	(0.427)	(0.464)

Note: Data are weighted.
*** $p < .001$,** $p < .01$,* $p < .05$

Auxiliary Table 4: GLLAMM regressions of postsecondary access on disability status, self-determination, and school characteristics with random effect for disability

	Application	**Admission**	**Enrollment**
	Logit Model w/Full Controls	*Logit Model w/Full Controls*	*Logit Model w/Full Controls*
Level-1			
Disability Status			
Disabled	0.040	-0.363	-0.486
	(0.166)	(0.833)	(0.490)
Self-Determination			
Behavioral Autonomy	-0.043	-0.142***	-0.059***
	(0.084)	(0.047)	(0.005)
Self-regulation	0.111	0.301*	0.035***
	(0.103)	(0.173)	0.009
Psych. Empowerment	0.215***	-0.284	0.200
	(0.076)	(0.179)	0.225
Self-realization	-0.086	0.163	-0.159
	(0.090	(0.101)	(0.167)
Level-2			
School-level Characteristics			
Academic Press			
Academic Climate/Press	-0.007	0.125	-0.070**
	(0.078)	(0.372)	(0.030)
Many teachers are negative about students (Wave 2)	0.089	-0.033	-0.166
	(0.104)	(0.227)	(0.156)
School Resources			
Learning Hindered by Lack of Resources	-0.039	-0.010	-0.001
	(0.121)	(0.199)	(0.024)
>75% Teachers Rated Good/Excellent	0.007	-0.238***	-0.265
	(0.125)	(0.043)	(0.358)
>90% Full-time Teachers are Certified	0.388***	-0.444	-0.482**
	(0.129)	(0.355	(0.235)
>5% Full-time Teachers Teach Out of Field	0.109	0.105	-0.303
	(0.210)	(0.239)	(0.221)
School Demographics			
Total School Enrollment (Wave 1)			
Medium (1000-1999)	0.068	0.438***	0.009

	Application	**Admission**	**Enrollment**
	Logit Model w/Full Controls	*Logit Model w/Full Controls*	*Logit Model w/Full Controls*
	(0.167)	(0.068)	(0.171)
Larger >2000	0.188	0.633***	0.610***
	(0.123)	(0.194)	(0.124)
School Percent Free Lunch (Wave 2)			
Medium (21-75%)	-0.074	0.148	-0.330***
	(0.152)	(0.321)	(0.038)
High (76-100%)	0.301	-0.194	-0.273
	(0.443)	(0.135)	(0.387)
% of Students Receiving Special Education Services			
Medium (10.01-20.00%)	-0.210	0.076	0.322***
	(0.148)	(0.172)	(0.059)
Higher (Over 20%)	-0.659***	0.281***	-0.069
	(0.171)	(0.051)	(0.185)
Variance component			
School-level random variance	0.602***	0.546***	0.579
	(0.068)	(0.229)	(0.567)
Random effect (Disability)	0.760***	0.428	0.001
	(0.101)	(1.548)	(0.001)

Note: Data are weighted.
*** $p < .001$,** $p < .01$,* $p < .05$

Auxiliary Table 5: GLLAMM regressions of college application on disability status, self-determination, and school characteristics with random effect for disability and interactions between disability and school-level characteristics

	Application
	Logit Model w/Full Controls
Level-1	
Disability Status	
Disabled	-.562
	(.315)
Self-Determination	
Behavioral Autonomy	-.040
	(.073)
Self-regulation	.102***
	(.018)
Psych. Empowerment	.237**
	(.068)
Self-realization	-.154*
	(.065)
Level-2	
School-level Characteristics	
Academic Press	
Academic Climate/Press	-.023
	(.050)
Many teachers are negative about students (Wave 2)	-.034
	(.145)
School Resources	
Learning Hindered by Lack of Resources	-.014
	(.179)
>75% Teachers Rated Good/Excellent	-.206
	(.118)
>90% Full-time Teachers are Certified	.105
	(.254)
>5% Full-time Teachers Teach Out of Field	.366*
	(.186)
School Demographics	
Total School Enrollment (Wave 1)	
Medium (1000-1999)	-.021

