

ABSTRACT

Title of Dissertation: PREDICTING SCHOOL DROPOUT
AMONG YOUTH WITH DISABILITES:
THE ROLE OF YOUTH
CHARACTERISTICS, ACADEMIC
EXPERIENCES AND EMOTIONAL
ENGAGEMENT FACTORS.

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The purpose of this study was to explore the effects of disability classification, individual characteristics, academic experiences and emotional engagement on dropping out of school among youth with disabilities. Variables related to youth characteristics and school experiences were drawn from the first three waves of the National Longitudinal and Transitional Study 2 database. Chi-square analyses, t-tests, reliability analysis and logistic regression were used to answer five research questions.

The descriptive results showed that there were significant group differences between dropouts and non-dropouts on disability classification, race/ethnicity, gender, disciplinary school exclusion, grade retention, grades and levels of emotional engagement. Logistic regression results showed that disability classification and race/ethnicity characteristics were reduced to non-significance when controlling for

gender, household income, academic experiences and emotional engagement factors. Predictors that increased the odds of dropping out were out of school suspensions or expulsions and grade retention. Additionally, girls had significantly increased odds of dropping out compared to boys when controlling for other variables in the model. Factors associated with decreased odds of dropping out included coming from households with higher than average income, higher than average grades and higher levels of emotional engagement. The findings suggest that factors related to academic experiences significantly increased the odds of dropping out beyond disability classification or ethnic membership alone. Higher than average levels of emotional engagement were also associated with decreased odds of dropping out but appeared to have the smallest effect. Recommendations stress that school practices such as disciplinary removal and grade retention should be carefully considered, and that school programs be in place to help keep youth at-risk from dropping out.

PREDICTING SCHOOL DROPOUT AMONG YOUTH WITH DISABILITIES:
THE ROLES OF INDIVIDUAL CHARACTERISTICS, ACADEMIC
EXPERIENCES AND EMOTIONAL ENGAGEMENT FACTORS

By

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Dedication

To Frank H.

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LIST OF ABBREVIATIONS

ATI: Alabama Transition Initiative

ASTS: Alabama State Tracking System

CATI: computer-assisted telephone interview

CCD: Common Core of Data

CPS: Current Population Survey

DANS: Data Analysis System

EBD: emotional and behavioral disturbance(s)

ESEA: the Elementary and Secondary Education Act

FAPE: free appropriate public education

HS&B: High School and Beyond Survey

HSES: High School Effectiveness Study

IDEA: the Individuals with Disabilities Education Act

IEP: individualized education program

IES: Institute of Educational Science

LD: learning disability(ies)

LEA: local education agency

LOW: low incidence disabilities

LRE: least restrictive environment

MR: mental retardation

NCLB: the No Child Left Behind of 2001

NCES: National Center on Education Statistics

NDPC-SD: National Dropout Prevention Center for Students with Disabilities

NELS: 88: National Education Longitudinal Study

NLTS: National Longitudinal Transition Study

NLTS2: National Longitudinal Transition Study 2

OHI: other health impairment(s)

OR: odds ratio

OSEP: Office of Special Education Programs

OSERS: Office of Special Education and Rehabilitation Services

PL: public law

SEELS: Special Education Elementary Longitudinal Study

SES: Socio-economic status

SI: speech impairment(s)

SPSS: the Statistical Package of the Social Sciences

SRI: Stanford Research Institute International

USDOE: United States Department of Education

CHAPTER I: OVERVIEW

Reducing the number of students who drop out of school is an urgent national policy issue. One of the National Education Goals of 1990 was to reduce the school dropout rate, and a related goal stated that 90 percent of all students would graduate by the year 2000 (U.S. Department of Education, 1990). More recently, the No Child Left Behind Act of 2001 (PL 107-110) has required states to incorporate graduation rates into their accountability systems for secondary schools and school districts (U.S. Department of Education, 2004). Public Law 108-446, the Individuals with Disabilities Education Improvement Act of 2004 (IDEA), which provides students with disabilities extra protections in the form of academic and behavioral modifications and procedural safeguards, also requires states to collect and report dropout data on students with disabilities as part of their performance based reporting systems (McLaughlin & Thurlow, 2003).

Despite these national initiatives, many students with and without disabilities do not complete school. According to the National Center on Educational Statistics (NCES) as of 2000 only 17 states have reached the 90% school completion rate specified in the National Education Goals of 1990 (NCES, 2003). While dropout rate estimates ranged between 4-10% across states in 2004 (Laird, DeBell, & Chapman, 2006), these figures are widely considered to underestimate the true dropout rates and mask the higher dropout rates among certain subgroups of students (Balfanz & Letgers, 2004). In part, this inconsistency is due to the different ways that states and government agencies have historically defined, calculated and reported dropout rates. Despite the vagaries in dropout rate reporting, there are dropout proportions among subgroups that remain

consistent. Youth from minority or low-income backgrounds and youth with disabilities drop out of school at an estimated rate that is two to three times the national average (Laird, Bell & Chapman, 2006; Rumberger, 1995; Thurlow, Sinclair & Johnson, 2002). According to the Department of Education Office of Special Education Programs (OSEP), approximately 31% of students with disabilities dropped out of school in 2003-2004 (U.S. Department of Education, 2009). Students with emotional and behavioral disorders (EBD) dropped out at one and a half times the rate (48%) of all students with disabilities and up to four to five times a higher rate than the NCES estimates for students in the general population for that same year.

These findings indicate that not only are students with disabilities at higher risk of not completing school than their non-disabled peers, but suggest that special education laws, programs, and specialized teacher training, designed to provide academic and social safeguards for these students, are in need of closer inspection. Additionally, understanding factors that lead youth to drop out is crucial to the development of school policies and practices that are designed to provide additional academic and social support and promote school completion for youth who are most at-risk of dropping out.

In this chapter, I provide an overview and rationale of the study by discussing key elements of dropping out among students with disabilities. First, I discuss the consequences of dropping out, policy initiatives and dropout prevention programs. Second, I discuss the current knowledge on the factors associated with dropping out including student characteristics, school characteristics and student engagement. Third, I review the purpose of the study by discussing research questions, the NLTS2 dataset and

methodology. Finally, I discuss the significance of this study to the field of special education.

Consequences of Dropping Out

Education attainment has taken on increased importance as America heads into the information age. The consequences associated by not completing high school has changed in response to America's transition from an agrarian-rural society in the 1800's to an industrial-urban society through the first half of the 20th century, and finally to our information-based society in the 21st century (Dorn, 1996). While the school completion rate during the past century has increased from 4% in 1900, to 75% in 1965, and to 86% in 2000 (Thurlow, Sinclair, & Johnson, 2002), reduction in low-skilled, high-paying jobs has placed an increased emphasis on advanced education to obtain meaningful employment. At minimum, completing high school is the first step in securing meaningful employment in a global economy. Dropping out of high school places youth with and without disabilities at risk for serious adult difficulties that include negative economic and social outcomes.

Economic and Social Outcomes

The cost of dropping out of school to individuals and to American society is very expensive. Individuals without a high school diploma earn less and have significantly higher rates of unemployment and underemployment than those who complete school (U.S. Department of Labor, 2007). Youth without disabilities who do not complete school not only experience underemployment but also reduced voting behavior, incarceration and dependence on social welfare systems (Rouse, 2005; Bailey, 2005). The picture for youth with disabilities who drop out is less clear but appears to reflect the

trends in the general population. While dropouts with disabilities are more likely to be employed than school completers with disabilities within 2 years of leaving school, they are less likely to earn more money, vote, or obtain drivers licenses, and more likely to change jobs often and to start families than dropouts without disabilities (Wagner, Newman, Cameto, Garza, & Levine, 2005).

The costs to society of a high dropout rate are evident in the loss of tax revenue and increased reliance on social programs and income assistance. In a cross-sectional analysis using the labor market assessment from the Current Population Survey (CPS), Rouse (2005) estimated that the lifetime earnings loss for dropouts compared to those having earned a high school diploma is about \$158 billion resulting in an aggregate (lifetime) loss of about \$36 billion in tax revenues (not including Social Security contributions) and \$58 billion in total income tax revenues (or 4-6% of the 2003 IRS income tax revenues).

In addition to the economic costs, youth who drop out are at greater risk of negative social outcomes. Dropping out of school has been theorized to be a component in the theoretical “school to prison pipeline” (Wald & Losen, 2003). Early school withdrawal is viewed as a culminating event based on negative school experiences including poor academic achievement and frequent disciplinary exclusion, which ultimately lead to increased involvement with the juvenile justice system. These outcomes disproportionately affect minority youth and youth with disabilities. Minority youth are more likely to suffer from unduly punitive consequences (suspensions, office referrals, corporal punishment) at school, and represent two thirds of incarcerated youth but only one third of all youth (Leone, Christle, Nelson, Skiba, Frey & Jolivette, 2003).

Dropouts with disabilities are significantly more likely to have been arrested or to have spent time in jail or juvenile facilities than school completers (Wagner, et al., 2005), and between 30-70% of incarcerated youth have been identified as having a disability (Quinn, Rutherford, Leone, Osher, & Poirier, 2005; Wald & Losen, 2003). Blackorby and Wagner (1996) found that 35% of youth with emotional disturbances were arrested 3-5 years after they graduated and 73% of those who dropped out had been arrested at least once. Further, the economic costs of incarceration outweigh the cost of education. Incarcerating youth can cost states anywhere from \$35,000 to \$70,000 per bed per year (Leone, et al., 2003). When compared to the typical costs of a college education, incarcerating youth appears to be an expensive proposition.

Unemployment, reliance on social service agencies and incarceration are a few of the outcomes that can potentially have a profound effect on individual lives. These outcomes illustrate the potential negative effects of leaving school early. While these outcomes are generally known, understanding the number of youth who drop out and the factors associated with how youth drop out are crucial in designing policy initiatives and school practices designed to prevent dropout and promote school completion.

Policy Initiatives

Due to widespread publicity in the early 1960's, early school withdrawal was recognized as a national concern and the term "dropout" entered the popular lexicon (Dorn, 1996). This concern reflected the long-term exclusion of teenagers from labor markets and a new mission for secondary education as American society began the transition from an industrial-based to a technical and information-based economy. This

led to a concerted national effort to enact initiatives and legislation designed to meet better meet the needs of youth who were disengaging from school (Dorn, 1996).

The Elementary and Secondary Education Act

At the same time that dropping out became a national concern, the United States Congress passed the Elementary and Secondary Education Act of 1965 (ESEA) as part of Lyndon Johnson's "War on Poverty." This initiative greatly expanded the role of the federal government in education, primarily through Title I programs which were designed to provide financial aid to schools for compensatory education programs to assist underprivileged children (Kantor, 1991). While school dropouts were not addressed in the original legislation, Congress amended the Act by adding Title VIII, Section 807—Dropout Prevention Projects in 1968 (Underwood, 1980). This initiative provided funding for selected school districts to implement dropout prevention programs. These programs continued to be amended under the ESEA to varying degrees throughout the past 40 years. Currently, dropout prevention programs are funded under Title I, Section 1012(h) of the No Child Left Behind Act of 2001 (NCLB).

There are numerous dropout prevention programs that have been supported by this legislation. While some of these programs have reduced dropout rates, and there is anecdotal evidence in support of some programs, the effectiveness of these programs has seldom been empirically demonstrated. The federal What Works Clearinghouse began a comprehensive and rigorous evaluation of dropout prevention programs, but results are uneven and still emerging (Dynarski, 2008). Because of this some policymakers and researchers have suggested implementing systemic changes as a part of school

improvement programs based on factors that contribute to dropout and school completion gleaned from dropout prevention programs (Shannon & Bylsma, 2005).

Individuals with Disabilities Education Act

In 1975, Congress enacted Public Law 94-142, The Education of All Handicapped Children Act establishing the right to a “Free and Appropriate Public Education” (FAPE) for students with disabilities. For over 30 years, the education of students with disabilities has been shaped, more or less entirely, by Public Law 94-142, which would later be renamed the Individuals with Disabilities Education Act (IDEA) (Martin, Martin, & Terman, 1996).

The right to FAPE did not automatically ensure school completion for students with disabilities. Despite the provisions of Individualized Education Plans (IEP) and Individual Transition Plans (ITP), the dropout rate for students with disabilities continues to outpace rates for general education. In 1997 and 2004, the amendments to the IDEA required states to develop performance plans, including performance goals and indicators, compare dropout and graduation rates with students in general education, analyze trends in dropout rates, and plan future activities to decrease dropout and increase rates of school completion for students with disabilities (Bost & Riccomini, 2006; McLaughlin & Thurlow, 2003). To this end the Office of Special Education Programs (OSEP) has provided funding to determine effective interventions that decrease dropout rates for students with disabilities and established the National Dropout Prevention Center for Students with Disabilities (NDPC-SD), a technical assistance and dissemination center of research and dropout prevention strategies. Additionally states must set up accountability

systems by reporting dropout rates and set up rewards, sanctions and technical assistance to reduce these rates (Bost & Riccomini).

Dropout Rates

In order to adequately address the problem of dropping out, accurate counts of dropout rates are important. Currently the federal government uses the October supplement to the Current Population Survey (CPS) collected by the U. S. Census Bureau, the Common Core of Data (CCD) compiled by the NCES, and data from the NCES Longitudinal Studies Program (Kaufman, 2004). These agencies typically report one or more of three types of dropout rates: (1) event rates; (2) status rates; and (3) cohort rates. Event rates measure the proportion of students who drop out in a single year without completing high school and yield the lowest rate. Status rates yield a higher rate and measure the proportion of students in a given age range who have not completed high school and are not enrolled at one point in time, regardless of when they dropped out. Cohort rates measure what happens to a single group of students over a period of time and typically yield the highest dropout rates. While these counts typically include youth with disabilities to some extent, the main source of information on youth with disabilities who drop out come from OSEP's Data Analysis System (DANS). DANS houses data that states are required to report under the recent IDEA amendments.

Though policy initiatives have opened the door to better data collection and reporting methods, the dissimilarities in calculating and reporting dropout rates can obscure rather than illuminate the scope of the problem. Variations in defining dropouts, calculating rates, clerical errors and ineffective communication between agencies have been persistent problems (Lehr, Hansen, Sinclair & Christenson, 2004). For example the

NCES uses both a status rate and event rate in reporting dropout rates. Depending on the type of rate used, national dropout rates can be 4% or 12%. At the national level, this is a very large difference and can result in a confusing picture if how these rates are calculated is not explained. Purposeful misrepresentation of the data by some districts (i.e. reporting lower rates than what is actually true) is seen by some as also being partly responsible (Losen, Orfield, & Balfanz, 2006; Dillon, 2008). While legislative efforts have paved the way for intervention, data collection, reporting and accountability, the reasons why students with and without disabilities drop out are still under investigation. Researchers have attempted to examine the various factors responsible for dropping out of school in order to make intervention programs more effective and data collection more accurate.

Factors Associated with Dropping Out

While calculating and reporting dropout rates attempts to describe the extent to which youth drop out, some researchers have attempted to identify the reasons why youth drop out. A number of factors associated with increasing the risk of dropping out have been identified in the dropout literature for all students. These risk factors are categorized here across three broad areas: (a) individual (student)-level factors (b) institutional (school)-level factors; and (c) student engagement factors. Student engagement factors can be considered a subset of student level factors, but are separated here for definitional clarity. While there is large body of research in the dropout literature that includes all students, there are far fewer studies that specifically examine factors among students with disabilities.

Student-Level Factors

Student-level characteristics related to dropping out in the general population include demographic variables such as gender, race and ethnicity, and socio-economic status (SES). Youth who are male, Black or Hispanic and from a low SES background have a higher probability of dropping out (Goldschmidt & Wang, 1999; Rumberger, 1995; Rumberger & Thomas, 2000). Poor academic achievement is a strong predictor of dropping out (Croninger & Lee, 2001; Ekstrom, Goertz, Pollack, & Rock, 1986; Goldschmidt & Wang, 1999; Rumberger, 1995). Teenage pregnancy (Pirog & Magee, 1997), high school employment (Goldschmidt & Wang, 1999) and high student mobility (Rumberger, 1995) have also been identified as factors associated with dropping out.

Student level variables are most commonly found in the literature for students with disabilities and mirror those found in the general dropout literature. Low attendance, academic problems, disability status (Dunn, Chambers & Rabren, 2004; Scanlon & Mellard, 2002; Wagner, 1995; Wagner, 1991), high mobility (Osher, Morrison, & Bailey 2003), retention, and low SES (Reschly & Christenson, 2006) have been identified as factors that relate to dropping out at the student level. One study (Scanlon & Mellard) reported that some youth believed that problems related to their disability classification had an impact on their school performance. For example, youth with learning disabilities believed that they had more trouble with academics while youth with an emotional disturbance cited behavior or emotional problems as impacting their education.

Across these studies, dropout rates were the highest for students with emotional and disturbances (EBD). In general, students with emotional disturbances, learning disabilities (LD), speech-language impairments (S&L), other health impairments (OHI)

and mental retardation (MR) have the highest dropout rates amongst all students with disabilities (U.S.D.O.E, 2009).

Aside from disability classification, there is conflicting information regarding the relationships between other student demographic variables associated with disability status and dropping out. One report from the National Longitudinal and Transition Study 2 (NLTS2) found that there were no differences in gender or race associated with student dropout status (Wagner, et al., 2005), while another report found that Black and low-SES youth had higher dropout rates (Blackorby, Edgar, & Kortering, 1991).

School-Level Factors

Simply being a minority student, having a disability, or coming from a low SES background does not necessarily predict dropping out. Though schools are part of a larger institutional framework including families and communities, they have been found to exert a powerful influence on school completion (Rumberger, 2004). Studies that examined school level variables have identified school climate, discipline policies, retention and teacher quality as predictors of dropping out after controlling for student demographics (Bryk & Thum, 1989; Lee & Burkham, 2004). Other school-level variables found to be associated with higher dropout rates include school size and type (Lee, & Burkham, 2002), school social composition (Bryk & Thum, 1989; Goldschmidt & Wang, 1999; Lee & Burkham, 2002; Rumberger & Palardy, 2005) perceptions of school disciplinary climate (Bryk & Thum, 1989; Finn & Rock, 1997) and grade retention practices (Christle, Jolivette, & Nelson, 2007; Goldschmidt & Wang, 1999; Jimerson, 1999; Rumberger, 1995; Rumberger & Larson, 1998).

To date, there is little information on school level factors associated with dropout status for students with disabilities. One school factor that has been identified and unique to students with disabilities is program placement in the least restrictive environment (LRE). One study (Landrum, Katsiyannis, & Archwamety, 2004) used state-level data from the U.S. Department of Education's Annual Reports to Congress on the Implementation of the IDEA found higher dropout rates for youth with emotional and behavioral disorders. Specifically, these students in self-contained programs had lower dropout rates and students in inclusion programs were found to have higher dropout rates.

Student Engagement Factors

An emerging line of research has identified student engagement factors as predictors of school completion and dropping out. Student engagement refers to the extent to which environmental factors interact with individual factors to influence his/her investment in education (Fredericks, Blumenfeld & Paris, 2004). These environmental domains include family, peers, and schools. However, there are different theoretical constructs that include environmental and individual factors and no clear conceptual framework that clearly merges the two types of factors. The most consistent definition was provided by Fredericks, Blumenfeld, & Paris, who defined three main engagement types at the individual level based on the participant identification model proposed by Finn (1989): (a) behavioral; (b) emotional; and (c) cognitive engagement. Behavioral engagement includes attendance work completion, class participation, misbehavior, attendance and participation in school activities. Psychological or emotional engagement includes feelings of identification with the school and perceptions of teachers and peers. Cognitive engagement draws on the idea of motivation and investment in learning.

Indicators of behavioral disengagement that are associated with dropping out include absenteeism, low work completion and misbehavior (Alexander, Entwisle and Horsey 1997; Carbonaro, 1998; Ekstrom, et al., 1986; Goldschmidt & Wang, 1999; Jimerson, Egeland, Sroufe & Carlson, 2000; Rumberger, 1995). Studies that have examined behavioral engagement and dropping out suggest that dropping out is influenced by both the academic and social experiences of youth, rather than academic failure alone.

While behavioral engagement indicators are external and observable, emotional and cognitive engagement indicators are related to thoughts and feelings, which are less observable. Measuring emotional or cognitive engagement is primarily done through surveys or questionnaires. While less studied than their observable counterparts, components of emotional engagement such as low satisfaction with school (Alexander, Entwisle, & Horsey, 1997) and low perceptions of teacher quality (Rumberger, 1995) have been found to be associated with higher rates of dropping out. Dropouts with disabilities have also reported poorer school bonding and a sense of not belonging to their schools (Kortering, Braziel & Tompkins, 2002; Kortering & Braziel, 1999). On measures of cognitive engagement, high school students with disabilities who reported that they felt school had utility and usefulness to their future, were found to have a lower likelihood of dropping out (Reschly & Christenson, 2006).

Engagement and Dropout Prevention Programs. The concept of engagement is a critical factor in understanding the process of early school withdrawal (Finn, 1989) and increasing student engagement is the focus of many dropout prevention programs (Lehr, et al., 2003). The extent to which dropout prevention interventions are based on an

understanding of the complex interactions between students and schools is critical to the development of effective interventions (Lehr, et al.). Schools across the nation have implemented dropout prevention programs. Although these programs provide guidelines and appear promising, empirical evidence is overwhelmingly descriptive and the methodology used to evaluate the effectiveness of many programs has been judged to be of low quality (Christenson & Thurlow, 2004). Despite this lack of evidence, there seems to be a general consensus anecdotally that many of these programs are effective (Christenson & Thurlow).

However, given the complexities of these interactions, dropout prevention programs may be only part of the answer. Bost, and Riccomini, (2006) advance the idea that school policies that focus on factors amenable to change should include strategies that incorporate components of dropout prevention as part of a school's improvement plan. Striving to understand the nature of academic, social, and personal problems affecting students and tailoring services and programs to promote school engagement and completion is essential (Christenson & Thurlow, 2004). Also attending to student perspectives will provide information to strengthen programs to help students with disabilities stay in school and graduate (Bost & Riccomini). The National Dropout Prevention Center for Students with Disabilities (NDPC-SD) also proposes strategies for practitioners that can be implemented in school policy and by teachers who have the opportunity to intervene naturally within their classrooms each day. These include among others, building a positive learning environment, building teacher-student rapport and assisting youth with relationship building (Covington-Smith, 2007).

Summary

Understanding why students drop out of school has been a perplexing issue for researchers, policymakers and practitioners. Like other educational issues, it is influenced by an array of factors that make effectively addressing the problem a “difficult if not impossible task” (Rumberger, 2004, p.147). Existing studies have included individual characteristics of youth (gender, race/ethnicity) but few have identified or explored students with disabilities. The line of research on student engagement for students with disabilities includes numerous theoretical explanations and studies examining the associations between engagement and other student outcomes (i.e. academic achievement). Emergent evidence on engagement factors indicate that increasing student engagement in school holds promise for helping all youth complete school. While recommendations to change school policies and teacher practices to increase student engagement make intuitive sense, there is still little evidence that explore the relative contributions of disability classification and individual characteristics, school experiences and student engagement factors to early school withdrawal for students with disabilities.

Purpose of the Study

There is scant evidence of how engagement factors are predictive of dropping out among students with disabilities. Specifically, little is known about the extent to which individual characteristics, academic experiences, achievement or engagement factors increase or decrease the likelihood of dropping out of school. The purpose of this study was to analyze the relationship between student characteristics, academic experiences and emotional engagement factors with dropping out among students with disabilities using data from a large, nationally representative dataset. Using data from the National

Longitudinal and Transitional Study 2 (NLTS2), I described and compared the student disability classification and demographics associated with dropping out. Second, I described and compared academic experiences theorized to contribute to dropping out among students with disabilities. Finally, I described and compared the relationship between emotional engagement and dropping out among students with disabilities.

Research Questions

This study was guided by the following research questions:

Research Question 1: What are the differences between youth who drop out and youth who do not drop out by disability category, individual characteristics, academic experiences and emotional engagement variables?

Research Question 2: What are the effects of disability classification to the likelihood of dropping out?

Research Question 3: What are the relative contributions of selected individual characteristics (race/ethnicity, gender, income,) to the likelihood of dropping?

Research Question 4: What are the relative contributions of academic experiences (grades, disciplinary action, and retention) to the likelihood of dropping out?

Research Question 5: What are the relative contributions of emotional engagement factors to the likelihood of dropping out?

Data and Methods

I utilized the National Longitudinal and Transitional Study 2 (NLTS 2) to answer these questions. There are several benefits in using the NLTS-2. First, it is current (i.e., data collection began in 2001 and ends in 2010) and special care was taken to accurately represent all of the federal disability categories under IDEA in the NLTS2 sample. The

NLTS2 provides nationally representative information for individuals who were between 13 and 16 years of age in the first wave of data collection. Over 11,000 students with disabilities were included in the initial sample including 1,100 students with emotional and behavioral disorders (EBD). The NLTS2 provided data on individual and household characteristics, school program and experiences, high school achievement, and postschool outcomes (Wagner, Kutash, Duchnowski & Epstein, 2003) over the period from 2000 - 2010. Finally, the NLTS2 research design provided a conceptual framework, which identified six categories of variables considered to impact school completion (SRI International, 2000a). I primarily used the parent and youth interviews from this conceptual model to select and organize the variables used in this study.

Study Sample. I examined a subsample of 5,018 youth with disabilities from NLTS2 who had reported that they had graduated, dropped out or were still in school at some point during the first three waves of data collection (2000 - 2006) and had no missing data on the independent variables. These were chosen from an original analytic sample of 5,928 youth who had full responses on questions related to school completion. Due to missing data, the sample had fewer dropouts, slightly higher mean income, slightly higher grades, fewer youth who reported negative academic experiences and fewer dropouts and students with emotional disturbances than the full NLTS2 sample from which it was drawn. The ramifications of this are presented in the final chapter.

Data Collection Instruments. I used data collected from the parent/youth interviews in the first 5 data collection points (i.e., 2000-01, 2002-03, and 2004-05, respectively). SRI collected the data through parent interviews in 2000-01 during the first data collection point, in 2002-03 during the third data collection point, and in 2004-05

during the fifth data collection point (SRI International, 2000a). During the third and fifth data collection, SRI also interviewed youth as well. I used data SRI collected in the Parent and Youth Interviews for all three waves for all variables used in the study. I provide a further description of these variables in Chapter III.

Methodology. I analyzed the data through descriptive analyses, chi-square tests, *t*-tests, and logistic regression analysis to evaluate the effects of each factor on school completion status. I used the descriptive analyses to present individual characteristics of the selected youth and the independent and dependent variables. I used chi-square tests to determine whether the percentage of youth with disabilities who dropped out of school differed from the percentage of youth with disabilities who had not dropped out on the various factors. I used the *t*-tests to determine whether the mean scores on the continuous variable (i.e., income and grades) differed between those who dropped out of school and those who had not. I used logistic regression analysis to evaluate the effects of all factors as a model for predicting dropping out as well as the individual effects of each characteristic or experience on dropping out among youth with disabilities.

Limitations. There are a number of limitations when conducting research with large scale datasets. One is missing data due to item non-response. Missing data can weaken methodological assumptions and present threats to a study's internal and external validity (Croninger & Douglas, 2005). Unfortunately, missing data in the NLTS2 is extensive. To adjust for this I captured data from preceding or following waves, and used mean imputation and listwise deletion. These strategies and the consequences of dropping cases due to missing data are discussed in more detail in Chapter III. Second, survey data from secondary data sources can be faulty due to inaccurate responses or responses

affected by bias or reaction to the surveyor (Gay & Airasian, 2003). The data for this study came primarily from parent/youth interviews. Third, since engagement was not captured as an explicit factor in the NLTS2, I constructed an engagement factor using six questions from the parent/youth interview post-hoc, as is common in the engagement studies I reviewed. In order to verify that these variables tapped into an engagement construct, I conducted a reliability analysis on the summed scale. While the composite variable had moderate reliability, the variable is unique within the limitations of the dataset, and may be difficult to replicate with other datasets. Finally, the dropout variable is a dichotomous variable. Youth either did or did not drop out of school. Since many youth return to school or attain a completion certificate by alternate means, the initial act of dropping out will serve as the outcome. The purpose of this investigation is to examine the factors that influence this decision, not circumstances beyond that. Therefore, youth who leave school and return in a later wave were not counted twice.

Significance of the Study

This study is important for several reasons. First, dropout rates are disproportionately high for students with disabilities. Numerous studies exist that examine dropping out among students in general education, but there is limited research on students with disabilities. Second, given the potential negative outcomes for students who dropout it is important to have reliable information available to policymakers and practitioners to design relevant interventions in order to achieve positive school outcomes. Third, this study contributes to the dropout literature on students with disabilities by building on previous descriptive studies that examined characteristics associated with dropping out among students with disabilities and by exploring the

relative contribution of student engagement variables to dropping out. There is to date, little known about how these engagement variables predict dropping out among students with disabilities.

Definition of Terms

Behavioral Engagement – A form of student engagement that includes participation in class and extra-curricular activities, work completion, and rule following.

Cognitive Engagement – A form of student engagement that includes investment in learning, and a feeling that school is useful to one's future.

Cohort Rate – A type of dropout statistic that measures what happens to a single group of students over a period of time.

Disability - As defined by IDEA, the term "child with a disability" means a child: with mental retardation, hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), serious emotional disturbance, orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities; and who, by reason thereof, needs special education and related services.

Disproportionate – Differential rates of dropout by race, disability, or some other individual characteristic.

Dropout- A student who withdraws from school before receiving a diploma or certificate. Withdrawal from school before receiving a diploma or certificate.

Emotional engagement- A form of student engagement that includes positive and negative reactions to teachers, classmates, academics, and school and is presumed to create ties to schools and influence willingness to do school related tasks.

Event Rate- A type of dropout statistic that measures the proportion of students who drop out in a single year without completing high school.

Individual with Disabilities Education Act (IDEA) – The major, federal disability education law originally enacted in 1975 under the title of Education for All Handicapped Children Act (EAHCA). IDEA entitles children with disabilities, birth to age 21, to a free appropriate public education (FAPE) in the least restrictive environment (LRE) in compliance with an individualized education plan (IEP) and procedural safeguards.

No Child Left Behind Act of 2001 (NCLB) - The major, federal general education law that requires states to develop and implement statewide academic standards, statewide assessments, and statewide accountability system.

Non- Dropout – In the dummy-coded variable, this represents youth who had graduated, received a certificate of completion, were still in school, or aged out of school.

Status Rate- A dropout statistic that measures the proportion of students who have not completed high school and are not enrolled at one point in time, regardless of when they dropped out.

Youth – A young person between 13 and 21 years of age.

Youth with a disability – A young person between 13 and 21 years of age who (a) has one or more of the following impairments: mental retardation, hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), emotional disturbance, orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities; and (b) has received special education services during his/her K-12 education, unless otherwise specified in text. For instance, the definition of disability in under the civil rights laws is a physical or mental impairment that substantially limits at least one major life activity, which is specified in the text.

