

ABSTRACT

Title of Document: CHARACTERISTICS, PREDICTORS, AND GROWTH TRAJECTORIES OF CHILDREN WHO EXIT SPECIAL EDUCATION AND THEIR GENERAL AND SPECIAL EDUCATION PEERS

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The purpose of this study was to examine the characteristics and predictive factors for children receiving special education services, and if they received special education services, factors associated with them discontinuing those services before eighth grade. In addition, a second purpose was to determine whether there are differences in the reading and mathematics growth trajectories of children who exit special education, children who remain in special education, and children who attend general education classes and how those growth trajectories vary by characteristics such as race and gender. I used data from the Early Childhood Longitudinal Study – Kindergarten Cohort (ECLS-K), a study of a nationally representative sample of children attending kindergarten during the 1998 school year and followed through eighth grade. I used a subsample of the data to compare the characteristics and predictive factors of children receiving special education services or exiting from special education using chi-squares,

t-tests, and logistic regression analyses. Using hierarchical linear modeling, I analyzed data on the academic growth trajectories of children who exited special education, remained in special education or never received special education. The results of my study indicate that large number of children exit special education between kindergarten and eighth grade and the children who exit special education differ from their general and special education peers both in their characteristics and their academic growth rates in reading and mathematics. Finally, I discuss the implications of these findings for policy and future research.

CHARACTERISTICS, PREDICTORS, AND GROWTH TRAJECTORIES OF
CHILDREN WHO EXIT SPECIAL EDUCATION COMPARED TO THEIR
GENERAL AND SPECIAL EDUCATION PEERS

By

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Dedication

To my father Alan Lewis Dragoo, Ph.D.: thank you for believing in me and my ability to accomplish this long before I did. I never would have started this journey without the inspiration and support you provided. I wish you could have seen me finish.

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Chapter I

Approximately 7 million children (13% of the school age population) in the United States receive special education services under the Individuals with Disabilities Education Act (IDEA) (Snyder & Dillow, 2010). This number has remained relatively stable over the past 10 years; however, research has shown that there is a significant amount of change in the special education population each year as some children exit special education and new children are identified (Bielinski & Ysseldyke, 2000; Carlson & Parshall, 1996; Ysseldyke & Bielinski, 2002). Studies on children who stop receiving special education services, also referred to as children who have been “declassified from special education” (Innocenti, 2005, p. 3) have reported declassification rates as high as 50% over the course of several years (Innocenti, 2005), though the most commonly reported rates range from 8% to 16% per year (Carlson, Daley, Bitterman, Heinzen, Keller, Markowitz, & Riley, 2009; Carlson & Parshall, 1996; Daley & Carlson, 2009; SEELS, 2005; Ysseldyke & Bielinski, 2002). One study of declassification rates conducted by Bielinski and Ysseldyke utilized the records of 217,519 children in Texas and found that each year over a five year period approximately 20% of the special education population changed due to children entering and exiting special education.

Most of the studies have been descriptive and have reported on the number of children declassified at different age and grade levels and basic demographic information on the children who exit. While researchers have investigated many issues surrounding

the determination of eligibility for special education (e.g., evaluation procedures, eligibility determination, early intervening services¹), the literature base regarding children who exit special education is limited. In this chapter, I provide an overview of the existing literature on children served under the IDEA who exit special education and the federal policies that affect children when they leave special education. I also describe the purpose, the research questions, and the dataset I used in my study.

Overview of Policies and Research Pertaining to Declassification

Since the Education for All Handicapped Children Act (EAHCA; P.L. 94-142) was enacted in 1975, the law has helped ensure that children are appropriately identified as needing special education and once identified for special education services are regularly assessed to determine if they should remain in special education or return to general education. The current amendments to this law, now known as the Individuals with Disabilities Education Act or IDEA (P.L.108-446) include provisions both for evaluating children to determine if they qualify for special education services and for the reevaluation of children receiving special education services to determine if special education is still appropriate for them or if they should be declassified. The 2004 reauthorization of IDEA established that initial evaluations must be conducted within 60 days of receiving consent for the evaluation from the child's parents, and continued to

¹ Examples of articles on evaluation procedures, eligibility determination, and early intervening services include: Bricker, Clifford, Yovanoff, Pretti-Frontczak, Waddell, Allen, & Hoselton, 2008; Burns & Senesac, 2005; Case, Speece, & Molloy, 2003; Davis, Lindo, & Compton, 2007; DiStefano & Morgan, 2011; Dunn, 2007; Hoover, 2010; Macy, Bricker, & Squires, 2005; Shinn, 2007; Speece & Case, 2001; Speece, Case, & Molloy, 2003; Vaughn, Linan-Thompson, & Hickman, 2003; Vellutino, Scanlon, Small, & Fanuele, 2006; Wilkinson, Ortiz, Robertson, & Kushner, 2006; Ysseldyke, Algozzine, & Epps, 1983.

require that the initial evaluation employ a variety of valid and reliable assessment tools to determine the child's educational needs and if the child has a disability [34 CFR 300.301]. In addition, the IDEA 2004 requires that:

A child must not be determined to be a child with a disability under Part B:

(1) If the determinant factor for that determination is:

(i) Lack of appropriate instruction in reading, including the essential components of reading instruction (as defined in section 1208(3) of the ESEA);

(ii) Lack of appropriate instruction in math; or

(iii) Limited English proficiency... [34 CFR 300.306(b)] [20 U.S.C. 1414(b)(5)]

In addition, IDEA 2004 introduced the concept of early intervening services for students who are struggling in the general education classroom as a precursor to evaluation for special education eligibility. IDEA 2004 allows school districts to use up to 15% of their IDEA Part B funds to implement early intervening services, usually implemented as a series of three or more academic interventions for children who are not currently identified as children with disabilities but who have been determined through screening or teacher observation to need support to succeed in the general education environment (34 CFR §300.226, 2006; Hozella, 2007). The IDEA provisions pertaining to initial evaluations and early intervening services influence which children qualify for special education services, and by impacting who receives special education services also play an indirect role in who exits special education. However, the only provisions that directly impact children who exit from special education are the ones concerning reevaluation for special education services.

With respect to reevaluations which could lead to a declassification decision, the IDEA (2004) states that with the exception of students who are graduating or whose age exceeds the eligibility requirements for free appropriate public education (FAPE) under their State laws, schools are required to reevaluate a child “before determining that the child is no longer a child with a disability,” (34 CFR 300.305(e)(1); 20 U.S.C. 1414(c)(5)). Likewise, the IDEA 2004 statute reads “a local educational agency shall evaluate a child with a disability in accordance with this section before determining that the child is no longer a child with a disability” (U.S.C 20 Sec 614). Until 2004, a reevaluation was mandatory every three years. The IDEA now allows for a reevaluation to be forgone if, “the parent and the public agency agree that a reevaluation is unnecessary,” (34 CFR 300.303; 20 U.S.C. 1414). This is the extent of federal special education policy related to ceasing special education services to previously identified students.

Federal data collection requirements pertaining to declassification. IDEA has always required children with an Individualized Education Programs (IEP) be regularly reevaluated to determine if they still qualify for special education services or if they should exit/be declassified from special education. This continued requirement demonstrates the attention paid at the federal level to the issue of children exiting special education. In addition, the federal Department of Education collects data on children 14 and older who exit special education. The IDEA regulations (2004) require states to provide the Secretary of Education with a “Report of Children with Disabilities Exiting Special Education” annually. This report must contain data on “children by race, ethnicity, limited English proficiency status, gender, and disability category, the number

of children with disabilities aged 14 through 21 who stopped receiving special education and related services because of program completion (including graduation with a regular secondary school diploma), or other reasons, and the reasons why those children stopped receiving special education and related services” (34 CFR 300.640). States report data on how many children “transferred to regular education” in their annual reports on exiting special education (U.S. Department of Education, 2011). For example, state-reported data for 10 school years (1998-2008) on the numbers of students with disabilities ages 14 to 21 who exited special education indicated that an average of approximately 66,000 or 11% of secondary-aged students receiving special education services “transferred to regular education” each year (U.S. Department of Education, 2011).

These annual reports provide insight into the prevalence of exiting special education among secondary school age students. However, previous research has indicated that the largest waves of declassification occur between preschool and the beginning of junior high (i.e., before children are 14 years old; Bielinski & Ysseldyke, 2000; Carlson et al., 2009; Daley & Carlson, 2009; Carlson & Parshall, 1996; Innocenti, 2005; Kane & Johnson, 1995; Walker et al., 1988; SEELS, 2005). Thus, there is no federally reported data regarding the numbers of children younger than age 14 who leave special education or on their reasons for exiting.

Research on declassification from special education. Research on declassification of students receiving special education has largely been descriptive and answered questions such as how many children are declassified, their disability categories when declassified and demographic or educational characteristics.

Declassification rates and percent that exit. Research on declassification rates has been conducted using four nationally representative longitudinal studies of students with disabilities: the Pre-Elementary Education Longitudinal Study (PEELS; Carlson et al., 2009; Daley & Carlson, 2009), National Longitudinal Transition Study (NLTS; Carlson, 1997; Carlson & Reavey, 2000), National Longitudinal Transition Study-2 (NLTS2; Wagner, Newman, Cameto, Levine, & Marder, 2003), and the Special Education Elementary Longitudinal Study (SEELS, 2005). In addition, six studies involving large samples from states or districts have reported on declassification rates. Overall, these studies report that each year between 8% and 16% of students who received special education during the previous year are declassified (Bielinski & Ysseldyke, 2000; Carlson & Parshall, 1996; Clarizio & Halgren, 1993; Halgren & Clarizio, 1993; Walker et al., 1988; Ysseldyke & Bielinski, 2002). An IEP team decision that a student no longer requires special education or related services is the most commonly reported reason for declassification. Two large-scale studies, one focused on elementary-aged students (SEELS, 2005) and the other focused on secondary school-aged students (Wagner, Newman, Cameto, Levine, & Marder, 2003), independently reported that over 80% of declassified students were declassified because they no longer qualified as children with disabilities or they had met their IEP goals. Refusal of special education services by either the parents or student, or a decision to home school, were the most commonly reported reasons why the remaining students in the two studies stopped receiving special education services.