	Application
	Logit Model w/Full Controls
	(.134)
Larger >2000	.045
	(.373)
Percent Free/Reduced Lunch (Wave 2)	
Medium (21-75%)	.057
	(.075)
High (76-100%)	.629
	(.452)
Percent of Students Receiving Special Education Services	
Medium (10.01-20.00%)	-.062
	(.239)
Higher (Over 20%)	-.475***
	(.081)
Cross-level Interactions	
Academic Press	
Disability* Academic Climate/Press	.130***
	(.023)
Disability* Many teachers are negative about students (Wave 2)	.250
	(.181)
School Resources	
Disability*>75% Teachers Rated Good/Excellent	.353***
	(.078)
Disability* Learning Hindered by Lack of Resources	.015
	(.154)
Disability*>90% Full-time Teachers are Certified	.657**
	(.215)
Disability*>5% Full-time Teachers Teach Out of Field	-.693***

	Application
	Logit Model w/Full Controls
	(.145)
School Demographics	
Total School Enrollment (Wave 1)	
Disability* Medium (1000-1999)	.048
	(.139)
Disability* Larger (>2000)	.381
	(.750)
School Percent Free/Reduced Lunch (Wave 2)	
Disability* Medium (21-75%)	-.390
	(.597)
Disability* High (76-100%)	-.463
	(.348)
Percent of Students Receiving Special Education Services	
Disability* Medium (10.01-20.00%)	-.335***
	(.053)
Disability* Higher (Over 20%)	-.440
	(.660)
Variance component	
School-level random variance	.507***
	(.121)
Random effect (Disability)	.733***
	(.132)

Note: Data are weighted.
*** $p < .001$,** $p < .01$,* $p < .05$

Auxiliary Table 6: GLLAMM regressions of postsecondary application on special education services, self-determination, and school characteristics

	Application				
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
	Special Education Services	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
Level-1					
Special Education Services					
Ever received special education services	-0.576***	-0.549***	-0.448***	-0.0805	-0.0828
	(0.088)	(0.155)	(0.145)	(0.0617	(0.107
Self-Determination					
Behavioral Autonomy		0.0313	0.0563	-0.0227	0.0167
		(0.156)	(0.166)	(0.155)	(0.163)
Self-regulation		0.326**	0.173	0.237***	0.0355
		(0.157)	(0.169)	(0.0201)	(0.143)
Psych. Empowerment		0.369**	0.408**	-0.117	0.111
		(0.176)	(0.195)	(0.194)	(0.237)
Self-realization		-0.234	-0.272	-0.0538	-0.18
		(0.198)	(0.222)	(0.153)	(0.281)
Student Demographics					
Gender					
Male			-0.552***	-0.335*	-0.415**
			(0.106)	(0.174)	(0.165)
Race/Ethnicity					
Hispanic			0.578***	0.787***	0.845**
			(0.0941)	(0.0305)	(0.401)
Black/African-American			0.462	1.171*	1.201
			(0.588)	(0.643)	(0.714)
Other			0.0355	0.0866	0.236
			(0.356)	(0.493)	(0.358)
Socioeconomic Status			0.338***	-0.087*	-0.086
			(0.0502)	(0.0457)	(0.086)
Family Structure					
Two-Parent/Guardian			0.165	0.413*	0.318
			(0.265)	(0.225)	(0.206)
Total Family Income (2001)					

	Application				
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
	Special Education Services	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
Middle Income ($35,001-$75,000)			0.233	-0.224	-0.0875
			(0.394)	(0.421)	(0.344)
Higher Income (>$75,000)			0.655**	0.126	0.224
			(0.312)	(0.184)	(0.367)
Parents' Level of Education					
Some College			0.274	0.336***	0.408***
			(0.193)	(0.0635)	(0.106)
School-related experiences					
Standardized test composite score-math/reading				0.057***	0.054***
				(0.019)	(0.013)
Ever held back a grade (prior to 10th grade)				-0.561***	-0.576*
				(0.132)	(0.326)
Does 10th grader expect to attend college?				0.246***	0.374**
				(0.0656)	(0.152)
Does parent expect 10th grader to attend college?				1.095***	1.298***
				(0.0189)	(0.253)
Have you ever provided advice about applying to college/school (10th grade)?				-0.576***	-0.386
				(0.190)	(0.309)
# of teachers that expect 10th grader to attend college				1.051***	0.906***
				(0.0365)	(0.208)
High School GPA					
Average GPA (2.01-3.00)				0.0746	0.131
				(0.0991)	(0.226)
Higher GPA (3.01-4.00)				-0.231	-0.266
				(0.215)	(0.488)
In College/Academic Track				0.299	0.390
				(0.381)	(0.304)
Ever Participated in College Preparatory Program				-0.354	-0.158
				(0.281)	(0.417)
Participated in Extra-curricular activities (year prior to college)				-0.0730	-0.0143
				(0.129)	(0.154)