CHAPTER II: REVIEW OF THE LITERATURE

School completion is a crucial benchmark for students with and without disabilities. While student and school characteristics have commonly been cited as dropout predictors, the complex nature of the dropout phenomenon requires a rigorous examination of student characteristics and factors that keep students engaged in school. The purpose of this study was to analyze the relationship between student characteristics, academic experiences and emotional engagement factors with dropping out among students with disabilities using data from the NLTS2. The following chapter is organized in four sections. First, I briefly discuss an historical perspective of school dropouts. Second, I describe dropout data sources and the ways in which dropout rates are reported. Third, I describe the background and research of factors associated with school dropouts. Fourth, I discuss the concept of student engagement. Finally, I review studies that have explored the relationship between student engagement constructs and school dropout. Included in this section is a methodological review of the studies using quality indicators as outlined in Thompson, Diamond, McWilliam, Snyder and Snyder (2005).

Historical Context

Who is a school dropout and where did the term originate? Due to widespread publicity in the early 1960's, early school withdrawal was recognized as a national concern and the term "dropout" entered the popular lexicon. This concern reflected the long-term exclusion of teenagers from labor markets and a new mission for secondary education as American society began the transition from an industrial-based to a technical and information-based economy. (Dorn, 1996). In 1962, the National Education Association (NEA) and the U.S. Department of Education defined a "dropout" as "a pupil

who leaves school for any reason except death, before graduation or completion of a program of studies and without transferring to another school” (Underwood, 1980). In another article, *Life* magazine declared that “leaving school is usually one more step on the treadmill of discouragement, failure and escape. But the individual tragedy is also a national waste” (Dropout tragedies 1960: 106A). Thus, the term “dropout” has negative connotations typically associated with individual deficits.

Prior to the 1960’s, the negative connotations and outcomes associated with early school withdrawal grew as education became more important. In the late 1800’s and early 1900’s, education was viewed as the domain of the privileged few and leaving school to work or learn a vocation was a socially acceptable path to take. In the early 20th century, 96% of individuals 18 and older had not completed school but were easily employable (Thurlow, et al., 2002). Around the same time, in response to calls for a more educated workforce and the enactment of child labor laws as the country moved from an agricultural based society to an industrialized-urban society, compulsory attendance laws were enacted. It therefore became mandatory in the early 1900’s in many states to attend public school until the age of 14 (Dorn, 1996). While seen by many as a way to provide education to the lower classes, compulsory attendance laws were criticized by others as a reactive social control measure to assimilate the burgeoning population and to address increased urbanization (Richardson, 1980). Nevertheless, by the 1950’s, the NEA declared that schools were the “dominant institution for youth” (Dorn, p. 39). This led to a concerted national effort to implement programs, practices and better data collection on school completion and drop out in order to better address the problem (Dorn).

While preventing school dropout is still a national concern, dropout rates have declined over the past 30 years (Laird et al., 2006). With the initiation of the ESEA in the 1960's, attempts to count dropouts and address the problem have become more extensive. This included recent amendments to the IDEA and NCLB that are designed to better track dropouts and school completion in order to develop effective interventions. Whether the reduction is due to federal initiatives supporting dropout prevention programs, social promotion, variances in data reporting, or an increased pressure on youth to complete school is not clear. At the same time a paradigm shift that puts the focus on deficient schools rather than deficient students has seemed to occur. This is evident in the language around dropouts that now label many schools "dropout factories" (Balfanz & Letgers, 2006), or a component in the "school to prison pipeline" (Wald & Losen, 2002). Indeed, researchers have started to take a closer look at the school's role in contributing to dropping out. For example, the National Research Council (2004) published a book authored by a national committee of experts that synthesized research and presented recommendations on how school's can increase student engagement and motivation to achieve better learning outcomes. The concept of student engagement has emerged as a focal point in dropout prevention programs and is central to my study. While there is emerging evidence between dropping out, school completion and student engagement, there is scarce evidence of this specifically for youth with disabilities.

While the dropout out rate has steadily decreased from the vast majority of students in the early 1900's, to 25% in the 1960's to the current estimates of around 10% for all youth and 31% for youth with disabilities, the dropout issue is still a perplexing and important issue. Whether the individual or the institution is too blame obscures the

complexities in why students leave or stay in school. Generally, policymakers, practitioners and researchers have taken a two-pronged approach to addressing the problem. One approach is locating the extent of the dropout problem through better rate calculation and reporting. The other is centered on locating the reasons why youth dropout and developing subsequent interventions.

Dropout Rates and Data Sources

Trends in dropout rates have steadily declined over the past thirty years (Laird, et al., 2006). However data collection methods and the ways in which student dropout rates are reported present a number of practical and methodological challenges. The true numbers are largely unknown because a majority of states do not follow individual students over time but only report annual enrollments, which are then aggregated at the federal level (Orfield, 2004). At the national level, dropout rates are reported by using a number of different calculation methods which obscures the extent of the dropout phenomenon.

Types of Dropout Rates. The NCES uses the October supplement to CPS to calculate two basic dropout rates most commonly reported by the federal government: (1) event rate and (2) status rate. Event rates are annual rates that describe the proportion of students age 15-24 that leave school each year without completing a high school program. Status rates provide cumulative data on dropout among all students in a given age range who have dropped out of school. Status rates are higher than event rates because they include all students within an age range, regardless of when they dropped out. In 2004 the NCES reported nationwide event rates and status dropout rates of 4.7

percent and 10.3 percent respectively. These rates have remained relatively stable over time.

INSERT TABLE 1 ABOUT HERE

The Common Core of Data (CCD) is a program of the U.S. Department of Education's National Center for Education Statistics that annually collects fiscal and non-fiscal data about all public schools, public school districts and state education agencies in the United States. The data are supplied by state education agency officials and include information that describes schools and school districts, including name, address, and phone number, descriptive information about students and staff, including demographics; and fiscal data, including revenues and current expenditures (NCES,2003). The data are easily accessible for public use. Event dropout rates can be calculated for individual state districts, local school districts or individual schools.

Cohort Rates. A cohort rate reflects the percentage of individuals who dropout from a group of students who enter 9th grade at the same time and are measured four years later. Cohort measures yield rates that are considered the most accurate and typically yield higher percentages than event rates and comparable percentages to status rates with one important distinction. Status rates are point-in-time measures while cohort rates are derived from a longitudinal design. With longitudinal designs, one can calculate the proportion of 8th graders who dropout at any point during the subsequent four years (Kauffman, 2004). These data are derived from large-scale assessments such as the

National Education Longitudinal Study (NELS: 88), High School and Beyond (HS&B), and the National Longitudinal and Transitional Study (NLTS2).

Reporting Methods

Currently the federal government uses three sources of data on high school dropouts and completers: the October supplement to the Current Population Survey (CPS) collected by the U. S. Census Bureau, the Common Core of Data (CCD) compiled by the NCES, and data from the NCES Longitudinal Studies Program (Kaufman, 2004). A summary of these sources is shown in Table 2.

INSERT TABLE 2 ABOUT HERE

Current Population Survey. CPS has calculated dropout rates in a uniform manner for nearly 30 years and is the only source of long term trends in drop out and completion rates (Kaufman, 2004). However, there are some ambiguities behind the simplicity of the CPS data that may make trends look clearer than they actually are. Due to changes in questionnaire design, it is difficult to make year-to-year comparisons. The accuracy of the rates has also been called into question due to sampling and non-sampling errors common to surveys. While sampling errors are generally within the accepted range for large surveys, errors for small subpopulations can be large (Kaufman).

Non-sampling error in the form of coverage errors occur when the members of a target population are excluded from the sampling frame or when sampled members of the population fail to participate in the survey (Kaufman). Since Hispanic and African American students have low coverage ratios, which threaten the reliability of minority

estimates, the dropout rates are likely inaccurate for Hispanic and African American youth than reported by the NCES. By design, the CPS is also a survey of non-institutionalized populations. This excludes those individuals incarcerated and those in the military.

Common Core of Data. While the CPS provides national estimates for dropout rates, the sample sizes for most states are not large enough to reliably report on rates for most state education agencies. The Common Core of Data (CCD) has the potential to more accurately reflect local rates. The CCD is a comprehensive source of statistics on basic school and district demographics, high school completion, and dropping out (Swanson, 2004). The CCD is a well-known database that exists in the public domain and has a common definition of dropout that facilitates state-to-state comparisons and can be used in studies that are easy to replicate (Swanson). The data provide information used to describe selected school characteristics (i.e., size, demographics), and student characteristics (i.e., demographics, gender).

Longitudinal Studies

Longitudinal studies commissioned by the U.S. Department of Education attempt to understand the dynamics of students and schools that influence student outcomes. Databases such as the NELS: 88, HS&B, and NLTS2 can be used to look at dropout and completion rates by following cohorts of students over time. One of the main strengths of longitudinal studies is that they allow for the examination of specific characteristics of students who drop out of school and the wide range of psychological, sociological, and economic factors that affect students' educational attainment (Kaufman, 2004).

Subsequently, results from studies using these databases may have useful implications for policymakers and practitioners.

NELS: 88. The NELS: 88 was the third longitudinal study of elementary and secondary students in the United States conducted by the NCES. The NELS: 88 began in 1988 with a nationally representative sample of eighth graders and was completed in 2000 (Curtin, Ingels, Wu & Heuer, 2002). The NELS employed a clustered, stratified national probability sample of schools and students. A total of 1,052 public and private schools were selected. Then a random selection of 26 students from each school was selected for a total of 24,599 participants. There have been numerous dropout studies using the NELS: 88 that are described in following sections.

HS&B: The HS&B, initiated in 1980 and completed in 1992, was a follow-up to the National Longitudinal Study of the High School Class of 1972 (NLS-72). The HS&B base year survey called for a stratified probability sample of 1,100 secondary schools at the first level (Zahs, Pedlow, Morrissey, Marnell & Nichols, 1995). At the second level, 36 students were randomly selected from each school which yielded a sample of approximately 58,000 students. (Zahs, et al).

NLTS/NLTS2/SEELS. In order to obtain information on outcomes for students with disabilities, the U.S. Congress directed the Secretary of Education to conduct a longitudinal study on the educational experiences and outcomes of students with disabilities. In 1985, OSEP contracted with SRI International to develop a nationally representative sample. The original NLTS was conducted between 1987 and 1994 and included over 300 school and more than 8000 students (Wagner, 1995). Numerous data briefs, newsletters and reports were generated from analyses on the NLTS that were

instrumental in informing policy and practice on inclusion practices, course taking, transition planning, and support services (Wagner).

SRI has also developed and conducted data collection with the Special Education and Elementary Longitudinal Study (SEELS) and the National Longitudinal and Transition Study 2. These datasets have been used to further implement policy and programs for students with disabilities. For example, findings from these databases have been included in the Office of Special Education's National Assessment of the Implementation of IDEA included in the Annual Reports to Congress. The level of detail provided in these datasets can add valuable information over and above what is provided by states to the U.S. Department of Education.

Both the NLTS and NLTS2 have reported on dropout rates, school completion rates, youth demographics as well as a wide assortment of other outcomes and characteristics of students with disabilities. For example, reports from the NLTS showed that dropout rates stood at approximately 30% for all youth with disabilities (Blackorby & Wagner, 1996) to 23% from the second wave of the NLTS2 (Wagner, et al., 2005). Reports from both have found a significantly higher number of youth with emotional and behavioral disorders who drop out and a lower number of youth with low incidence disabilities (i.e. hearing impairments, Autism, deaf/blindness) who reported dropping out. Reports from both datasets describe dropouts and school completers in terms of disability status, race/ethnicity, gender, income and numerous post-school outcomes (i.e. employment) but do not explore many factors that may be associated with increasing or decreasing the odds of dropping out among these youth.

The weaknesses of longitudinal datasets are that they are designed to give national estimates of dropout and completion rates and are subject to the same potential for bias due to non-response and undercoverage in the CPS (Kaufman, 2004). Additionally, these studies are also very expensive and time consuming. Practitioners may not want to wait 10 years for results that may inform practice to emerge. It may also be possible that by the time a study is completed and reports issued, they address concerns that may no longer be relevant because of policy changes (i.e. NCLB) that had a significant impact on practice. Despite this, examining longitudinal datasets can target student and school characteristics that cannot be captured by CPS or CCD data. As such, these studies can identify specific areas (i.e. student engagement) that can then be addressed with more intensive intervention studies that seek to determine how to change school practices that influence student outcomes.

OSEP Dropout Rates

While the OSEP uses data from the SEELS and NLTS2, the primary source of data comes from the Data Analysis System (DANS). DANS is a repository for all data mandated by the IDEA to be collected from states annually. DANS includes data collected under Child Count, Educational Environments, Exiting, Discipline and Personnel. For exiting data, states report to OSEP using a calculation similar to an event rate, in that totals are calculated by dividing the number of students who were not enrolled at the end of the school year by the number enrolled at the beginning of the school year. For the period covering the school years between 1993 and 2001, OSEP had reported dropout rates on average of about 42 % for all students with disabilities and

65 % for students with EBD (U.S.D.O.E, 2009). Since 2001 however, there appears to have been a steep decline in dropout to approximately 15% for all youth with disabilities and 21% for youth with EBD as of 2007 (USDOE, 2008)¹. While these figures reflect higher rates of dropping out for students with disabilities, they also reflect the way school exiting rates are calculated. Until 2005, states reported students who transferred or moved as dropouts, which may have inflated the true numbers of youth who dropped out. After 2005, students who moved or transferred and were known to be continuing school became a separate category. As of 2007, this new category comprised nearly 31% of all school leavers, and while there was a decline in dropout rates, there was also a drop in school completion rates from 65% in 2004 to 42% in 2007. Therefore it is difficult to determine current exiting rates since there will likely be an adjustment once youth who have moved or transferred reach school exiting age.

Additionally, comparing exit patterns of students with disabilities to students without disabilities is complicated since the definition of dropout and calculations differ between OSEP and the CCD. While both agencies use calculations akin to an event rate, OSEP allows states to choose the twelve month period in which to report data, while the CCD requires counts to be conducted on October 1st (Lehr, et al., 2004). Despite this, the rates for students with disabilities appear consistently higher amongst students with disabilities compared to their non-disabled peers (U.S.D.O.E., 2006).

In addition to vagaries in calculating dropout rates, another criticism addresses the potential for misrepresentation of the numbers by independent state agencies. For example, Losen, et al. (2006) found that the state of Texas underreported school

¹ Data downloaded from <https://www.ideadata.org/PartBData.asp> on February 15, 2009 and hand calculated.

completion rates by up to 19 percent, with the largest discrepancies noted for Black and Hispanic students. In Mississippi, the state reported a graduation rate of 87%, but another team of researchers compiled a figure of 63%, and California reported an annual graduation rate to the USDOE of 83% but reports a lower 67% on its state Web site (Dillon, 2008). While some school districts may misreport dropout statistics to avoid embarrassment, or many schools simply may not know what happened to students who suddenly stopped coming to school (Kaufman, 2004), or state workers have struggled to interpret new data collection systems (Dillon). However, reporting lower dropout rates than the actual number may mask the severity of the situation and create a situation where the problem is not addressed with effective interventions.

Recently, regulations were written into Title I of the NCLB to reform the way school exiting rates are calculated. The Four Year Adjusted Annual Cohort Rate (34 C.F.R. § 200.19(b)) will require states to use a common formula to calculate rates to improve accountability. This rate will calculate the number of students who graduate with a diploma in four years divided by the number of students who enrolled in school at the beginning of the four year period. States would also be required to disaggregate certain subgroups including youth with disabilities (34 C.F.R. § 200.19(b)(4)(ii)). While this appears to be a step in the right direction it is not clear if rates for students with disabilities will be disaggregated by disability classification.

Summary

Currently, the varied dropout rates reported by different agencies using different calculations and databases present a complicated picture of general trends associated with the dropout phenomenon. Dropout rates can range widely depending on how a definition

of dropout, calculation methods, and population under review. School completion rates are often reported that are inconsistent with dropout rates and are ambiguous in defining the difference between graduation and school completion via an alternate certificate or GED (Kaufman, 2004). Variations in definitions and methods make state to state comparisons difficult to interpret (Swanson, 2004). Some states have been accused of over inflating their reported graduation rates, thereby masking true rates and presenting an overly rosy picture of high school completion (Losen, Orfield, & Balfanz, 2006). However, reforms are underway to improve the data collection process to increase accountability and to help researchers target at-risk populations and alterable factors that can influence the decision to drop out or to stay in school.

Why Students Dropout

Dropping out has been associated with specific risk factors. The concept of risk is drawn primarily from the field of medicine, and advances the idea that exposure to particular conditions, increases the likelihood that an individual will experience certain adverse consequences (Finn & Rock, 1997). In education, dropping out may be viewed as the final adverse academic outcome in a long process of school disengagement. Correlates of dropping out often serve as risk factors in studies that examine why students experience difficulty in school and ultimately leave school. However, some have said that certain correlates have led to stereotyping and “blaming the victim” for negative outcomes (Dorn, 1996). Others argue that risk indicates the probability of negative outcomes and not an explanation of why these outcomes occur (Croninger & Lee, 2001). While there is some ambiguity as how the concept of risk is classified, there are certain correlates that were consistent across the studies in the literature.

The two main dimensions that risk factors associated with drop out can be classified across are; (a) individual perspectives and (b) institutional perspectives (Rumberger, 2004). The individual perspective focuses on individual attributes such as values, beliefs and attitudes associated with dropping out. The institutional perspective examines the contextual factors found in schools, families and communities associated with dropping out. For example, contextual factors in school include school structure, policies and practices and school climate. Contextual factors in the family include socioeconomic status and family structure. Contextual factors in the community include peer influences, employment opportunities, and socioeconomics. While most researchers have found multiple factors at play, no causal links have been empirically established between and one factor or a combination of factors.

Individual Perspectives

Academic achievement. Numerous studies have found that poor academic achievement is a common predictor of dropping out (Goldschmidt & Wang, 1999; Eckstrom, et al., 1986; Rumberger, 1995; Wehlage & Rutter, 1986). These studies found a strong association between low grades, academic difficulties and the decision to drop out and indicated that dropping out may be related to other negative school outcomes. Additionally, negative academic experiences such as grade retention and school disciplinary exclusion has also been found to be associated with early school withdrawal (Alexander, et al., 1997; Goldschmidt & Wang, 1999; Reschly & Christenson, 2006; Stearns, Moller, Blau & Potochnich, 2007).

Demographic characteristics. Other studies have found that a number of demographic background characteristics such as gender, race and ethnicity, and

immigration status are associated with dropping out (Goldschmidt & Wang, 1999; Rumberger, 1995; Swanson & Schneider, 1999). Specifically African-American, Hispanic, male youth and from a family who recently immigrated to America have been associated with higher dropout rates.

Social factors associated with the individual perspective resulting in high dropout rates include high mobility (Rumberger, 1995; Swanson & Schneider, 1999), high school employment (Goldschmidt & Wang, 1999), and teenage pregnancy (Pirog & Magee, 1997). These findings indicate that certain risk factors outside of school may increase the likelihood of an individual's choice to leave school. However, contextual factors influencing individual choice should be considered. For example, the quality of the school may have influenced a family decision to move, or inadequate sex education programs may have influenced teen behavior, or students' perceptions on the utility of school to their future may influence the decision to quit school and start working.

Institutional Perspectives

Family. Contextual factors that may influence a youth's decision to drop out of school may compound individual risk factors. Family background is recognized as perhaps the most important contributor to success or failure at school (Rumberger, 2004). Low socioeconomic status, as measured by family income and education has been commonly found to be associated with dropping out in the research literature (Bryk & Thum, 1989; Croninger & Lee, 2001; Ekstrom et al., 1986; Rumberger, 1995) as has consolidated poverty and associated community risk factors (Van Dorn, Bowen, & Blau, 2006). Research has also shown that students coming from a single-parent household are

more likely to dropout than students from a two-parent household (Ekstrom et al., 1986; Goldschmidt & Wang, 1999; Rumberger, 1995).

School. School characteristics that predict dropping out have also been studied extensively. Organizational aspects such as school demographic composition, concentrated poverty, school size, school type, class size, teacher quality, academic press, teacher salaries, school safety, administrative expectations, school order and school discipline policies (Bryk & Thum, 1989; Christle, Jolivet & Nelson, 2007; Fine, 1986; Goldschmidt & Wang, 1999; Lee & Burkham, 2003; Rumberger & Palardy, 2005; Rumberger & Thomas, 2000) have been identified as factors associated with dropping out. For example dedicated staff, school-wide behavior management and effective academic instruction may minimize the risk of dropping out and subsequent court involvement for at-risk youth, while high rates of suspensions and poor perceptions of fair discipline are associated with higher dropout rates (Bryk & Thum; Christle, et al.).

Students with Disabilities

Special education programs are designed to decrease the perceived risk associated with having a disability by increasing the academic and social competence of these youth. However, youth classified with an emotional disturbance or mental retardation are at higher risk of dropping out (Blackorby et al., 1991; Wagner, Newman, Cameto, Levine, Garza, 2006) than students with other disabilities and youth with disabilities have higher dropout rates than their non-disabled peers. This suggests that special education programs and associated practices, designed to help youth, may not be adequately meeting all students' needs. I only found one study that examined the contextual effects of school programming on dropping out among youth with disabilities (Landrum, et al.,

2004). This study examined the effects of the least restrictive environment (LRE) placement and found that youth with emotional disturbances in mainstreamed programs had higher rates of dropout than those in self-contained programs. The authors reported substantial limitations citing the inaccuracies of OSEP reported data on their findings. However this study highlighted the need to examine potential school effects.

Risk factors that increase the likelihood of dropping out for students with disabilities have generally focused on individual characteristics and have been described in studies using interview or survey methods with small samples of students, but have found results inconsistent with research on dropouts in general. Race/ethnicity, reading level, family intactness and SES, school transfers and school releases were found to not be statistically significant between a group of graduates with LD and a group of dropouts with LD (Blackoby, et al., 1991; Kortering, Haring & Klockars, 1992). Another study found no significant differences in I.Q., academic achievement, academic satisfaction or perception of teachers between a group of dropouts with LD and school completers with LD (Bear, Kortering & Braziel, 2006). Conversely, Scanlon and Mellard (2002) found that youth with learning disabilities who dropped out had lower academic achievement than youth in school or in a GED program. They also reported that students with emotional disturbances who dropped out experienced more behavior problems than in the comparison groups.

While these studies run contrary to findings that dropouts have lower levels of achievement than school completers, students with disabilities may enter high school with depressed academic achievement records overall. This may suggest that other factors associated with academics including application of skills and perceptions of

satisfaction with education may be more influential (Bear, et al., 2006). Wagner, et al., (2007) used the NLTS2 to examine the perceptions of students with disabilities toward getting along with others, school safety, and school affiliation. While the study did not examine differences between school exit categories, higher amounts of dissatisfaction with school were noted among students classified with mental retardation, emotional disturbances and other health impairments.

Summary

Generally, there are common variables that are associated with dropout rates. Race, gender, SES, family structure, academic achievement, school exclusion, and community and peer factors are well described. However, causation should not be implied solely from demographic information alone. In addition, there is little known about how these variables are associated with dropout rates for students with disabilities. One of the purposes of describing this line of research was to identify predictor variables from existing research that are included in the NLTS2 and will be used in my investigation to determine if these risk factors are associated with dropping out for a sample of students with disabilities. Academic experiences, behavior and perceptions of teachers and schools were also described in many studies, particularly for youth with disabilities. While these were described within the context of risk factors, ways in which students overcome these hurdles are complex and not as well known.

Student Engagement

Emerging research on student engagement examines how risk factors affect involvement with school as well as factors that may help youth overcome risk. As such it taps into the larger body of literature on resiliency. Resiliency is a characteristic that

allows a person to make beneficial behavioral choices in the presence of multiple risk factors (Leone, et al., 2003). Characteristics of resiliency may be internal at the individual level (cognitive skills, emotional skills) or external at the institutional level (caring relationships, opportunities for meaningful participation, high expectations). High levels of youth engagement in school may be a protective factor in the decision to drop out. For example, emotional engagement in the form of school bonding and establishing caring relationships with adults at school has been found to be a protective factor for students at risk of facing negative school-related outcomes (McNeeley 2005). The construct of engagement can be a useful way to disentangle the complex interactions of risk factors associated with negative outcomes for youth and to identify specific areas that improve student outcomes.

Two Models of Engagement

Before defining the different types of engagement, it may be instructive to discuss Finn's seminal study (1989) that has provided a foundation for numerous dropout studies. Here I discuss two models devised by Finn that attempt to explain dropout behavior. First, I describe the frustration self-esteem model. Second, I describe the participation-identification model. These models predict that youth with deficiencies in self-esteem or attachment to and engagement with school, respectively, are more likely to drop out. Since many factors can be found at both the individual and institutional level, it is useful to examine the extent to which these theories can explain the link between dropping out and student characteristics, behavior and engagement.

Frustration Self-Esteem Model. As Finn (1989) described, the frustration self-esteem model explains why students who have experienced academic difficulties drop

out of school. In this model, unsuccessful school experiences such as school exclusion, retention or low grades lead to a reduction in self-esteem. In an attempt to boost self-esteem, students turn toward problem behaviors to find ways to be successful or to win the approval of peers. This behavior exacerbates until the student withdraws completely from school. Finn describes a cyclical process whereby problem behavior is linked to deficient school practices leading to unsuccessful school outcomes, leading to reduced self-esteem and back to the problem behavior. The blame for poor performance is “more commonly attributed to the school’s failure to provide an adequate instructional and/or emotional environment” (p.119). In one study, Bernstein and Rulo (as cited in Finn, 1989) used this line of reasoning for youth with learning disabilities. They explained that the embarrassment and frustration brought on by school failure leads to inappropriate behavior. As more adult attention is given to the behavior than the learning disability, youth fall further behind leading to suspension, dropout, and subsequent delinquent acts.

While school deficiencies are likely part of the problem, negative school outcomes are often attributed to the student in the context of this model. As Finn explained, “Pursuant to academic failure, according to the frustration self-esteem model the youngster’s self-view is a central mediator of problem behavior” (p.120). As such, this view places the burden of change on the individual’s shoulders pursuant upon one’s ability to increase self-esteem in order to affect more positive outcomes. However, self-esteem has not been found to predict dropout status consistently among youth (Stearns, et al., 2007).

INSERT FIGURE 1 ABOUT HERE

Participation-Identification Model. Finn (1989; 1993) developed a model for examining school dropout based on the developmental cycle of children rooted in the constructs of “identification” and “participation.” The construct of the “participation-identification” model is further explained by Finn as:

”... most children begin school at age five or six as willing participants, and are drawn to participate initially by encouragement from home and by classroom activities. Over time, first-level participatory behavior continues as long as the individual has the minimal ability level needed to perform the required tasks, and as long as the instruction is clear and appropriate. That is, there must be a reasonable probability that the child will experience some degree of academic success. As the youngster progresses through the grades and autonomy increases, participation and success may be experienced in an increasing variety of ways, both within and outside the classroom. These experiences promote the ways, both within and outside the classroom. These experiences promote the youngster’s sense of identification with school and still further participation. Frustration and less than successful experiences are inevitable for all students, but under ideal circumstances should not be sufficient to interrupt the self-reinforcing nature of the cycle. Students whose development follows this pattern meet the basic requisites for a successful, complete school career. Those who do not are at increased risk for emotional and physical withdrawal” (p.129-130).

INSERT FIGURE 2 ABOUT HERE

Finn’s model shows how participation in school activities may lead to successful outcomes which increase a student’s identification to school. Valuing and identifying with school then lead into increased levels of school participation. This circular pattern is impacted by the quality of teacher instruction and the student’s individual abilities.

Based on Finn's participation-identification model, predictor variables of school dropout can be classified across two dimensions within individual and institutional perspectives: (a) the degree to which a predictor variable increases or decreases student engagement with school; and (b) the degree to which predictor variables can be altered by educators to influence student outcomes (Sinclair, 1997). The first dimension considers whether the variables under study are associated with the risk of dropping out such as socioeconomic status, ethnicity, socio-economic status (SES), and school composition or school type. The second dimension introduces the control that schools have over variables associated with dropping out. These range from status predictor variables such as SES, parental perceptions on education, or school composition to alterable predictor variables such as school climate, discipline policy and teacher behavior towards students (Finn, 1993; Sinclair).

Unlike the frustration self-esteem model, the participation identification model is formulated in positive terms to facilitate efforts at dropout intervention (Finn, 1989). A component of the participation-identification model and more closely related to the frustration self-esteem model is called the withdrawal cycle.

INSERT FIGURE 3 ABOUT HERE

According to this cycle, non-participation leads to unsuccessful school outcomes which lead to emotional withdrawal. This cyclical pattern eventually results in total withdrawal from school. Like the frustration self-esteem model, this model is based on a set of negative experiences. As such it can lead to guiding questions that involve the

identification and impact of school practices and related academic experiences on school withdrawal or may be focused on individual deficiencies that prevent a student from engaging. In this way it is limited, and researchers have primarily turned their attention to questions that address ways to increase student involvement and participation. As educators this makes intuitive sense. Because much of this research does not specifically address youth with disabilities, an assumption may be that identifying predictors that increase participation for all youth, have the same effect on youth with disabilities. However, the consistently higher dropout rates among youth with disabilities suggest that we cannot ignore the negative associations with dropout in favor of positive interventions, if we are not sure where to target interventions. The model used for this study is a modification of Finn's withdrawal cycle model and is described in Chapter III.

Types of Engagement

Since Finn's model was published, defining the concept of participation and identification has been problematic. Research based on Finn's model has attempted to further the idea of student engagement by examining variables theorized to relate to different types of engagement (Finn, 1993; Finn & Rock, 1997; Finn & Voelkl, 1993; Reschly & Christenson, 2006; Sinclair 1997). However, a common definition of engagement has been elusive since educators, psychologists and sociologists define participation and identification within different theoretical constructs. For example, sociologists refer to positive teacher relationships as a form of social capital (Coleman, 1994; Croninger & Lee, 2001; Stearns, et al., 2007), while the same relationship is referred to as a part of emotional engagement by psychologists (Dunn et al., 2004; Reschly & Christenson, 2004).

For purposes of this study, I use the definition based on the literature in developmental psychology, since emergent research on youth with disabilities and school outcomes is rooted in this approach. Fredericks, et al. (2004) have identified three main types of engagement: (a) Behavioral engagement draws on the idea of participation and includes involvement in academic and social or extracurricular activities and is considered crucial for achieving positive academic outcomes and preventing dropping out; (b) Emotional engagement encompasses positive and negative reactions to teachers, classmates, academics, and school and is presumed to create ties to an institution and influence willingness to do school related tasks; (c) cognitive engagement draws on the idea of investment and incorporates thoughtfulness and willingness to exert the effort necessary to comprehend complex ideas and master difficult skills.