Categories of declassified students. Children from every one of the 13 IDEA disability categories are declassified from special education (U.S. Department of

Education, 2011). However, children in certain categories are declassified at much higher rates than others. For example, in the 2008/2009 school year, 34,465 children categorized as learning disabled (LD) were declassified compared to only 4 children with deaf-blindness (U.S. Department of Education, 2011). The U.S. Department of Education (2011) reported in its most recently released statistics on declassified students that approximately 92% of students age 14 through 21 years old who transferred to regular education had received services under one of four classifications: speech/language impairments (SLI), emotional disturbance (ED), LD, or other health impairments (OHI).

Similar findings were reported by Carlson (1997), who examined a nationally representative sample from the first National Longitudinal Transition Study (NLTS). Carlson found that 93.8% of students between the ages of 13 and 21 years old declassified from special education had received services under one of three classifications: SLI, ED, or LD. Pre-school children receiving special education services who participated in the Pre-Elementary Education Longitudinal Study (PEELS) overwhelmingly received special education services under one of two categories. Over 90% of children with disabilities ages 3 to 5 in the nationally representative sample of pre-school children who were declassified between the 2003-04 and 2005-06 school years, received special education services for either SLI or developmental delay (Daley & Carlson, 2009). The Special Education Elementary Longitudinal Study (SEELS) study, which examined elementary school children receiving special education services, found that nearly three quarters (74%) of first through ninth grade children declassified from

special education services had received special education services under the primary disability categories of SLI, OHI, ED, orthopedic impairments, and LD (SEELS, 2005).

Characteristics. Research regarding declassification has found differences in declassification status across racial and ethnic groups, gender and family income. For example, Walker et al. (1988), in a study involving three urban school districts, found that children in the category of SLI were significantly less likely to be declassified from special education if they were Black than if they were from any other racial or ethnic group. In addition, both Carlson (1997) and a SEELS Special Topic Report on Declassification (2005) reported positive associations between income and declassification, meaning the higher a child's family's income bracket the more likely they were to be declassified.

Some studies also examined program factors as they relate to declassification. According to the SEELS data, children who were declassified from special education differed from those who remained in special education in terms of where they received special education and related services (SEELS, 2005). All children who were declassified had received at least part of their language arts and mathematics instruction in a general education classroom. Only 2% of declassified children received mathematics instruction in a resource room and only 3% received language arts instruction in a resource room. No declassified children spent mathematics or language arts instruction time in a self-contained classroom. However, 28% of the children who remained in special education received mathematics or language arts instruction in a self-contained classroom and 34% received instruction in a resource room (SEELS, 2005). Walker et al. (1988) reported that children in fourth through sixth grade with SLI or LD who

received only related services, such as speech or occupational therapy, were significantly more likely to be declassified from special education than children who received special education instruction alone or in conjunction with related services. Obviously, the type of instruction or related service as well as where a student receives it can be confounded with the severity of the child's disability. Thus, we do not know what to infer from these data. However, as this brief overview indicates, there is very little known about the children who leave special education compared to those who stay, nor do the studies noted above report on what happens to children when they exit special education. In addition, few studies report on the academic achievement scores of students who exit special education (e.g., Bielinski & Ysseldyke, 2000; Halgren & Clarizo, 1993; Ruedel, 2008), and no existing studies compare the achievement of students who exit special education with both children who remain in special education and children who never received special education.

Purpose of the Study

The purpose of this study is to examine the characteristics of children who were both reported as receiving special education services in Early Childhood Longitudinal Study Kindergarten Cohort (ECLS-K) between kindergarten and eighth grade and who had stopped receiving IEP services during one or more waves of data collection, compared with children reported as receiving special education continually and those children who never were reported as receiving special education. The ECLS-K is a longitudinal study of over 21,000 children who began kindergarten in 1998 and were followed through 8th grade. In this study, I (a) describe the characteristics (e.g., gender, race/ethnicity, and SES) of students who never received special education services,

students who continually received special education services, and students who received services and were later declassified; (b) examine the influence of student-level demographic, economic, academic, and behavioral variables to predict a student's probability of being declassified from special education; and (c) analyze and compare growth in reading and mathematics achievement measures for each of the three groups between kindergarten and eighth grade.

Research Questions

My research was guided by the following questions pertaining to the following groups of children in the ECLS-K sample, those who: (a) never received special education services; (b) stopped receiving special education between kindergarten and eighth grade; and (c) received special education services continually from the initial wave of data collection in which they were identified through the end of the study.

Questions:

1. What are the characteristics of students who receive special education services between kindergarten and eighth grade, and those who do not receive special education services between kindergarten and eighth grade? To what extent do academic, behavioral, and demographic factors predict whether a student will receive special education or not between kindergarten and eighth grade?
2. What are the characteristics of students who stay in special education after their initial placement and those who stop receiving special education at some point between kindergarten and eighth grade? To what extent do academic, behavioral and personal factors predict whether a student will continue receiving special education or will stop receiving special education and related services?

3. How does growth in reading and mathematics achievement compare between those children who stopped receiving special education between kindergarten and eighth grade, children who remained classified, and those who never received special education (i.e., what are the academic achievement trajectories of the different groups)?

Significance of the Study

There are several reasons for obtaining a better understanding of which children exit special education and how they fare after they leave special education. In this era of increased accountability, when states must disaggregate growing amounts of data for the subgroup of children with disabilities, it is important to know which children are in this subgroup and how this subgroup changes over time. Throughout the grades the special education population changes becoming overall a lower performing group, as children who have met their IEP goals are declassified from special education while children struggling in the regular classroom are found eligible for special education and start receiving IEP services. As Bielinski and Ysseldyke (2000) explained, after tracking the transitions of more than 200,000 children over a five year period:

We found that the highest achieving special education students left special education to return to general education, and that they were replaced by the lowest performing regular education students who had been referred to and found eligible for special education. The result was a substantial increase in the performance gap over time between regular education and special education students across grades... Failure to document and account for changes in students' special education status ... could result in misinterpretations about the effectiveness of special education services. (p. 1)

Since educators and policy makers make inferences about special education students based on their performance on national assessments, it is important to understand how the characteristics of the special education population change across grade levels. Misinterpretations of the effectiveness of special education services can

occur if people fail to take into account differences in the academic performance of children who are declassified from special education and children who remain in special education (Bielinski & Ysseldyke, 2000; SRI International, 2005).

In addition, changes in special education policy and practice, occurring in the years the ECLS-K data were collected (1998-2007) and the years immediately proceeding it, may have influenced the frequency with which children exited special education or even some of the characteristics of children who exit special education as a group. For example, the movement towards full inclusion of children with special needs in the general education curriculum gained momentum throughout the 1990s and early 2000s (e.g., Kupper, 1995). The movement towards providing students with the supports and accommodations they needed within the general education classroom, instead of educating them in completely self-contained classes or mainstreaming them for a few classes (often electives) but separating them from all others, may have impacted which students teachers recommended for special education evaluation. For example, a general education teacher in a school where students with IEPs are educated in self-contained classrooms might be more inclined to refer students with behavior problems to special education than would a teacher in an inclusive school. Only four of the datasets, used in the articles reviewed in the next chapter, used data collected recently enough to reflect changes made to the population of students who exit special education due to the movement towards inclusion (ECLS-K, PEELS, NTL2, and SEELS). For my study I used data from the ECLS-K collected between children's kindergarten year up through the final wave of data collection in the spring of 2007, making the data used in this study more recent than any of the data used in studies of student exiting previously.

In addition, it is important to understand how children who are declassified from special education are faring for educational purposes. Knowing which of these children are achieving in the general curriculum and which return to special education may inform special and general educators about what types of supports are required to help children successfully exit special education. Finally, being able to compare how children who exit special education compare to those who stay in special education and those who never receive special education can provide educators with a more complete picture of the children who receive special education and how receiving special education impacts their academic achievement. Currently, such achievement data on children who have exited special education are not available from state-reported data or from existing studies. However, it is possible to examine these questions using the Department of Education's ECLS-K data set, which I used to examine the trends in academic performance of children who leave special education as compared to children who remain in special education and children who have never been in special education.

ECLS-K Dataset

The Early Childhood Longitudinal Study – Kindergarten Cohort (ECLS-K) dataset was used to conduct this study. The ECLS-K is a longitudinal study that followed a nationally representative sample of over 21,000 children attending more than 1,200 public and private kindergartens in the fall of 1998 for a period of 9 years. Data were collected during the kindergarten, 1st, 3rd, 5th and 8th grade years. I used the data from the 5 spring waves of data collection to answer my research questions. The dependent variable in these analyses was a dichotomous indicator of the receipt of special education services. Student-level variables included: gender, race/ethnic group, socioeconomic

status (SES), test score in reading, test score in mathematics, approaches to learning score, and externalizing problem behavior score.

Limitations

This study employed an extant longitudinal large-scale dataset, the ECLS-K. Like most large-scale datasets, the ECLS-K contains a significant amount of missing data. I employed missing data analyses to determine how missing data impacted the external validity of my findings. However, even my missing data analyses were restricted to the characteristics of students that the ECLS-K staff collected data on (e.g., race, gender, SES); data was not collected on whether students were in foster care, juvenile justice programs, homeless, in families of migrant workers or members of any other transient group that might have increased their likelihood of missing data during one or more waves of data collection.

In addition, there were limitations to the data that were collected. For example, the lack of over-sampling of children with disabilities in the ECLS-K results in fewer children with disabilities to examine than in other large-scale data sets where children with disabilities are either over-sampled or are the focus of the study. Over-sampling is a procedure used to increase the sample size of subgroups that are underrepresented in the population (e.g., children with disabilities or children attending private schools) in order to ensure the sample size of that group is large enough to perform statistical analyses. Since children with disabilities were not over-sampled in the ECLS-K, I was not able to conduct detailed analyses by disability type in my study. My analyses included all children who were receiving special education services regardless of their disability category.