	Application				
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
	Special Education Services	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
Level-2					
School-level Characteristics					
Academic Press					
Academic Climate/Press					0.11
					(0.154)
Many teachers are negative about students (Wave 2)					0.469
					(0.362)
School Resources					
Learning Hindered by Lack of Resources					-0.161
					(0.163)
>75% Teachers Rated Good/Excellent					-0.0207
					(0.174)
>90% Full-time Teachers are Certified					1.143***
					(0.274)
>5% Full-time Teachers Teach Out of Field					-0.044
					(0.409)
School Demographics					
Total School Enrollment (Wave 1)					
Medium (1000-1999)					0.277
					(0.485)
Larger >2000					0.534
					(0.840)
School Percent Free Lunch (Wave 2)					
Medium (21-75%)					0.040
					(0.341)
High (76-100%)					0.269
					(0.387)
% of Students Receiving Special Education Services					
Medium (10.01-20.00%)					-0.512**
					(0.211)
Higher (Over 20%)					-0.388

	Application				
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
	Special Education Services	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
					(0.461)
Variance component					
School-level random variance	0.561***	0.484***	0.720***	0.112	0.001
	(0.176)	(0.207)	(0.210)	(0.758)	(0.525)

Note: Data are weighted.
*** $p < .001$,** $p < .01$,* $p < .05$

Auxiliary Table 7: GLLAMM regressions of postsecondary admissions on special education services, self-determination, and school characteristics

	Admissions				
	Model 1	Model 2	Model 3	Model 4	Model 5
Level-1	Special Education Services	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
Special Education Services					
Ever received special education services	-0.353	-0.360	-0.280	-0.245	-0.350
	(0.755	(0.572	(0.667	(0.373	(0.751
Self-Determination					
Behavioral Autonomy		-0.174***	-0.228***	-0.468***	-0.545**
		(0.060)	(0.044)	(0.100)	(0.157)
Self-regulation		0.753***	0.646***	0.354	0.322
		(0.046)	(0.028)	(0.352)	(0.253)
Psych. Empowerment		0.277***	0.209	0.040	0.162
		(0.040)	(0.131)	(0.069)	(0.178)
Self-realization		-0.450	-0.468	-0.312	-0.367
		(0.390)	(0.334)	(0.444)	(0.469)
Student Demographics					
Gender					
Male			-0.0763	-0.413	-0.557
			(0.229)	(0.536)	(0.899)
Race/Ethnicity					
Hispanic			0.115	1.746***	1.479
			(0.796)	(0.434)	(0.798)
Black/African-American			0.673*	1.980***	1.813***
			(0.381)	(0.315)	(0.407)
Other			0.835	1.716	1.782***
			(0.9)	(0.987)	(0.455)
Socioeconomic Status			1.957**	2.641*	3.182**
			(0.972)	(0.339)	(0.158)
Family Structure					
Two-Parent/Guardian			-0.663***	-1.134**	-1.742***
			(0.231)	(0.381)	(0.264)
Total Family Income (2001)					
Middle Income ($35,001-$75,000)			-0.930**	-1.052	-0.936*

	Admissions				
	Model 1	Model 2	Model 3	Model 4	Model 5
	Special Education Services	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
			(0.449)	(0.666)	(0.445)
Higher Income (>$75,000)			-1.491	-1.342	-1.395
			(0.002)	(0.696)	(0.405)
Parents' Level of Education					
Some College			-1.219**	-1.896*	-2.694**
			(0.540)	(0.775)	(0.831)
School-related experiences					
Standardized test composite score-math/reading				0.130***	0.124***
				(0.023)	(0.027)
Ever held back a grade (prior to 10th grade)				-0.548	-0.658
				(0.796)	(0.066)
Does 10th grader expect to attend college?				-1.280*	-1.218
				(0.644)	(.009)
Does parent expect 10th grader to attend college?				0.617	1.264
				(0.252)	(0.104)
Have you ever provided advice about applying to college/school (10th grade)?				0.875*	0.795**
				(0.388)	(0.301)
# of teachers that expect 10th grader to attend college				-0.181*	-0.153
				(0.095)	(0.280)
High School GPA					
Average GPA (2.01-3.00)				1.645***	1.321***
				(0.430)	(0.275)
Higher GPA (3.01-4.00)				2.983***	3.150***
				(0.494)	(0.452)
In College/Academic Track				0.110	0.043
				(0.249)	(0.348)
Ever Participated in College Preparatory Program				-1.001	-1.060*