Behavioral Engagement

Behavioral engagement has generally been defined in three different ways (Fredericks, et al., 2002) and is believed to be important mediator in the dropout process (Rumberger, 2004). The first involves participation in positive conduct, such as following rules and the absences of negative behaviors such as getting sent to the office or fighting (Finn & Cox, 1992; Finn & Voekel, 1993). The second definition involves learning and academic behaviors such as effort, persistence, homework completion and class participation (Skinner & Belmont, 1993; Reshly & Christenson, 2006). The third definition involves participation in school-related activities such as after school clubs or sports (Finn, & Cox; Reshly & Christenson). These different definitions have components that overlap or may be highly correlated. Students who participate in class

may participate more in after school activities, demonstrating an overall institutional commitment that students with lower levels of engagement may lack.

Cognitive Engagement

Research on cognitive engagement comes from the literature on school engagement, which stresses investment in learning, and from the literature on learning and instruction, which involves self-regulation, or being strategic (Fredericks, et al., 2004). School engagement definitions of cognitive engagement emphasize an inner psychological quality and investment in learning that goes beyond behavioral engagement. The definitions from learning and instruction are manifested in behaviors such as developing strategies, or self-regulating, having a desire to go beyond the requirements, and a preference for challenge and hard work (National Research Council, 2004).

Emotional Engagement

Emotional engagement refers to students' affective engagement in the classroom. This can include boredom, excitement, anxiety or happiness, and feelings towards teachers and peers (Skinner & Belmont, 1993). This can also be conceptualized as a feeling of identification or bonding with the school or an emotional connection to teachers and peers (Finn, 1989; Finn & Voelkl, 1993; Murray & Greenberg, 2001) or an emotional disconnect through feelings of alienation and estrangement (Finn, 1989). Emotions such as showing interest or valuing something are thought to overlap with motivation, but the definitions used in engagement studies are much less elaborated and differentiated than in motivational research (Fredericks, et al.). Consequently, the construct of emotional engagement has not been very clear.

Research on Emotional Engagement. Though there are few studies that examine the relationship between dropping out and emotional engagement among youth with disabilities, more studies have investigated the associations of emotional engagement and academic outcomes. The following studies include both youth with and without disabilities.

Some studies have found that having positive relationships with teachers was associated with higher academic achievement, lower disciplinary referrals, lower levels of delinquency, higher social emotional functioning and enjoyment with school (Crosnoe, Johnson & Elder, 2004; Decker, Dona & Christenson, 2007; Murray & Greenberg, 2001; Wagner, et al., 2007). Youth who bonded with schools were more likely to report that they enjoyed school, were involved in school-based activities and attended school that promoted a feeling of safety (Crosnoe, et al., Wagner, et al.). Students in schools with a homogenous ethnic population and youth in private schools reported higher levels of enjoying school (Crosnoe, et al). The finding that homogenous school groups increased participation and identification was also found among a sample of minority students without disabilities (Finn & Voelkl, 1993).

Conversely, students with emotional disturbances have reported greater dissatisfaction and less enjoyment with their teachers or schools (Murray & Greenberg, 2001; Wagner et al., 2007). Youth who did not feel connected to schools had a heightened perception of school dangerousness, higher absences, and weak social skills were prone to delinquency and psychological stressors (Fink, 1990; Murray & Greenberg).

Emotional engagement in the form of school bonding and establishing caring relationships with adults at school has been found to be a protective factor for students at risk of facing negative school-related outcomes (McNeely, 2005). Several studies show that behavioral disengagement is a predictor of dropping out. These findings are based on measures (participation, discipline, extra-curricular activities) that gauge youths' observable behavior on academic tasks across diverse samples in school-age youth. There are far fewer studies that specifically measured elements of emotional engagement and its relationship to dropping out. While these factors are likely interrelated, it is important to know how each form of engagement contributes to, or mediates dropping out. This may especially be important for students with disabilities, who are receiving services due to an observed difficulty in academic, social or emotional functioning in school.

In sum, there are several strengths and limitations associated with conceptualizations and measurement of engagement. Engagement encompasses a wide variety of constructs that help explain how youth think, feel and behave in school. However there is considerable overlap in definitions across the different types of engagement (Fredericks, Blumenfeld, Friedel, & Paris, 2005). For example, effort is included in the definitions of both behavioral and cognitive engagement and “no distinction is made between effort that reflects a psychological investment in learning and effort that merely demonstrates compliance with school requirements” (p. 306). There is also overlap with constructs that have already been studied. Literature identifying on-task behavior and student conduct is similar to the work of behavior engagement. Research on

identification and belonging, and student attitudes is similar to conceptualizations on emotional engagement.

Measures of emotional engagement are often tapped by surveys which examine attitudes and motivations toward various aspects of school. There has been some debate as to whether emotional engagement is a latent factor closely related to motivation. This has led to a general and somewhat ambiguous definition of the construct (Fredericks, et al. 2004) which has made it difficult to measure. While empirical evidence of the link between emotional engagement and dropping out is scant, there are studies that explored the relationship between emotional engagement and other school outcomes. In an effort to more clearly define emotional engagement, attempts have been made to develop a specific construct that taps into emotional engagement (Furlong & Christenson, 2008; Finlay, 2006). However there is little empirical evidence to date of the implementation of newly devised scales and current knowledge relies on emotional engagement constructs created from survey questions that are related to the overall concept.

Methodological Review

Literature relating to dropout is numerous and varied. In the process of working on this dissertation and a related academic project, I have collected numerous journal articles, book chapters, newspaper articles, organization briefs and reports, and government reports on dropping out. While this collection is extensive, it is not exhaustive by any means. It also provided a foundation on which to build this study.

While the dropout literature encompasses varied viewpoints and theories, the purpose of this study was to empirically test correlations between factors. The specific purpose of this methodological review is to examine empirical studies that use similar

designs, data collection methods and sources, variables, and analyses that I will use in my study. For the methodological review, I searched for articles through ERIC, EBSCO, PSCYCHINFO and SOCIAL SCIENCE CITATION INDEX in the University of Maryland library using the following search terms in different combinations; *students with disabilities, student engagement, emotional engagement, dropout, school completion, behavioral disorders, student participation, school characteristics and large-scale dataset, NLTS(2), and SEELS*. I applied the following selection criteria to the this search: (a) drop out was used as the dependent variable; (b) the study included independent variables related to student engagement, (c) the study used large-scale datasets and quantitative analyses (d) the studies included youth with disabilities. This resulted in 5 studies (Alexander, Entwisle & Horsey, 1997; Blackorby, Edgar & Kortering, 1991; Dunn, Chambers & Rabren, 2004; Reschly & Christenson, 2006; and Wagner, Newman, Cameto, Garza & Levine, 2005) included for review. To expand this, I eliminated criteria (d), which added 6 additional studies (Croninger & Lee, 2001; Ekstrom, Goertz, Pollack & Rock, 1986; Finn & Rock, 1997; Lee & Burkam, 2003; Rumberger, 1995; and Stearns, Moller, Blau & Potochnick, 2007). I chose these studies because of their use variables related to engagement and because they used nationally representative datasets, which provided further insight into the design, data collection, and analysis methods of large datasets.

Overview

All 11 studies analyzed data with dropping out of school as the outcome variable using surveys obtained from large-scale datasets. Five studies (Croninger & Lee, 2001; Finn & Rock, 1997; Reschly & Christenson, 2006; Rumberger, 1995; Stearns, et al.,

2007) utilized the National Education Longitudinal Study of 1988 (NELS: 88). The NELS: 88 was the third longitudinal study of elementary and secondary students in the United States conducted by the NCES. The NELS: 88 began in 1988 with a nationally representative sample of eighth graders and was completed in 2000 (Curtin, Ingels, Wu & Heuer, 2002). The NELS employed a clustered, stratified national probability sample of schools and students. A total of 1,052 public and private schools were selected. Then, a random selection of 26 students from each school was selected for a total of 24,599 participants. One study (Lee & Burkham, 2003) used data from the High School Effectiveness Study (HSES), which is a supplement to the NELS. The HSES collected data nearly identical to the NELS for 247 additional high schools. The inclusion of additional schools allowed for a more fine-grained analysis of high school effects (Curtin, et al.).

One report used the NLTS2 (Wagner, et al, 2005) to examine the characteristics of youth with disabilities who drop out of school. The particular characteristics of the NLTS2 are found elsewhere in this paper. This study is one of the few reports using the NLTS2 that used multivariate methods to examine youth with disabilities with this database and the only one that I found that examined dropping out. Though the NLTS2 is available to independent researchers, I found few independent, peer-reviewed studies using SRI developed datasets by authors other than those directly associated with SRI. For example in an examination of EBSCO, ERIC and PSYCHINFO databases using the search words *NLTS2*, *SEELS* and/or *outcomes*, I found 40 publications, 36 of which were authored by associates of SRI, two that were released through the Department of Education and two independent studies using the SEELS database. Within the context of

my study, the lack of independent research using multivariate methods suggests there is a large gap in the research literature in examining the effects of a wide range of factors influencing dropout for youth with disabilities using large scale datasets.

Another study (Ekstrom, et al., 1986) used the High School and Beyond (HS&B) survey. The HS&B, initiated in 1980 and completed in 1992, was a follow-up to the National Longitudinal Study of the High School Class of 1972 (NLS-72). The HS&B base year survey called for a stratified probability sample of 1,100 secondary schools at the first level (Zahs, Pedlow, Morrissey, Marnell & Nichols, 1995). At the second level, 36 students were randomly selected from each school which yielded a sample of approximately 58,000 students. (Zahs, et al).

One study (Alexander, et al., 1997) used the Beginning School Study (BSS) to examine early predictors of dropping out. The BSS is a longitudinal study that has been monitoring the academic progress of a representative random sample of youth in the Baltimore City Public Schools since they began school in 1982. Twenty schools were selected that included 790 youth at the study's inception. Specific information about the database was not available from the BSS website.

Two studies used subsamples of datasets gathered from state or district-level data (Blackorby, et al., 1991; Dunn, et al., 2004). Blackorby, et al. mined data by examining office records from a metropolitan school district in Washington State which served 44,000 students. Dunn, et al. examined students that took part in the Alabama Transition Initiative (ATI), an intervention program implemented in 23% of Alabama's 128 school systems. The authors analyzed data on 1,654 of students with LD and MR against a

randomly selected comparison group of students with disabilities from the Alabama State Tracking System (ASTS).

A critical review of relevant literature in the field should be used to design potential research questions, variables of interest, instruments, and procedures in order to make a significant contribution to the field (Boote & Belle, 2005). I have adapted guidelines proposed by Gay and Airasian (2003) to evaluate research studies. These guidelines include: (a) rationale of purpose and research questions; (b) research design and participant description; (c) methods and instruments including variable descriptions; (d) data analysis and results and (e) discussion of the findings. Additionally, I will evaluate analytical methods and procedures using quality indicators outlined by Thompson, et al. (2005) for correlational research. These include measurement, practical and clinical significance, and confidence intervals for reliability coefficients, statistics and effect sizes. Table 3 presents main findings from the reviewed studies.

INSERT TABLE 3 ABOUT HERE

Purpose and Research Questions

The statement of purpose is one of the most important parts of a study since it explains what an author's intent was (Huck, 2004). All 11 studies provided a rationale and purpose relating to importance of examining dropout predictors and to fill existing gaps in the research literature. Two studies (Reschly & Christenson, 2006; Stearns, et al., 2007) explicitly used Finn's participant-identification model as a theoretical framework. The purpose and rationale were thus drawn from that. However, one of the studies (Stearns, et al., 2007) also drew on Finn's frustration self-esteem model and theories of

social capital to define their purpose and drive their sampling and analyses. The inclusion of alternate theories within the same framework was interesting, but confusing in the sense that the three theoretical backgrounds explained in the rationale were also used as independent variables in the study.

Rumberger (1995) pointed out the major shortcoming of dropout research as “few research studies have attempted to model dropout behavior in a comprehensive fashion, simultaneously accounting for the effects of individual, family, and school factors, and distinguishing between truly independent factors, such as ethnicity and family background, and such intervening factors as school behavior and academic achievement” (p. 585). Additionally, Reschly and Christenson, (2006) explained, “students with disabilities have only occasionally been the focus of dropout research,” and “most publications from government sources have reported only dropout rates and racial/ethnic information for students with disabilities who drop out of school” (p 277).

Research questions can operationalize the author’s purpose and direct an investigation (Gay & Airasian, 2003). Of the 11 studies chosen, 5 (Dunn, Chambers & Rabren, 2004; Croninger & Lee, 2001; Lee & Burkham, 2003; Reschly & Christenson, 2004; Rumberger, 1995) included specific research questions. For example Croninger and Lee, (2002) asked, “Do forms of teacher based social capital influence the likelihood that students drop out of high school” (p.555)? Reschly and Christenson, (2006) inquired “How does the engagement of students with mild disabilities compare to that of their average-achieving peer” (p. 280)? While the other studies did not have specific questions, their questions could be implied from their hypotheses and rationale. Alexander et al., (1997) stated “This profile of dropout is well established and one of our concerns was to

see whether it was reproduced in the experience of our sample of urban youths” (p. 88). While a purpose can be implied here, this statement provided a somewhat ambiguous definition of the researchers’ intent.

Research Design and Participant Description

Correlational studies can be designed either to determine whether and how a set of variables are related, or to test a hypothesis among expected relationships (Gay & Airasian, 2003). One studies (Blackorby, et al., 1993) provided primarily descriptive information on disability status, gender, race/ethnicity, household income, disciplinary referrals, age and employment opportunities between graduates and dropouts with disabilities. As previously noted, findings from descriptive research design provide limited information about possible predictors of dropping out of school. Ten studies (Alexander et al., 1997; Croninger & Lee, 2001; Dunn et al., 2004; Ekstrom, et al., 1986; Finn & Rock, 1997; Lee & Burkham, 2003; Reschly & Christenson, 2006; Rumberger, 1995; Stearns, et al., 2007; Wagner et al., 2005) investigated predictive factors associated with school dropout utilized longitudinal, correlational designs.

All of the studies utilized large scale data sets as their main source of data. Wagner, et al., used the first two waves from the NLTS2 do examine changes on selected factors between the waves. Most of the studies used selected sub-samples of youth to examine predictive factors of dropout. For example Rumberger (1995) selected 17,424 students from the first and second data collection points of the NELS: 88 to examine dropout predictors. Lee and Burkham (2003) selected a sub-sample of 3,840 students in 190 schools from the HSES who had full data on race, gender, SES, test scores, transcript information and dropout status. Finn and Rock (1997) examined a sub-sample

1,803 youth of African-American or Hispanic origin that had full data across three waves of the NELS: 88. Reschly and Christenson (2006) selected a sub-sample of 1402 students classified as LD or EBD and 13,000 students without disabilities from the NELS: 88 to compare groups on a variety of measures including dropout. The authors of this study expressed significant roadblocks identifying and extracting information on disability classification from the NELS: 88. Alexander et al, (1997) examined dropout predictors for youth from the BSS but did not describe whether they used the full sample, or a selected subsample.

Two studies (Blackorby, et al, 1991; Dunn et al., 2004) used district level-data to in their sample selection. Blackorby, et al. analyzed graduates and non-graduates by examining compliance folders from a 44,000 student district. From this, the authors report that 4,300 students received special education services. The authors then report the total sample was less than 800 students, but do not give an explanation of why this number was selected or whether it was representative of the students receiving special education in the district. Dunn, et al., examined students that took part in the ATI, a transition enhancement program at 49 sites which were selected through a competitive process. Additionally, students who participated in the ATI must also have participated in the Alabama Student Tracking System, a statewide program that surveys a selection of youth and young adults with disabilities. From this the authors selected 1,654 of former students with LD and MR of which 14% (228) had dropped out. They were compared against a randomly selected control group from the remaining 86% who had graduated on selected predictors.

Participant Description. Research studies should describe the sampling approach and include a description of the participants including basic demographic information (Gay & Airasian, 2003). Of the eleven studies, seven (Blackorby, et al., 1991; Croninger & Lee, 2001; Dunn, et al., 2004; Finn & Rock, 1997; Lee & Burkham, 2003; Reschly & Christenson, 2004; Rumberger, 1995) provided descriptive information on age, gender, SES, race/ethnicity, family structure and disability status. One study described the sample in terms of having a disability or not (Reschly & Christenson, 2006). One study described the sample in terms of sophomores who drop out and sophomores who stay in school (Ekstrom, et al., 1986). Another study only described the sample by race/ethnicity (Alexander, et al., 1997). One study (Stearns, et al., 2007) described how race, SES, gender, dropouts were coded, but provided little descriptive information on their chosen sample. In three of the studies (Alexander, et al., 1997; Stearns, et al., 2007; Wagner et al., 2005) demographic descriptions were defined only in the context of the data analyses results (i.e. percentages). This made it difficult to determine whether or not the sample chosen was representative of the overall sample from which it was drawn.

Methods and Instruments

The data collected through the methods and instruments should be reliable and internally valid (Gay et al., 2006). The quality of the evidence informing practice is limited by the psychometric integrity of the data being analyzed in a study (Thompson, et al., 2005). A majority of the studies provided little evidence of the reliability or validity of the instrument used. Ten of the studies (Alexander et al., 1997; Croninger & Lee, 2001; Dunn et al., 2004; Ekstrom, et al., 1986; Finn & Rock, 1997; Reschly & Christenson, 2006; Rumberger, 1995; Stearns, et al., 2007; Wagner, et al., 2005) used

data collected through survey methodology contained in extant datasets to capture or create variables. Generally, these datasets provided consistent sources that included parent, youth, teacher and administrator questionnaires, and school records.

Collecting data through different kinds of respondents provides multiple perspectives on the youth's experiences (Wagner, et al., 2003). Nine studies (Alexander et al., 1997; Croninger & Lee, 2001; Dunn, et al., 2004; Finn & Rock, 1997; Reschly & Christenson, 2006; Rumberger, 1995; Stearns, et al., 2007; Wagner, et al., 2005) used both youth and parent reports. Six of these studies (Croninger & Lee; Finn & Rock; Reschly & Christenson; Rumberger; Stearns, et al.; Wagner, et al.) also used teacher reports. Four studies (Alexander et al.; Finn & Rock; Lee & Burkham, 2003; Wagner, et al.) used school records. Additionally, one study (Reschley & Christenson) used administrator responses. One study (Blackorby, et al.) obtained data from only school records and another (Ekstrom, et al., 1986) did not disclose which data was obtained from the HS&B. In three studies (Alexander et al.; Dunn, et al.; Wagner, et al.), data were also collected through telephone or face-to-face interviews.

Reliability. While little evidence was given of reliability or validity of the instrument used, the majority of the studies in this body of literature utilized data from large-scale, federally-funded research projects (e.g., NLTS2, NELS: 88) which used survey instruments that were extensively tested and documented in various reports and technical manuals (e.g., Curtin, et al., 2002; Wagner, et al., 2005; Zahs, et al., 1995), therefore I did not feel it necessary to critique the reliability and internal validity of their data collection methods and instruments. However, according to Thompson, et al. (2005), "these practices may originate in the misconceptions that tests are reliable, and that once

reliability has been established in a given sample, further concerns are moot” (p. 185).

The assumption that reliability and validity of the instruments is inherent in the database instruments may prevent researchers from disclosing this information. At minimum, Thompson et al. explain that reasonable detail should be given to the influences of score reliability and validity on the study.

Only two studies (Finn & Rock, 1997; Wagner, et al., 2005) explicitly provided reliability reports taken from the technical manuals of the databases for the instruments that they used. For example Finn and Rock presented reliability statistics for the NELS: 88 and a measure on self-esteem. Wagner et al. provided sufficient details of reliability and validity in an appendix format. Another study (Stearns, et al., 2007) constructed composite factors using variables that were related to Finn’s participation identification model and social capital from the NELS: 88.

I evaluated reliability and validity reports of three studies that did not use large federally-funded databases (Alexander, et al., 1997; Blackorby, et al., 1991; Dunn, et al., 2004) because technical reports were not readily available. Dunn, et al. provided both content validity and reliability evidence for the ASTS. Content validity included field-testing, comparison of content domains with the NLTS2, and content comparison and alignment with the 2003 Northwest Passages Forum on Post-School Outcomes survey. Reliability was obtained through significant correlation coefficients between responses on two pairs of same-content questions from the survey. Blackorby, et al. obtained documents from a physical search through school records, and collected data from compliance folders based on convenience and availability. To enhance their data collection procedures, the authors developed a record review form that included items

such as demographics, school placement and special education referral data. Inter-rater reliability rates were computed at 0.92 using Cohen's kappa. Alexander et al. (1997) provided alpha reliability statistics for most of the survey instruments used in the BSS. For example, they reported modest alpha levels (.60) for youth interview data and engagement indicators. However, there were other measures (i.e. family context) where no reliability or validity statistics were provided.

Missing data. Another issue in choosing subsamples of youth from large scale datasets is how missing data affects the validity of the study. Missing data in large data sets is pervasive and can undermine the methodological assumptions of an analysis plan and pose a threat to a study's internal and external validity (Croninger & Douglas, 2005). Therefore it is important that authors address missing data when selecting an analytic sample. Common approaches include listwise deletion, pairwise deletion, and mean imputation (Croninger & Douglas). Of the studies reviewed here only 5 described how missing data was handled.

Three studies (Croninger & Lee, 2001; Finn & Rock, 1997; Rumberger, 1995) selected only participants that had full data on all key variables. Two of these (Rumberger; Croninger & Lee) described how this affected the composition of their sample. For example, Rumberger conducted t-tests between his analytic sample and the full NELS sample on key variables, which showed a non-significant difference between samples. One study (Stearns, et al., 2007) described procedures to impute missing data using listwise deletion and mean-plugging to preserve as much of the original NELS: 88 sample as possible.

Wagner et al., (2005) used mean imputation primarily by using the same disability category, race/ethnicity or education for the head of household that matched the student with a missing value for income from the NLTS2. For example, to impute mean income for a White student classified with Autism, whose mother had a college education, the mean from those three categories for the entire sample was calculated and imputed for that individual.

Weighting. Stratified, complex sampling is often used to create large scale dataset. Oversampling certain groups or individuals are effective in getting the correct number of the right types of observations in a sample, but in its raw form can be a distortion from the population from which it was drawn (Thomas, Heck & Bauer, 2005). Additionally, clustered samples (students in a school) may be more homogeneous than participants selected from a random sampling procedure. This can cause estimates of variances and standard errors to be biased (Thomas, et al). For these reasons, database designers often include a weight or a set of weights that can be used to correct for unequal probabilities of sample selection in the design. Five of the eleven studies (Lee & Burkham, 2003; Reschly & Christenson, 2006; Rumberger, 1995; Stearns, et al., 2007; Wagner, et al., 2005) explicitly described the use of weights in their analyses. Lee & Burkham went so far as to calculate their own weights, explaining that weights in the HSES were calculated “on the basis of inappropriate statistical assumptions” (p. 389). Finn & Rock (1997) did not describe using weights with their small subsample, but set a conservative threshold for significance ($p < .001$) to control for Type I error due to underestimated variances caused by clustered sampling. Two studies (Croninger & Lee, 2001; Stearns, et al., 2007) reported unweighted N’s, and weighted percentages in data reports.

Variables. Inconsistent or undefined variables may lack construct validity (Gay & Airasian, 2003). This is important, since many studies reviewed here used restructured or re-coded variables from their original sources. Of the eleven studies reviewed, only three (Croninger & Lee, 2001; Reschly & Christenson, 2004; Rumberger, 1995) provided explicit variable selection and composite construction including the code name from the NELS: 88 database. These studies also included factor loadings and alpha coefficients for their composite variables.

Five studies included general information on variable construction and definition (Alexander et al., 1997; Dunn, et al., 2004; Finn & Rock, 1997; Lee & Burkham, 2003; Stearns, et al., 2007) presented in table, appendices, or within the body of the text. Additionally, seven studies (Alexander et al; Croninger & Lee, 2001; Finn & Rock; Lee & Burkham; Reschly & Christenson; Rumberger; Stearns, et al.) included information on one or more of the following items: coding schemes, means, percentages and standard deviations for the description of re-coded and constructed variables. Three studies (Croninger & Lee; Rumberger; Stearns, et al.) also presented information on factor analysis used in constructing composite variables. Three studies (Blackorby, et al., 1991; Ekstrom, et al., 1986; Wagner, et al., 2005) provided little or no definitions of their variables. However, Blackorby, et al. and Wagner et al. primarily described group differences rather than predictive effects of certain variables. Wagner et al. also provided basic information based on the NLTS2 sample.

Seven studies (Alexander, et al., 1997 Croninger & Lee, 2001; Ekstrom, et al., 1986; Lee & Burkham, 2003; Reschly & Christenson, 2006; Rumberger, 1995; Stearns, et al., 2007) constructed dichotomous dependent variables to reflect dropout status. The

majority used coding schemes analogous to 1= dropout, 0 = non-dropout. Non-dropouts included both graduates and youth still in school. Finn and Rock (1997) trichotomized the dropout variable to reflect dropouts, school completers, and youth still in school (school “stayers”), and examined the effects of independent variables across groups. Blackorby, et al. (1991) and Wagner et al. (2005) also examined group differences in dropout and school completion status, although dropout was not an explicit dependent variable. Blackorby, et al., referred to youth who dropped out as school interrupters and Wagner et al., used dropping out as both a dependent variable and independent variable. Dunn et al. (2004) did not give an explicit definition of the dependent variable. Instead, I inferred that a dichotomous dependent dropout variable based on the results of their logistic regression analyses.

As described earlier, independent variables can be classified as status (unchangeable) or alterable (changeable). Status predictors typically include demographic information that an individual has little control over, while alterable describe individual or institutional characteristics that can be altered to predict outcomes. All eleven studies included demographic variables and defined their independent variables consistent with previously found correlates on their dependent variable. Demographic variables common to most studies included gender, SES, race/ethnicity, age, disability classification, and family characteristics.

Alterable variables were classified by academic performance and experiences, behavioral engagement, and emotional engagement. Ten of the studies (Alexander et al., 1997; Blackorby, et al., 1991; Croninger & Lee, 2001; Ekstrom, et al., 1986; Finn & Rock, 1997; Lee & Burkham, 2003; Reschly & Christenson, 2006; Rumberger, 1995;

Stearns, et al., 2007; Wagner, et al., 2005) used a measure of academic achievement. Six studies (Alexander, et al.; Croninger & Lee; Finn & Rock; Reschly & Christenson; Rumberger; Stearns, et al.) examined the predictive odds of retention on dropping out. Two studies (Ekstrom, et al.; Finn & Rock) examined how school exclusion predicted dropping out.

Items that measure elements of behavior and emotional engagement as defined by Fredericks, et al. (2004) included positive adult-student or teacher-student relationships (Croninger & Lee, 2001; Dunn, *et al.*, 2004; Lee & Burkham, 2003; Reschly & Christenson, 2006), school satisfaction (Alexander, et al., 1997; Ekstrom, et al., 1986), peer relationships (Rumberger, 1995; Stearns, et al., 2007), and being interested in school (Ekstrom, et al.). Measures of behavioral engagement were more commonly described. These included attendance (Alexander, et al., 1997; Reschly & Christenson; Rumberger, 1995; Stearns, et al.), preparedness, (Dunn et al.; Reschly & Christenson; Rumberger; Stearns, et al.), extracurricular participation (Stearns, et al.) and misbehavior (Blackorby, et al., 1991; Reschly & Christenson; Rumberger). This review describes similar predictors that are used within different theoretical frameworks, but does not evaluate how they are used in a model. Additionally, while there was commonality among studies on many of the variables used, variables were all used differently depending on the type of analyses conducted.

Data Analyses/Results

Studies should provide evidence of testing statistical assumptions, significance levels and the effect sizes of significant results (Thompson et al., 2005). However, tests of statistical assumptions and effect size reporting are rarely seen in the literature

(Thompson, et al.). I did not find evidence of testing statistical assumptions. One explanation may be in that logistic regression relaxes the assumptions that predictor variables have to be normally distributed, linearly related, or of equal variance in each group (Tabachnick & Fidell, 2007).

Eight of the studies (Alexander et al., 1997; Croninger & Lee, 2001; Dunn & Chambers, 2004; Lee & Burkham, 2003; Reschly & Christenson, 2006; Rumberger, 1995; Stearns, et al., 2007; Wagner, et al., 2005) employed logistic regression as part of their multivariate analyses. One of these studies (Lee & Burkham) used hierarchical linear modeling (HLM) with a dichotomous dependent variable. Finn and Rock (1997) used multivariate analysis of variance (MANOVA) and multivariate analysis of covariance (MANCOVA). Blackorby et al., (1991) used chi-square and t-tests in descriptive crosstabulation analyses. Eckstrom et al. (1986) used path analysis and value-added analysis as their main techniques. Many of the studies employed additional analyses such as descriptive, bivariate, or hierarchical linear modeling (HLM).

Statistical Significance. All studies reported finding statistical significance to some degree and used various statistics to report. For example, significance levels were expressed as a Wald statistic, or goodness-of-fit chi-square statistic in some studies using logistic regression (Reschly & Christenson, 2006; Croninger & Lee, 2001; Dunn et al., 2004; Stearns et al., 2007, Rumberger, 1995; Alexander et al., 1997), as an F statistic in studies using MAN(C)OVA, (Finn & Rock, 1997; Reschly & Christenson), or a t -statistic or chi-square in studies using t -tests or crosstabulations (Blackorby, et al., 1991; Wagner, et al., 2005) and chi-square statistic for log-linear analysis (Finn & Rock). Statistical significance can be inflated with large sample sizes. For this and other reasons,

Thompson, et al (2005) urge researchers to compute and report practical significance, defined as “the degree to which sample results diverge from the null hypothesis” (p.185) commonly referred to as effect sizes.

Effect sizes. Only two studies explicitly reported or interpreted effect sizes.

Reschly & Christenson (2006) reported an eta squared for their MANOVA findings Finn reported effect sizes using a Mahalanobis’s D. However, odds ratios generated by logistic regression studies can be referred to as effect sizes (Tabachnick & Fidell, 2007), and some researchers use a pseudo r-squared statistic as an approximation of the r-squared from linear regression to determine model effect size (Menard, 2002). All but one of the authors that used logistic regression reported log odds or odds ratios. Wagner et al., (2005) reported that logistic regression was used and significant results were identified. However, the results were not presented in log odds or odds ratios and it was hard to distinguish exactly which analytic methods were used in each result table. A technical description of logistic regression was provided in the appendix, but was not related back to any of the results.

Correct classification of cases and omnibus chi-square statistics are also used in logistic regression to show the relative strength of a model (Menard, 2002). Chi-square statistics showing a goodness of fit between models were provided in some studies (Croninger & Lee, 2001; Dunn, et al., 2004; Reschly & Christenson, 2006; Rumberger, 1995; Stearns, et al., 2007) and classification percentages were supplied by others (Dunn, et al; Reschly & Christenson).

Findings

The analyses contained in this body of literature revealed numerous significant findings on predictors and correlates of dropping out. All of the authors provided detailed descriptions of their findings. While many of these findings were consistent across studies, there were some conflicting findings on others.