My study was limited by the information available in the ECLS-K. Unlike the PEELS and the SEELS, which specifically focused on children receiving special services, the ECLS-K is nationally representative of all children who began kindergarten in the fall of 1998. Therefore, not only do children who received special education services only account for a small portion of the overall sample, they also were not the primary focus of the study designers, leading to fewer questions asked of their parents and teachers about their special education experiences. For example, there is no information in the ECLS-K about the type or intensity of special education services children received, nor did the ECLS-K staff record the reasons children stopped receiving services.

Definition of Key Terms

Child with a disability: A child identified with a disability in one of the 14 categories of disability defined in the IDEA: autism, deaf-blindness, deafness, developmental delay, emotional disturbance, hearing impairment, intellectual disability, multiple disabilities, orthopedic impairment, other health impairment, specific learning disability, speech or language impairment, traumatic brain injury, and visual impairments including blindness.

Declassified/Declassification: Used to describe children who at one point received special education services but are no longer receiving said services. Declassified is the preferred term used in most of the articles in my literature review. However, when referring to students in my study, I used terms such as “exited special education,” “discontinued services,” “no longer classified,” and “stopped receiving special education services,” because the reasons students stopped receiving special education were not recorded in the ECLS-K making it impossible to state definitively whether they had been officially

declassified by their IEP teams or had stopped receiving special education services for other reasons.

ECLS-K: The Early Childhood Longitudinal Study – Kindergarten Cohort. A longitudinal study that followed a nationally representative sample of 21,000 children attending more than 1,200 public and private kindergartens in the Fall of 1998 for a period of 9 years. Five waves of data were collected during the children’s kindergarten, first, third, fifth, and eighth grade years.

Emotional Disturbance (ED): As defined in the IDEA [34 CFR 300.8 (c)(4)(i)]

“Emotional disturbance means a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child’s educational performance: (A) An inability to learn that cannot be explained by intellectual, sensory, or health factors. (B) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers. (C) Inappropriate types of behavior or feelings under normal circumstances. (D) A general pervasive mood of unhappiness or depression. (E) A tendency to develop physical symptoms or fears associated with personal or school problems.

(ii) Emotional disturbance includes schizophrenia. The term does not apply to children who are socially maladjusted, unless it is determined that they have an emotional disturbance.”

Individualized Education Program (IEP): A document required by the IDEA for all children receiving special education services, which specifies all aspects of the student’s special education program including his or her goals, educational placement, the special

education and related services the child will receive, and the criteria established to measure the child's progress toward meeting his or her goals.

Individuals with Disabilities Education Act (IDEA): The federal legislation that contains the requirements for providing special education and related services to children and youth with disabilities from birth through 21 years old. Though the IDEA was referred to as the Individuals with Disabilities Education Improvement Act (IDEIA) during its 2004 reauthorization it is still commonly called the IDEA.

Longitudinal study: a research study that follows and measures the same subjects over time.

NLTS: the first National Longitudinal Transition Study (1985-1990)

NLTS2: the second National Longitudinal Transition Study (2000-2010)

Other Health Impairment (OHI): As defined in the IDEA (34 CFR 300.8) "Other health impairment means having limited strength, vitality, or alertness, including a heightened alertness to environmental stimuli, that results in limited alertness with respect to the educational environment, that— (i) Is due to chronic or acute health problems such as asthma, attention deficit disorder or attention deficit hyperactivity disorder, diabetes, epilepsy, a heart condition, hemophilia, lead poisoning, leukemia, nephritis, rheumatic fever, sickle cell anemia, and Tourette syndrome; and (ii) Adversely affects a child's educational performance.

PEELS: Pre-Elementary Education Longitudinal Study

SEELS: Special Education Elementary Longitudinal Study

Specific Learning Disability (LD): As defined in the IDEA [34 CFR 300.8 (c)(10)(i)]

“Specific learning disability means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. (ii) Disorders not included. Specific learning disability does not include learning problems that are primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage.”

Speech or Language Impairment (SLI): As defined in the IDEA [34 CFR 300.8 (c)(11)]

“Speech or language impairment means a communication disorder, such as stuttering, impaired articulation, a language impairment, or a voice impairment, that adversely affects a child’s educational performance.”

Chapter II: Review of the Literature

The purpose of the proposed study is three-fold. The first purpose is to describe the characteristics of children who have exited special education compared to those of children continually served by either the special or the general education system. Second, I examined factors that may predict which children exit from special education. The third purpose was to examine the trend of declassified children's achievement scores in reading and math compared to those of children continually served by either the special or the general education system. In this chapter, I first provide an overview of the federal special education policies affecting children with disabilities with a specific focus on policies related to placement in and exit from special education. Next, I describe the characteristics of children in the United States who receive special education services and of children who stop receiving special education. Finally, I review the existing research on children who are declassified from special education.

IDEA Policies Related to Special Education Evaluation and Exiting

In 1975, the Education for All Handicapped Children Act (EAHCA) was enacted by the 94th United States Congress to ensure all children with disabilities the right to a free and appropriate public education. The same year Congress passed the EAHCA, a Congressional report estimated that during the previous year approximately 1.75 million children with disabilities were denied access to public schools, and more than two million children with disabilities were estimated to be educated in programs which were not appropriate for their needs (as cited in Yell, 2006). Hobbs (1975) reported children who were referred to special education prior to the enactment of EAHCA were often placed in restrictive programs intended for children with moderate or severe intellectual disabilities

based on a single assessment measure and left in the programs for five years or more without further evaluation. The EAHCA was meant to end the practices of excluding children from public schools or allowing them to languish in inappropriate programs. The EAHCA endeavored to change special education in the U.S. into a system which met the needs of all children with disabilities by: a) requiring multiple assessments to determine whether a child has a disability; b) requiring a re-evaluation of each child at least once every three years to determine if the child is still a child with a disability requiring special education and/or related services; and c) developing an individualized education program (IEP) for each child determined to have a disability (Yell, 2006). The evaluation, reevaluation and IEP provisions of the EAHCA were meant to help ensure that each child with a disability received an appropriate education and to determine when children no longer qualify as disabled and should stop receiving special education and related services.

During its 1990 reauthorization (P.L. 101-476), the EAHCA was renamed the Individuals with Disabilities Education Act (IDEA). The IDEA, which was most recently amended in 2004 as Public Law 108-446, provides special education and related services to children and youth with disabilities from birth through age 21. In the 1986 reauthorization of the IDEA, Congress added Section 619, which expanded special education services to preschoolers through grants to State Education Agencies (SEAs) for the provision of special education services for children between the ages of 3 and 5 years old. Children and youth ages 3 to 22 years old are provided with services through Part B of the IDEA. Infants and toddlers from birth until their third birthday receive services under Part C of the IDEA. Part C of the IDEA covers a shorter time period than Part B

(i.e., 3 years vs. 19 years), and the limited research on children who are declassified from special education has focused on children served under Part B of the IDEA.

Under Part B of the IDEA, when children between the ages of 3 and 21 are suspected of having a disability by their parents or personnel from their school, the LEA, the SEA or another state agency, they are referred to a multidisciplinary team within their school which determines if they require a complete evaluation for special education and related services (Yell, 2006). The multidisciplinary team typically consists of a school administrator, general education teacher, special education teacher, and a school psychologist. If the team determines that the child should receive a complete evaluation, they must coordinate the collection of all educationally relevant information and administer appropriate assessments to determine: (a) if the child has disability; (b) the child's educational needs; (c) the child's present level of academic achievement and related developmental needs; and (d) whether the child needs special education and related services (20 U.S.C. 1414). If the team determines that the child has a disability which has an adverse effect on his or her education and qualifies for special education and related services under one of the 14 categories of disability covered by the IDEA, then the student will be determined eligible for special education and related services. Children and youth who are determined to be eligible for special education and related services under the IDEA are entitled to a free and appropriate public education in the least restrictive environment.

In addition, IDEA 2004 included a second potential route either to begin the special education evaluation process or to circumvent its necessity: early intervening services (EIS). Though EIS is the term used in the IDEA, the most widely known and

implemented form of EIS is response to intervention (RTI). According to the National Center for Response to Intervention funded by the U.S. Department of Education:

With RTI, schools identify students at risk for poor learning outcomes, monitor student progress, provide evidence-based interventions and adjust the intensity and nature of those interventions depending on a student's responsiveness, and identify students with learning disabilities or other disabilities. (NCRTI, 2010)

In a classroom implementing a RTI model, students who are screened and determined to be at risk for poor learning outcomes, are provided with evidence based interventions and their progress is monitored. If students respond to the first level or tier of intervention provided to them, then they will stop receiving RTI instruction. If students continue to struggle they will be provided with another tier of intervention, which may mean a different research-based intervention or an increase in the intensity or time provided for the original intervention. The students' progress is monitored throughout the RTI process. If a student responds to the interventions provided, special education evaluation and placement may be avoided entirely. However, if, after the receiving all available tiers of intervention available (which vary but is often 3 tiers), the student is not responding adequately to the interventions, they may be referred to the special education evaluation process.

Once the child is determined to be eligible for special education and related services, a team consisting of special and general education teachers, related service providers, the child's parents, and other individuals involved in the child's education and development work together to develop an Individualized Education Program (IEP) for the child to ensure that he or she receives an appropriate education. The IEP has dual

purposes: to set goals for the child's learning and to specify the services that the school district will provide to the child (Yell, 2006). A child's IEP directs multiple aspects of the child's special education. In addition to specifying the child's goals, the IEP must contain specific information about the child's present level of academic and functional performance, educational placement, the special education and related services the child will receive, and the criteria established to measure the child's progress toward meeting his or her goals. The IDEA requires IEP teams to determine each child's educational placement in the least restrictive environment that is appropriate for him or her. Education in the "least restrictive environment" means that children with disabilities should be educated with their general education peers to the maximum extent appropriate.