	Admissions				
	Model 1	Model 2	Model 3	Model 4	Model 5
	Special Education Services	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
Participated in Extra-curricular activities (year prior to college)				(0.641) 1.160*** (0.218)	(0.501) 1.276*** (0.250)
Level-2					
School-level Characteristics					
Academic Press Academic Climate/Press					 -0.913*** (0.228)
Many teachers are negative about students (Wave 2)					0.088 (0.676)
School Resources Learning Hindered by Lack of Resources					0.156 (0.116)
>75% Teachers Rated Good/Excellent					-0.556 (0.860)
>90% Full-time Teachers are Certified					0.729* (0.384)
>5% Full-time Teachers Teach Out of Field					-0.944*** (0.022)
School Demographics Total School Enrollment (Wave 1)					
Medium (1000-1999)					0.067 (0.339)
Larger >2000					0.064 (0.357)
School Percent Free Lunch (Wave 2)					
Medium (21-75%)					1.087** (0.362)
High (76-100%)					0.506

	Admissions				
	Model 1	Model 2	Model 3	Model 4	Model 5
	Special Education Services	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
					(0.207)
% of Students Receiving Special Education Services					
Medium (10.01-20.00%)					-0.550
					(0.510)
Higher (Over 20%)					0.764
					(0.146)
Variance component					
School-level random variance	0.001	0.001	0.001	0.616	0.000
	(0.001)	(0.001)	(0.001)	(0.380)	(0.001)

Note: Data are weighted. Models include controls for the total number of institutions applied to by the student and the total number of institutions applied to by the student that had an open enrollment/admissions policy. *** $p < .001$,** $p < .01$,* $p < .05$

Auxiliary Table 8: GLLAMM regressions of postsecondary enrollment on special education services, self-determination, and school characteristics

	Enrollment				
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
	Special Education Services	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
Level-1					
Special Education Services					
Ever received special education services	-0.246	-0.225	-0.017	-0.0793	-0.0285
	(0.555)	(0.523)	(0.456)	(0.503	(0.51)
Self-Determination					
Behavioral Autonomy		0.0441	-0.153	-0.0357	-0.0183
		(0.077)	(0.215)	(0.120)	(0.121)
Self-regulation		0.343***	0.117	-0.174	0.424***
		(0.090)	(0.305)	(0.348)	(0.078)
Psych. Empowerment		0.198	0.011	-0.183***	0.212**
		(0.214)	(0.284)	(0.065)	(0.102)
Self-realization		-0.523***	-0.0936	-0.0114	-0.424***
		(0.0621)	(0.300)	(0.065)	(0.064)
Student Demographics					
Gender			-0.257***	-0.277	-0.530
Male			(0.0919)	(0.230)	(0.340)
Race/Ethnicity					
Hispanic			2.750**	2.934**	2.748*
			(1.249)	(1.223)	(1.529)
Black/African-American			-0.152	-0.0673	-0.278
			(0.253)	(0.401)	(0.963)
Other			-0.0438	0.348	0.234
			(0.173)	(0.251)	(0.761)
Socioeconomic Status			0.840***	0.833***	0.989***
			(0.0150)	(0.125)	(0.339)
Family Structure					
Two-Parent/Guardian			0.0160	-0.114	-0.209
			(0.0353)	(0.245)	(0.363)

	Enrollment				
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
	Special Education Services	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
Total Family Income (2001)					
Middle Income ($35,001-$75,000)			-0.782	-0.763	-0.662
			(1.313)	(1.298)	(1.189)
Higher Income (>$75,000)			-1.009***	-0.925*	-0.985**
			(0.360)	(0.534)	(0.500)
Parents' Level of Education					
Some College			-0.0274	-0.149	-0.427
			(0.635)	(0.752)	(0.897)
School-related Experiences					
Standardized test composite score-math/reading				-0.000303	-0.0157
				(0.014)	(0.018)
Ever held back a grade (prior to 10th grade)				0.119	0.094
				(0.440)	(0.578)
Does 10th grader expect to attend college?				-0.298	-0.294***
				(0.208)	(0.0698)
Does parent expect 10th grader to attend college?				1.581***	1.876***
				(0.353)	(0.228)
Have you ever provided advice about applying to college/school (10th grade)?				0.0373	0.361***
				(0.485)	(0.056)
# of teachers that expect 10th grader to attend college				0.145	0.108
				(0.289)	(0.279)
High School GPA					
Average GPA (2.01-3.00)				0.275	-0.098
				(0.912)	(0.821)
Higher GPA (3.01-4.00)				0.514	0.089
				(0.388)	(0.282)
In College/Academic Track				-0.480	-0.330
				(0.395)	(0.716)
Ever Participated in College Preparatory Program				-0.232	-0.224
				(0.506)	(0.344)
Participated in Extra-curricular activities (year prior to college)				0.504**	0.681***