Individual Characteristics. There were significant relationships between some individual characteristics and dropping out. These included SES, gender, race/ethnicity and disability classification. Six studies (Alexander, et al., 1997; Croninger & Lee, 2001; Finn & Rock, 1997; Rumberger, 1995; Stearns, et al., 2007; Wagner, et al., 2005) found that higher SES was associated with lower dropout rates and lower SES was associated with a higher probability of dropping out. These findings were consistent despite the fact that the SES variable was composed of different metrics across studies. For example, using the same database (NELS: 88), Reschly and Christenson (2006) used 5 variables from the parent survey related to parent education, occupation and income. Croninger and Lee used the NELS: 88 constructed variables related to family income, parent education and family structure as composite variables subsumed within a category of social risk. Rumberger used a NELS: 88 composite SES variable that includes income, education, reading materials in the home, family structure and ESL households.

Race/ethnicity was found to be a predictor in several studies (Alexander et al., 1997; Blackorby, et al., 1991; Croninger & Lee, 2001; Ekstrom, et al., 1986; Lee & Burkham, 2003; Rumberger, 1995). Being Black or Hispanic was associated with higher odds of dropping out. However, in two studies (Rumberger; Stearns, et al.) race/ethnicity was found to be non-significant when SES was considered. Specifically, they found that

Black students from low SES backgrounds were no more likely to drop out than White student from low SES backgrounds even though race/ethnicity was found to be significant by itself. In another study using the NLTS2, Wagner et al. (2005) found no significant differences between Black and White students with disabilities even when just considering race/ethnicity alone.

There were conflicting findings with student gender. Being male was associated with higher odds of dropping out, but in two studies, girls were found to have higher odds of dropping out after controlling for other factors in the model (Croninger & Lee, 2001; Rumberger, 1995). Finn and Rock (1997) described a higher percentage of females who dropped out than males among Black and Hispanic youth when factors such as SES were controlled for. Eckstrom (1986) found that white and Hispanic males were more likely to drop out than females, but that Black females were more likely to drop out than Black males.

Disability. Five studies (Alexander, et al., 1997; Blackorby, et al., 1991; Dunn, et al., 2004; Reschly & Christenson, 2006; Wagner, et al., 2005) examined the direct or indirect association that having a disability has with dropping out. Consistent with OSEP reports, these studies found that youth with an EBD have significantly higher rates of dropping out among all youth with disabilities and youth without disabilities. In their analyses of a large school district in Washington, Blackorby et al. found that youth with emotional disturbance had higher school interruptions than youth with learning disabilities or mental retardation. Using the NLTS2, Wagner et al. found that youth with emotional disturbances have higher rates of drop out among students with disabilities. They also found that youth who drop out have more negative post-school outcomes

including lower employment wages, more police involvement and earlier parenthood than youth who do not drop out. Alexander et al. found that early disability status was predictive of dropping out, but not in the presence of other factors. Two other studies (Reschly & Christenson; Dunn, et al.) examined dropout for students with disabilities, but did not use disability as a predictor. Their research was focused on the relationship of selected variables on the probability of dropping out for comparison groups.

Engagement. Several studies used variables related to engagement, but only two (Reschly & Christenson, 2006; Stearns, et al., 2007) described a conceptual model based on Finn's theory of participation and identification. Reschly and Christenson found that behavioral engagement factors such as poor preparation, tardiness, absences, skipping class, and not completing homework increased the odds of dropping out for students both with and without disabilities. They also examined the difference in engagement factors for dropouts and school completers with learning disabilities, emotional disturbances and average achieving students and found engagement factors are significant for all groups, but may particularly be a protective factor for students with disabilities. Descriptive results showed that 50% of students with an emotional disturbance dropped out compared to 26% of students with learning disabilities and 15% of non-disabled students. When behavioral engagement variables were taken into account, MANOVA results indicated that students with LD and EBD were more likely to have behavior problems at school, be less prepared for classes, and complete less homework, have higher levels of absences, cutting classes and tardiness. On emotional engagement variables, students with LD and EBD had lower perceptions of school warmth and more interactions with their teachers and less boredom at school.

On measures of emotional engagement, they found that feelings of school warmth were associated with a decrease in the odds of dropping out, but student-teacher relationships were associated with an increase in the odds of dropping out among students with emotional disturbances. This last result was somewhat surprising and the authors explained that there may have been considerable co-variance between variables within the emotional engagement composite.

Stearns et al. (2007) used participation-identification as a composite variable, but constructed it with variables related solely to behavioral engagement. A variable related to emotional engagement (lack of bond with teachers) was included in a different composite (social capital). While values were significant for the behavioral engagement composite in their final model, it was difficult to interpret since this composite was entered alongside a frustration-self-esteem composite and a social capital composite. The inclusion of different theoretical frameworks appeared well-intentioned, but served to confound rather than shed light on grade retention and dropping out.

Variables related to emotional engagement were included in other studies. Lee and Burkham (2003) found that positive student-teacher interactions were associated with decreased odds in dropping out. This was examined through the lens of school organization in an HLM model. While positive student-teacher relationships were significant at the individual level, the authors found that this effect was nullified in large or very large schools, with the explanation that in large high schools it may be more difficult for students to connect with a teacher or other adult. Croninger and Lee (2001) found that positive student-teacher relationships decreased the odds of dropping out for students with multiple academic and social risk factors. Alexander et al. (1997) found

that higher school satisfaction was associated with decreased odds of dropping out. Dunn et al. (2004) found that students with MR who identified a helpful adult at school had lower odds of dropping out than students with LD.

Variables related to behavioral engagement were common in other studies. For example, poor attendance was found to be predictive of dropping out in several studies (Alexander et al. 1997; Croninger & Lee, 2001; Ekstrom, et al., 1986; Finn & Rock, 1997; Reschly & Christenson, 2006; Rumberger, 1995). Classroom preparation and homework completion were found to be associated with dropout in some studies (Dunn et al., 2004; Reschly & Christenson; Rumberger) and misbehavior in others (Croninger & Lee; Rumberger).

Predictors associated with school experiences were also present in several studies. Academic achievement was also consistently found to increase the odds of dropping out. Low academic achievement was predictive of dropout in six studies (Alexander, et al. 1997; Croninger & Lee, 2001; Ekstrom, et al., 1986; Reschly & Christenson, 2006; Rumberger, 1995; Stearns, et al., 2007). Blackorby, et al. (1991) found, students who completed school had slightly lower achievement scores as measured by the WISC. Student with high rates of suspension and expulsions were more likely to drop out in two studies (Ekstrom, et al.; Finn & Rock, 1997). Retention was perhaps the most consistent predictor of dropping out. Being held back in school was associated with a higher likelihood of dropping out in five studies (Alexander, et al.; Finn & Rock, 1997; Rumberger, Stearns, et al.; Reschly & Christenson, 2006). Alexander et al., Rumberger and Stearns et al. found that retention was significant even after controlling for individual, family and school factors.

Discussion

The discussion sections may include a non-technical interpretation of the results, implications for future research and alternative explanations (Gay & Airasian, 2003; Huck, 2004). Since methodological design and statistical modeling is never perfect (Thompson, et al., 2005), caveats and limitations are important to disclose. For example, Dunn et al. (2004) disclosed that the generalizability of the results may be compromised since the data came from school sites receiving additional resources for transition services and thus may have been plausible that these students benefited disproportionately compared to students at other sites. This was an important disclosure since two of the authors were stakeholders in the implementation of the program, and may have a bias toward reporting positive results. However they failed to mention why they performed descriptive crosstabs after the logistic regression analyses and why a chi-square statistic was not used to examine differences between groups. In short, the authors provide very little illumination for the data culled from the logistic regression analyses.

Finn and Rock (1997) pointed out the need for future research in relationships between students and teachers by saying “the potential for highly accessible, supportive teachers to launch students on a positive trajectory is largely unexamined” (p. 232), but did not reveal any limitations of their study.

Reschly and Christenson (2006) explained that their measures of engagement were limited in design and scope by the data collected within the constraints of the NELS: 88 and called for more detailed measures. Similarly, Croninger and Lee (2001), described their measures of social capital as “blunt” (p.569), and not sufficiently detailed to capture the full extent of the effect of social capital.

Alexander, et al., (1997) discussed the limitations of their results of early predictors of dropout, by explaining the absence of knowledge about how these factors interact and track between the early years and high school. Rumberger (1995) suggested that dropping out is the culmination of a long-term process, and that by measuring drop out at the point of exit, post-school processes are largely ignored. Students may re-enter school, attend GED programs or vocational programs. Stearns, et al. (2007) described significant results throughout seven models of a logistic regression analysis, but never addressed the fact that their -2 log likelihood statistic was fluctuating up and down between models.

Methodological Review Summary

The literature reviewed here presents a description of the predictors associated with dropping out and a myriad of ways that researchers approach the issue. This is illustrated in the variety of subsamples drawn for larger datasets, different means of analyses, different theoretical constructs, varying levels of significance chosen and differing interpretation as to the strength of individual predictors. However, some of these studies connected their results back to previous literature, and though methods and procedures were inconsistent, findings on certain broadly defined variables were consistent. There were fairly consistent findings on demographic predictor associated with dropping out. SES was perhaps the strongest predictor among status level demographic predictors. Being held back in school was also a strong predictor. Whether retention is the result of individual deficiencies or deficient school practices was not examined. Low academic achievement levels, and suffering school exclusion were found to predict dropping out. Race was found to be a predictive factor, but not in the presence

of other factors (i.e. SES). Low levels of participation, high absenteeism, and poor preparation were behavioral factors associated with dropout. Low levels of emotional engagement in the form of perceptions of school and relationships at school were associated with higher dropout rates.

Of these studies, only five (Alexander, et al., 1997; Blackorby, et al., 1991; Dunn, et al., 2004; Reschly & Christenson, 2006; Wagner, et al., 2005) included or specifically examined students with disabilities. This is troubling given the higher dropout rates youth with disabilities have than students without disabilities. The exclusion of, or lack of identification of students with disabilities in the other studies is concerning. It is plausible that students with disabilities were included in some samples but not identified as such, which may lead to skewed results since this group of students have been found to have higher dropout rates. Only two studies (Alexander, et al.; Reschly & Christenson) included both students with disabilities and students without disabilities in their samples. Alexander used disability as an independent variable which was significant by itself, but not significant when controlling for other factors. Reschly & Christenson found that low levels of behavioral engagement affected the odds of dropping out for all students, but that emotional engagement may serve as a protective factor for students with disabilities in particular.

Wagner, et al (2005) examined students with disabilities using the NLTS2 database. They provided descriptive data on the characteristics of students who dropout and complete school. They also provided descriptions of post-school outcomes between youth with disabilities who drop out and those who don't. In a companion report, they examine the characteristics of students and the relationship to engagement factors such as

satisfaction with school, perceptions of student-teacher relationships and school safety. However, I found no studies using the NLTS2 that specifically look at how academic experiences and engagement factors are predictive of dropping out.

This study was designed to use the NLTS2 to add to the literature on dropout for students with disabilities. Specifically, it was designed to examine if certain demographic predictors (SES, race/ethnicity) hold true for this sample population and whether measures of retention in earlier grades and school exclusion are predictive of dropout consistent with previous studies. Finally, this study examined how emotional engagement predictors increase or decrease the odds of dropping out. Youth with emotional disturbances have the highest dropout rates of any school demographic group, despite individualized programs to help them. One goal of this study is to examine how emotional engagement factors influence the odds of dropping out in order to understand the extent to which practice can address this crucial component of engagement. As to date, there are few studies that have attempted to do this.

Chapter Summary

This literature review presented the history of dropping out, ways in which dropout rates are calculated, reasons why youth dropout of school, a description of student engagement factors and a methodological review of selected studies. Overall, dropping out has been extensively, if unevenly studied. The complex nature of school dropout can be linked to larger societal and economic forces at work, which may explain the difficulty in locating true dropout rates and reasons for dropping out, both hypothesized and explained. There are a myriad of dropout reporting procedures, which provides a confusing definition of dropout trends and rates both nationally and locally.

This may or may not be corrected with the recent NCLB amendment to streamline the dropout rate calculation and reporting methods. The reasons youth dropped out have been theorized to exist at both the individual (student) and institutional (school) levels. While a number of individual predictors have emerged (SES, retention), the interplay between these factors and how they influence dropout has made it difficult to develop empirically based and tested dropout prevention programs.

Recent advances in engagement research have categorized a wide array of significant predictors into coherent theoretical frameworks, and provide a promising direction to inform dropout research and intervention programs. This framework can be helpful in identifying ways at the individual level in which youth interactions with their school environments are manifested in behaviors and emotions. However, agreeing upon and using a common metric is still elusive. Many engagement constructs are designed from existing variables in large scale studies, which provide an uncommon definition of engagement. Another line of research that examines the structural and organization effects of schools using HLM can also inform dropout research by examining the ways in which contextual factors influence individual outcomes.

The methodological review of studies presented here provided insight into how research has been designed, analyzed and reported. While some studies focus on engagement, others view the composition of variables within slightly different frameworks. This has led to a divergent overall view, but has identified some common themes. One common theme has been the similar roles of various indicators that help youth connect to schools. There is growing evidence that this can be a powerful protective factor for youth at-risk of school failure.

CHAPTER III: DATA AND METHODOLOGY

Review of the research in Chapter II has demonstrated that while many dropout predictors have been identified, few large scale studies have examined these predictors among students with disabilities. These include academic achievement, grade retention, disciplinary exclusion, race/ethnicity, gender and engagement factors. What is known is that certain background characteristics (i.e., low SES and lower parental education) create a greater risk for youth, regardless of disability status, to drop out of school. We also know that among youth with disabilities, those classified with an emotional disturbance have much higher dropout rates, but we know little about the extent to which these predictors influence outcomes for these youth.

There is also little know as to the extent emotional engagement factors are predictive of dropping out. However there is evidence to suggest that youth who connect to school have better academic and social outcomes. Additionally, research informs us that youth with higher levels of behavioral engagement (class participation, discipline, etc.) have a lower likelihood of dropping out of school. However, we know little as to the relative contribution of emotional engagement factors that influence the decision to drop out of school. Therefore, in addition to exploring the demographic student and family characteristics of youth with disabilities who dropout, this study is designed to investigate the relative contribution of academic experiences and specific engagement variables.

The model used for this study was adapted from Finn's component of the withdrawal cycle, whereas certain forms of non-participation, academic achievement and emotional engagement impact a student's decision to drop out of school.

INSERT FIGURE 4 ABOUT HERE

In this model, I consider the impact of individual characteristics, negative school experiences, low academic achievement and low levels of emotional engagement on withdrawal from school. Since youth with disabilities have much higher dropout rates than youth without disabilities, it may be important to try to illuminate areas that have a negative impact on school outcomes in order to identify specific interventions. This model considers the effects of certain factors, including emotional engagement on the decision to drop out of school in order to help identify areas that need attention. It is meant to generate exploratory questions that help describe how these factors are related to dropping out.

The study will utilize the National Longitudinal and Transition Study 2 (NLTS2) dataset. This chapter will describe the NLTS2 dataset and the methodology for the proposed study. The first section provides an overview of the NLTS2 including the purpose of the study, study design, sampling procedures, instrumentation, response rates and data weights. The second section describes the analytic sample and the variables that will be used in the proposed study. Finally, the third section outlines the methodology that will be used to analyze the data including descriptive and statistical analyses and an explanation of the logistic regression model and the SPSS software program that will be used to conduct the analyses.

The NLTS2

The research questions were answered by conducting a secondary analysis of the data collected through the NLTS2. The NLTS2 was originally commissioned by the US Department of Education, the Office of Special Education Programs (OSEP), to evaluate the effects of the IDEA Amendments of 1997 (Valdes, 2006a). Additionally, it is a follow-up study to the original NLTS. The NLTS was a nationally representative, longitudinal study of youth receiving special education, ages 15 through 23, in the 1985-86 school year. SRI conducted two waves of data collection between 1985 and 1990, which included parent and youth interviews, school staff and principal surveys, and review of student's transcripts and high school records (Wagner, et al., 2005).

The NLTS2 is also being conducted by SRI International (2000a, b) under the auspices of the Institute of Educational Science (IES). The NLTS2 is a study of a nationally representative sample of youth in special education who were ages 13 to 16 and in at least 7th grade in the fall of 2000. Data on educational and non-educational experiences/ characteristics are collected as the youth move through secondary school and transition to adult life. The study focuses on secondary school experiences and performance, postsecondary education and training, employment, independent living, and social adjustment. IES has released data collected during the first five annual data collection points during 2000-05. The released data were disseminated in three waves derived from parent interviews/ mail surveys and school-based surveys in the first and second data collection point (2000-01 and 2001-02), parent and youth interviews/ mail surveys, school-based surveys, and direct assessments in the third and fourth data collection points (2002-03 and 2003-04), and parent and youth interviews/ mail surveys

in the fifth data collection point (2004-05). SRI will collect data through two more data collection points in 2007 and 2009 (Wagner, et al., 2005).

Research Design and Sampling Procedures. The NLTS2 is a nested sample, in which youth in the sample are nested within school districts or LEAs. The study employed a two-stage sampling selection process: a sampling of “operating LEAs” and a sampling of youth with disabilities in those LEAs which agreed to participate in the study. Before sampling, SRI selected a nationally representative sample of “operating LEAs” and state-supported special schools from a sampling frame created from the Quality Education Data (QED) database. The QED is a marketing service firm that focuses solely on the educational market and provided highly targeted mailing and emailing lists as well as demographic information on the teachers, students, administrators, and operating schools within school districts.

Sample of LEAs. A total of 3,635 LEAs from the QED database were invited to participate in the study. These districts were drawn from a total of 12,435 LEAs identified in the QED. Before drawing the sample of LEAs, the following types of schools and school districts were excluded: supervisory unions, Bureau of Indian Affairs schools, public and private agencies such as correctional facilities, LEAs in the US territories, and LEAs with 10 or fewer youths in the NLTS2 age range (Valdes et al., 2006a). The remaining LEAs were stratified according to geographic region; district enrollment; and district/ community wealth. Once the LEAs were placed in a 64-strata grid, a random sample of LEAs was drawn proportional to the size of each stratum (SRI International, 2000b). A total of 3,635 LEAs were invited to participate in the study. Of this number, 501 LEAs agreed to participate in the study.

To ensure appropriate representation, SRI conducted a non bias analysis of LEAs in two stages: comparison to extant databases and comparison to responses to a survey (Javitz & Wagner, 2005). In the first stage, the participating LEAs were compared to the universe of LEAs with two extant databases: one generated by the Department of Education's Office of Civil Rights (OCR) and the other generated by QED. The LEAs special education policies and practices were compared on the following aspects: youth demographics (e.g., ethnicity, gender), educational placement, testing and promotion, diplomas and certificate of completion, and teacher certification and student ratio. In the second stage, participating LEAs were compared to a nationally representative sample of LEAs (n = 883) on various aspects of special education policies and procedures. In both stages, the participating LEAs did not differ from the universe of LEAs with practical significance.

Sample of Youth. When LEAs and special schools were contacted to obtain agreement to participate in the study, they were also asked to provide rosters of the youth receiving special education who were ages 13 to 16 on December 1, 2000 and in at least 7th grade. SRI requested these rosters to include the names and addresses of the youth receiving special education under the jurisdiction of the LEA, the disability category of the youth, and the youth's birth date or age. However, some LEAs only provided identification numbers for appropriate youth, birthdates, and disability category. In these LEAs, the parents or guardians of the youth sampled were contacted by mail via the LEA. The youth on the special education rosters were categorized by primary disability category and grade. Then a fraction of the youth in each disability category was selected randomly from each LEA and special school in order to accurately represent the 12

disability categories and to oversample older youth in the NLTS2 age range (Valdes et al., 2006a). SRI wanted 12,943 youth to participate; however, only 11,272 agreed to participate in the first data collection point (SRI International, 2000b).

Data Collection Methods and Instruments

The NLTS2 collected data using the following instruments: Parent Interviews, Youth Interviews, direct assessments and youth in-person interviews, Teacher Surveys, School Program Surveys, School Background Surveys, and high school transcripts. However, all data collection instruments were not administered at every data collection point. Further, IES has not released data derived from all the data collection instruments.

The variables from this study were taken from the parent and youth interviews conducted in each year. The response rates of the individual data collection instruments varied from 82% (9,230/11,244) on the 2001 Parent Interviews at the first data collection point to 50% (5,657/11,225) by the third data collection point. The maximum sample response rate was based on the total number of youth who were eligible for the sample, which included youth who could not be reached for an interview or survey because there was no phone number or address available. The practical sample response rate was based on the total number of all eligible youth who were living, appropriate for the data collection instrument, and for whom there was a phone number or mailing address; this number did not include youth whose parents had actively denied consent for participation or for those who had permanently withdrawn from the study (Valdes et al., 2006a). The practical sample response rates were between 0 and 12.4 percentage points higher than the maximum sample response rates. The instruments and response rates are displayed in Table 4.

INSERT TABLE 4 ABOUT HERE

Parent and Youth Interviews/Questionnaires. The primary instrument that the data for this study were culled from was the Parent and Youth Interviews. Parent Interviews were conducted at three data collection points in 2001, 2003, and 2005. SRI contacted parents by phone to complete standardized interviews on the youths' disability characteristics, health insurance and care, school experiences (e.g., whether the youth is receiving instruction, what type of school the youth attends, whether the youth received a diploma), family interaction and involvement (i.e., school–family contact, the IEP process), after-school and extracurricular activities, behavior, services, employment outcomes, parent expectations, and household characteristics (i.e., household composition, socioeconomic status). If a parent could not be reached by telephone, SRI mailed him/her a self-administered questionnaire with a subset of essential interview questions. A total of 9,230 interviews were completed at the first data collection point with a calculated response rate of 82.1% for the practical sample (Valdes et al., 2006a). A total of 6,888 interviews were completed at the third data collection point, and a total of 5,657 Parent Interviews were completed at the fifth data collection point. SRI did not provide response rates exclusively for the Parent Interviews at the third or fifth data collection point.

Youth Interviews were conducted at two data collection points in 2003 and 2005. SRI contacted youth by phone to conduct standardized interviews on social and extracurricular activities, health, secondary school experiences and involvement,

postsecondary education, employment, risk behaviors, youth's feelings and expectations, and youth's household. Individual youth who were unable to complete a telephone interview were mailed questionnaires that requested information on his/her social and leisure time, health, household, previous and current high school experiences, personal interests and activities, school-sponsored work, leaving high school, two-year colleges, vocational schools, four-year college, and previous and current jobs (Valdes et al., 2006a). A total of 2,934 youth interviews and 441 youth questionnaires were completed at the third data collection point and a combined total of 5,657 Parent and Youth Interviews were completed at the fifth data collection point. These numbers resulted in a 61.1% response rate for the practical sample of Parent and Youth Interviews in the third data collection point and a response rate of 50.4% for the practical sample at the fifth data collection point (Valdes et al.).

Student Assessments, School Program Surveys. In addition to the Parent/Youth Interviews, the NLTS2 contained other data collection instruments and procedures. Since they were not used in my study, only a cursory overview is presented here. Sources for student assessments in the NLTS2 include (a) a direct assessment/interview, or (b) an alternate assessment. The direct assessment/interview is a one-time face-to-face assessment and interview of youth ages 16-18. Students were assessed on reading, math, science, and social studies using the *Woodcock-Johnson III* (Woodcock, McGrew & Mather, 2001). Data were also drawn on student self-determination and adaptive behavior. Additionally, mail surveys were sent to school staff including general education teachers and staff familiar with youth's special education programs. These survey collected information about the overall programs and experiences in general education

academic classes and in vocational and special education settings. For more detailed description of the assessments used see Wagner, et al. (2003).

Instrument Validation. In the spring of 2000, data collection instruments and procedures were pretested to ensure the protocols and instruments functioned according to their design and to identify concerns or problems with the data collection methods (SRI International, 2000a). The instruments were each pretested with nine of the appropriate participants (i.e., teachers, principals, parents, or youth). The direct assessments and in-person youth interviews were pretested with five groups of youth with disabilities: mild disabilities, deafness/ hearing impairments, low vision/ blindness, cognitive disabilities, and physical/ health disabilities. During the pretest of all instruments, special attention was paid to the following aspects: (a) the amount of time it took to administer the procedure; (b) respondents comprehension of the content and format of the interviews; (c) analysis of item characteristics such as the believability of responses, variation of responses, and appropriateness of procedures based on students and settings; (d) the logical flow and skip patterns of the interview protocols; (e) the logistics of the sequence of activities; and (f) the need and ability to provide necessary accommodations on the data collection instruments (SRI International).

Sampling Weights. SRI provided two types of sampling weights in the NLTS2 dataset: full sample weights and replicate weights. The NLTS2 data need to be weighted to represent estimates of true values for the population of youth with disabilities in the US who were between 13 and 16 during 2000. The weights were constructed based on the youth's LEA characteristics, primary disability, and the overall response rate to the data collection instrument at the particular data collection point. The full sample weights

were calculated taking into consideration the characteristics of the youth's LEA, the youth's primary disability, and the response rate to the data collection instrument at each data collection point. There was one full sample weight for each of the data collection instruments at each data collection point. The replicate weights were calculated in a similar way but were derived from only half of the LEA sample. There are 32 replicate weights for each data collection instrument at each data collection point (Valdes et al., 2006a). In this study, I used the weight provided for the third wave of parent/youth interviews.

Analytic Sample

To capture the maximum amount of data and to ensure that comparisons between independent and dependent variables were as robust as possible, I chose my analytic sample in three steps. My first step was to create a sample based on full responses to my dependent variable. If responses were given for these variables across all three waves of data, they were included in the analysis. To do so, I created three filter variables to construct my sample. The first filter combined the responses to nine variables that reported whether youth had graduated, tested out or dropped out in all waves.² This resulted in a total of 3053 cases (638 = dropped out, 2415 = graduated).

In my second step, I created a sample that included students who reported being in school, or being temporarily suspended in the third wave. This yielded a total of 2936 additional cases. I then combined the two samples into one sample which was comprised of students who reported dropping out, graduating or testing out in all three waves, or still in high school in the third wave. This resulted in a total number of cases of 5,928 that had

² These were created by combining the responses to the variables used for the dependent variable across waves. The dependent variable is described in the following sections.

full responses on the dependent variable. This was less than the 9,230 cases with completed Parent Interview instruments in the 2001 wave and was slightly more than the number of completed Parent/Youth Interview instruments (5,657) in the NLTS2 2005 third wave of data.

To prevent counting responses to the same questions twice, I created a filter variable to capture the exit status at each wave. For example if a parent/youth reported dropping out, testing out, aging out or graduating, this was coded = 1 while all other responses were coded 0. I did this for each wave. I was then able to match responses on my independent variables to the exit status variables. So if a youth reported dropping out in wave 3, I would match the independent variable response (i.e. grades, income) to that particular wave. If data were present for more than one wave on a particular variable, I used the most recent responses given for that variable.

Missing Data

In my third step, I used a filter variable to retain as many cases as possible after accounting for missing data on the independent variables. Missing data is a common problem with longitudinal data. If there are a substantial number of missing data, the results can weaken statistical power and increase the likelihood of committing a Type II error and threaten external validity (Croninger & Douglas, 2005). In the NLTS2, data are missing primarily due to item non-response (i.e. the participant did not complete the survey or interview). SRI did not impute any data that appears in the NLTS2.

I used a range of strategies to impute missing data in order to maximize sample size. Table 5 describes the methods used. For variables that described characteristics that are somewhat static (gender, disability, race/ethnicity), I simply used different

instruments and/or different waves to retrieve a response if the data were missing in the Parent/Youth interview sample. For example, if a parent did not report their ethnicity in the first wave, I checked the second and third wave if applicable and retrieved the data from there.

INSERT TABLE 5 ABOUT HERE

For the standardized variables of household income and grades, I used mean imputation using the SPSS function which calculated means for missing data based on the nearest available data. In an attempt to be consistent with group membership on the dependent variable, I first sorted the data file according to the dependent variable. I then imputed means for the missing data by setting the series imputation to capture the mean of the ten data points closest to the missing cell. Next I reverse recoded the income variable and standardized it around a mean of 0 and standard deviation of 1. I standardized the grade variable in the same manner. For my composite variable, I imputed the series mean for the entire sample. I also standardized this variable around a mean of 0 and standard deviation of 1.

Non-Biased Analysis.

In order to determine if the analytic sample was biased due to the amount of dropped cases, I conducted non-biased analyses between my sample and the dropped cases from the baseline sample. First I created a filter variable that dichotomized missing cases or non-missing cases. There were a total of 918 dropped cases primarily due to missing data on the suspension, grade retention and cases that did not have weights. Next,

I compared the missing cases to the analytic sample on the dependent variable, the dichotomous independent variables (disability category, race/ethnicity, gender) and the continuous variables (household income, grades and emotional engagement). I used chi-square analyses for the categorical variables and independent *t*-tests for the continuous variable.

After dropping cases with missing data and conducting non-bias analyses, my final analytic sample was 5,018 cases. Overall, my analytic sample contained a larger number of White students and a smaller number of Black students, a higher percentage of male and youth with low incidence disabilities than the baseline sample. There were fewer youth with learning disabilities and emotional disturbances in the analytic sample. My analytic sample was also more likely to have higher household income and higher grades than the baseline sample.

The frequency distributions of the variables drawn from the sample are shown in Table 6. The unweighted *n*'s and weighted percentages are reported. The unweighted *n*'s reflect the over- or under-sampling of certain groups in the study's design, while the weighted percentages reflect the normalized weights used in the NLTS2 to generalize to a national sample. All of the analyses in this study were weighted. Youth who are white, male and have learning disabilities comprise the majority in each group. Percentages for income are somewhat flat across all categories showing similar percentages for each income group. Grades and the emotional engagement variable are negatively skewed. The majority of reported grades (66%) are in the A to C range, and the majority of youth (70.4%) report positive levels of emotional engagement with school.

INSERT TABLE 6 ABOUT HERE

In order to make general comparisons between my sample, the NLTS2 sample and state reported OSEP data, I collected data that shows population percentages for selected groups and variables. Table 8 shows demographic comparisons to the NLTS2 sample and with the OSEP state reported data. The sample characteristics are largely consistent between my sample and the NLTS2 sample. There is a higher percentage of White youth and a lower percentage of Black youth. Comparisons with OSEP national data show some differences. There are noticeably fewer youth with LD and noticeably more youth with OHI in the OSEP data than in my sample and the NLTS2 sample. One possible reason may be that youth with OHI, which included youth with AD(H)D, may have been included in the learning disabilities category in the NLTS2. There is also a noticeable difference in the dropout category. OSEP reports much higher dropout rates than found in my sample or found in an analysis of the NLTS2 wave 3 data. This may be due to design effects associated with the NLTS2, or could reflect the possibility that youth who dropped out had higher attrition rates and item non-response reflected in the missing data from my sample.

INSERT TABLE 7 ABOUT HERE

Variables Used in the Study

To answer the research questions guiding my study, I drew upon the literature to inform my variable selection. I used data on specific variables obtained from the 2001 Parent Interviews, the 2002 youth interviews, the 2003 parent/youth interviews, the 2004 youth interviews and the 2005 parent/youth Interviews. I provide a description of the variables which include the names of the dataset items used to create the variables in the study, the method I used to combine variables, and the coding of the variables used in this study. Information on the NLTS2 variables' names and coding were obtained from the NLTS2 Data Dictionary (Valdes et al., 2006a). Descriptions of the NLTS2 variables and the variables I derived from the NLTS2 for use in this study are presented in tabular form in Appendix B.