The IDEA requirements for reevaluations of children previously determined to be eligible for special education and related services mirror the requirements for initial evaluations with additional requirements pertaining to when and how often reevaluations should be conducted. The IDEA specifies that unless the child's parent and the LEA agree to forgo a reevaluation, reevaluations should be conducted at least once every three years but not more than once in a single year (34 CFR 300.303; 20 U.S.C. 1414).

Exiting Part B. While the IDEA clearly specifies the process for obtaining special education and related services, it does not clearly specify guidelines for exiting the special education system (Daley & Carlson, 2009). There is only one statute and one corresponding regulation that address the concept of evaluating a child to determine if he or she should exit special education. The IDEA 2004 statute reads, "a local educational agency shall evaluate a child with a disability in accordance with this section before

determining that the child is no longer a child with a disability” [Section 614 (c)(5)(B)]. The corresponding regulation § 300.305 (e)(2) states, “a public agency must evaluate a child with a disability in accordance with §§ 300.304 through 300.311 before determining that the child is no longer a child with a disability.” The sections referred to in both the IDEA statute and regulations on reevaluations provide guidance on evaluation and eligibility procedures for determining if a child qualifies for special education services. Despite the requirement that children’s eligibility for special education be periodically considered, there are few federal requirements for reporting exit rates. The federal government collects extensive information on children with disabilities receiving special education services, but relatively little information on the children who exit special education. In the following section, I first provide an overview of what government data tells us about children who receive special education, followed by a review of the available federal data related to exiting special education.

Characteristics of Children with Disabilities and their Educational Placements

During the 2007-2008 school year, over 6.6 million children with disabilities ages 3 through 21 received special education services through the IDEA (Snyder & Dillow, 2010). Together, these children represent 13.4% of the population of children enrolled in public schools in the U.S. (Snyder & Dillow, 2010). In this section, first, I will provide a description of these children. Then, I will discuss what is currently known about the children who are declassified from special education each year.

The characteristics of children who receive IDEA services. Of the children who received special education services in fall 2011, 52% were White, 23% were Hispanic, 19% were Black, and 2.5% were Asian/Pacific Islander (U.S. Department of

Education, Office of Special Education Programs, 2012). In comparison, in the general population of children in U.S. elementary and secondary schools, 52% were White, 23% were Hispanic, 16% were Black, and 5% were Asian/Pacific Islander (Keaton, 2012). Thus, according to the most recent U.S. government data, Black/African-American children are over-represented and Asian/Pacific Islander children are under-represented in special education. However, White and Hispanic children are represented in equal percentages in both the special and general education populations.

Historically, the greatest occurrences of disproportionate representation of children from different racial/ethnic groups have consistently been in the special education categories of emotional disturbance (ED), specific learning disability (LD), and intellectual disability. In their report for the Committee on Minority Representation in Special Education of the National Research Council (2002), Donovan and Cross coined the term *judgmental disabilities* to refer to the categories of LD, ED, and intellectual disability because the diagnosis of these disabilities is not based on biological, medically diagnosed disorders but rather is determined by the more subjective or judgmental special education evaluation and placement process. The categories of ED, LD, and intellectual disability find children over and under represented by race more dramatically than the other 11 special education categories (Donovan & Cross, 2002; Ruedel, 2008). For example, Black/African-American children represented 29% of children in the ED category in 2009 (U.S. Department of Education, 2009) even though they comprised only 15% of the student population (Child Trends, 2009). In contrast, Hispanic children represented only 12% of children in the ED category (U.S. Department of Education, 2009), much less than the 22% Hispanic children accounted for in the school-aged

population (Child Trends, 2009). Together the judgmental categories account for a majority (64%) of the children receiving special education services in the U.S. (Donovan & Cross, 2002; U.S. Department of Education, Office of Special Education Programs, 2009).

Males constitute another group that is disproportionately represented in special education. In 2008, approximately 67% of all children ages 3 through 21 who received special education services were male (U.S. Department of Education, 2009). Finally, in each grade between kindergarten and fifth, the percentage of children whose families were below the poverty threshold receiving special education was greater (between 6 and 18% depending on the grade) than the percentage of children whose families were at or above the poverty level (between 4 and 10%) receiving special education (U.S. Department of Education, Office of Special Education Programs, 2009). The U.S. Department of Education also collects data on children who exit the special education system. While the data on exiting children is not as extensive as the data on the special education population in general, it provides some insight into secondary aged students who exit from special education.

Data on students who exit special education. The U.S. Department of Education collects and reports data from all 50 states, Washington, D.C. and Puerto Rico on children age 14 or older who exit from special education (U.S. Department of Education, 2011). Every year states are required to submit a report to the U.S. Department of Education on the children who exited special education in the previous year, whether by graduating, dropping out, reaching the maximum age for public education, or by transferring to regular education (i.e., being declassified from special education) [34 CFR

300.640]. States report how many children from each IDEA disability category and of each age from 14 to 21 transferred to regular education in the previous year. During the decade between 1998 and 2008 the number of children with disabilities ages 14 to 21 who transferred to regular education each year ranged from just under 52,000 to over 71,000. Younger students (i.e., 14 to 17 year olds) were more likely to transfer to regular education than older students (i.e., 18 to 21 year olds). For example, approximately 17,000 students age 14 transferred to regular education each year compared to approximately 6,000 students age 18 and 200 students age 21. Specific learning disability (LD) was the most common category children received special education services under before transferring to regular education. Children with LD accounted for over half the secondary school students who transferred to regular education each year, ranging in number from 27,777 to 41,102 per year. Children in the categories of SLI, OHI, and ED also transfer to regular education in sizeable numbers each year (i.e., ranging from 5,000 to 11,000). In contrast, students with physical disabilities (e.g., hearing impairments, visual impairments, or orthopedic impairments) or cognitive/intellectual disabilities (e.g., traumatic brain injury, autism, or mental retardation) transferred to regular education in much smaller numbers; declassification rates for children with physical or intellectual disabilities ranged from an average of fewer than 10 children with deaf-blindness to approximately 2,000 children with mental retardation per year.

Research on Children Who Stop Receiving Special Education Services

To determine what is currently known about the characteristics of children with disabilities who are declassified and stop receiving special education and related services

as well as factors related to declassification, I conducted a thorough review of the extant research literature. I was interested in all research related to the topic of exiting or declassification and I believed that there was a limited literature base. Thus, I made the selection criteria as inclusive as possible. In my initial search, I did not limit myself to research published during a specific period of years and I accepted both quantitative and qualitative research. I included reports written for state and federal government agencies as well as articles published in peer-reviewed journals. The types of data used in each study (i.e., national, state or district-level) are presented in Appendix A1.

I only excluded one study found in my search (Haring & Krug, 1975). Haring and Krug's study was conducted before the passage of P.L. 94-142. The study followed a group of children who stopped receiving special education services and returned full-time to the regular education classroom; however, none of the children had IEPs and there was no federally mandated special education system for them to exit from. Therefore, while it did examine a group of children who stopped receiving special education services, it did not address declassification as I have defined it (i.e., children who no longer have IEPs entitling them to receive special education and related services). In the following section, I first describe my literature search procedures. Then, I provide a synthesis of the findings from the reviewed studies, beginning with nationally representative studies, followed by a review of state studies, and finally district level studies.

Search procedures. I conducted a computer search of the Educational Resources Information Center (ERIC), EBSCO Educational Research Complete, PsycARTICLES, and PsycINFO databases. I originally did not limit the years I searched but after finding the Haring and Krug (1975) article and determining that articles

describing exiting special education before the passage of IDEA were not appropriate for my study, I limited my search to 1976 to the present and the actual studies I would accept to those whose data collection had taken place in 1975 or later. The computer search used the term “special education” combined with the terms declassif* (e.g., declassification, declassified), exit* (e.g., exiting, exited), discontin* (e.g., discontinuation, discontinued, etc.), decertification, dismissal, left, leaves, terminat*, reintegrat*, and “stopped receiving.” While these searches resulted in over 400 hits, I eliminated articles that did not directly address the subject of declassification from special education. Of the approximately 425 studies returned by these searches, over 400 studies were about post-secondary transition (e.g., students exiting high-school or exit exams for students with disabilities), teacher retention (e.g., teachers who had left or were leaving special education teaching as a profession), or other topics unrelated to children exiting the special education system to return to general education. Only seven articles met the requirement of focusing on exiting or declassification among children in grades K through 12. Due to the limited results from the initial database search, I conducted a search on each of the authors of the seven articles I had found to determine if they had conducted research on a related topic which had not come up in my first search, and a hand search of several special education journals (*Exceptional Children*, *Journal of Learning Disabilities*, and *Learning Disabilities Research & Practice*). These methods resulted in three more articles. Next, I conducted an ancestral search of studies cited in the reference lists of the 10 studies I had obtained, which resulted in two more studies. I performed a database search on the authors for the two new studies and found one more relevant report, for a total of 13 studies.

One of the studies I had obtained was a qualitative study based on interviews with children who had participated in the NLTS. I searched through the reports on the NLTS2 website to see if any findings on children who had stopped receiving special education services were examined. I found one additional report which discussed discontinuation of special education services. Finally, I searched ProQuest Dissertations and Theses database. This resulted in two potential dissertations to include in my study. The first, was by Elaine Carlson (1997), who had co-authored four of the published studies I was including. I decided against using her dissertation because its content overlapped her published work. However, I included Ruedel's (2008) doctoral dissertation, which focused on disproportionality in special education rather than declassification, because she used the same data set I intended to use in my study, the ECLS-K, and her investigation into the predictive factors of children receiving special education services during kindergarten, third and fifth grade uncovered several findings about children who had been declassified from special education.

The tables A2 and A3 in Appendix A provide an overview of the 15 studies in this literature review. Table A2 describes the purpose and findings of each of the reviewed studies. Table A3 provides an overview of the data sources, analytic samples, and variables of each of the studies. They are followed by an in-depth discussion of each study's findings.