	Enrollment				
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
	Special Education Services	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
				(0.241)	(0.100)
Level-2					
School-level Characteristics					
Academic Press					
Academic Climate/Press					0.224
					(0.228)
Many teachers are negative about students (Wave 2)					-0.052
					(0.235)
School Resources					
Learning Hindered by Lack of Resources					0.604
					(0.608)
>75% Teachers Rated Good/Excellent					-0.431
					(0.317)
>90% Full-time Teachers are Certified					-3.540**
					(0.547)
>5% Full-time Teachers Teach Out of Field					4.120***
					(0.357)
School Demographics					
Total School Enrollment (Wave 1)					
Medium (1000-1999)					-0.090
					(0.150)
Larger >2000					-0.650*
					(0.389)
School Percent Free Lunch (Wave 2)					
Medium (21-75%)					0.059
					(0.180)
High (76-100%)					-1.250***
					(0.250)
% of Students Receiving Special Education Services					
Medium (10.01-20.00%)					0.665***

	Enrollment				
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
	Special Education Services	+ Self-determination	+ Demographics	+ School Experience	+ School Characteristics
					(0.014)
Higher (Over 20%)					-0.610**
					(0.253)
Variance component					
School-level random variance	0.202***	0.430***	0.280	0.010	0.001
	(0.114)	(0.097)	(0.846)	(0.294)	(0.001)

Note: Data are weighted.
*** $p < .001$,** $p < .01$,* $p < .05$

Vita

Christian Villenas

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Date of Birth: January 2, 1977
Location: New York, NY

Education

Ph.D. Expected Spring 2014, The Johns Hopkins University, Sociology
Dissertation: Explaining the Disability Gap in Access to Postsecondary Education: The Role of Social Factors

M.A. The Johns Hopkins University, Sociology

M.S. New School University, Urban Policy Analysis and Management

B.S. New York University, Individualized Study (Economics/English)

Honors and Awards

- Doris Entwistle Teaching Fellowship, The Johns Hopkins University
- Summer Doctoral Fellowship, MDRC
- Excellence in Teaching Award, Winner, The Johns Hopkins University
- Krieger School of Arts & Sciences Dean's Teaching Fellowship, The Johns Hopkins University
- TA Associate and Contributing Editor (Making the Difference: A Comprehensive Guide for Teaching Assistants), Center for Educational Resources, The Johns Hopkins University
- The Johns Hopkins Excellence in Teaching Award, Nominee, The Johns Hopkins University
- The Johns Hopkins Excellence in Teaching Award, Nominee, The Johns Hopkins University
- Krieger School of Arts & Sciences Dean's Teaching Fellowship, The Johns Hopkins University
- American Institutes for Research Pre-Doctoral Fellowship, The Johns Hopkins University and the American Institutes for Research
- JAM. Kaplan Award, New School University
- MBA Scholarship, New School University
- Founders Day Scholar, New York University

Selected Teaching Experience

Courses Taught at The Johns Hopkins University

Sociology of Disability; Department of Sociology, Public Health Studies
Freshmen Seminar: Disability & Society; Department of Sociology, Public Health Studies
Sociology of Sports; Department of Sociology

Courses Taught at the University of Maryland, Baltimore County

Sociology of Education; Department of Sociology & Anthropology
Disability and Rehabilitation; Department of Sociology & Anthropology

Teaching Assistant

Introduction to Social Statistics, Racial Segregation in the U.S., Criminal Justice & Corrections, Policy Analysis

Selected Professional Experience

2012–Present *Policy Analyst*, Advocates for Children of New York

Advocates for Children of New York works on behalf of children who are at greatest risk for school-based discrimination and/or academic failure due to poverty, disability, race, ethnicity, immigrant or English Language Learner status, homelessness, or involvement in the foster care or juvenile justice systems.