Dependent Variable

Dropout. The dependent variable used in this study was whether or not youth dropped out of school. I combined the responses to the question on school exit from the 2001 Parent Interview, the 2003 Parent/youth interview and the 2005 parent/youth interview (Np1D1k_2D_D3b; Np2D1k_D2d_D3b; Np3D1k_D2d_D3b). In order to ensure continuity across waves, I recoded responses similarly for all three waves. I then combined the variable across waves and dummy-coded it (1 = dropped out, and 0 = graduated or in school) to align with coding procedures used for dichotomous variables in logistic regression (Thompson, 2006). I gave preference to the responses in the third wave of data collection and then filled in missing responses with data from the first two waves. In some cases, there were two similar responses to the same question on different

waves. Preference was given to the first response and any additional responses were not counted.

Independent Variables

I used thirteen variables derived from the NLTS2 dataset. I recoded three of the scaled variables (income, grades, and emotional engagement) into standardized continuous variables for use in the logistic regression analyses. I describe these variables within four different categories. The first category describes the 12 disability classifications assigned by the IDEA. I dichotomously coded each category and collapsed 7 low incidence classifications into one category. The second category is Individual Characteristics (gender, race/ethnicity, household income). The third category is Academic Experiences (grades, grade retention and school suspension/expulsion). The fourth category is Emotional Engagement factors (caring adult, likes school, is satisfied with education, etc). These will be entered into a logistic regression model in four stages to determine the relative contribution of each set of predictors to dropping out of school.

Disability

Disability Classification. Students with an EBD were found to have significantly higher dropout rates and lower school completion rates than students who were not classified with EBD (Blackorby, et al., 1991; Dunn, et al., 2004; Reschly & Christenson, 2006; Wagner, et al., 2005). I used a variable from the cross-instrument data file from first data collection point to represent the youth's disability category (W1_Dis12). SRI constructed this variable from data collected from the following instruments: the 2001 Parent Interview, the 2002 School Program Survey, or the 2002 Teacher Survey to reflect the 12 disability categories outlined in the IDEA. If cases were missing a response, I

retrieved responses from the 2003 Parent/ Youth Interview data file (W2_DisHdr2003) and the 2005 Parent/Youth Interview (W3) DisHdr2005). I coded the variable in the following way: 1=learning disability (LD), 2=speech impairment (SI), 3=mental retardation(MR), 4=emotional disturbance (ED), 5=hearing impairment (HI), 6=visual impairment (VI), 7=orthopedic impairment (OI), 8=other health impairment (OHI), and 9=autism (AUT), 10= traumatic brain impairment (TBI), 11= multiple disabilities (MD), and 12= deaf/ blindness. These classifications are considered students' primary disability and do not describe any co-occurring disabilities.

To make comparisons across classification subgroups I created dichotomously-coded variables (LD, MR, ED, SI, and OHI) to represent youth with high incidence disabilities and a Low Incidence category that included the remaining seven categories. I chose to do this for two reasons. First, youth classified with high incidence disabilities have been found to have the highest dropout rates and youth classified with low incidence disabilities have been found to have the lowest dropout rates among all students with disabilities. My main classifications of interest were youth with high incidence disabilities, particularly EBD. Second, there were relatively few students within this category making up approximately 5% of the weighted sample. Specifically there were categories within low incidence disabilities that had less than 5 students (i.e. Deaf/Blindness) and cross-tabulations require a minimum of five cases per cell.

Individual Characteristics

Gender. Gender was found to be a predictive factor of dropping out in several studies reviewed earlier. Specifically, male students were more likely than female students to drop out. (Alexander, et al., 1997; Dunn, et al., 2004; Finn & Rock, 1997; Lee

& Burkham, 2003). To examine if gender was a factor consistent with the research, I used the variable from the 2001 Parent Interview (np1A1) to capture gender. If cases were missing a response, I retrieved responses from the 2003 Parent/ Youth Interview data file (W2_GendHdr2003) or the 2005 Parent/ Youth Interview data file (W3_GendHdr2005). I recoded responses 0= male and 1= female.

Race/Ethnicity. In several studies that I reviewed race/ethnicity was a predictive factor for dropping out. Consistently, African-American, Native American and Hispanic students had higher rates of dropping out than White students. To see if this finding held with my subsample from the NLTS2, I used a variable that described race/ethnicity. The variable for race and ethnicity was created by the NLTS2 from a data designated by school districts. I created this variable from responses constructed in NLTS from parent interviews in the first wave of data (W1_EthnHdr_2001). If cases were missing in the first wave, I retrieved cases from the parent interview responses (np2A3B, np3A2B) and the NLTS2 constructed variables (W2_EthnHdr, W3_EthnHdr). I recoded the variables to 1= White, 2= African-American/Black, 3= Hispanic, 4= Asian/Pacific Islander, 5= American Indian/Alaskan Native and other. I created five dummy-coded variables for each category to make comparisons between ethnic groups and for use in the logistic regression analyses.

Household Income. The studies I examined showed higher rates of dropping out among students from low income backgrounds (Alexander, et al., 1997; Finn & Rock, 1997; Rumberger, 1995; Wagner, et al., 2005). There are numerous variables in the NLTS2 that describe socio-economic status (SES) indicators. However there is no composite variable that indicates SES. For this analysis, household income will used as a

proxy variable for SES. The NLTS2 did have a composite income variable from each wave of data that divided income into 16 categories by 5,000 dollar increments (< \$5,000 to > \$75,000). I used the variable from the 2001 Parent Interview (np1K15Detail) and then filled in missing data with responses from the 2003 Parent Youth Interview (np1K14Detail) and the 2005 Parent/Youth interview (np1K14Detail). I then standardized this variable to use in the analysis (Mean = 0, SD =1). The mean income was approximately \$35,000 and the standard deviation was equal to \$17,500.

Academic Experiences

Grades. Among other academic achievement outcomes, having low grades was associated with dropping out in my reviewed studies (Lee & Burkham, 2003; Reschly & Christenson, 2006; Rumberger, 1995). I constructed the grade variable (GRADES) from variables provided in the Parent/Youth Interviews from all three waves. I used the reported grades in the first wave (np1D9b) and then filled in missing data with reports from the second (np2d6m) and third (np3d6m) waves of data collection. The grade categories represented a broad range. 3.0 – 4.0 was considered as mostly A's and B's, 2.0 – 2.9 was considered mostly B's and C's, 1.0 – 1.9 was considered mostly C's and D's, and 0 – .99 was considered mostly D's and F's. I standardized this into a continuous variable for use in the analysis (Mean = 0, SD =1). There were a small number of cases that had reported not receiving grades, or receiving a wide range of grades. I treated these responses as missing data and mean imputed using the procedures described in the missing data section.

Grade Retention. I reviewed studies that found being retained in school is associated with dropping out (Alexander, et al., 1997; Croninger & Lee, 2001; Finn &

Rock, 1997; Stearns et al., 2007). Only one study that I reviewed examined this variable for students with disabilities (Reschly & Christenson, 2006). Grade retention was a variable I created from the 2001 Parent Interview by the NLTS2 indicating whether students were retained at any point in their schooling. This variable (np1D_1o_2g) is coded Yes= 1, No= 0. I reverse recoded this to No = 0, Yes = 1 to coincide with the direction of the other variables in the analysis. Since this variable was collected only in the first wave, I did not have the need to combine variables across waves. Because of this, the retention variable has the highest amount of missing data.

School Exclusion. Students who are frequently disciplined with exclusionary measures such as suspensions or expulsions were found to have a greater likelihood of dropping out in some studies reviewed earlier (Alexander, et al., 1997; Croninger, & Lee, 2001; Finn & Rock, 1997). However, I found no studies that examined this variable for students with disabilities. Information on suspensions and expulsions is available in the NLTS2. These were collected from the 2001 Parent Interview (np1D_5L_7h), the 2003 Parent/Youth Interview (np2D5d_ever), and the 2005 Parent/Youth interview (np3D5d_ever). They are dichotomously coded 1= ever suspended/expelled and 0 = never suspended or expelled. I used the responses from the 2001 wave and filled in missing responses with data from the 2003 and 2005 waves where necessary. If a parent or youth reported being suspended at all three waves, I only counted the responses once. Since this was a dichotomous variable and asked at all three waves, I could not determine whether multiple responses meant multiple suspensions, so only one instance of being suspended or expelled can be assumed. As such, this reduces the variability associated with the extent to which being excluded from school predicts dropping out.

Emotional Engagement

Emotional engagement refers to students' affective reactions in the classroom, including interest, boredom, happiness, sadness, and anxiety (Skinner & Belmont, 1993). Some researchers assess emotional engagement by measuring emotional reactions to the school and their teachers (Lee & Smith, 1995). Some conceptualize it as identification with school (Finn, 1989, 1993; Finn & Voelkl, 1993). Finn defines identification as belonging (a feeling of being important to the school) and value (an appreciation of success in school-related outcomes). The emotions included in these definitions duplicate an earlier body of work on attitudes, which examined feelings toward school and included survey questions about liking or disliking school, the teacher, or the work; feeling happy or sad in school; or being bored or interested in the work (Epstein & McPartland, 1976).

There was not a specific survey in the NLTS2 that measured emotional engagement. I chose six categories that were related to the previous literature on engagement. The six categories included one question from each wave that addressed that particular category for a total of 18 questions. In a few cases, the questions were worded slightly different between waves, but still tapped into the same construct. I then recoded the variables to a common metric and to reflect the positive direction of the other continuous variables. Next I conducted a reliability analysis on them. These variables were measured with a Likert scale that ranged in responses from "strongly agree" to "strongly disagree" but some were not. Those were recoded and in some cases reverse coded to align within this group of variables and the other variables in the study. The

responses were matched with the final status of each student. If data were not available for that wave, data from the previous wave was imputed.

Youth enjoys school. Wagner et al. (2007) found that enjoyment of school was related to better school outcomes for some youth with disabilities. I constructed this variable by using responses to questions from each wave that tapped into the extent to which youth felt that they enjoyed school. I used the responses to the statement “Youth enjoys school” in the first wave (np1D12b), and “How much youth enjoys school” (np2Ra_k3b; np3R1a_k3b) in the second and third waves. These were coded 1 = strongly agree to 4 = strongly disagree. I reverse coded this to 1 = strongly disagree to 4 = strongly agree. To address missing data, I gave preference to the responses to the question in the third wave and then filled in missing data with responses from the second wave and first wave. This resulted in a total of 5774 cases and 154 missing cases.

Adult cares about youth. Having an adult that a student feels close to is conceptually similar to positive peer-teacher relationships. Positive peer-teacher relationships were found to have an effect on dropping out (Croninger & Lee, 2001; Dunn, et al., 2004; Reschly & Christenson, 2006). This question measured whether there the respondent felt that there was an adult at school who cared about or that the student felt close to. I combined three variables from the Parent/Youth survey in each wave. I used the responses to the statement “There is an adult at school that knows/ cares about youth” (np1D12c) in the first wave, and “There is an adult at school youth feels close to” in the second (np2R4a_a_K3c) and third waves (np3R4a_a_K3c). The variable was coded 1 = strongly agree to 4 = strongly disagree). I reverse coded this to 1 = strongly disagree to 4 = strongly agree. To address missing data, I gave preference to the

responses to the question in the third wave and then filled in missing data with responses from the second wave and first wave. This resulted in a total of 5752 cases and 176 missing cases.

Youth gets along with teachers. Student relationships with teachers and peers can increase feelings of connectedness to school (Crosnoe, et al., 2004; Decker, Dona, & Christenson, 2007; Murray & Greenberg, 2001; Wagner, et al., 2007). The NLTS2 had several questions that tapped this construct. I chose three variables from each wave that addressed this factor. I used responses to “How well youth gets along with his/her teachers” (np1D11) in the first wave and “How often youth had trouble getting along with teachers” (np2R5a_K2; np3R5a_K2) from the second and third wave. I renamed and reverse recoded responses to the statement to 1 = strongly disagree to 4 = strongly agree. To address missing data, I gave preference to the responses to the question in the third wave and then filled in missing data with responses from the second wave and first wave. This resulted in a total of 5767 cases and 161 missing cases.

Youth gets along with peers. The methods that I used to change this variable are identical to those used with “Youth gets along with teacher” described above. The variables used were “How well youth gets along with peers, “(np1D10) from the first wave of data collection, and “How often youth had trouble getting along with peers” (np2R5d_K1; np3R5d_K1) in the second and third waves. I renamed and reverse recoded responses to the statement to 1 = strongly disagree to 4 = strongly agree. To address missing data, I gave preference to the responses to the question in the third wave and then filled in missing data with responses from the second wave and first wave. This resulted in a total of 5745 cases and 183 missing cases.

Youth is satisfied with school. Satisfaction with school was found to have an effect on dropping out in two studies (Alexander, et al., 2007; Ekstrom et al., 1986). The variables used were “Youth is satisfied with school” (np1D14a) in the first wave and “Satisfaction this school year with youth’s school” (np2D6o_a; np3D6o_a) in the second and third waves. The variable was coded from 1 = strongly disagree to 4 = strongly agree. To address missing data, I gave preference to the responses to the question in the third wave and then filled in missing data with responses from the second wave and first wave. This resulted in a total of 5792 cases and 136 missing cases.

Youth is satisfied with education. I employed three variables that measured youths’ satisfaction with their overall education. I used responses to the statement “Youth is satisfied with education” (np1D14d) from the first wave with “Satisfaction this school year with youth’s education” (np2D6o_d; np3D6o_d) from the second and third waves. The variable was coded from 1 = strongly disagree to 4 = strongly agree. To address missing data, I gave preference to the responses to the question in the third wave and then filled in missing data with responses from the second wave and first wave. This resulted in a total of 5648 cases and 280 missing cases.

Reliability Analysis.

I summed the variables associated with emotional engagement into a single variable and conducted a reliability analysis. An item analysis using the reliability procedure is necessary when building a construct to obtain a summed score that is more strongly related to the construct of interest than individual items alone (Green & Salkind, 2005). I present the reliability results in Table 8. The mean scores for all the items were agree (2) or strongly agree (1) range, showing that the majority of the responses fell

within these categories. Of the 15 correlations, the strongest associations were between “youth gets along with teachers” and “youth gets along with peers” (.416), and “satisfaction with school” and “satisfaction with education” (.635). The Cronbach’s alpha was .616 for the construct. I standardized this score around a mean of 0 and standard deviation of 1 for use in the logistic regression analysis.

INSERT TABLE 8 ABOUT HERE

Sampling weights. Sampling weights are used to adjust for differential sampling rates and non-response so that inferences about population parameters can be made from results (Thomas, et al., 2005). Because of its complex sampling design, the NLTS2 dataset includes sampling weights to adjust for unequal probabilities of selection. For example, weights adjust for the over-sampling of subgroups in the study (e.g., Asian students, students with deaf/blindness) so that data are representative of the target population. The different weights also diminish the bias in estimates that result from participant non-response (e.g., parent refusal) by adjusting weights according to predictor variables of non-response.

In this study, I applied the full sample weight for the appropriate data collection point. When combining responses from different waves into a single variable or when analyzing variables derived from different data collection instruments, I applied the normalized, full sample weight for the instrument with the lowest response rate (Valdes, personal communication, 2008). One consequence of using raw weights provided in datasets is that some statistical packages may be fooled into believing that the sample size

is larger than it is intended to be (Thomas, et al., 2005). To correct for this I created a “normalized” weight by dividing the raw weight by its mean. This was done to preserve the sample size while still adjusting for oversampling (Thomas, et al., 2005).

Complex Samples. The stratified and clustered sampling design of the NLTS2 required modifications to my analyses. One issue was sampling stratification which resulted in proportional oversampling and undersampling of certain subgroups (i.e. disability category). SRI assigned variable weights to each participant to ensure proper representation in the sample. The weight was computed and used as described above. Another issue was the non-independence of cases created by cluster sampling. As a result, similarities among individuals within groups become more pronounced and can potentially lead to biased estimates such as smaller standard errors (Thomas, et al., 2005). To adjust for this, I used the SPSS software program, Complex Samples in SPSS Base 16.0 for the crosstabulations and logistic regression analyses. This program was specifically designed for adjusting standard errors in stratified large-scale datasets. The NLST2 included stratum and cluster variables for use with the Complex Samples program.

Analyses

I conducted four types of analyses to answer the research questions: exploratory descriptive analyses, crosstabulations, t-tests of independent samples and logistic regression. I conducted other analyses to determine whether the independent variables were appropriate for logistic regression (e.g., bivariate correlations, and collinearity diagnostics). I used the crosstabulations and t-tests to examine the differences between my dropped cases and analytic sample and to answer my first research question. I used

logistic regression to answer the remaining research questions. I used the SPSS 17.0 Base version to conduct the t-tests, bivariate correlations and collinearity diagnostics. I used the SPSS Complex Samples 16.0 version to conduct the crosstabulations and the logistic regression analyses.

Exploratory Descriptive Analysis

Initially I ran exploratory descriptive analyses on all of my variables to obtain frequencies, means and distributions. This is typically a first step in analyzing large data sets to check if values are within range on continuous variables, if means and standard deviations are plausible, and if any numbers on categorical variables are out of range (Tabachnick, & Fidell, 2007). This also helped describe the makeup of my analytic sample in terms of the basic demographic descriptions of the participants and the distributions of the independent variables.

The means and standard deviations are presented in Table 7. The means for the categorical variable represent the proportion of students in that group. For example, the mean of .32 for female reflects the proportion of girls in the category. The mean for household income in this sample is equal to approximately \$35,000 with a standard deviation of approximately \$17,500. The mean for grades is in the broad range of mostly B's and C's. The mean for the emotional engagement variable (3.1) is equal to the statement "Agree" with a positively worded statement on the four-point Likert scale.

INSERT TABLE 9 ABOUT HERE

Chi-square and T-tests

I conducted crosstabulations and independent *t*-tests for the non-bias analyses and to answer my first research question:

1. What is the difference between youth who drop out and youth who do not drop out by disability category, individual characteristics, academic experiences and emotional engagement variables?

I chose to use independent-sample chi-square tests to analyze frequencies of the categorical independent variables because this statistical method is frequently used to compare the expected and observed frequencies of a response variable that is categorical (Huck, 2004). For instance, I used a chi-square test to evaluate whether there was a difference between the proportion of males who dropped out and the proportion of females who dropped out. I was also able to examine whether the proportion of students with EBD who dropped out was different than the proportion that did not drop out. These results were entered into a contingency table, which shows how a group is divided on a response variable (Huck). I determined significance rates based on the null hypothesis that each population was identical to one another on the dichotomous drop out variable. I used the chi-square statistic to examine the significance of the differences.

I performed independent *t*-tests to compare the mean differences in my continuous variables between youth who had dropped out and youth who had not. A *t*-test tests the null hypothesis that the two groups have identical means on the same measure (Huck, 2004). I used the *t*-value to determine if the difference in group means were statistically significant. I also calculated a Cohen's *d* level to determine if the statistically

significant t-values were of practical significance. I used benchmarks proposed by Huck who suggested .20, .50 and .80 as small, moderate and large effect sizes respectively.

Multicollinearity Analyses

Before conducting logistic regression analyses to answer the research questions, I ran bivariate correlations to determine if there were significant relationships between the independent variables and the dependent variable. I evaluated the Pearson's R statistic in order to identify significant relationships between the dichotomous dependent variable and the categorical independent variables (Huck, 2004). These findings are presented in an intercorrelations table. Due to the nature of the sample and the potential bias due to small standard errors, I used a significant level of .001 for all of the correlations. Due to the sample design and the large sample sizes, findings of significance with r values under 0.1 may be of little practical value and lead to Type I error. Readers are cautioned to interpret significant findings within this context.

I also examined collinearity diagnostics by examining tolerance statistics using linear regression in the SPSS 17.0 Base Version. This option was not available in the SPSS Complex Samples program. The tolerance statistic is $1 - R^2_x$ where R^2_x is the variance in each independent variable, explained by all of the other independent variables (Menard, 2002). Tolerance levels of under .20 indicate potential multicollinearity and are cause for concern (Menard).

Logistic Regression Analysis

I used logistic regression analysis to answer research questions 2 through 5. Logistic regression allows the prediction of a discrete outcome from a set of predictors. One main advantage of logistic regression is its flexibility. The predictor variables can

be any mix of continuous, discrete and dichotomous variables (Tabachnick & Fidell, 2007). I chose logistic regression analysis because I was interested in determining the predicted probability of a youth with disabilities dropping out of high school. This statistical technique is appropriate since the dependent variable in this study is dichotomous.

Logistic regression analysis also permitted the use of categorical independent variables and produced results on the effectiveness of each independent variable or the combined group of variables (Huck, 2004). This analytic technique has been used in similar studies reviewed earlier that have investigated the effects of individual and academic factor on dropping out. The objectives of this analysis was to determine (a) whether disability classification were predictive of dropout status for youth with disabilities, and (b) whether the blocks or categories of variables (i.e., individual and demographic characteristics, academic behavior and emotional engagement) significantly improved the prediction of dropping out when controlling for other factors in the model.

I entered groups of predictors sequentially into the logistic regression model. I did this to examine the relative contributions of conceptual sets of predictors as they were added to the model. The first set of predictors included disability classification. For this grouping, youth with learning disabilities were the reference group. The comparison groups were youth classified with emotional disturbances, speech impairments, mental retardation, other health impairments and low incidence disabilities. The second set of predictors was demographic characteristics (race/ethnicity, gender, income). In this grouping youth who were White, male and of average income was the comparison group. The third set of predictors captured academic experiences (retention, suspension, grades).

The reference groups were those youth not retained, not suspended, and had average grades. The final group was the emotional engagement composite variable. The reference group for this set was youth who reported average emotional engagement levels.

The research questions for the logistic regression analyses were:

2. What are the effects of disability classification to the likelihood of dropping out?
3. What are the relative contributions of individual characteristics (race/ethnicity, gender, income,) to the likelihood of dropping out?
4. What are the relative contributions of academic experiences (grades, disciplinary action, and retention) to the likelihood of dropping out?
5. What are the relative contributions of emotional engagement factors to the likelihood of dropping out?

Odds Ratios. The main statistics that I reported for the individual predictors included odds ratios (OR) and the Wald statistic. The odds ratio is the increase or decrease (if the ratio is less than 1.0) in the odds of being in the outcome category when the value of the predictor increases by one unit (Tabachnick & Fidell, 2007). Odds ratios that are greater than 1.0 indicate that members in the group have an increased odds (or likelihood) of the outcome. For example an odds ratio of 1.5 means that the odds of dropping out labeled 1 (DV coded 1=yes), increase by 1.5 times with a one-unit increase in suspensions (independent predictor), or a 50% increase. An odds ratio of 0.7 means that an outcome labeled 1 is 0.7 times as likely to drop out with a one-unit increase in the independent variable. In this case the odds are decreased by 30% (1- 0.7). The further the odds ratio is from one, the more influential the predictor. For each standardized

coefficient and odds ratio, I reported the standard errors for the coefficient and confidence intervals (95%) of the odds ratios as calculated by the SPSS 16.0 Complex Samples program for logistic regression.

The equation for the odds ratio in the logistic regression analyses used in this study was

$$Prob(dropout) = \hat{Y}_i = \frac{e^{B_0 + B_1X_1 + B_2X_2 + B_3X_3 + \dots + B_{13}X_{13}}}{1 + e^{B_0 + B_1X_1 + B_2X_2 + B_3X_3 + \dots + B_{13}X_{13}}}$$

where the odds ratio for a given independent variable represents the factor by which the odds (\hat{Y}_i) change for a one-unit change in the independent variable. I used the odds ratios, signified as “Exp(B)” in the SPSS output, to determine how much each independent variable increases or decreases the odds of a youth dropping out of school.

In order to determine the effect of each independent variable on the probability of dropping out of school, I evaluated the Wald statistic for the unstandardized regression coefficients. The Wald statistic is expressed as a chi-square and describes the significance of the contribution of each individual predictor. Significance is calculated by dividing the squared standard error into the standard coefficient (Tabachnick & Fidell, 2007). I evaluated the effects of coefficients based on a .05 significance level.

To determine the goodness of fit for each set of predictors, I examined the -2 log-likelihood chi-square statistic. The goodness of fit statistic shows whether each set of variables improves the prediction of that set to the previous set of variables. The difference between two log likelihoods, when multiplied by -2, is interpreted as a chi-square statistic which provides a test that the null hypothesis is different from zero (Menard, 2002). The omnibus model chi-square statistic provided evidence of whether having information on the youths’ characteristics and experiences improved the

prediction of dropping out versus persisting in school over having no information or data (Menard). For each successive set of variables, I report the omnibus block statistic which depicts the difference in $-2 \log$ likelihood between blocks (sets) expressed as a chi-square statistic. The block chi-square statistic provided evidence of whether each set improved the prediction of dropping out above and beyond the previous model without that block of variables. I used the model chi-square statistic to determine whether each set of independent variables improved the prediction of enrollment dropping out.

To determine the overall effect size of a model, there are several measures to choose from (Tabachnick, & Fidell, 2007). For this study, I reported the Nagelkerke r-square measure which is an approximation of the r-squared statistic in OLS regression and is commonly referred to as a “pseudo” r-square (Menard, 2002). The Nagelkerke adjusts the Cox & Snell measure so that a value of 1 can be achieved (Tabachnick & Fidell). By doing this the estimates may be biased upward. Because of this and its utility as an r-squared statistic, results should be interpreted cautiously. I also reported classification percentages generated by the SPSS output to evaluate model fit. This evaluates the model’s ability to predict correctly the outcome category for cases whose outcome is known (Tabachnick & Fidell). I also reported the standard errors for the B coefficient as generated by the Complex Samples program and the 95% confidence interval for the odds ratio. According to Thompson, et al., (2005), describing the confidence interval helps readers understand the parameters of a significant finding.

Chapter Summary

I conducted a secondary analysis using the NLTS2 dataset to answer the research questions in this study. The NLTS2 provided information a nationally representative

sample of youth with disabilities who were between the ages of 13 and 16 and who were receiving special education services in 2000 as they transitioned from high school to adult life. The dataset offered information on the youth's characteristics, experiences, and achievements from multiple perspectives (i.e., youth, parent, teacher, and principal) and at multiple points in time (i.e., five data collection points). I used variables obtained from the 2001 Parent Interviews, 2003 Parent and Youth Interviews, and 2005 Parent and Youth Interviews from the fifth data collection point. I conducted exploratory descriptive analyses and bivariate correlations to examine population parameters and intercorrelations between variables. I then conducted independent-sample chi-squares and independent-sample t-tests to determine the differences between youth with disabilities who dropped out on individual characteristics, academic experiences and emotional engagement factors. Finally, I conducted a sequential logistic regression analysis to determine the effects of these characteristics on predicting dropout among youth with disabilities when controlling for the chosen factors in the model.

CHAPTER IV: RESULTS

The purpose of my study was to investigate the effects of specific student characteristics and school experiences on dropping out for students with disabilities. The study was designed to address limitations in the current body of research, specifically the lack of multivariate analyses that explore the relative contributions of individual characteristics, school experiences and emotional engagement factors to the odds of dropping out of school among students with disabilities. I examined an analytic subsample of 5,018 students from the NLTS2 for this study.

This chapter describes the non-bias analyses between the analytic sample and dropped cases, the demographic characteristics of my analytic sample including means, standard deviations and frequency distributions, the chi-square tests of group differences and *t*- tests of independent means for research question 1, and intercorrelations, collinearity diagnostics and logistic regression results for research questions 2 through 5.

Non-Bias Analyses Results

In order to determine if the analytic sample was biased due to the amount of dropped cases, I conducted non-biased analyses between my sample and the dropped cases from the baseline sample. I present the results of the differences between groups in Tables 10 and 11. There were statistically significant differences between the analytic sample and dropped cases for the dependent variable, three disability categories, gender, and two race/ethnicity categories. Specifically, there was a higher than expected percentage of youth who dropped out that was not included in the analytic sample ($p < .001$). Youth with learning disabilities and emotional disturbances had higher than expected percentages of dropped cases ($p < .001$) and youth with low incidence

disabilities had lower than expected percentages of dropped cases. There were significantly fewer males than females in the dropped cases ($p < .01$), fewer White youth ($p < .001$) and more Black youth ($p < .05$) in the dropped cases than what would be expected.

INSERT TABLE 10 ABOUT HERE

Table 11 describes the results of the t - tests. For income and grades, there also was a statistically significant difference between the means for dropped cases and the analytic sample. Dropped cases had lower mean income (-0.097) and mean grades (-.154) than did the cases in the analytic sample. While statistically significant, the income mean difference was comparable to approximately \$3000 (.114) and the grades difference (.181) to a fifth of a grade point.

INSERT TABLE 11 ABOUT HERE

Overall, my analytic sample contained a larger number of White students and a smaller number of Black students, a higher percentage of male and youth with low incidence disabilities than the baseline sample. There were fewer youth with learning disabilities and emotional disturbances in the analytic sample. My analytic sample was also more likely to come from families with higher household income and higher grades than the dropped cases. Caution should be exercised in interpreting results since the bias suggests that results may be skewed toward youth who did not dropout, are White, male, have a low incidence disability, have higher than average grades and come from

households with higher than average income. Results may be skewed away from youth who have dropped out, are Black, female, have been identified with learning disabilities and emotional and behavioral disorders and youth with lower than average grades and from household with lower than average income. This difference is particularly notable in the dropout category (12.5%) which is much lower than national estimates from government agencies, and may reflect a high attrition rate for youth who dropout.

On the other hand, the statistically significant findings for income and grades may not be that meaningful due to the large sample sizes retained in the analytic sample. For example, I reported the Cohen's *d* effect size statistics for the *t*-values of group differences on income and grades. Findings of .20, .50 and .80 are considered small, moderate and large respectively (Huck, 2004). The Cohen's *d* statistic on the income and grades *t*-test measures was less than .20 (11% and 18% respectively) suggesting that the differences may be of little practical value.

Analysis/Results

The following analyses and results are organized around the research questions posed in this study. I used chi-square and *t*-tests to examine group differences between dropouts and non-dropouts for research question 1. Next, I used logistic regression to answer research questions 2 through 5. Each research question was associated with a block of predictors entered sequentially into the logistic regression model. Prior to running logistic regression, I conducted regression diagnostics to determine if multicollinearity between variables was a concern.

Research Question 1: What is the difference between youth who drop out and youth who do not drop out by disability category, individual characteristics, academic experiences and emotional engagement variables?

I used chi-square and t-tests to analyze the differences between youth with disabilities who drop out and those who complete or stay in school based on individual characteristics (disability, race/ethnicity, gender, and income), academic experiences (school exclusion, retention, grades) and emotional engagement with school. Each variable was dichotomously coded (0 = other, 1 = specific category (i.e. EBD, LD, White, Hispanic, Female)) and I compared groups using 2x2 contingency tables, using chi-square as the statistic to analyze the differences between the observed and expected frequencies. I analyzed each categorical variable in a 2x2 table using a chi-square statistic and each continuous variable with a t-test of independent samples and a t-statistic.