Findings from studies of children with disabilities who were declassified. Of the 15 studies included in this review, seven were originally published in peer-reviewed journals (Carlson & Parshall, 1996; Carlson & Reavey, 2000; Clarizio & Halgren, 1993; Daley & Carlson, 2009; Halgren & Clarizio, 1993; Walker et al., 1988; Ysseldyke &

Bielinski, 2002), four were written for projects funded by the United States Department of Education (Bielinski & Ysseldyke, 2000; Carlson et al., 2009; SEELS, 2005; Wagner, Newman, Cameto, Levine, & Marder, 2003), three were reports produced for State Departments of Education (Kane & Johnson, 1995; Innocenti, 2005; New Jersey State Department of Education, Division of Special Education, 1992) and one was a doctoral dissertation (Ruedel, 2008). The majority of the studies were descriptive and were based on large national, state, or district samples. All of the studies contained some descriptive data about the characteristics of children who exited special education and returned to full time placements in general education.

The studies examining declassification of children from special education varied in terms of designs and methods though all included descriptive and/or inferential statistics (Bielinski & Ysseldyke, 2000; Carlson & Parshall, 1996; Carlson & Reavey, 2000; Clarizio & Halgren, 1993; Daley & Carlson, 2009; Halgren & Clarizio, 1993; Innocenti, 2005; New Jersey State Department of Education, Division of Special Education, 1992; Ruedel, 2008; SEELS, 2005; Walker, et al., 1988; Ysseldyke & Bielinski, 2002). The studies' researchers relied on extant datasets comprised of survey, interview, and assessment data collected either specifically for research or as part of standard reporting requirements. The main statistics reported were frequencies and percentages. In the following sections, I report on the studies based on nationally representative databases first, followed by studies examining declassification in different states, and concluding with studies on school districts.

National surveys and studies. Six studies involving five nationally representative datasets examined children who exited special education. Two studies

employed the PEELS (Carlson et al., 2009; Daley & Carlson, 2009), one the ECLS-K (Ruedel, 2008), one the SEELS (SEELS, 2005), and the remaining two studies used the NLTS and NLTS2 (Carlson & Reavey, 2000; Wagner, Newman, Cameto, Levine, & Marder, 2003).

NLTS & *NLTS2*. One study reported findings from the most recent National Longitudinal Transition Study (NLTS2) (Wagner et al., 2003) and one study used a sample of students drawn from the original National Longitudinal Transition Study (NLTS) (Carlson & Reavey, 2000). The NLTS was the first nationally representative survey to follow secondary school-aged youth who received special education and related services through their transition to post-secondary life. The NLTS documented the characteristics, experiences, and outcomes of a nationally representative sample of more than 8,000 youth who were ages 15 through 23 and were receiving special education services in grade 10 or higher in the 1985/1986 school year (Wagner, Newman, Cameto, & Levine, 2005).

The NLTS2 began following a nationally representative sample of more than 11,000 youth who were ages 13 through 16 and were receiving special education services in grade 7 or higher at the inception of the study on December 1, 2000. The NLTS2's last wave of data collection was in 2010; however, the NLTS2 report which discusses declassification was from 2003 and reflects data collected by the end of the 2001/2002 school year. Data for the NLTS and NLTS2 were collected from the participating students, their parents, their teachers, their principals, and their school records. In addition to interviews with participating students and their parents, surveys were sent to the student's school principal and the school staff member best able to describe the

student's overall program. The NLTS2 also included direct assessments of the participants and surveyed their general education teachers.

The study which utilized a sample drawn from the first NLTS was the one qualitative study in my review (Carlson & Reavey, 2000). In order to find a group of young adults who had been declassified from special education during their secondary school years to study, Carlson and Reavey enlisted the help of SRI International, the contractor who conducted the NLTS to contact youth in the original sample who had been declassified from special education, were in the NLTS's youngest age cohort and lived in the eastern United States, to request their participation in their study. Seven youth who reflected diversity in academic achievement level, disability type, and community background were chosen to participate in the study. Of those seven, two had to be excluded from the study because school records verifying they had been declassified from special education could not be obtained for them. The five remaining youth and their parents participated in semi-structured interviews about the factors that affected their declassification from special education and the impact of declassification on their high-school and post secondary experiences. In addition to the interviews the researchers reviewed the participant's school records, including IEPs, transcripts, and eligibility meeting notes. This study made the most extensive use of interview data of any of the studies reviewed. However, there was very little information about the procedures for conducting the interviews or methods used to establish the validity of the qualitative research design.

Carlson and Reavey (2000) compiled case studies of the five selected youth who had been declassified from special education. The researchers considered three of these

case studies “successful” declassifications due to their ability to complete high-school in the general education setting and transition from high-school to postsecondary education or employment. The remaining two students were unemployed and relying on their families and social services for financial support at the time of the interviews. The researchers speculated on possible factors that the three successful youths possessed which may have contributed to their success, including cognitive aptitude, family support and expectations, peer influence, ambition, and the circumstances of students’ declassification from special education.

During the 5-year period over which the original NLTS was conducted, 5.6% of the students participating in it discontinued special education services (Carlson, 1997). When the NLTS2 was conducted, approximately the same percentage (i.e., over 5%) of participating youth discontinued special education services during the first 16 months (Wagner, Newman, Cameto, Levine, & Marder, 2003). Less than 1% of the youth who discontinued services during the first 16 months of the NLTS2 continued to receive disability-related accommodations under section 504 of the Vocational Rehabilitation Act. When the parents of the youth who were no longer receiving special education services were surveyed about the reasons their children had stopped receiving services, 85% of them reported the students had met their IEP goals, no longer needed services, or no longer qualified for services. Parents of the majority of the other students who were no longer receiving special education services reported they or their children had refused special education services. The rates at which students in various disability categories discontinued special education services varied widely from a high of 22% of students with SLI to 1% or less of students with autism, intellectual disability, deaf-blindness, or

multiple disabilities, during the 16 month period. Students in the categories of LD, ED, traumatic brain injury; or hearing, visual, orthopedic, or other health impairments discontinued special education services at rates between 2% and 6%.

SEELS. Another nationally representative report used data from the Special Education Elementary Longitudinal Study (SEELS, 2005). The SEELS included over 11,000 children selected from throughout the United States, who were between 6 and 13 years old and in first grade or higher on September 1, 1999. The study followed these children for 6 years. The SEELS data used in this study was obtained in two waves of data collection. The first wave included parent interviews in 2000 and direct assessment of children, and surveys and questionnaires of school personnel in the spring of 2001. The second wave repeated the direct assessments, surveys, and interviews in 2002.

Two parts of the SEELS study design, the School Program Questionnaire and the Computer-Assisted Telephone Interview (CATI) of parents, included questions to determine whether or not each student in the SEELS was receiving special education services and if not when they had stopped receiving services. The School Program Questionnaire asked school staff members who were knowledgeable of the student's program: "Does this student have an IEP for special education services now?" If the staff member answered "No," they were asked "In what school year was this student discontinued from special education?" (SEELS, 2005, p. 3). In addition, the CATI staff asked parents "Our records show that [CHILD] received special education services at the beginning of 1999–2000 school year. Is she/he in special education now?" (SEELS, 2005, p. 3). The SEELS interviews were developed by experts in the fields of special education and survey research and were standardized. The SEELS study specifically

addressed measures put in place to ensure fidelity during the interviewing process (SEELS, 2005) including on-going training of interviewers and fidelity checks of random interviews.

The SEELS Special Topic Report on declassification (SEELS, 2005) describes the sample group's demographic characteristics (e.g., grade level, gender, household income, race/ethnicity, etc.), and results of parent interviews about discontinuing special education services on the behaviors, strengths, school experiences, and health of children who were declassified. The analysis of the SEELS data to examine the percentage of first through ninth grade children who were declassified from special education during a two year span utilized the entire data set. However, some of the analyses only examined declassified children or only children whose primary disability was in a category with high declassification rates. The SEELS data indicated that 17% of children were declassified within two years and that SLI was the single most common disability category among declassified children, accounting for a third of the children who were declassified. The next most frequently declassified category was OHI (12%) followed by LD (10%) and ED (9%).

Parent interviews conducted during the first and second waves of SEELS data collection sought to determine if a student was no longer receiving special education and the most prevalent reasons for discontinuing special education services. Almost 80% of the parents who reported that their child stopped receiving special education and related services indicated that it was because the services were no longer needed. Other reasons given for no longer receiving special education included: the school not having the program the student needed (7%); changing schools and not being identified as needing

special education at the new school (3%); parents deciding to home school (3%); parents no longer wanting their child in the school's special education program (3%); and the child no longer wanting to remain in the school's special education program (2%).

Interviews conducted with 453 parents revealed differences in reasons for declassification across disability categories. Between 81%-87% of the parents of children in four disability categories (SLI, LD, hearing impairments, and orthopedic impairments) reported that their child no longer needed special education services as the reason for discontinuation. However, 35% of the parents of children with OHI and 26% of the parents of children with ED who stopped receiving special education services reported that the child discontinued special education services despite still needing them. Reasons for this included that the school could not provide the needed program, the parent or the student decided to exit services, or the parent decided to home school the student (SEELS, 2005).

After analyzing of data on parental expectations of their children and satisfaction with their children's schools, the researchers reported that parents of children who were declassified from special education were significantly more likely to say that they expected their child would graduate from high school (84%) and go on to postsecondary education (54%) than parents whose children remained in special education (59% and 29% respectively). Parents of children who had been declassified from special education were also more likely to report they were very satisfied with their child's school (43%) than parents of children who remained in special education (37%; SEELS, 2005).