- Conduct research on issues of education policy by reviewing existing literature and web resources and interviewing experts and stakeholders.
- Collaborate with AFC's staff of attorneys and advocates to analyze data, review and organize research, monitor changes in policy and practice, and draft policy briefs and reports.
- Respond to requests for information from policy makers, advocacy groups, and the media.

2011–2012 *Policy Data Analyst*, New York City Charter School Center

The New York City Charter School Center helps new charter schools get started, supports existing schools and builds community support so that highly effective schools can flourish.

- Conducted multiple activities including mining, analyzing, and presenting data on the NYC charter school sector.
- Assisted in the development of a data dashboard for the NYC Charter School sector.
- Wrote selected in entries in State of the NYC Charter School Sector Report, 2012.
- Facilitated focus groups with key stakeholders in the NYC charter school community to increase project buy-in.

2008–2009 *Research Associate*, U.S. Department of Education, National Center on Response to Intervention, American Institutes for Research

The National Center on Response to Intervention provides technical assistance to states and districts in implementing proven models for response to intervention.

- Conducted multiple activities including developing a multi-year project evaluation plan; leading evaluation data collection, analyses, and writing of reports; conducting local and state surveys.
- Performed state by state analysis of RTI implementation and capacity.

2004–2008 *Research Associate*, U.S. Department of Education, National Center for Student Progress Monitoring, American Institutes for Research

The National Center for Student Progress Monitoring provides technical assistance to states and districts in implementing proven models for student progress monitoring.

- Conducted multiple activities including developing a multi-year project evaluation plan; leading evaluation data collection, analyses, and writing of reports; conducting local and state surveys; coordinating review process of commercially available progress monitoring measures by a committee of national experts and planning of annual national training institutes.
- Performed state by state analysis of SPM implementation and capacity.

2006–2008 *Research Associate*, National Center for Education Statistics (NCES), Federal Statistics Program-NAEP Educational Statistical Services, American Institutes for Research
The Federal Statistics Program contributes to the development of high-quality statistics about education that inform discussion, debate and planning of decision-makers at national, state, and local levels.

- Supported technical reviews of NAEP reports, developing, maintaining and monitoring statistical, methodological, and quality standards related to reporting for the NCES Assessment Division.

2004–2007 *Research Associate*, U.S. Department of Education, Access Center, American Institutes for Research
The Access Center provides technical assistance that strengthens State and local capacity to help students with disabilities effectively learn in the general education curriculum.

- Served as a member of the evaluation team and researching instructional strategies proven to increase access to the general education curriculum for students with disabilities.
- Conducted multiple activities including developing a multi-year project evaluation plan; leading evaluation data collection, analyses, and writing of reports; conducting local and state surveys.

Selected Consulting Experience

2008 Client: Center for Educational Resources, The Johns Hopkins University

- Worked on maintaining TA training materials, give workshops on teaching and help advance understanding of good teaching. Write and edit TA training manual.

2002 Client: Riverside Church; New York, NY

- Member of team that designed a community center for Riverside Church that successfully integrated the Church with the existing community. The project involved real estate and project financing with the goal of self-sufficiency, a demand analysis of non-profit space in Harlem, design of structure interior, and architectural design of structure. 1st Place at Chase/JP Morgan Community Development Competition.

2002 Client: ACCION New York

- Responsible for aiding ACCION in developing a credit-scoring model to measure future loan performance of clients. The model will assist ACCION in streamlining loan underwriting by using technological resources to increase client -base.

Selected technical reports and evaluation briefs

Shami, M., Villenas, C., Holland-Coviello, R., Short, S, Safer, N., & McInerney, M. (2008). National Center on Student Progress Monitoring Year 4 Evaluation Report. Washington, DC: American Institutes for Research.

Shami, M., Lee, S. W., Villenas, C., Holland-Coviello, R., Short, S, Safer, N., & McInerney, M. (2007). National Center on Student Progress Monitoring Year 4 Evaluation Report. Washington, DC: American Institutes for Research.

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Progress Monitoring Year Three Evaluation Report. Washington, DC: American Institutes for Research.

Derryck, D., Abzug, R. & Villenas, C. Operating in a New Climate: Neighborhood Based Social Services in the Aftermath of 9/11. Report for Nonprofit Finance Fund/United Neighborhood Houses. 2002.

Selected Professional Presentations

Plank, S., Villenas, C., & Reese, M. How do we study diffusion of innovation in education? A review of 20 years of research. Presented at American Educational Research Association Annual Convention, New York, NY. 2008.

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Available upon request.