Results for Research Question 1

I ran crosstabulation analyses in SPSS 16.0 Complex Samples. The crosstabulation analysis tests the null hypothesis that the proportions of youth who dropped out or did not are equal to the full sample among the various groups. The expected percentage for dropping out derived from the entire sample was 12.5%. Overall, there were statistically significant differences between the expected and observed frequencies among youth who had dropped out and youth who had not on variables associated with disability category and being suspended or retained. I used three levels ($p < .05$, $p < .01$, $p < .001$) of statistical significance generated by the analyses. I present the results in Tables 12 and 13.

INSERT TABLE 12 ABOUT HERE

Disability Category

I compared youth with disabilities who had dropped out and those who had not dropped out by disability category. Youth with learning disabilities (11.3%), mental retardation (9.5%), speech impairments (8.4%) and low incidence disabilities (4.6%) had lower than expected frequencies of dropping out. Youth with emotional disturbances (26.7%) and other health impairments (14.2%) had higher observed frequencies than expected. Youth with low incidence disabilities and speech impairments had statistically significant lower frequencies of dropping out ($\chi^2 = 18.87, p < .001$; $\chi^2 = 3.08$ respectively), while youth with emotional disturbances had statistically significant higher frequencies of dropping out ($\chi^2 = 118.37, p < .001$).

Race/Ethnicity

I compared youth with disabilities who had dropped out and those who had not by race/ethnicity. White youth and Asian youth had lower than expected frequencies of dropping out (11% and 10.1% respectively). Black, Hispanic and Native American youth had higher than expected frequencies of dropping out (16.4%, 15.8% and 20.8% respectively). While a few of these percentages suggest a large difference (i.e. 20.8% for Native American), there were no statistically significant differences between racial/ethnic groups. This may be due in part to the relatively small population proportions of certain groups.

Gender

I compared youth with disabilities who had dropped out and those who had not by gender. Girls had higher frequencies of dropping out than what would be expected (14.7%) and boys had lower than expected frequencies (11.5%). The difference between gender categories and the group average (12.5%) was not statistically significant.

Suspension/Expulsion and Grade Retention

I compared youth with disabilities who had dropped out and those who had not dropped out by suspension/expulsion and retention. Both variables were dichotomously coded (0 = no, 1 = yes). I found a significant difference for both variables. Youth who had been suspended had higher observed frequencies of dropping out (24.4%) than what would be expected ($\chi^2 = 419.99, p < .001$). Youth who had been retained also had higher observed frequencies of dropping out (20.8%) than would be expected ($\chi^2 = 180.02, p < .001$).

Income

I compared youth with disabilities who dropped out to those who did not on the income measure. Since this variable was continuous, I used a *t*-test of independent means to measure mean differences. The variable was standardized around a mean of 0, and SD of 1. In more interpretable terms, average income was approximately \$35,000 with a standard deviation of about \$17,500. I found significant differences between average household income for families of youth who drop out compared to those who do not ($t = 9.94, p < .001$). Youth who dropped out reported coming from households with an average family income of -0.340 (roughly \$27,500), while youth who do not drop out

came from households with an average income of .049 (approximately, \$37,500). The Cohen's *d* effect size for the *t*-statistic showed a moderate effect (-0.39) between groups.

Grades

I compared youth with disabilities who dropped out to those who did not on grades. I standardized this variable and used a *t*-test to analyze differences in group means. The overall grade average was 2.9 (B's and C's) and set to zero for the analysis. I found significant differences between average grades for youth who dropped out compared to those who did not ($t = 32.65, p < .001$). Youth who dropped out had a mean grade of -1.097 (1.8, C's and D's), while youth who did not drop out had a mean grade of .157 (3.2, A's and B's). The Cohen's *d* effect size for the *t*-statistic showed a substantial effect (-1.11) between the two groups.

Emotional Engagement

I compared youth with disabilities who dropped out to those who did not on the emotional engagement composite variable. I standardized this variable around a mean of 0 which equated to a mean of 3.1 (agree with positive statements). I found significant differences between average emotional engagements for youth who dropped out compared to youth who did not drop out ($t = 19.75, p < .001$). Youth who dropped out had a mean score of -.709 (2.8 = disagree), and youth who did not had a mean score of .101 (3.2, agree). The Cohen's *d* effect size for the *t*-statistic indicated a large effect (-0.81) between groups.

INSERT TABLE 13 ABOUT HERE

Overall, youth with disabilities who dropped out differed from youth who did not drop out in terms of disability category, demographics and academic experiences. Youth with emotional disorders, who were Black, female, have been suspended or expelled and have been retained in class had higher than expected frequencies among those who drop out. Youth with learning disabilities, mental retardation, low incidence disabilities, who were White and were male, had lower than expected frequencies of dropping out. Additionally, there were group differences on academic experiences, and household characteristics. Youth who dropped out had lower mean income, lower grades and lower levels of emotional engagement than youth who did not drop out. The effect size statistics for these variables showed a small to moderate effect for income and large effects for both grades and emotional engagement on the *t*-test measures.

While most of these differences were statistically significant, caution should be applied in interpretation. The analyses were conducted in SPSS Base 17.0, which did not take into account design effects due to stratified sampling and may have resulted in inflated significance levels. As follow-up analyses will show, some of these differences were mitigated when using the SPSS Complex Samples program, and when controlling for other variables in the multivariate analyses.

Multicollinearity

Before I ran logistic regression analyses to answer research questions 2-5, I evaluated the multicollinearity and intercorrelations of my predictors to determine if any variables should be eliminated due to collinearity. If variables are highly correlated, it is difficult to obtain a unique estimate of the regression coefficient (Menard, 2002). I analyzed multicollinearity using tolerance statistics obtained from a linear regression

function in SPSS Base 17.0. Tolerance levels below .20 would be cause for concern (Menard). I present the results of the Tolerance test in Table 14.

INSERT TABLE 14 ABOUT HERE

The tolerance statistics shown in Table 14 range between .740 (suspended/expelled) to .975 (speech impairment) and did not suggest excessive collinearity. Though tolerance statistics were not a concern, I also analyzed bivariate correlations between all of the independent variables. I did this to determine the strength of any significant relationships between variables. Pearson's r of .80 or above between two variables would show that there may be a problem with collinearity (Menard, 2002). I present the results in Table 15.

INSERT TABLE 15 ABOUT HERE

The intercorrelation table shows the correlations between all variables used in the study. The dependent variable is the first variable followed by all independent variables. Disability classification, race/ethnicity, gender, suspended/expelled, and retained are dichotomously coded (0= no, 1 = yes). For example a positive correlation between dropout and retained of .189 means that there is an association between being retained a grade in school and dropping out. A negative correlation between White youth and drop out of -.056 means that there is an association between being a member of a racial/ethnic group other than White and dropping out. Also, positive values on income, grades and

engagement reflect higher than average levels in each category. Negative values indicated lower than average levels. For example the correlation between grades and dropout ($r = -.363$) means that there is an association between lower than average grades and dropping out. Due to the large sample size and the nested nature of the data, small coefficients may be reported as significant. I used a conservative significance cutoff ($p < .001$) to report significant correlations and compensate for this possibility.

Overall, there were significant correlations on 43% of all of the correlations. However, due to the design effects, I only report on the strongest relative correlations above 0.20. The strongest associations with the dependent variable were for grades, engagement levels, and suspension ($r = -.363$, $r = -.269$, $r = .289$ respectively). There were relatively strong association for having an emotional disturbance (EBD) and getting suspended ($r = .318$). There were relatively strong negative correlations between suspension and expulsion and grades ($r = -.303$) and emotional engagement ($r = .284$). There were also relatively strong associations between grades and emotional engagement levels ($r = .426$), and between White youth and coming from households with higher than average income ($r = .294$).

These correlations should be interpreted with caution, since the bivariate correlations were not conducted in the SPSS Complex Samples program. Standard errors may have been misestimated leading to inflated significance levels. The purpose of the intercorrelations was to check for strong associations ($r > .80$) between variables that would have indicated collinearity. The results presented here suggest that there are no collinearity problems with the variables.

Research Question 2.

What are the effects of disability classification to the likelihood of dropping out?

I used logistic regression in the SPSS Complex Samples program for Model 1 to analyze the effects of disability classification (EBD, MR, OHI, SI, and LOW) on the likelihood of dropping out. The model chi-square from the omnibus test suggested that taken together, all 5 disability categories significantly predicted dropout ($\chi^2 = 118.372$, $df = 5$, $p < .001$). The classification table indicated that the model correctly classified 100% of the non-dropout cases, and 0% of dropout cases, with a total classification percentage of 87.5%. The pseudo R^2 (Nagelkerke) was .044.

Table 16 shows the coefficients, standard errors, Wald chi-square statistics and odds ratios for disability category. The Wald chi-square tests the null hypothesis that the B coefficient is equal to zero for each individual predictor. The constant (-2.05) reflects the B coefficient for the reference group (learning disabilities). In this model, the odds of dropping out (odds ratio [OR] = .128) were significantly lower for youth with learning disabilities. In comparison, the odds of dropping out increased significantly for (OR = 2.83) youth with emotional disturbances and decreased significantly (OR = .366) for youth with low incidence disabilities. This means the odds of dropping out increased by 183% if a youth was classified with an emotional disturbance, and decreased by approximately 63% if youth were classified with a low incidence disability.

The odds of dropping out increased by approximately 29% (OR = 1.29) for youth with other health impairments, and decreased by 29% (OR = .713) for youth with speech impairments, and decreased 17% (OR = .831) for youth with mental retardation. The standard errors associated with the coefficient for these categories were large (e.g., MR =

.302) and none of the categories were statistically significant. However, as the 95% confidence interval shows, results that were not significant include the possibility that odds can increase above 1 or below 1 for a similar subgroup chosen from this sample.

INSERT TABLE 16 ABOUT HERE

Research Question 3

What are the relative effects of individual characteristics (race/ethnicity, gender, income,) on the likelihood of dropping out controlling for disability classification?

I used logistic regression to analyze the effects of race/ethnicity, gender and household income on the likelihood of dropping out after controlling for disability characteristics. These predictors were entered in the second model which included the disability predictors from the first model. Table 17 shows the coefficients, standard errors, Wald chi-square statistics and odds ratios for individual characteristics and disability classification. The omnibus model coefficient suggested that the predictors taken together significantly predicted dropping out ($\chi^2 = 221.67$, $df = 9$, $p < .001$) and the block chi-square suggested that the predictors entered in the second model significantly predicted dropping out ($\chi^2 = 103.29$, $df = 4$, $p < .001$) in relation to the first block. The classification table was unchanged from the previous model with a total classification percentage of 87.5%. There was an increase in the pseudo r-square (Nagelkerke $R^2 = .08$) of approximately 4 percentage points from the first model. The constant (-2.27) is the coefficient corresponding to the reference group which included White, male, youth with learning disabilities from households with average income. This

group had about a 90% decreased odds of dropping out (OR = .102) than the other groups in the model.

The only predictor with a significant result was for household income (OR = .676, Wald $\chi^2 = 9.23$, $p < .01$). Because this variable was standardized, an increase in one standard deviation unit is equal to an increase of \$17,500 in household income. The results show that for the standardized income variable, an increase of one standard deviation (\$17,500) was associated with decreased odds of dropping out by approximately 33% ($1 - .676$).

The Wald statistics for race/ethnicity and gender were not significant. This suggests that other covariates included in the model (i.e. EBD and income) are responsible for the associations for these predictors rather than race/ethnicity or gender alone. Interestingly, there are higher odds of dropping out for Asian youth even though this group had lower than expected dropout percentages in the chi-square analyses. Native American youth also have increased odds of dropping out of 65%. However, the standard error for both groups is very large indicating that these results are unstable. The Wald chi-square statistics showed little change and remained significant for youth with emotional disturbances (B = 1.02, Wald $\chi^2 = 17.22$, OR = 2.78, $p < .001$) and youth with low incidence disabilities (B = -.102, Wald $\chi^2 = 20.34$, OR = .360, $p < .001$) when controlling for the demographic predictors.

The standard errors generated by the complex samples program were generally larger than comparison analyses I conducted in the SPSS Base 17.0 program. The corresponding standard errors for the confidence intervals were also larger and resulted in wide ranging confidence intervals that in some cases ranged from values below and

above 1. For example, while youth with mental retardation had decreased odds of dropping out, there is a chance that a similar sample drawn from the population would have increased odds of dropping out (C.I. = .357 – 1.18).

INSERT TABLE 17 ABOUT HERE

Research Question 4

What are the relative contributions of academic experiences (grades, disciplinary action, and retention) to the likelihood of dropping out controlling for disability classification and individual characteristics?

I used logistic regression to analyze the effects of academic experiences (grades, school suspension/expulsion, and grade retention) on dropping out while controlling for disability classification and individual characteristics. I present the results in Table 18. The omnibus model coefficient suggested that the predictors taken together significantly predicted dropping out ($\chi^2 = 1110.37$, $df = 12$, $p < .001$) and the block coefficient suggested that the predictors entered in the third model significantly predicted dropping out ($\chi^2 = 888.73$, $df = 3$, $p < .001$). The classification table indicated a slightly better model fit classifying 97.2% of non-dropouts cases and 34.2% of dropout cases with an overall total of 89.3% correctly classified. There was also an increase for the pseudo r-square (Nagelkerke $R^2 = .43$) of 35 percentage points from the previous model.

The constant ($B = -4.28$) for the reference group was statistically significant, and was associated with decreased odds of dropping out ($OR = .016$). Table 18 shows the

coefficients, standard errors, Wald chi-square statistics and odds ratios for academic experiences, individual characteristics and disability classification.

All of the predictors in this model were associated with significant increases in the odds of dropping out. The odds of dropping out increased significantly for youth who were suspended or expelled ($B = 1.31$, Wald $\chi^2 = 17.68$, OR = 3.70), had been retained ($B = -.891$, Wald $\chi^2 = 13.03$, OR = 2.44) or grades ($B = -1.26$, Wald $\chi^2 = 82.25$, OR = .285). In sum, the odds ratios for dropping out increased by 270% for youth who had been suspended or expelled, increased by 144% for youth who had been held back a grade, and decreased by about 72% for each standard deviation increase (nearly one letter grade) in academic grades.

The addition of this block also had a large effect on some of the other predictors in the model and may suggest interaction or suppression effects. For example, the odds ratio for youth with EBD ($B = .556$, Wald $\chi^2 = 3.01$, OR = 1.74) decreased and the odds ratio for youth with low incidence disabilities ($B = -.188$, Wald $\chi^2 = .512$, OR = .829) increased. Both categories became statistically non-significant. Though not statistically significant, the odds increased for youth with other health impairments (OR = 1.51) and Hispanic youth (OR = 1.41). The odds ratio increased for girls to 2.85 which was statistically significant ($B = 1.05$, Wald $\chi^2 = 13.08$). The odds for African-American youth were close to even (OR = 1.06) in this model. The odds for coming from a low-income household also decreased (OR = .567) and remained statistically significant.

The 95% confidence intervals show a large range for some groups. For example, while the odds of dropping out were nearly 3.7 to 1 for youth who were suspended, a similar sample drawn from this dataset may have odds ranging from over 2 to 1 to nearly

7 to1. Odds for Hispanic youth, while not significant, have a range of 28% lower than even odds (.72) to an increased odds ratio of 189% (2.89) indicating that a similar sample drawn from the population may yield much lower or much higher odds. The odds ratios for Asian students fell dramatically, while the odds ratios for Native American students rose to more than a 2:1 ratio when the academic controls were entered into the model. However, the large standard errors and wide 95% CI indicate very unstable results.

INSERT TABLE 18 ABOUT HERE

Research Question 5

What are the relative contributions of emotional engagement factors to the likelihood of dropping out controlling for disability classification, individual characteristics and academic experiences?

I used logistic regression to analyze the effects of emotional engagement on dropping out while controlling for disability classification and individual characteristics. The omnibus model coefficient suggested that the predictors taken together significantly predicted dropping out ($\chi^2 = 1161.71$, $df = 13$, $p < .001$) and the block coefficient suggested that the predictor entered in the third model significantly predicted dropping out ($\chi^2 = 51.31$, $df = 1$, $p < .001$). The classification table indicated that 96.7% of non-dropouts cases and 36.1% of dropout cases and an overall total of 89.1% correctly classified. There was also a 1 percentage point increase for the pseudo r-square (Nagelkerke r-square =.44) from the previous model indicating a slight improvement in prediction when emotional engagement was added to the model. There remained a

significantly decreased odds of dropping out for the reference group ($B = -4.16$, Wald $\chi^2 = 161.20$, $OR = .016$).

Table 19 shows the coefficients, standard errors, Wald chi-square statistics and odds ratios for academic experiences, individual characteristics and disability classification. The odds of dropping out increased significantly for youth with lower than average emotional engagement ($B = -.310$, Wald $\chi^2 = 5.22$, $OR = .733$, $p < .05$). Because this variable was standardized and, a one unit standard deviation unit increase was associated with an increase on the emotional engagement scale of approximately one-half of a point on the 4 point Likert scale. So each increase of a half of one point on the engagement scale decreased the odds of dropping out by approximately 27% ($1 - .733$).

The inclusion of this variable had a slight effect on the other variables in the model. The odds ratio for girls increased slightly ($OR = 2.87$) while the odds ratios decreased for retention and suspension/expulsion ($OR = 2.34$, and $OR = 3.42$ respectively). However, as was the case in the previous model, all of these variables were statistically significant. There was little effect on the disability categories, though odds increased slightly for youth with EBD ($OR = 1.75$) and while not statistically significant, had a p - value of .06. Youth from households with higher than average income ($B = -.610$, Wald $\chi^2 = 15.67$, $OR = .543$) and who had higher than average grades ($B = -1.16$, Wald $\chi^2 = 62.95$, $OR = .313$) had significantly decreased odds of dropping out.

INSERT TABLE 19 ABOUT HERE

Chapter Summary

Youth with disabilities who dropped out differed significantly from youth with disabilities who did not drop out on several measures. Youth with an emotional disturbance, were African-American, or female had higher percentages of dropping out than what would be expected. Youth from low income households, who had lower than average grades and who had lower than average emotional engagement scores were more likely to drop out than youth from higher than average income households, higher than average grades and higher than average emotional engagement scores.

The results from the logistic regression analyses show that having an emotional disturbance was significantly associated with having increased odds of dropping out while having a low incidence disability significantly decreased the odds of dropping out. When race/ethnicity, gender and household income were entered into the model, coming from a household with lower than average income significantly increased the odds of dropping out. While the emotional and low incidence categories retained their significance, there was a noticeable decrease in the odds ratio for both categories suggesting that income may have explained some of the relationships associated with the disability categories. Also, being African-American was associated with dropping out when compared in the contingency tables, but was not predictive of dropping out in the logistic regression model.

Having negative academic experiences appeared to have the largest effect in this model. There was a significant change when the academic predictors were entered into the model. Being suspended had the largest effect, increasing the odds of dropping out by a nearly 4:1 ratio. Having lower than average grades and being retained was also

significantly associated with increased odds of dropping out. Interestingly, when these predictors were added the odds of dropping out for the disability categories were reduced to statistical non-significance. The odds of dropping out among females increased significantly and the significant odds for lower than average income remained somewhat static. The results for emotional engagement suggested that lower than average levels of engagement was associated with increased odds of dropping out. However, the inclusion of the variable did not have much effect on the other variables in the model and increased the pseudo r-squares and model fit only slightly. I discuss the implications of these findings within the context of the research literature on engagement and dropping out in the next chapter.

CHAPTER V: DISCUSSION

The purpose of this study was to extend the research on the effects of selected individual, academic and emotional engagement variables on school drop out for youth with disabilities. To complete this study, I used information from the parent and youth interviews from the first three waves of data from the NLTS2. I utilized chi-square and t-test analyses to examine differences between youth who drop out and youth who do not drop out. I then used logistic regression analyses to examine the effects of the blocks of variables, and the effects of specific individual characteristics and experiences on predicting dropping out.

This chapter presents a discussion of the study's overall findings. First I discuss the significant findings of factors related to dropping out in the context of the existing literature. Next I discuss the implications of this study for policy and practice. Lastly I discuss the limitations of this study, including practical and methodological considerations, and directions for further research.

Findings

Overall the findings in this study were generally consistent with previous research for youth without disabilities. More importantly, this suggests that dropout indicators found for youth without disabilities hold true for youth with disabilities. There were significant group differences between dropouts and non-dropouts on disability classification, gender, income, grade retention, school exclusion, grades and levels of emotional engagement. Multivariate analyses in the logistic regression model indicated that gender, grade retention, suspension, significantly increased the odds of dropping out. Higher than average levels of income, grades and emotional engagement were associated

with a statistically significant decrease in the odds of dropping out. While these predictors were associated with an increased odds of dropping out, the opposite would be true had I reversed the directions of certain variables. For example, while getting suspended significantly increased the odds of dropping out, not getting suspended would have significantly decreased the odds of dropping out. I discuss the findings in more detail in the following sections.

Disability Classification

For the first research question, chi-square and *t*-test analyses showed that there were significant group differences between youth with disabilities who dropped out and those who had not dropped out. Specifically, youth identified with emotional disturbances had higher frequencies of dropout than what would be expected and youth with learning disabilities and low incidence disabilities had lower than expected frequencies of drop out. These numbers are consistent with reported dropout rates from OSEP and from NLTS2 reports that show youth with an EBD with dropout rates 2 to 3 times higher than other youth with disabilities (USDOE 2006; Wagner, et al., 2005). I also found that youth with low incidence disabilities drop out at significantly lower rates than youth with high incidence disabilities. This is also consistent with NLST2 reports. Wagner et al. report youth with low incidence disabilities having higher school completion rates and lower dropout rates than other youth with disabilities. School completion rates were highest for youth with visual impairments and hearing impairments in an analysis of data from the NLTS2 (Wagner, et al.).

The overrepresentation of youth with emotional disturbances who drop out is troubling. To date there has been little research as to the reasons for this, but available

evidence suggests that there are multiple factors besides disability classification involved. Survey studies that described the experiences of dropouts with emotional disturbances reported that these had students described reasons such as more teacher support, more meaningful curriculum and less disciplinary exclusion would have influenced their decision to stay in school (Kortering, et al., 2002; Kortering & Braziel, 1999).

Findings from this study also suggest that more factors are at play than disability classification alone. When other variables were entered in the logistic regression analyses, the effects of disability classification were reduced to statistical non-significance. This was particularly evident with the addition of the income, suspension, grade retention and achievement variables. This suggests that being classified with an emotional disturbance may not be a risk factor in itself, but academic experiences and income levels, which may or may not be associated with an EBD classification, have a greater effect on the decision to drop out.

Individual Characteristics

In this block of predictors I included race/ethnicity, gender and household income. Overall, lower than average income was the only predictor that significantly increased the odds of dropping out. When these predictors were considered, the odds for youth with an EBD and OHI increased, while the odds for youth with a low incidence disability slightly decreased.

In the chi-square analyses, there were significant differences between dropouts and non-dropouts on race/ethnicity and gender. Black youth had higher than expected frequencies of dropping out and girls had higher than expected dropout rates. The chi-square analyses show some results that appear inconsistent with other NLTS2 findings.

One report (Wagner, et al., 2005) using the NLTS2 reported nearly equal school dropout rates by gender, whereas I found a significantly higher percentage for girls. The finding that girls had higher probabilities of dropping out than boys was unexpected. Using the NLTS2, Wagner et al. (2005) also found a higher percentage of Hispanic youth who drop out than both Black youth and White youth. My study found a higher proportion of Black youth who drop out than Hispanic or White youth.

In the logistic regression model, significance levels were mitigated when other factors were considered. In the second block of predictors, the odds of dropping out increased by 20% for Black youth compared to White youth. The odds ratio for gender indicated that girls had increased odds of nearly 50% compared to boys. In both cases, neither was significant and the large standard errors and associated 95% confidence intervals for the odds ratios actually encompass a possible reduction in odds for both groups below 1.0 (even chances) if a similar sample were drawn from the population. The non-significant levels for race/ethnicity are consistent with previous research that demonstrated that race/ethnicity is not by itself predictive of dropping out when other factors are considered (Rumberger, 1995).

I found a significant difference for household income in both the *t*-test analyses and logistic regression analyses. The *t*-test indicated that dropouts' families had a significantly lower mean income than non-dropouts families. When considered as a predictor in the second logistic regression model, household income was associated with decreased odds of dropping out. Since the variable was standardized, a one unit increase in the standard deviation of income ($SD = 1$, $1SD =$ approximately \$17,500) was associated with a 43% decrease in the odds of dropping out. However, considering

household income alone as a proxy for socioeconomic status may not give a complete picture of true SES. Family size, parental education and family structure may add more explanatory power to the variable, but were not considered here. While the income variable may be a weak proxy for SES as an individual predictor it was significant in the model and is consistent with findings from other studies that show an association between low income and dropping out (Wagner, et al., 2005) and low SES and dropping out (Alexander, et al., 1997; Rumberger, 1995; Finn & Rock, 1997; Van Dorn, et al., 2006).

Academic Experiences

As a group, this block of predictors contributed the most to the overall model. For example there was an increase in the Nagelkerke pseudo r-square statistic from .08 to .43. While this is an approximation of the r-squared statistic, it shows a large relative increase in explained variance from the second to the third block of predictors. All three variables (suspension/expulsion, grade retention and grades) were significant suggesting that school experiences may have a powerful effect on the decision to drop out of school. When these factors were considered, disability classification became statistically non-significant.

Another interesting finding that was not the focus of this investigation was that the odds for girls increased dramatically when controlling for other factors. This surprising finding may suggest that lower than average household income, low grades, getting suspended or being retained increases the risk of dropping out for girls more than for boys. This finding is consistent with other studies that found higher dropout rates for girls when controlling for other factors (Rumberger, 1995; Croninger & Lee, 2001), but

contradicts other findings from the NLTS2 (Wagner, et al., 2005). Another plausible explanation is that there are other factors that are gender specific such as pregnancy or family issues that influence girls' decision to withdraw from school (Ekstrom, et al., 1986; Pirog & Magee, 1997; Zablocki & Wilson, 2007) that were not considered here.

There were significant group differences between dropouts and non-dropouts on grades. Dropouts reported getting mostly C's and D's, while non-dropouts received mostly B's and C's. Having higher than average grades was associated with a significant decrease in the odds of dropping. It should not be surprising that youth with higher levels of achievement are less likely to dropout, and youth with low grades are more likely to dropout and is consistent with previous research (Ekstrom et al., 1986; Reschly & Christenson, 2006; Lee & Burkham, 2003; Rumberger, 1995), but the fact that youth with disabilities are receiving lower than average grades though programs and services designed to provide successful academic outcomes is concerning. Perhaps youth with low grades believe they won't receive enough credits to complete school and simply dropped out. However, this is speculative since these were general grades. It is difficult to determine if any particular academic area contributed more than another.

Grade retention significantly increased the odds of dropping out by nearly 2.5 times. This finding was consistent with previous research on youth without disabilities (Finn & Rock, 1997; Alexander, et al., 1997; Croninger & Lee, 2001; Stearns et al., 2007), and is consistent with another study that showed the odds of dropping out increased by 73% for youth with emotional disturbances who were retained (Reschly & Christenson, 2006). While the standard error for this finding was somewhat large, the 95% confidence interval for the odds ratio show a large range suggesting that retention

can increase the odds by 1.5 times to nearly 4 times with a similar sample drawn from this population. This is troubling in light of the possibility that youth who may have an undiagnosed disability may be held back a grade prior to receiving a special education evaluation.

Receiving a suspension or expulsion had the largest affect on increasing the odds of dropping out by a ratio of nearly 4:1. Though the standard error was moderately large (.298), the 95% confidence interval shows that the odds of dropping out might increase by a range from slightly more than 1.8 to 1 to nearly 7 to 1 for a similar sample of youth drawn from this population. For youth with disabilities, this is indeed troubling. This finding was consistent with other finding for youth with and without disabilities.

A number of researchers have found being suspended or expelled was a predictive factor of dropping out (Alexander, et al., 1997; Croninger, & Lee, 2001; Ekstrom et al., 1986; Finn & Rock, 1997). Evidence also suggests that school exclusion practices disproportionately affect youth with emotional disturbances and youth from minority backgrounds (Krezmien, Leone & Achilles, 2006; Achilles, McLaughlin, & Croninger, 2006). The findings from this study are consistent with these finding and may explain some of the decline in odds ratios of dropping out for youth with emotional disturbances when the suspension/expulsion predictor was entered into the model. However, more exploration is needed into the interaction of these effects.

Emotional Engagement

The construct of emotional engagement as a predictive factor in dropping out was important to this study. One of the purposes of this analyses was to explore whether lower forms of emotional engagement was associated with an increase in the odds of

dropping out, and alternately, whether higher forms of emotional engagement was associated with a decrease in the odds of dropping out. Results from NLTS2 reports showed that youth with disabilities have positive feelings toward their schools (Wagner, et al., 2007). The results from this study also showed that a majority of youth agreed with statements relating to emotional engagement with an average level of 3.1 (on a 4-point Likert scale). However youth who dropped out reported an average level of 1.8 (disagree-strongly disagree) for positively worded statements which was significantly different than youth who did not drop out (3.2, agree-strongly agree).

Results from the logistic regression model indicated that higher levels of emotional engagement decreased the odds of dropping out by nearly 27% (OR = .733). Alternately, lower levels of emotional engagement would increase the odds of dropping out. This suggests that a youth's feeling of attachment to schools and the people in schools has an effect on the decision to stay in or leave school. While the inclusion of this composite variable had little discernable effect on the other predictors in the model, there were slight decreases in the odds of the suspension, retention and grade predictors. The findings here were consistent with findings from other studies that showed that elements of emotional engagement including positive student-teacher relationships and satisfaction with school and education decreased the odds of dropping out (Alexander, et al., 1997; Ekstrom, et al., 1986; Croninger & Lee, 2001; Dunn et al., 2004; Reschly & Christenson, 2006).

Implications for Policy and Practice

The implications presented here are speculative due to the limitations described in the following section. However, the findings from this study raise questions that should

be included in the discourse on dropping out. One of the most compelling findings of this study was the effect of academic experiences on dropping out for youth with disabilities. These findings are consistent with research on youth without disabilities and suggest that disability classification by itself is not necessarily predictive of dropping out. For example, grade retention was found to significantly increase the odds of dropping out in this study. The use of retention has increased in the past 25 years and disproportionately targets youth who are minority, have learning and behavioral problems and youth from low income backgrounds (National Association of School Psychologists [NASP], 2003). Retention as a remediation tool has been found to be ineffective, particularly for children with an undiagnosed learning disability (Yampolskaya, Brown, & Greenbaum, 2002)) since it can deny them services they may need to succeed. Because of this, administrators and practitioners should take these facts into careful consideration when determining what to do with the second grade student who cannot read or the sixth grader whose behavior is thought to be affecting his or her learning. Clearly, better screening, the use of response to intervention (RTI) strategies and early intervention efforts should be considered as an alternative to grade retention.