PEELS. Two studies used data from the Pre-Elementary Education Longitudinal Study (PEELS; Carlson et al., 2009; Daley & Carlson, 2009). The PEELS dataset is

comprised of a nationally representative sample of 3,104 children who were between 3 and 5 years old at the inception of the study in 2003-04. The PEELS study followed the children in their sample for six years and collected data on the characteristics of the children and their families, their educational programs and services, their performance in preschool and elementary school, and their transitions from both early intervention programs into preschool and preschool into elementary school. Data for the PEELS were collected from the participating children, their parents and families, teachers, service providers, preschool programs, local education agencies (LEA), and state education agencies (SEA). In addition to direct child assessments, questionnaires were sent to children's teachers, principal or program director, local director of special education in the LEA, and the state preschool special education coordinator, and interviews were conducted with the children's parents. Both PEELS studies specifically addressed measures put in place to ensure fidelity during the interviewing process (Carlson et al., 2009; Daley & Carlson, 2009). The measures built into the PEELS to ensure fidelity during interviews included on-going training of interviewers and fidelity checks of random interviews to make sure all the interviewers conducted their interviews in the same way. The studies that employed the PEELS dataset (Carlson et al., 2009; Daley & Carlson, 2009) examined both child-level factors and school- and/or district-level factors.

Daley and Carlson's study (2009) found that over a two year period, approximately 16% of children receiving special education and related services in the pre- and early-elementary grades were declassified each year. In a more in depth exploration of the third wave of data collection of the PEELS, Carlson et al. (2009) found

that an average of 20.5% of children who transitioned between pre-school and kindergarten were declassified each year over a two year period, while only 7% of children who did not make a transition were declassified. The researchers concluded that the high rate of declassification for PEELS participants who were transitioning between pre-school and kindergarten was largely a result of required evaluations to determine Part B eligibility which have different criteria than evaluations to determine eligibility for early intervention services.

Both studies that utilized PEELS data (Carlson et al., 2009; Daley & Carlson, 2009) used multiple logistic regression analysis to adjust for confounding factors such as student age and family background. Carlson et al. (2009) found children who were declassified from special education at some point during the three waves of data collection had higher mean scores on an inventory of social skills. In addition, males who were declassified scored lower on a scale measuring rates of problem behaviors than males who remained in special education throughout the study. A multivariate logistic regression found several variables to be significant predictors of declassification: the child's gender (females are more likely to be declassified), the size of the district's preschool special education program (children are more likely to be declassified in districts with small programs), district wealth (low-wealth districts have higher rates of declassification), child disability classification (children with SLI were the most likely to be declassified), severity of disability and problem behaviors (children with less severe impairments and fewer problem behaviors were more likely to be declassified), and scores on the Peabody Picture Vocabulary Test (children with higher scores on the PPVT were more likely to be declassified) (Daley & Carlson, 2009).

ECLS-K. The ECLS-K is a longitudinal study that followed a nationally representative sample of over 21,000 children attending more than 1,200 public and private kindergartens through their 8th grade year. In addition to providing information on children's home environment, classroom environment, and assessing their cognitive, social, emotional, and physical development as they entered school, transitioned to kindergarten, and progressed through school, the ECLS-K also provided information on children's parents, teachers and schools. Ruedel (2008) used the ECLS-K data set to examine disproportionality rather than declassification in special education. However, as part of her study, Ruedel investigated the characteristics of children in the kindergarten, third, and fifth grade waves of data collection who received special education at various points in time including children who exited special education, remained in special education, or never received special education services.

Ruedel examined how many males and females were in special education at different points in time (e.g., during K only; or K, third, and fifth; or third and fifth but not K). She found a higher percentage of males than females received special education in every combination of grades with one exception; females accounted for 60% of the children who received special education in kindergarten and third grade and were no longer receiving special education in fifth grade. Ruedel suggested this may indicate that while males are more likely to receive special education services, females are more likely to exit special education in mid to late elementary school. In addition, Ruedel found Black and Hispanic children were underrepresented in several subgroups including those who stopped receiving services after third grade, those who exited special education between kindergarten and third grade and were then reclassified by fifth, and children

who received special education services in kindergarten, third, and fifth. In terms of SES, while children who had never received special education were represented approximately equally across quintiles, more children who stopped receiving special education services after having received them in kindergarten and third grade were poor (1st quintile), and more children who stopped receiving special education services after receiving special education in kindergarten only were wealthy (5th quintile) compared to all other subgroups. When reading and mathematics achievement were examined, children who had received special education services at any point were more likely to have scores in the lowest quartile than the highest.

As part of her examination of disproportionality in the ECLS-K dataset, Ruedel (2008) used Hierarchical Generalized Linear Modeling (HGLM) to determine which variables, as measured in the third grade would be the strongest predictors of whether or not a child would still be receiving services in fifth grade. Ruedel found that children from higher-SES backgrounds were more likely to stop receiving special education between third and fifth grade than children from lower-SES backgrounds. There were no significant differences between children of various racial/ethnic backgrounds or among children with different levels of reading achievement; however, children with higher mathematics achievement scores were more likely to stop receiving services than children with lower mathematics scores. When school-level results were examined, Ruedel found that children who attended schools with fewer minority children were less likely to exit special education between third and fifth grade. While children who attended economically disadvantaged schools were more likely to stop receiving special education services than children attending wealthier schools.

Key findings from national studies. Studies utilizing nationally representative samples to examine children exiting special education reported rates of exiting between 15 and 17% for pre-school and elementary school-aged children (Carlson et al., 2009; Daley & Carlson, 2009; SEELS, 2005), and between 5 and 6% for secondary-aged children (Carlson, 1997; Wagner, Newman, Cameto, Levine, & Marder, 2003). Characteristics of children who exit special education reported in national studies included a greater likelihood of females exiting than males (Daley & Carlson, 2009; Ruedel, 2008). Studies which examined the likelihood a student would exit special education based on their disability classification found a preponderance of children exiting special education had received services under high-incidence disability classifications which were not associated with cognitive impairments such as SLI, LD, and OHI; while very few children stopped receiving special education services if they were classified in categories representing severe or multiple physical or cognitive impairments such as TBI, deaf/blindness, or autism (Carlson et al., 2009; Daley & Carlson, 2009; SEELS, 2005).

Parents of children who had exited special education were significantly more likely to report expecting their children to graduate from high school and obtain postsecondary education than parents of children who remained in special education (SEELS, 2005). In addition, parents of children who exited special education were more likely to describe their children as highly persistent, well organized, sensitive to others feelings, and as being strong in the areas of computer skills, athletic ability, artistic ability, creativity, and mechanical abilities. Parents gave a variety of reasons why their children had stopped receiving special education services (Carlson & Reavey, 2000)

including deciding to home school and the parent or child deciding to discontinue services, but the most common reason for exiting special education accounting for over 8 out of every 10 parents surveyed was that the student no longer needed or qualified for special education services or had met all his or her IEP goals (SEELS, 2005; Wagner et al., 2003).

Critique of national studies. Large-scale, nationally representative data sets share both strengths and weaknesses. A greater variety of data (e.g., demographic, academic, health-related, observational, self-reported, etc.) was collected from more groups of participants (e.g. children, parents, teachers, principals, related service providers, LEAs, etc.) in the national studies than in state or district studies, where data collection was often limited to one or two groups (e.g. children and their teachers) and/or addressed fewer variables (e.g., only demographic and academic variables). However, national studies also shared similar problems. Longitudinal studies which include surveys, interviews, and questionnaires usually have non-random missing data. Missing data and survey non-response are ubiquitous problems in large-scale nationally representative studies. Unfortunately, of the national studies I reviewed, only Ruedel (2008) addressed how she handled missing data. Both the studies which used the PEELS data set (Carlson et al., 2009; Daley & Carlson, 2009) explained they used weights that adjusted the child base weights to account for nonresponse on specific data collections but did not discuss any missing data analysis or measures taken to address missing data. Carlson and Reavey (2000) used qualitative methods which did not require missing data analysis. The remaining two national studies (SEELS, 2005; Wagner et al., 2003) did not address

missing data, even though they both reported on the results of parent interviews, a likely place for non-random missing data to occur.

State studies. Six studies examined state data (Bielinski & Ysseldyke, 2000; Carlson & Parshall, 1996; Innocenti, 2005; Kane & Johnson, 1995; New Jersey State Department of Education, Division of Special Education, 1992; Ysseldyke & Bielinski, 2002). Four of the 6 state studies examined the entire population of children receiving special education a particular grade (e.g., Bielinski and Ysseldyke examined all 4th graders in Texas in 1993) or across grades 1 to 12 (New Jersey State Department of Education, Division of Special Education, 1992; Carlson and Parshall; 1996) for 2 or more years. The two studies by Bielinski and Ysseldyke (Bielinski & Ysseldyke, 2000; Ysseldyke & Bielinski, 2002) followed all the 4th-graders (n=217,519) who took the Texas Assessment of Academic Skills in 1993 for the next 5 years. The New Jersey State Department of Education, Division of Special Education (1992) reported on all children who received special education and related services in the state of New Jersey each year between 1987 and 1992. They estimated that approximately 180,000 children were receiving special education services each year. Carlson and Parshall (1996) used child count data collected by the Michigan Department of Education on 51,624 children six years old and older to track declassification from special education throughout the state over the 5 year period between 1989 and 1993.

Michigan. Carlson and Parshall (1996) used data collected by the Michigan Department of Education to track not only how many children were declassified from special education but also the children's success once they returned to general education. The researchers reviewed data collected statewide in Michigan on elementary and

secondary school children entering and exiting special education over a 5 year period as well as follow-up surveys the state conducted a year after each child was declassified. The Michigan Department of Education required districts to provide demographic and programmatic data on all children ages 6 to 26 receiving special education services including their gender, date of birth, ethnicity, primary disability category, special education placement, and reason for exiting special education. The reasons for exiting special education that school staff had to select from were: (a) graduated with a diploma, (b) graduated with a certificate of completion, (c) reached maximum age for services, (d) dropped out, (e) refused services, (f) moved to another district, (g) moved out of state, (h) suspended or expelled, (i) deceased, (j) too sick to receive services, (k) could not be located, and (l) returned to general education. In addition, each year from 1989 to 1993, Michigan's intermediate districts were required to collect follow-up data on each student who was declassified from special education a year after their return to general education. To complete that task approximately 75% of Michigan school districts used a standardized follow-up survey developed by experts in the fields of special education and survey research consisting of a one-page in-school survey given to the general education teacher or high school counselor of each student who had reportedly "returned to general education" the previous year. Carlson and Parshall (1996) analyzed the follow-up data submitted by those districts over the period between 1989 and 1993.

When Carlson and Parshall (1996) analyzed the Michigan data they found that each year, 7% of children receiving special education in Michigan schools returned to general education full-time. The highest rates of declassification were for children in upper elementary school (8-11 years old) with the rate of declassification dropping steadily

after fifth grade. The largest percentage of children returning to general education were in the SLI category (66%), followed by children with LD (24%), and children with ED (7%). Within three years of declassification, 4% of declassified children returned to special education. Over half of the children who returned to special education were classified as having a different disability category than the one they had received IEP services for previously. The most common change was from SLI to LD.

New Jersey. The New Jersey Department of Education reported on data collected between 1987 and 1992 from a randomly selected sample of school districts in the state (New Jersey State Department of Education, Division of Special Education, 1992). The report indicated yearly declassification rates ranging from 1.9 to 2.2%. It is difficult to interpret these low rates because we do not know what the schools were asked about their declassification rates; how reliable the data being reported were; or whether the study included schools that did not provide data on declassification or had no children declassified from special education. Further, how the percentages were calculated was unclear.

Texas. In the two largest studies examining data from a single state, Ysseldyke and Bielinski (Bielinski & Ysseldyke, 2000; Ysseldyke & Bielinski, 2002) used data from a large-scale longitudinal database of the Texas Assessment of Academic Skills (TAAS) scores of all fourth grade children in the state of Texas in 1993 over the course of five years to examine declassification rates and compare the achievement gap between children in special education and children in general education across grades. The researchers investigated the extent to which children entering, exiting, and reentering special education impacted the achievement gap between general and special education

children over the five-year period. Ysseldyke and Bielinski found that approximately 13% of children receiving special education services in fourth grade were not in special education the following year. A slightly smaller percentage of children left special education in each of the following four years of the study reaching a low of 9.6% of children in seventh grade. Of the children who were not receiving special education between fourth and fifth grades, 16% were classified as receiving special education services between sixth and seventh grades.

The focus of the two studies by Ysseldyke and Bielinski (Bielinski & Ysseldyke, 2000; Ysseldyke & Bielinski, 2002) was to examine the impact of students moving in and out of special education on the aggregate performance of children with and without IEPs. To measure this, the researchers used general education children as the reference group and children with IEPs as the focal group and reported effect sizes in each grade (4th through 8th). They examined the size of the achievement gap between special education and general education children by looking at the changing composition of special education as new children were classified as disabled every year and other children were declassified and returned to general education. They did this by defining group membership in two ways. In one method, which they called the *cohort-static* method, they defined special education membership by each student's special education status in the first year of testing. In the second method, which they termed *cohort-dynamic*, the researchers redefined special education membership each year as only the children who were currently receiving special education services. The researchers reported effect sizes, which allowed them to report trends in the direction and magnitude of differences in achievement across grades (Bielinski & Ysseldyke, 2000).

Ysseldyke and Bielinski found that children in the special education group defined by the cohort-static method maintained their achievement level relative to children in general education. However, the children in the special education group defined by the cohort-dynamic method showed a precipitous decline in their achievement relative to children in general education. The researchers explained that group composition was directly tied to student achievement since the children leaving special education were a higher achieving group than the children entering special education. Thus, over the years of the study the special education group became more concentrated with low achieving children.

Utah. The two remaining state studies were conducted for state departments of education using random samples of children who had discontinued special education services. The first of these two studies was conducted by Innocenti (2005) and was based on data from The Utah Early Intervention Project (UTEIP), a 3-year longitudinal study of children who received services either through Utah's Part C program (Baby Watch) or the Part B preschool special education program. The UTEIP study enrolled 300 children selected from locations throughout the state to represent a diversity of programs, cultures, and services and followed the children from 1996 to 1999; 150 of the participants were newly enrolled in Baby Watch and 150 were enrolled in preschool special education. The Utah Office of Education provided UTEIP with funding to extend this longitudinal study through 2004. Data from the 2001/2002 through the 2003/2004 academic years were analyzed for the declassification study. In order to obtain information on children's special education status, each year phone interviews were conducted with each child's

parents and a questionnaire was sent to each child's school. In addition, interviews were conducted with the teachers of children who remained in special education.

Approximately half of the children who had been in the Baby Watch program (46-49%) or in preschool special education (46-50%) in 1996 were reported to no longer be receiving special education during the 3 years of the study. The rate of approximately 50% of children no longer receiving special education services is the highest reported in any study. Innocenti (2005) explained that overall attrition from the study may have inflated the findings. However, he noted that even if all the children who dropped out of the study were still in special education the declassification rate would remain over 25%.

In order to better understand the high rate of declassification, Innocenti (2005) used analyses of variance (ANOVA) to examine differences between declassified children and children who remained in special education in terms of their scores on cognitive and behavioral measures or in the information their parents reported about their health, behavior, stress level, development, and major life events when they first entered early intervention or preschool special education. He found four variables to be predictive of later classification status regardless of whether the child had been enrolled in a Part C or Part B program in early childhood. Two of the variables were connected to the child's scores on the Cognitive Subtest of the Battelle Developmental Inventory and the Vineland Adaptive Behavior Scale. A low score on either of these measures when a child began Part C or B early childhood services was predictive of later special education placement. In addition, if a child's parents had high stress scores on the Parent-Child Dysfunction Scale of the Parenting Stress Index when their child began services, or if they reported their child having poor health, their child was less likely to discontinue

special education services later. Among the children who were enrolled in a preschool special education program, higher scores on the Social Skills Rating Scale and fewer reports of negative life events from the child's parents were predictive of declassification in elementary school.

In addition to the declassification rate, the disability classifications of the children who remained in special education were reported for the first two years of the study. Communication disorders represented the largest classification category for both children who had been served in Part C and Part B programs for both years that data were reported (Innocenti, 2005). Developmental delay was the second largest classification in the 2001/2002 school year; however, by the 2002/2003 school year, many of the children who previously had been classified as developmentally delayed were given the more specific designations of intellectual disability, LD, multiple disabilities, or autism. In addition, the percentage of parents reporting they did not know the primary disability classification on their child's IEP dropped dramatically between the first and second year of the study (from 18 to 5% for Part C; 25 to 8% for Part B). The researchers did not know whether they could attribute this decline to better communication on the part of the school, parents becoming more focused on their child's disability as their child grew older, or whether parents who did not know their child's disability were more likely to drop out of the study.

Vermont. The final state study reviewed was conducted by Kane and Johnson (1995) for the Vermont State Department of Education for the purpose of examining how well schools were supporting children with disabilities in general education classrooms. The researchers randomly selected 220 school-aged children from the categories of (a)

children who were receiving special education services, (b) children who had exited special education in the previous 2 years, and (c) children who had been provided with support from their school's instructional support team (IST) during the previous year. The researchers interviewed the children, their parents, and their general and special education teachers. Kane and Johnson collected information on the grades, test scores, drop-out rates, and services received by children in each of the 3 groups. In addition, children completed Quality of School Life Scales (QSL), and the interviews provided perceptions of children's success and abilities while in special education and after having exited special education.

Kane and Johnson (1995) reported that nearly all (98%) of the teachers interviewed stated that full-time placement in general education was appropriate for the children who had been declassified, 89% of children who had been declassified from special education reported feeling successful in school, and 96% reported they liked school. Furthermore, the children's grades did not decline when they returned to general education. The report stated that children who exited special education continued to receive support in a variety of ways, which were not explained.

Key findings from state studies. The state-level studies on declassification resulted in the widest range of reported declassification rates of all the studies reviewed. The New Jersey State Department of Education, Division of Special Education (1992) reported the lowest declassification rates (1.9 to 2.2% a year) and Innocenti (2005) reported the highest (50% over 3 years). Both of these studies were conducted for state departments of education. The declassification rates reported in the two state-level studies published in peer-reviewed journals were more closely aligned with

declassification rates reported in the national and district-level studies (Carlson & Parshall, 1996; Ysseldyke & Bielinski, 2002). Carlson and Parshall (1996) reported a declassification rate of 7% in Michigan, and Ysseldyke and Bielinski (2002) reported declassification rates ranging from approximately 13% a year among 4th graders to below 10% in the 7th grade (9.6%).

Critique of state studies. The number of problems with a state-level study's methodology appeared to be related to the study's ties to their state department of education. The two studies conducted by state departments of education were the most flawed (Kane & Johnson, 1995; New Jersey State Department of Education, Division of Special Education, 1992) and the three studies conducted by independent researchers were the most sound methodologically (Bielinski & Ysseldyke, 2000; Carlson & Parshall, 1996; Ysseldyke & Bielinski, 2002). The report by the New Jersey State Department of Education was not intended to be a research study. It was simply a report of data submitted to the New Jersey State Department of Education. The New Jersey State Department of Education had collected information on declassification for five years at the time they compiled this report (1992), but they explained their data collection system was not developed to a point yet where they could report on declassification rates by age or by disability category. They did not report on how they handled missing data or even how they collected data from districts on declassification. The study conducted for the Vermont Department of Education (Kane & Johnson, 1995), also provided limited information on their data collection procedures and missing data. The researchers reported that they conducted over 1200 interviews with 220 children, the children's general and special education teachers, and parents. However, beyond stating that those

interviewed were asked to reflect on the student's success in school, no information was provided about the interview procedures and nothing was stated about response rates or missing data from the children, parents, and teachers selected for the study.

District studies. Three studies reviewed were conducted in local school districts. Of these one examined declassification in urban districts and two were conducted in rural districts.