The finding that youth with disabilities who are suspended or expelled increased the odds of dropping out was troubling in light of the fact that the language in the IDEA limits the number of suspensions for not more than 10 school days as long as the same applies to students without disabilities (20 U.S.C.A. § 1415(k)(I)(B); 34 C.F.R. § 300.530(b)). More troubling was the fact that youth with EBD had positive correlates with being suspended and were at increased odds of dropping out. The findings here do not support any hypothetical reasons for high rates of suspension. This investigation

reported whether or not youth had been suspended or expelled, not the number of times they were excluded from school. This finding supports the notion that school exclusion should be considered carefully in the context of the IDEA and the due process rights guaranteed to students under requirements such as the manifestation determination clause (20 U.S.C.A. § 1415(k)(I)(E)(i)).

The findings that disability classification did not significantly increase the odds of dropping out when other factors are considered suggests that the same factors predictive of dropout found in studies on youth without disabilities hold true for youth with disabilities. However, given the disproportionate dropout rates for youth with disabilities compared to rates for all youth, there seems to be more to the picture than meets the eye. Do grade retention and disciplinary school exclusion have a greater effect on the decision to leave school for students with disabilities than students without disabilities? Are extra protections afforded under the IDEA not adequate in meeting students' needs? What are the effects of least restrictive program (LRE) placement on the probabilities of dropping out, and for which students? While these questions were outside the scope of this investigation, they are important to consider. More exploration into these questions is needed to shed light on why youth with disabilities have disproportionately high dropout rates, and address the perception that having a disability has, by itself, an effect on dropping out.

School personnel who are interested in identifying youth at-risk of dropping out can examine school records for grade retention and school exclusion history, and evaluate and observe the extent to which students participate in, and are connected to school. This can be followed up by using evidence based interventions that increase student

participation and success (Christenson & Anderson, 2002). As an alterable variable that is under the control of schools to a certain degree, emotional engagement may be fostered by implementing interventions that encourage students to stay bonded to school. These interventions may include providing additional tutoring, counseling, or creating more personable and positive environments with consistent, clear rules and consequences to facilitate interpersonal connections between students and teachers (Murray & Pianta, 2007). School experiences are shaped in part by school policies and practices. Practices such as grade retention, disciplinary school exclusion and grade distribution are alterable variables under the control of school personnel to some degree. While the implications discussed here do not imply causation and should be considered cautiously given the limitations of the study, the evidence is consistent with previous dropout research and bears further investigation.

Limitations/Directions for Future Research

While my study demonstrated some significant findings, implications of this investigation should be interpreted cautiously. A number of complicated theoretical and methodological issues need to be considered. These include the underlying theories behind engagement, the research design and sample selection for this study and the methods used for variable construction and analysis. The interpretation of the results and their implications for policy and practice should be considered in light of these limitations.

Student Engagement

Numerous studies and reports on dropouts referred to Finn's influential paper (1989) on student engagement. As such, it became a driving force behind efforts to

identify dropout indicators and design subsequent interventions. For example, Finn used the participant identification model to identify and categorize dropout predictors as status or alterable (Finn, 1993). These predictors were then manipulated in programs such as the Check and Connect program (Sinclair, Christenson & Thurlow, 2005). At the same time, psychologists (Frederick, et al, 2004) were attempting to define the types of engagement that included these predictors. They have generally agreed upon three types (i.e. behavioral, cognitive, and emotional), though academic engagement has also been added by some researchers (Bost, Riccomini, 2006).

A careful reading of Finn's theory reveals that the theory behind the frustration self-esteem model and the participation-identification model was largely constructed on ideas from developmental psychology and survey results of prior studies on dropout indicators. Researchers have in effect built and elaborated upon this theory over past twenty years and have arrived at a general agreement on the dimensions of engagement. In many studies, including this one, types of engagement were constructed retroactively from survey responses to fit previous definitions of engagement. While behavioral engagement indicators are observable (e.g. misbehavior, homework completion) cognitive and emotional engagement has been an ambiguous construct that can be shaped by the available predictors in a dataset.

Emotional Engagement. I used conceptually-based indicators from previous studies to tap into emotional engagement and construct this composite variable. However there were several other indicators that I decided not use (e.g. "Youth feels a part of school") due to the substantial number of missing cases and the subsequent loss of power. The Cronbach's alpha was moderate (.613) for the composite variable, but because of the

relatively low number of variables included, this was a somewhat crude measure of emotional engagement. The use of the composite measure also obscured the contributions of each of the variables in the construct. For example, it is possible that youth who do not enjoy school was a more potent predictor than youth who did not get along with his or her teachers.

Another consideration is that emotional engagement does not exist as a separate entity but is tied into forms of behavioral engagement (e.g. attendance, work completion, extra-curricular participation) or cognitive engagement (e.g. the utility of schoolwork) that were not considered here and any potential co-variance associated with the inclusion of these variables is missing. I did not include them because some indicators were not available or presented methodological problems associated with the NLTS2. For example attendance is considered a very strong indicator of behavior engagement (Rumberger, 1995, Balfanz, Herzog & MacIver, 2007; Yazzie-Mintz, 2007), but was not available in the NLTS2. Other indicators that were available (e.g. homework completion, teacher perception of behavior, class participation) would have resulted in a substantial loss of statistical power due to missing data.

With these considerations in mind, both the theoretical basis for this composite variable and its significance in the study should be considered with caution. While there was a significant finding, more exploration is needed. Since types of engagement are multidimensional they can be used in different ways. For this study, I employed emotional engagement as a predictor. Engagement can also be seen as a mediating factor between school experiences and the decision to drop out, or as a dependent outcome

variable. Since emotional engagement is malleable and connected to other types of engagement, a technique such as structural equation modeling may be more appropriate.

Future research should focus on using sound measures of engagement rather than creating scales from available variables, in different research designs. Recently, researchers at the University of Minnesota have developed and piloted a scale designed to measure cognitive and emotional engagement (Appleton, Christenson, Kim & Reschly, 2006; Furlong & Christenson, 2008). The Student Engagement Instrument (SEI) was developed within the theoretical framework of Finn and may provide a common metric for future researchers interested in exploring student engagement.

Research Design

This study used a quasi-experimental correlational design which is common using large-scale datasets and was the design most often used in the literature reviewed for this study. This design allows one to examine associations between variables that are not under the control of the researcher. While I had a sufficient number of participants, I did not include variables that may have provided more explanatory power for the dependent variable. For example, the Nagelkerke r-squared (0.44) in the final model suggested that approximately 44% of the variance was accounted for. However, this measure is biased upward and is only an approximation. Also in the final model, the percentage of dropouts correctly classified was only 36%. This suggests that the model was underspecified. Future research using correlational designs should include a sufficient number of variables to increase the explained variance and/or classification of cases.

NLTS2. The NLTS2 is designed to analyze the school and post-school experiences of youth with disabilities using a variety of data collection methods in a longitudinal

design. As such, it has the ability to provide rich descriptions of the experiences of individuals with disabilities. At the same time it is a very complicated database to navigate and requires specialized training to learn its nuances and conduct multivariate analyses. It is unfortunate but not surprising that there are few independent studies using the NLTS2. As one of the main sources of data for driving special education policy, more accessibility to researchers should be encouraged and more transparency in how the methodological issues affect the generalizability of results is needed.

Because the NLTS2 provides a number of different measures, this study was constrained by my decision to only use parent-youth interviews. For example, because emotional engagement is not strictly a within-student variable, this may only present a limited view of the experiences of youth. The fact that data was drawn from both parents and youth for my study calls into question the reliability of the results culled from these responses, particularly as it relates to emotional engagement. The use of only one data source also presented problems, particularly when using survey responses in an extant database. Reliability may be questionable in that I was not able to triangulate data with other sources. For example, reports of suspension, expulsion or retention should be combined with district data or other sources to ensure validity. However this information was not available from other instruments and the one of the main purposes of this study was to describe the experiences of youth as told by them. The parent/youth interviews were the best instrument to capture these perceptions.

Attrition/Missing Data

Due to item non-response and missing data, I had to drop numerous cases from the analysis. This represented a reduction from 5929 to 5018. The non-bias analyses

showed statistically significant differences between the missing and non-missing cases on income, grades and dropout status. However, the effect sizes were small and I did not deem them of practical use. The higher than expected frequencies of youth with emotional disturbances, Black youth and youth who dropped out is of concern. This is reflected in the composition of the sample which was skewed toward percentage (12.5) of dropouts in my sample which is much smaller than national estimates but the proportions of youth by disability category was similar. For example, youth with an emotional disturbance are almost twice as likely to drop out, or youth with low incidence disabilities were significantly less likely to drop out was similar to OSEP reported numbers (USDOE, 2006). The fact that youth who drop out of school also drop out of survey studies is not surprising. However, using the NLTS2 to study an issue such as dropout may be impractical, particularly when results should generalize to a larger population. Generalizing the results from this study would be difficult and may lead to spurious conclusions.

Prior to dropping cases, I imputed missing data where possible. To do this, I utilized data from a previous or ensuing wave. This may call into question the accuracy of the variable. For example, I used a response for grades received from wave 2 for a youth who reported dropping out in wave 3, but had a missing grade variable for that wave. Obviously, the extent to which grades can change over the course of two years calls this decision into question. I also used this technique to address missing income data. In the same vein income and SES can change over time. Another issue with income is its use as a proxy for SES. Other variables to take into consideration are family size, family composition and parental education. These variables are available in the NLTS2.

Variable Construction

The variables were constructed by combining responses from waves. In order to do this, I matched appropriate data to the correct wave, and took care not to count responses more than one time. By combining waves, I tried to maximize sample size, but in doing so compromised the variability associated with age. For example, the sample included youth in the first wave that were in middle school, and by the third wave were in their fourth year of high school. At the same time, there were youth in their third year of high school in the first wave, and were out of school by the second and/or third wave. Therefore, responses to survey questions may have reflected very different school experiences depending upon the age and grade of the respondent. Also students who had persisted in school by the third wave may have been more likely to report positive experiences and feeling toward aspects of their schools.

Due to the dichotomous nature of many of the variables, there is a considerable amount of variance lost (Tabachnick, & Fidell, 2007). For example, dropping out of school is not necessarily the end of the line and some students may return to school or attend a GED program. Also the non-dropout cases in the dependent variable did not distinguish between receiving a diploma or certificate for school completers or whether youth aged out. Since the focus of this study was on dropouts, these variations were not considered. Future research should focus on the differences in predictors for youth with these varied school outcomes.

I also did not consider other factors, such as age and grade of dropping out, the age of both dropouts and school completers, or youth who aged out of school. Teasing out these variations may give a more expansive picture as to who completes school and

who doesn't. For example of the youth who dropped out in 2004, over 90% of them were 14, 15 and 16 years old (USDOE, 2009). This rate goes down dramatically in subsequent years. This suggests that there may be factors associated with age that bear investigating. Future research can address the variability in the probability of dropping out by investigating factors that are age and grade specific.

For this study, I used the primary disability classification provided in the NLTS2, but did not use information that indicated whether youth had a co-occurring disability, or if a youth had a change in disability classification or was no longer was identified as having a disability. Information about youth's disability came from school rosters, and assigned disability classification was based on criteria for a particular school district (Valdes, et al., 2006a). Despite federal guidelines, criteria and methods for assigning students to categories often vary from state to state and even among districts within states. Because of this substantial variation may exist in the nature and the severity of the disability. Also, the categories should not be interpreted as describing students with a particular disability, but rather as describing students who were categorized with a particular disability by their school or school district (Valdes, et al.). This should be considered when interpreting results by disability classification. Follow-up studies should attempt determine if some youth have co-occurring disability classifications, as well as the levels of severity associated with having a specific disability.

The fact that grade retention significantly increased the odds of dropping out is important. Youth are held back in different grades, and the extent to which that predicts dropping out was not covered in this study. This information is available in the NLTS2 but was not used in this study. Future research can determine if there is a difference

between grade level retention and whether multiple grade retentions are important. It would also be useful to know if youth were retained before or after being diagnosed with a disability.

The findings for suspension and expulsion, while significant, masks the number of times a youth had been excluded from school. To make data reduction more parsimonious, I only counted one instance of being suspended or expelled. It is possible that youth who had been given multiple suspensions had much higher odds of dropping out than youth who been suspended or expelled once. This is an important distinction to make and should be taken into consideration in future research. Another distinction should be drawn between being suspended and being expelled and its effect on the odds of dropping out. Future research that evaluates the cumulative effects of school exclusion practices on the odds of dropping out would be instructive.

Chapter Summary

The purpose of this study was to examine the effects of disability classification, youth characteristics, academic experiences and emotional engagement factors. Overall, the findings extend the research on dropout among students with disabilities by identifying predictors not previously explored. Importantly, predictive factors found in the literature on dropouts held true for youth with disabilities in this study. These factors included school disciplinary exclusion, grade retention, demographic characteristics such as income and gender had an effect on the odds of dropping out. Surprisingly, girls had higher dropout rates than boys when controlling for other factors in the model. This contradicts the common perception that boys dropout at higher rates than girls and raises some interesting questions for future study. Do negative academic experiences more

negatively affect girls than boys? Are there factors not related to school that are impact girls' decision to leave school? Examining complex interactions may help us understand how academic experiences differentially affect the decision to drop out between boys and girls with disabilities.

Overall, academic experiences had the largest impact on the odds of dropping out. Being suspended or being held back in school significantly increased the odds of dropping out while having higher than average grades and emotional engagement levels decreased the odds of dropping out. While implications for policy and practice were speculative, the findings in this study echo the findings of other studies and should give pause to school personnel responsible for implementing policy and creating an environment that helps kids connect to schools. To this end, future researchers should utilize a broad array research designs and analyses to provide a finer grained analysis of school dropout.

Examining the complex interactions of the effects of schools, families, and communities is needed to gain a better understanding of why youth dropout of, or complete school. The use of correlational designs with large scale datasets is useful to identify broad trends as to the factors associated with dropping out. Path analysis may be able to better examine the causal pathways of academic experiences and the mediating effects of emotional engagement. Experimental studies on the effectiveness of dropout prevention programs may provide some answers. Most importantly, we need to hear the voices of youth. Qualitative research using interviews, surveying and observation can provide a richly detailed picture that can compliment finding from large scale trends. It is

my hope that this study, at the very least, raised important questions and provided pathways for further exploration.

TABLES

Table 1

Dropout Rate Calculations

Type of Dropout	Statistic	Definition	Example	Relative Value
Event Rate (can also be referred to as the annual rate or incidence rate)	Measures the proportion of students who drop out in a single year without completing high school.	Measures the proportion of students who drop out in a single year without completing high school.	Five out of every 100 students enrolled in high school in October 2003 left school before October of 2004 without completing a high school program (NCES, 2005).	Typically yields the smallest rate.
Status Rate (or prevalence rate)	Measures the proportion of students who have not completed high school and are not enrolled at one point in time, regardless of when they dropped out.	Measures the proportion of students who have not completed high school and are not enrolled at one point in time, regardless of when they dropped out.	In October, 2004 approximately 3.8 million 16-24 year-olds were not enrolled in high school and had not earned a high school diploma or equivalent credential. These youth accounted for 10.3% of all youth in the U.S in 2004 (NCES, 2005).	Yields a rate that typically falls between event and cohort rates.
Cohort Rate (longitudinal rate)	Measures what happens to a single group of students over a period of time.	Measures what happens to a single group of students over a period of time.	The district percentage of ninth graders in Minneapolis who were reported as dropouts four years later was 35.2% (Minnesota Department of Children, Families and Learning, 2000).	Typically yields the largest rate of dropout.

Source: Adapted from Thurlow, Sinclair, & Johnson, 2002.

Table 2

National Data Sources for Dropout Statistics

Data Base*	Agency
Current Population Survey	U.S. Census Bureau
Common Core of Data	U.S. Department of Education
Longitudinal Studies	U.S. Department of Education
<ul style="list-style-type: none"> • NELS: 88 • HS&B • NLTS 2 • NLTS • SEELS 	
Office of Special Education (OSEP)	U.S Department of Education
State and Local Surveys	Varied

Source: National Center on Education Statistics (2005)

* This is not an exhaustive list of NCES databases.

Table 3

Empirical Studies Reviewed

Study	Purpose	Sample	Design/Method	Findings	Measurement	
					Validity	Significance
Alexander, Entwistle & Horsey (1997)	To examine early childhood predictors of dropout	Random sample of 720 Baltimore 1 st graders in the Beginning School Study	Survey; interviews; longitudinal design: logistic regression	The study found a significant relationship between behavioral disengagement in the early years and dropping out of high school	Alpha reliability coefficients for two survey instruments	Zero- order correlations; Used .10, .05 and .01 as significance levels in regression and logistic regression model. Psuedo R2 for model difference
Blackory, Edgar,	To describe	A subsample of	Cross-sectional.	The study found	Interrater	.036 using

& Kortering (1993)	school graduates and school dropout by disability classification and to determine factors related to these outcomes	753 students with disabilities from a Washington state school district serving 4,300 students with disabilities	Examined archival school records; author- developed record review form. Descriptives and cross-tabulations; t-tests	a strong relationship between EBD classification and school interruptions	reliability of .92 using Cohen's kappa for author created referral evaluation tool	Bonferroni technique. Chi- square, t-values and standard errors reported. No effect sizes or CI's reported
Croninger & Lee (2001)	To determine the effects of academic risk and social risk on the odds of dropping out. To examine the effects of student-teacher	A subsample of 10,797 youth from the NELS:88	Survey; longitudinal design; bivariate correlations; logistic regression	Positive student- teacher relationships decreased the odds of dropping out for academically and socially at-risk	Reliability and validity in NELS: 88. Not described in study	.05, .01 and .001 levels used. Log- odd coefficients, model-fit chi- square

	relationships			youth		
	(social capital) on					
	the odds of					
	dropping out.					
	Purpose					
	operationalized in					
	research					
	questions					

Dunn, Chambers	To examine	1,654 students	Longitudinal;	Students who	Correlation	.05, .01, .001.
& Rabren (2004)	student	with disabilities	Survey;	identified a	coefficients	Beta coefficient;
	perceptions of	who participated	interviews;	helpful class or	significant at the	Classification
	their school	in the Alabama	logistic	adult at school, or	.01 level to	percentage;
	experiences and	Transition	regression; cross-	felt that school	measure internal	significance not
	student	Initiative	tabulation	helped them to	reliability for the	tested for cross-
	demographic			prepare were less	post-school	tab analyses
	factors that			likely to have	survey	

	predict dropout for students with LD and MR. Purpose operationalized into research questions			dropped out		
Ekstrom, Goertz, Pollack, & Rock (1986)	To examine differences on the achievement and attitudes between high school dropouts and school stayers. Operationalized into research	An unreported number of youth from the HS&B survey	Longitudinal; Cross- tabulations; Path analysis; value- added analysis	Dropouts reported lower levels of participation, achievement, liking school, getting along with teachers, and higher levels	Reliability and validity of instruments not given. May be assumed in the HS&B database	Mean differences; standardized regression weights. No effect sizes or CI's

	questions				of suspensions	
					and expulsions.	
					Staying in school	
					has positive	
					impact on	
					achievement	

Finn & Rock (1997).	Examined the differences of self-esteem and locus of control between dropouts, resilient school stayers and non-resilient school stayers	1,803 minority students from the NELS:88	Survey; longitudinal design; bivariate; ANOVA; MANOVA	Findings: Dropouts and non-resilient students had significantly lower levels of SES, retention, suspensions. Resilient students	Reliability reported for achievement tests and the NELS: 88 self-esteem and locus of control measures were provided. Alpha levels of engagement	.01 and .001. Chi- square for ANOVA; R for bivariate correlations; F statistic for multivariate; Mahalanobi's distance measure (D) for effect
------------------------	--	--	---	---	--	--

				had higher levels of self-esteem and locus of control and behavioral engagement (attendance, preparation)	composites were not provided	sizes
Lee and Burkham (2003).	Explored the relationship between school structure and students' decision to drop out or stay in school. Operationalized	190 school and 3,840 students from the HSES survey	Survey; longitudinal; descriptive; t-tests; contingency tables; ANOVA; HLM	Positive student-teacher relationships are associated with a lower likelihood of dropping out in small schools, The authors	No statistics for HSES given	.05, .01, .001. Chi-square; change in odds and log odds; standard errors

	into research questions			concluded that this relationship may be harder to establish in large or very large schools		
Reschly & Christenson (2004)	Examined the association of different forms of engagement and dropping out for students with disabilities (EBD, LD). Operationalized into RQ's	8,395 students with disabilities and without disabilities and 14,887 students to answer research questions 1 and 2 respectively. NELS:88	Survey; longitudinal; bivariate; MANOVA; Logistic Regression	Perceptions of school warmth were associated with a decreased likelihood to drop out. Positive student-teacher relationships found to be associated with	No reliability for NELS: 88 instruments. Eigenvalues and percentage of variance accounted for provided for factor analyses of composite	.001. F for MANOVA N2 for MANOVA effect size; beta weights, log odds and percentage correctly classified for logistic regression; r-

				an increased	variables	square for
				likelihood of		bivariate
				dropping out		
Rumberger (1995)	To examine the effects of individual, family, and school factors, and distinguish between independent factors, such as ethnicity and family background	17,424 from the NELS:88	Survey; longitudinal; Logistic regression; HLM	Low SES was predictive of dropout. Race/ethnicity not significant controlling for SES. Girls more likely to dropout than boys when considering other factors. Grade retention and low grades had	Reliability for instruments not described. Variables and recodings described.	Log odds, odds ratios. -2 log likelihood and chi-square for model fit. No assumptions or effect sizes explicitly described.

				significant effects		
				of the odds of		
				dropping out.		
Stearns, et al., (2007)	To examine the effects of individual characteristics and retention on dropping out using Finn's model and theories of social capital.	Eighth grade sample from the NELS:88 No N's or percentages provided	Survey; longitudinal. Logistic Regression; regression decomposition	Grade retention was highly predictive of dropping out when controlling for other variables.	Reliability for instruments used not described. Variable construction described. Factor loadings provided.	Log odds; odds ratios; standard errors; -2 log likelihood and model chi-square. No assumptions explained. Effect sizes not explicitly explained. Little explanation of widely fluctuating -2

						log-likelihood.
Wagner, et al., (2005)	To report school and post-school outcomes of youth from wave 2 of the NLTS2. Examined the difference between w. 1 and w. 2 and between dropouts and school completers on various measures.	Sampled youth from the NLTS2. Unweighted numbers provided. Appeared much smaller than full sample.	Survey; longitudinal; Group differences, logistic regression.	Youth with EBD had significantly higher dropout rates. Dropouts were more likely to come from single parent household. Dropouts more likely to be unemployed, not be enrolled in post-secondary school and more likely to have	Reliability of instruments described in dictionary, but not report. Unweighted n's provided.	Statistical significance of .05, .01, .001. No log odds or odds ratios provided. No statistics for goodness of model fit provided. Difficult to determine what was measured with logistic regression and what was

been arrested.

measured with
other methods.

Table 4

NLTS2 Data Collection Instruments

Instrument	Respondent	Number Completed Instrument	Maximum Eligible Sample	Response Rate for Maximum Sample	Practical Eligible Sample	Response Rate for Practical Sample
Data Collection Point 1: 2001						
Parent Interview	Parent or guardian of youth	9,230	11,244	82.1%	11,244	82.1%
Data Collection Point 2: 2002						
Direct assessments/ youth in-person interview	Youth	3,193	5,956	53.6%	5,071	63%
Teacher Survey	General education teacher	2,577	7,650	33.7%	7,114	36.2%
School Program Survey	Teacher who knows youth's school program best	5,588	11,126	50.2%	10,517	53.1%
School Back-ground	School Principal	5,956	11,126	53.5%	10,956	56.6%

 Data Collection Point 3: 2003

Parent and Youth Interview	Parent or guardian & youth	6,859	11,226	61.1%	11,226	61.1%
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Data Collection Point 4: 2004

Direct assessme nts/ youth in-person interview	Youth	3,135	5,242	59.8%	4,343	72.2%
Teacher Survey	General education teacher	1,983	5,467	36.3%	4,866	40.8%
School Program Survey	Teacher who knows the youth's school program best	4,078	8,480	48.1%	7,815	52.2%

Data Collection Point 5: 2005

Parent and Youth Interview	Parents or guardian & youth	5,657	11,225	50.4%	11,225	50.4%
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Table 5

Missing data imputation for independent variables used in the study (N = 5928)^a

Variable Name	Missing cases (n)	Strategy
Disability	0	n/a
Gender	0	n/a
Race/Ethnicity	2	Imputed from previous or follow up waves
Income	220	Sorted cases by dependent variable and imputed series mean for nearest 10 cases
Academic Achievement (Grades)	1136	Sorted cases by dependent variable and imputed series mean for nearest 10 cases
Retained	405	Dropped from sample
Suspended/Expelled	193	Dropped from sample
Youth enjoys school	154	Combined the following 6 variables and imputed mean to create composite. ^b
Connection with adult at school	176	
Gets along with teachers	161	
Gets along with peers	183	
Satisfied with school	136	
Satisfied with education	280	
Youth/parent wave 3 weight	356	Dropped from analysis ^c

Notes.

^a Original analytic sample based on full responses to the dependent variable.

^b Detailed information about how this composite variable was created is located in table 8.

^c Weights could not be imputed. Dropped cases resulted in a final analytic sample of 5018 cases.

Table 6

Frequency Distributions of Variables Used in the Study (N = 5,018) ^a

Characteristics	<u>n</u>	<u>%</u>
Disability Classification		
Learning Disability	419	62.1
Emotional Disturbance	383	11.4
Mental Retardation	426	12.1
Other Health Impairment	525	4.7
Speech Impairment	449	3.8
Low Incidence ^b	534	5.9
Race/Ethnicity^c		
White	3351	64.0
Black/African-American	911	18.9
Hispanic	610	14.5
Asian/Pacific Islander	91	1.6
Native American	38	0.7
Other	17	0.3
Gender		
Female	1695	32.0
Male	3323	68.0
Annual Income (\$)		
0 - 5,000		
5,000 - 10,000	307	8.0
10,000 - 15,000	348	8.1
15,000 - 20,000	285	5.0
20,000 - 25,000	286	5.0
25,000 – 30,000	344	8.8
30,000 – 35,000	313	7.5
35,000 – 40,000	290	5.3
40,000 – 45,000	311	5.5

45,000 – 50,000	234	5.0
50,000 – 55,000	238	4.7
55,000 – 60,000	472	9.2
60,000 – 65,000	363	8.3
65,000 – 70,000	308	5.8
70,000 – 75,000	189	3.4
75,000 +	180	2.3
Grades	550	7.2
A's & B's		
B's & C's	1700	25.6
C's & D's	1400	40.7
D's & F's	663	23.9
Suspended	233	10.1
Yes		
No		
Grade Retention	1581	39.2
Yes	3437	60.8
No		
Emotional Engagement ^d	1584	36.2
4.0	3434	63.8
3.0		
2.0	372	4.4
1.0	4511	66.0
	67	28.1
	68	1.5

Notes.

^a N's are unweighted, percentages are weighted with normalized NLTS2 Wave 3 parent/youth survey weight. All analyses were weighted.

^b Low Incidence Disabilities include Autism (.7%), Multiple Disabilities (1.8%), Hearing Impaired (1.3%), Orthopedic Impairments (1.2%), Visually Impaired (0.5%), Traumatic Brain Injury (0.3%) and Deaf/Blindness (0.1%).

^c Due to small sample sizes, only White, African-American and Hispanic were included in analyses.

^d Emotional Engagement composite reflects Likert scale; 1= strongly agree, 2 = agree, 3 = disagree, 4 = strongly disagree.

Table 7

Demographic Comparisons of Sample to NLTS2 and OSEP

Characteristic	% Study Subsample	% NLTS Wave 3	% OSEP ^{a b c}
Disability Classification			
Learning Disability	62.1	62.0	55.6
Mental Retardation	12.1	12.2	11.1
Emotional/Behavior Disorder	11.4	11.3	10.3
Other Health Impaired	4.7	4.6	9.9
Speech Impaired	3.8	4.0	4.9
Low Incidence	5.9	5.9	7.2
Race/Ethnicity			
White			
Black	64.0	61.9	58.9
Hispanic	18.9	19.7	20.7
Asian/Pacific Islander	14.5	14.4	16.7
Native American	1.6	1.6	2.1
Other	0.7	1.1	1.5
Gender	0.3	1.4	n/a
Female			
Male	32.0	30.9	See Notes ^c
Dropped Out	68.0	69.1	
	12.0	11.7 ^d	30.1

Notes.

^a Federal child count data. Retrieved and calculated from the OSEP Data Accountability Center for IDEA data at https://www.ideadata.org/arc_toc7.asp#partbCC

^b Due to reporting procedures, age ranges for disability categories was 12-21. Age range for race/ethnicity was 6-21.

^c States not required to report gender to federal child count. OSEP uses SEELS and NLTS2 data for Annual Reports to Congress

^d Dropout rate calculated from NLTS2 wave 3 data with parent/youth weight. Percentage should be interpreted with caution.

Table 8

Intercorrelations and Reliability Analysis of Emotional Engagement Composite Variable

Variable	M	SD	1	2	3	4	5	6
1. Adult Cares About Youth	1.6	.78	---					
2. Youth gets along with teachers	1.7	.81	.185	----				
3. Youth gets along with peers	1.8	.89	.129	.416	-----			
4. Youth enjoys school	2.1	.97	.196	.191	.118	----		
5. Satisfied with school	1.7	.91	.178	.236	.119	.152	-----	
6. Satisfied with education	1.7	.83	.180	.206	.110	.117	.635	-----

Notes. Cronbach's alpha = .613

Table 9

Means and Standard Deviations for Variables Used in the Study

Variable	<u>M</u>	<u>SD</u>
Dropout	0.12	0.33
Learning Disabilities	0.62	0.48
Emotional Disturbance	0.11	0.32
Mental Retardation	0.12	0.33
Other Health Impairment	0.05	0.21
Speech Impairment	0.04	0.19
Low Incidence	0.06	0.24
Female	0.32	0.47
White	0.64	0.48
Black	0.19	0.39
Hispanic	0.15	0.35
Suspended	0.39	0.48
Grade Retention	0.36	0.48
Household Income ^a	8.01	4.57
Grades ^b	2.88	0.91
Emotional Engagement ^c	3.15	0.52

Notes.

^a Household income mean and standard deviation reflects an average of \$35,000 and a standard deviation of approximately \$17,500. Variable was standardized to a mean of 0 and an SD of 1 for use in analyses.

^b Average grades reflect mostly B's and C's. Variable was standardized to a mean of 0 and SD of 1 for use in analyses.

^c Average reflects statement "Agree" on Likert scale. Variable standardized to a mean of 0 and an SD of 1 for use in analyses.

Table 10

Non-Bias Analysis Between Dropped Cases and Analytic Sample

(N = 5928)

	Dropped Cases (n =910) (15.3%)	Analytic Sample (n = 5018) (84.7%)	
Variable	%	%	χ^2 (1)
Drop Out			
Yes	20.3	79.7	99.34***
No	9.1	90.9	
Disability Category			
Learning Disability	20.3	79.6	12.99***
Emotional Disturbance	20.2	79.8	11.74***
Mental Retardation	17.7	82.3	3.50
Other Health Impaired	15.6	84.4	.225
Speech Impairment	14.1	85.8	.315
Low Incidence ^a	12.8	87.2	24.81***
Race/Ethnicity			
White	13.1	86.9	28.32***
Black	17.2	82.8	5.57*
Hispanic	14.8	84.2	.002
Gender			
Male	14.0	86.0	
Female	16.6	83.4	7.02**

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

^a Collapsed category including autism, deaf/blindness, hearing impairment, multiple disabilities, orthopedic or physical impairment, traumatic brain injury and visual impairment.

Table 11

T-test results for Mean Group Differences Between Dropped Cases and Analytic Sample

(*N* = 5928)

	Dropped cases		Analytic Sample		df ^a	T ^b
	(n = 910)		(n = 5018)			
	M	SD	M	SD		
Income	-.097	.899	.017	.981	1286.1	3.42
Grades	-.154	.996	.027	.998	5925	4.98

Note. All *t* values significant at $p < .001$

^a Income df for equal variances not assumed. Grades df are equal variances assumed.

^b Effect sizes using Cohen's *d* for *t*-values were as follows: Income = .114; Grades = .181.

Table 12

Percent Comparison and Chi-square Statistic Between Youth who Dropped out and Youth who did not Drop out (N = 5928)

	Dropped out (12.5%)	Did not dropout (87.5%)	
	%	%	χ^2 (1)
Disability Category			
Learning Disability	11.3	88.6	9.71
Emotional Disorder	26.7	73.3	118.37***
Mental Retardation	9.6	90.4	5.22
Speech Impairment	8.4	91.6	3.08*
Other Health Impairment	14.2	85.8	.654
Low Incidence	4.6	95.4	18.87***
Race/Ethnicity			
White	11.0	89.0	17.13
African-American	16.4	83.6	15.74
Hispanic	15.8	84.2	.892
Asian	10.1	89.9	.426
Native American/Other	20.8	79.2	3.27
Gender			
Male	11.5	88.5	
Female	14.7	85.3	10.34
Suspended	24.4	75.5	419.99***
Retained	20.8	79.2	180.02***

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

Table 13

T-test results for group differences between youth with disabilities who drop out of school and youth who do not drop out

	Dropped Out		Did not drop out		df ^a	T ^b
	M	SD	M	SD		
Income	-.340	.903	.049	1.01	864.9	9.19
Grades	-1.097	.899	.157	.911	5016	32.32
Emotional Engagement	-.709	1.01	.101	.957	5016	19.03

Note. All *t*-values significant at $p < .001$ level

^a Income and grades df based on equal variances not assumed. Emotional Engagement df based on equal variances assumed.

^b Effect sizes using Cohen's *d* for *t*-values were as follows: Income = -0.39; Grades = -1.11; Emotional Engagement = -0.81.

Table 14

Tolerance Statistics for Disability, Demographics, Academic Experiences, and Emotional Engagement Variables (N = 5018)

Variable	Statistic
1. Emotional Disturbance	.856
2. Mental Retardation	.907
3. Other Health Impairment	.967
4. Speech Impairment	.975
5. Low Incidence Disabilities	.955
6. African-American	.872
7. Hispanic	.903
8. Gender	.947
9. Suspended/Expelled	.740
10. Retained	.952
11. Income	.874
12. Grades	.771
13. Emotional Engagement	.778

Note. Tolerance statistics of $< .20$ may indicate a problem with collinearity (Menard, 2002).

Table 15

Intercorrelations Between Variables Used in the Study

Measure	1	2	3	4	5	6	7	8	9
1. Dropout	--								
2. EBD	.154*	--							
3. LD	-.044	-.459	--						
4. MR	-.032	-.133	-.457	--					
5. OHI	.011	-.079	-.283	-.082	--				
6. SI	-.025	-.071	-.254	-.073	-.044	--			
7. Low	-.061*	-.090	-.324	-.094	-.056	-.050	--		
8. White	-.058*	-.009	-.012	-.067*	-.059*	.023	.008	--	
9. Black	.056*	.057*	-.085*	.116*	-.037	-.018	-.015	-.643*	--
10. Hispanic	.013	-.051*	-.081*	-.042	-.036	-.005	-.004	-.550	-.199
11. Asian	-.009	-.033	.004	.018	-.003	-.009	.020	-.169	-.061
12. Nat./Other	.026	.040	-.016	-.012	-.009	-.008	.010	-.136	-.049
13. Gender	.045*	-.070*	-.017	.077*	-.040	.033	.033	-.004	.023

14. Income	-.129*	-.049*	.065*	-.153*	.086*	.037	.037	.294*	-.219*
15. Grades	-.363*	-.101*	-.037	.071*	-.034	.045	.108*	.039	-.053*
16.Engagement	-.269*	-.116*	.008	.039	-.028	.026	.089*	.020	-.005
17.Suspension	.289*	.318*	-.137*	-.002	-.002	-.057*	-.096*	-.091*	.161*
18.Retained	.189*	.003	-.024	.069*	.007	-.016	-.041	-.035	.045

Note. * $p < .001$

Table 15 (cont.)

Intercorrelations Between Variables Used in the Study

Measure	10	11	12	13	14	15	16	17	18
10. Hispanic	--								
11. Asian	-.052	--							
12. Nat./Other	-.042	-.013	--						
13. Gender	.002	-.035	-.033	--					
14. Income	-.169*	.056*	-.027	-.038	--				
15. Grades	.014	-.071*	.006	.065*	.003	--			
16.Engagement	.012	-.079*	-.016	.023	-.025	.434*	--		
17.Suspension	-.085*	.062*	.029	-.196*	-.084*	-.320*	-.284*	--	
18.Retained	-.009	.042	-.026	.012	-.048*	-.112*	-.153*	.155*	--

Note. * $p < .001$

Table 16

Model 1: Logistic Regression Results for Disability Category Predicting Dropout (N =5018)

Predictor	B	SE	Wald χ^2 Statistic	Odds Ratio	95% C.I. for Odds Ratio
Constant	-2.05	.198	107.45***	.128	.087 – .190
<i>Disability Category^a</i>					
Emotional Disturbance	1.04	.236	17.66***	2.83	1.74 – 4.62
Mental Retardation	-.186	.304	.373	.831	.457 – 1.51
Other Health Impairment	.256	.285	.804	1.29	.737 – 2.26
Speech Impairment	-.339	.238	2.02	.713	.446 - 1.14
Low Incidence	-1.01	.222	20.54***	.366	.236 - .566

Notes. *** p < .001

^a Comparison Group = Learning Disabilities

Nagelkerke r-square = .044

Correctly Classified = 87.5%

Table 17

Model 2: Summary of Logistic Regression Results for Demographics Predicting Dropout (N = 5018)

Predictor	B	SE	Wald χ^2 Statistic	Odds Ratio	95% C.I. for Odds Ratio
Constant	-2.27	.230	104.28***	.102	.065 – .160
<i>Disability Category^a</i>					
Emotional Disturbance	1.02	.246	17.22***	2.78	1.71 – 4.51
Mental Retardation	-.432	.304	2.02	.649	.357 – 1.18
Other Health Impairment	.450	.295	2.33	1.57	.879 – 2.80
Speech Impairment	-.324	.236	1.89	.723	.454 – 1.15
Low Incidence	-1.02	.226	20.34***	.360	.231 – .562
<i>Race/Ethnicity^b</i>					
African-American	.201	.245	.676	1.22	.756 – 1.98
Hispanic	.062	.355	.030	1.06	.529 – 2.14
Asian	.243	.662	.135	1.27	-1.06 – 1.54
Native American/Other	.499	.634	.621	1.65	.474 – 5.72
<i>Gender^c</i>					
Female	.389	.262	2.21	1.48	.882 – 2.47
<i>Household Income^d</i>					
Income	-.391	.129	9.23**	.676	.525 – .871

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

^a Reference Group = Learning Disabilities

^b Reference Group = White

^c Reference Group = Male

^d Reference Group = Average Income

Nagelkerke r-square = .082

Correctly Classified = 87.5%

Table 18

Model 3: Summary of Logistic Regression Results for Academic Experiences Predicting Dropout (N = 5018)

Predictor	B	SE	Wald χ^2 Statistic	Odds Ratio	95% C.I. for Odds Ratio
Constant	-4.28	.329	169.38***	.014	.007 - .026
<i>Disability Category</i> ^a					
Emotional Disturbance	.556	.320	3.01	1.74	.928 – 3.27
Mental Retardation	-.481	.410	1.37	.618	.276 – 1.39
Other Health Impairment	.414	.300	1.90	1.51	.839 – 2.73
Speech Impairment	-.030	.353	.007	.971	.485 – 1.94
Low Incidence	-.188	.262	.512	.829	.495 – 1.39
<i>Race/Ethnicity</i> ^b					
African-American	.056	.280	.040	1.06	.610 – 1.83
Hispanic	.344	.381	.815	1.41	.667 – 2.98
Asian	-.945	.862	1.20	.389	.071 – 2.11
Native American/Other	.776	.989	.616	2.17	.311 – 15.19
<i>Gender</i> ^c					
Female	1.05	.290	13.08***	2.85	1.61 – 5.04
<i>Household Income</i> ^d					
Income	-.567	.144	15.38***	.567	.427 – .754
<i>Academic Experiences</i>					
Grades ^e	-1.26	.139	82.25***	.285	.217 – .374
Retained ^f	.891	.247	13.03***	2.44	1.50 – 3.96
Suspended/Expelled ^g	1.31	.311	17.68***	3.70	2.01 – 6.82

Notes. *** $p < .001$

^a Reference Group = Learning Disabilities

^b Reference Group = White

^c Reference Group = Male

^d Reference Group = Average Income

^e Reference Group = Average Grades

^f Reference Group = Not retained

^g Reference Group = Not suspended/expelled

Nagelkerke R-square = .43

Correctly Classified -= 89.3%

Table 19

Model 4: Summary of Logistic Regression Results for Academic Experiences Predicting Dropout (N = 5018)

Predictor	B	SE	Wald χ^2 Statistic	Odds Ratio	95% C.I. for Odds Ratio
Constant	-4.30	.336	163.25***	.014	.007 - .026
<i>Disability Category^a</i>					
Emotional Disturbance	.559	.330	2.88	1.75	.915 – 3.34
Mental Retardation	-.450	.397	1.29	.637	.292 – 1.39
Other Health Impairment	.423	.303	1.95	1.53	.842 – 2.77
Speech Impairment	-.027	.357	.006	.974	.482 – 1.96
Low Incidence	-.133	.267	.249	.875	.518 – 1.45
<i>Race/Ethnicity^b</i>					
African-American	.088	.285	.095	1.09	.624 – 1.91
Hispanic	.346	.379	.836	1.41	.672 – 2.96
Asian	-1.24	.767	2.63	.288	.064 – 1.30
Native American/Other	.746	1.06	.491	2.11	.260 – 17.09
<i>Gender^c</i>					
Female	1.05	.302	12.14***	2.87	1.58 – 5.19
<i>Household Income^d</i>					
Income	-.611	.154	15.67***	.543	.401 - .735
<i>Academic Experiences</i>					
Grades ^e	-1.16	.146	62.95***	.313	.235 - .417
Retained ^f	.852	.252	11.46***	2.34	1.43 – 3.84
Suspended/Expelled ^g	1.23	.324	14.37***	3.42	1.81 – 6.47
<i>Engagement</i>					
Emotional Engagement ^h	-.310	.136	5.22*	.733	.561 - .957

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

^a Reference Group = Learning Disabilities

^b Reference Group = White

^c Reference Group = Male

^d Reference Group = Average Income

^e Reference Group = Average Grades

^f Reference Group = Not retained

^g Reference Group = Not suspended/expelled

^h Reference Group = Average emotional engagement levels

Nagelkerke R-squared = .44

Correctly Classified = 89.1%

APPENDIX

Table A-1

Description of NLTS variables used in the study and recoded variables used in multivariate analyses

NLTS2 Dataset Variable(s)	Description of Variable	Survey/Interview Question	Variable Values	Name/Recoded values for analyses
np1D_1k_2d_5b	High school	“Is {he/she} not in school now because	1= graduated	Dropped out
np2D1K_D2d_B3b	completion	{he/she}...is on school vacation; graduated; took	2 = tested out/ received a	0 = completed/still in school ^a
np3D1K_D2d_B3b	status	a test and received a diploma or a certificate	certificate	1 = dropped out ^b
np2S1b_D3b		without taking all of {his/her} high school		
np3S1b_D1K_D2d_D3b		classes; dropped out or just stopped going; was	3 = dropped out	
		suspended (temporary); was expelled	4 = suspended	
		(permanent); was older than the school age limit;	temporarily	
		or some other reason”	5 = expelled	
			permanently	
			6 = older than	
			age limit	
			7 = other	
			S = skip	
W1_Dis12	Primary	“With what physical, sensory, learning, or other	1 = learning	Disability
W2_DisHdr2003	disability	disabilities or problems has {YOUTH} been	disability	0 = else

W3_DisHdr2005	category	diagnosed?"	2 = speech	1 = emotional
			impairment	disturbance
			3 = mental	0 = else
			retardation	1 = mental
			4 = emotional	retardation
			disturbance	0 = else
			5 = hearing	1 = speech
			impairment	impairment
			6 = visual	0 = else
			impairment	1 = other health
			7 = orthopedic	impairment
			impairment	0 = else
			8 = other health	1 = low incidence ^c
			impairment	
			9 = autism	
			10 = traumatic	
			brain	
			impairment	
			11 = multiple	
			disabilities	
			12 =	
			deaf/blindness	

w1_Gend2	Gender	“I’d like to ask you some questions about { YOUTH}. Is { YOUTH} male or female?”	1 = male	Gender
W2_GendHdr2003			2 = female	0 = male
W3_GendHdr2005				1 = female
W1_eth6	Race/Ethnicity	“Is [YOUTH] of Hispanic, Latino, or other Spanish origin?” and “I’m going to read a list of categories. Please choose one or more categories that best describes [YOUTH’s] race. Is [he/she]...”	1 = White	Race/Ethnicity
W1_Ethdr2001			2 = African American	0 = White
W2_EthHdr2003			3 = Hispanic American	1 = African American
np2CombEth			4 =	0 = White
W3_EthHdr2005			Asian/Pacific Islander	1 = Hispanic
np3CombEth			5 = Native American/Alaska Native	0 = White
np3A3b			6 = Multi-Other	1 = Asian American/Other
NP1K15Detail	Household		“In studies like these, households are sometimes grouped according to income. Please tell me which group best describes the total income all persons in your household in the last tax year, including salaries or other earnings, money from public assistance, retirement, and so on, for all household members, before taxes. Was your	1 = \$5,000 or less
NP2H14Detail	Income	2 = \$5,001 to \$10,000		z scored
NP3H14Detail		3 = \$10,001 to \$15,000		0 = avg. income ^d
			4 = \$15,001 to	

household income in the past year....\$5,000 or less, \$5,001 to \$10,000, \$10,001 to \$15,000, \$15,001 to \$20,000, \$20,001 to \$25,000, \$25,001 to \$30,000, \$30,000 to \$35,000, \$35,001 to \$40,000, \$40,001 to \$45,000, \$45,001 to \$50,000, \$50,001 to \$55,000, \$55,001 to \$60,000, \$60,001 to \$65,000, \$65,001 to \$70,000, \$70,001 to \$75,000, or over \$75,000?	\$20,000
	5 = \$20,001 to \$25,000
	6 = \$25,001 to \$30,000
	7 = \$30,001 to \$35,000
	8 = \$35,001 to \$40,000
	9 = \$40,001 to \$45,000
	10 = \$45,001 to \$50,000
	11 = \$50,001 to \$55,000
	12 = \$55,001 to \$60,000
	13 = \$60,001 to \$65,000
	14 = \$65,001 to \$70,000
	15 = \$70,001 to

			\$75,000	
			16 = over	
			\$75,000	
np1D9b	Grades across subjects	“Overall, across all subjects, did {he/she} get mostly....A’s, A’s and B’s, B’s, B’s and C’s, C’s, C’s, and D’s, D’s, D’s and F’s, F’s, or { YOUTH}’s school does not give these grades?”	1 = mostly A’s	Academic
np2D6m			2 = A’s and B’s	achievement
np3D6m			3 = B’s	Collapsed and
nts2C5_gr4		“Overall which of the following best describes this student’s performance in this class? (nts2C5_gr4)	4 = B’s and C’s	reverse recoded
			5= C’s	into
			6 = C’s and D’s	1 = D’s and F’s
			7 = D’s	2 = C’s and D’s
			8= D’s and F’s	3 = B’s and C’s
			9 = F’s	4 = A’s and B’s
			10 = school does not give grades	10,11, &12 used mean imputation
			11 = other	and collapsed into
			12 = wide range of grades or performance	above categories z scored
Np1D5j	Held back a grade	“Since {he/she} entered kindergarten has {he/she} ever been held back a grade in school?”	1 = yes 2 = no	Retained 0 = no 1 = yes

Np1D_5L_7h	Suspended or	“Has {he/she} ever been suspended or expelled	1 = yes	School exclusion
Np2D5d	expelled from	from school?” and	2 = no	0 = no
Np3D5d	school	“Has {he/she} been suspended or expelled in the last two years?”		1 = yes
Np1D12b	Youth enjoys school	“Think about {YOUTH}’s experience at {his/her} school since the beginning of the school year. Would you say you strongly agree, agree, disagree, or strongly disagree with the following statements.... {he/she} enjoys school?”	1 = strongly agree 2 = agree 3 = disagree 4 = strongly disagree	Youth enjoys school 1 = strongly agree 2 = agree 3 = disagree 4 = strongly disagree
Np2R1a_K3	Youth enjoys	“How much do you enjoy school?”	1 = a lot	Youth Enjoys
Np3R1a_K3b	secondary school		2 = pretty much 3 = a little 4 = not at all	Secondary School Recoded into 1 = strongly agree 2 = agree 3 = disagree 4 = strongly disagree
Np1D12c	An adult at school	“...There is an adult at the school who knows {YOUTH} well and cares about {him/her}.”	1 = strongly agree	Connection to adult at school

	knows/cares about youth		2 = agree 3 = disagree 4 = strongly disagree	1 = strongly agree 2 = agree 3 = disagree 4 = strongly disagree
Np2R4a_a_K3c Np3R4a_a_K3c	An adult at school knows/cares about youth	“There is an adult at school who I feel close to and who cares about me.”	1 = agree a lot 2 = agree a little 3 = disagree a little 4 = disagree a lot	Connection to Adult at school Recorded and combined with np1D12c 1 = strongly agree 2 = agree 3 = disagree 4 = strongly disagree
np1D11	Youth gets along with teachers	“How well would you say {YOUTH} has gotten along with teachers at school this year? Would you say....very well, pretty well, not very well, not well at all, mixed some well, some not, does not interact with teachers.”	1 = very well 2 = pretty well 3 = not very well 4 = not well at all	Youth gets along with teachers Recorded into 1 = strongly agree 2 = agree 3 = disagree

			5 = mixed, some well, some not	4 = strongly disagree
			6 = does not interact with teachers	5 & 6 treated as missing. Mean imputation used for missing data
Np2R5a_K2	Youth has	“Since school started this year, how often have	1 = never	Youth gets along
Np3Ra_K2	trouble getting along with teachers	you had trouble with each of the following activities.... Getting along with teachers?	2 = just a few times	with teachers
			3 = about once a week	Reverse recoded and combined with np1D11
			4 = almost every day	1 = strongly agree
			5 = every day	2 = agree
				3 = disagree
				4 = strongly disagree
				5 = 1
Np1D10	Youth gets along with other students	“How well would you say {YOUTH} has gotten along with other students at school this year? Would you say....very well, pretty well, not very well, not well at all, mixed some well, some not, does not interact with other students.”	1 = very well	Gets along with peers
			2 = pretty well	Recoded to
			3 = not very well	1 = strongly agree
			4 = not well at	2 = agree

			all	3 = disagree
			5 = mixed, some well, some not	4 = strongly disagree
			6 = does not interact with students	5 & 6 treated as missing. Mean imputation used for missing data
Np2R5d_K1	Youth has	“Since school started this year, how often have	1 = never	Gets along with
Np3R5d_K1	trouble getting along with peers	you had trouble with each of the following activities....getting along with other students.”	2 = just a few times	peers
			3 = about once a week	Reverse recoded and combined with np1D10
			4 = almost every day	1 = strongly agree
			5 = every day	2 = agree
				3 = disagree
				4 = strongly disagree
				5 = 1
Np1D14a	Satisfied with	“Thinking about this school year, would you say	1 = very	Satisfied with
Np2D6a_o	school	you are very satisfied, somewhat satisfied,	satisfied	school

Np3D6a_o		somewhat dissatisfied, or very dissatisfied with...{YOUTH}'s school?	2 = somewhat satisfied 3 = somewhat dissatisfied 4 = dissatisfied	Recoded into 1 = strongly agree 2 = agree 3 = disagree 4 = strongly disagree
Np1D14d	Satisfaction	“Thinking about this school year, would you say	1 = very	Satisfied with
Np2D6a_d	with education	you are very satisfied, somewhat satisfied,	satisfied	education
Np3D6a_d		somewhat dissatisfied, or very dissatisfied with...{YOUTH}'s education?	2 = somewhat satisfied 3 = somewhat dissatisfied 4 = dissatisfied	Recoded into 1 = strongly agree 2 = agree 3 = disagree 4 = strongly disagree

Notes:

^a Non-dropout value (0) was collapsed from NLTS2 values 1, 2, 4, 6, 7, and skip. I made an assumption that youth who were skipped were still in school.

^b Dropout value (1) was collapsed from NLTS2 values 3 and 5. Permanent expulsion has been counted as dropout in various NLTS2 reports.

^c Low incidence disabilities was a collapsed category including hearing impairment, visual impairment, orthopedic impairment, autism, traumatic brain impairment, multiple disabilities and deaf/blindness.

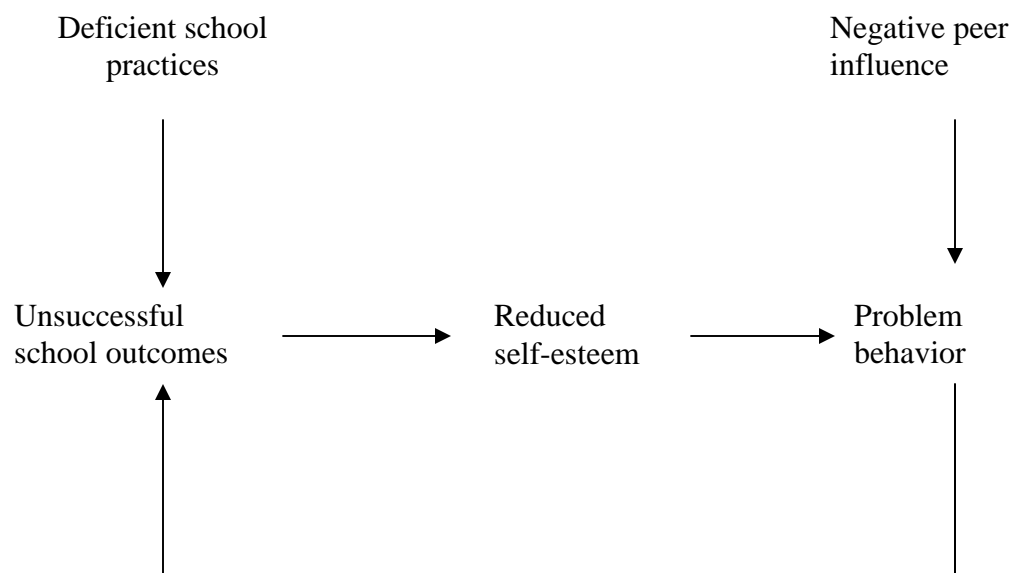
^d Average income calculated to be approximately \$37,500. This was then standardized to a mean of 0 and SD of 1.

^e Recoded to conform to standard grading metric. Average grade was 2.8 (B's and C's). This average was standardized to a mean of 0 and SD of 1.

^f Variables for the emotional engagement composite were first assigned uniform values. The composite variable had an average of 2.1 and was standardized to a mean of 0 and SD of 1.

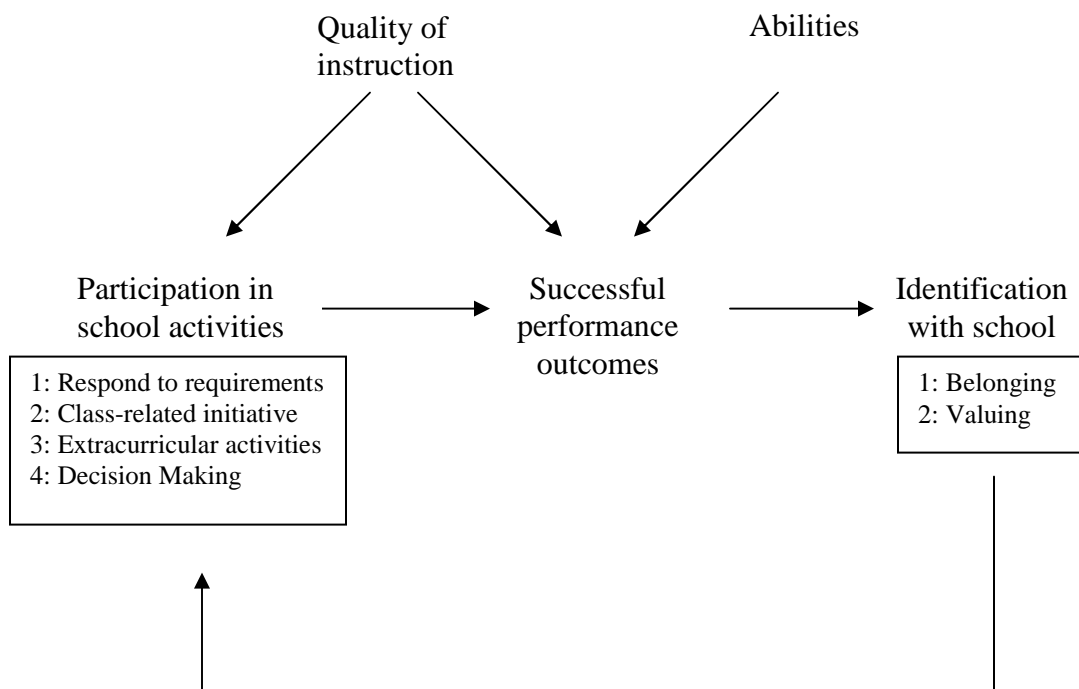
FIGURES

Figure 1: Frustration Self-Esteem Model



Adapted from Finn (1989).

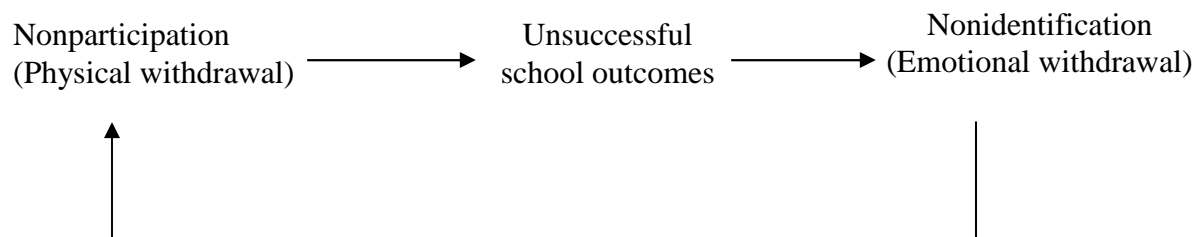
Figure 2: Participation Identification Model



Adapted from Finn (1989).

Figure 3

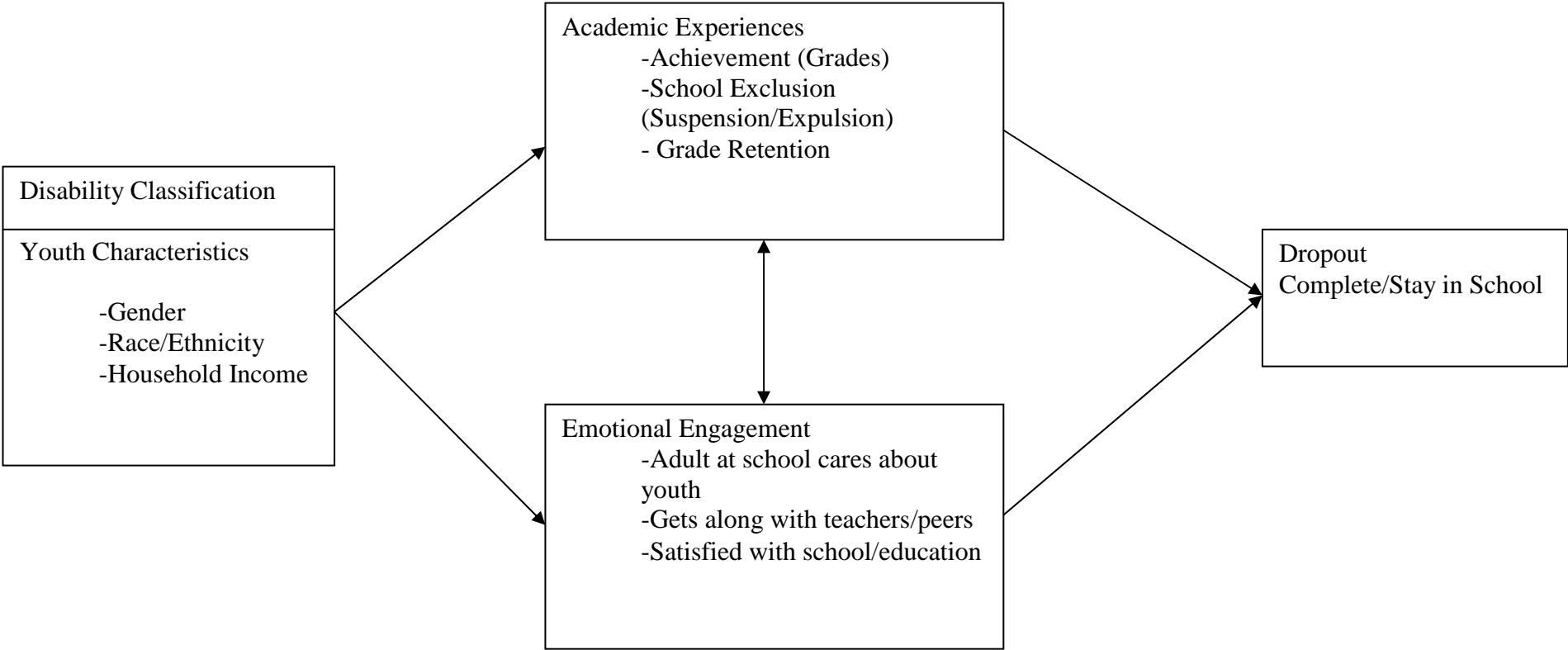
Withdrawal Cycle



Adapted from Finn (1989)

Figure 4

Model of Variables Used in the Study



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