Urban districts. Walker, Singer, Palfrey, Orza, Wenger, and Butler (1988) conducted a 2-year follow-up study of 1,184 elementary school children in 3 states who were receiving special education and related services. The researchers used data from the Collaborative Study of Children with Special Needs which compiled data from three urban school districts: Charlotte Mecklenburg, North Carolina; Milwaukee, Wisconsin; and Rochester, New York. Walker et al. (1988) used a stratified random sample technique to ensure that children with severe/low-incidence disabilities were adequately represented in the sample. The researchers conducted reviews of student records and interviewed parents in English and Spanish for each of the 1,184 participants in the study to gather information on demographic characteristics (e.g., children's ethnicity, household income, parent's education level) and educational background (e.g., placement, grade level, related services, parent participation in IEP meetings). After controlling for child and family background characteristics, the researchers used multiple logistic regression analysis to estimate the effects of school related characteristics, such as the type of services children received, or if they were in the appropriate grade for their age on their likelihood of exiting special education.

Overall, Walker et al. (1988) found that of the children who remained in the districts at the end of two years, 17% were no longer receiving special education and related services. Similar to other studies, children with SLI were the most likely to stop receiving special education (33.1%), followed by children with LD (14.9%) and children with ED (9.1%). Children initially classified as SLI were the most likely to exit special education within 2 years, followed by children receiving special education and related services under the categories of LD, ED, and visually impaired. Children served under the categories of hearing impairments, multiple disabilities, or intellectual disability rarely exited the special education system. Children in the grades 4-6 were also the most likely to stop receiving special education services over the two years.

Multiple logistic regression analysis was used to examine the relative contribution of child and family characteristics and school factors to the odds of exiting special education. Results indicated that children served under any special education category were more likely to stop receiving special education services if they were in the appropriate grade for their age at fourth, fifth and/or sixth grades. Children with SLI who had no parentally reported learning or emotional problems, were receiving speech therapy as their only special education service and were not Black were the most likely to exit special education. Similarly, for children with LD the more time spent each day in separate special education classes, the less likely they were to stop receiving special education services within the two years. Children initially classified as SLI were the most likely to be reclassified under a different special education category, particularly if they: received special education instruction in addition to speech therapy; were Black;

were not in the appropriate grade for their age; or had parents who reported a learning problem or were dissatisfied with the school's education program.

Rural district studies. Clarizio and Halgren's studies (Clarizio & Halgren, 1993; Halgren & Clarizio, 1993) sought to extend the study by Walker et al. (1988) by increasing the age range in their study and by examining children in rural rather than urban school districts. Both of Clarizio and Halgren's studies included children from preschool through secondary level. In addition, both studies examined the school records of 654 children receiving special education services in 10 rural school districts in an unspecified Great Lakes state where 98% of the children were White.

Despite the differences in the studies' participants, Clarizio and Halgren (1993) had findings similar to those of Walker et al. (1988). For example, children with SLI were the most likely to stop receiving special education services, followed by children with OHI and LD. Both groups of researchers found that children who were receiving services for more than one disability were less likely to leave special education. Compared to Walker et al. (1988) who reported that 17.2% of children stopped receiving special education services over a 2-year period, the studies by Halgren and Clarizio both reported that 21.9% of children stopped receiving special education services over a 3 year period.

Key findings from district studies. As was the case in both national and state studies of declassification in preschool and elementary school children, the district-level studies reported most children who exited special education were identified as having SLI (e.g., Clarizio & Halgren, 1993; Halgren & Clarizio, 1993; Walker et al., 1988). In addition, Halgren and Clarizio (1993) found being male to be a significant predictor of

declassification. However, they explained their finding may have been due to the fact that in the rural Midwest during the 1980s when they conducted their study there was a greater percentage of males than females receiving special education services and the females who were receiving special education services on average had more severe disabilities making them less likely candidates for declassification. Halgren and Clarizio also found that children with a single classification (e.g., SLI or LD) were significantly more likely to be declassified than children with two or more classifications (e.g., SLI and LD), and children with higher IQs as measured by the Wechsler Intelligence Scale for Children-Revised (WISC-R) and higher reading, mathematics, and written language achievement as measured by the Woodcock-Johnson Psycho-Educational Battery were also more likely to be declassified.

Critique of district studies. Studies examining school districts with particular characteristics (e.g. urban districts) are prone to suffer from a lack of generalizability to other types of districts. The two studies by Clarizio and Halgren (Clarizio & Halgren, 1993; Halgren & Clarizio, 1993) examining rural districts serve to improve the generalizability of Walker et al.'s earlier study (1988) examining declassification in urban districts. In addition, the similarities in the findings of the district-level studies both with each other and with the national studies suggest that the results can be generalized to other groups of children. The main limitation to making predictions about declassification in a current sample of students based on the findings of these studies is that they are based on data collected more than 20 years ago. In the two decades between when the district-level studies were conducted and the present, many changes have occurred in the field of special education and it is impossible to know exactly how or how

much those changes may impact trends in declassification. For a few examples, during the 1990s and 2000s, the IDEA was reauthorized three times (in 1990, 1997, and 2004), the inclusion movement encouraged increasing the time children with disabilities spent in the general education classroom, and Elementary and Secondary Education Act was reauthorized as No Child Left Behind ushering in a push for accountability and an increase in standardized testing. These are only a few of the changes in the educational landscape which could have altered declassification rates or the characteristics predictive of declassification. Therefore, it is important to explore the issues of students being declassified from special education using more recent data.

Summary and critique of declassification research.

In the following sections I summarize the findings across the 15 studies I reviewed. I also critique the quality of the research on declassification and identify the gaps in the research.

Declassification rates. Declassification rates, in the studies I reviewed, ranged from a low of 2% in New Jersey (New Jersey State Department of Education, Division of Special Education, 1992) to a high of 50% in Utah (Innocenti, 2005). However, the majority of studies that reported declassification rates and all of the studies that reported declassification rates from nationally representative samples reported declassification rates ranging from 8% to 16% of the special education population per year (Bielinski & Ysseldyke, 2000; Carlson et al., 2009; Daley & Carlson, 2009; SEELS, 2005; Walker et al., 1988; Ysseldyke & Bielinski, 2002). The highest declassification rates (i.e., 16% to 50%) were reported among children who had received preschool special education services (Carlson et al., 2009; Daley & Carlson, 2009; Innocenti, 2005). Overall,

declassification rates have been found to decline steadily as children grow older (U.S. Department of Education, 2011), with the notable exception of a spike in declassification rates in the upper elementary grades (Carlson & Parshall, 1996; Walker et al., 1988). The trends in declassification at different ages/grade levels have had to be pieced together from the results of studies examining a single age range (e.g., only elementary school age students). Therefore, future research examining trends in declassification as children move through elementary school and into secondary education are warranted.

The studies examined in this review differed widely both in terms of the age ranges they investigated, which ranged from early childhood (Carlson et al., 2009; Daley & Carlson, 2009; Innocenti, 2005) to secondary and postsecondary (Carlson & Reavey, 2000; Wagner et al., 2003), and the ways data were collected. Only five studies reported declassification data based on nationally representative samples; and of those studies, only two studies focused on declassification specifically (i.e., Daley & Carlson, 2009; SEELS, 2005). Two of the remaining three studies discussed children exiting special education as one of many topics in a report on a large-scale data set (Carlson et al., 2009; Wagner et al., 2003), and the final study (Ruedel, 2008) did not address children who stopped receiving special education services specifically, but instead reported on the characteristics of children participating in the ECLS-K study who received special education services during different points in time. Therefore, there continues to be a need for studies using nationally representative large-scale data sets, which examine the characteristics of children who exit special education.

Special education categories and declassification. The studies of preschool and elementary school children reported the majority of children who stopped receiving

special education services were identified as having SLI (e.g., Carlson & Parshall, 1996; Clarizio & Halgren, 1993; Daley & Carlson, 2009; SEELS, 2005; Walker et al., 1988). More than two-thirds of the elementary school children in the SEELS study who were declassified from special education between 2000 and 2002 were identified as SLI (SEELS, 2005). Carlson and Parshall (1996) found that up to age 12, children with SLI were the most likely to be declassified. However, at 13 years of age children with SLI were declassified in numbers approximately equal to children with LD and from age 14 on children with LD were more likely to be declassified from special education than children with SLI (Carlson & Parshall, 1996).

Many children with SLI are declassified in late elementary school causing the number of children being served under the category of SLI to decrease dramatically by junior high. The decrease in the number of children categorized as SLI in late elementary school and junior high results in fewer children with SLI being declassified, which in turn lowers the overall rate of declassification. Every year from 1995 and 2004, between 910,783 and 990,493 children ages 6-11 years old or approximately 35% of the special education population in 6-11 year old age group were provided special education services under the SLI designation (U.S. Department of Education, 2009). In contrast, during the same 10 year period, an average of 130,685 children ages 12 to 17 years old (5% of special education children in the 12-17 age range) and 58,638 children ages 14 to 21 years old (3% of the special education children in the 14-21 age range) were served under the category of SLI (U.S. Department of Education, 2009).

The number of children with LD declassified over the 10 year period from 1995 to 2004 who were 6-11 years old averaged just over one million compared to an average

of 1.6 million LD student ages 12-17 declassified (U.S. Department of Education, 2011). Likewise, the percentage of declassified children who had received special education services under the category of LD increased from 38% in the 6 to 11 year-old range to 60% in the 12 to 17 year-old range. Children with ED and intellectual disabilities also were more likely to be declassified in secondary school. Children with ED constitute an average of 5.5% (151,839) and children with intellectual disabilities an average of 8% (223,131) of 6 to 11 year olds declassified from special education. In comparison, children with ED account for approximately 11% (316,705) and children with intellectual disabilities account for approximately 12% (313,372) of 12 to 17 year olds declassified from special education (U.S. Department of Education, 2011).

The special education classifications under which children were receiving services at the time they were declassified is the most commonly reported data in declassification studies. Furthermore, there is a large amount of agreement between studies as to which disabilities a child is most likely to be identified as having at the time of declassification. During elementary school children with SLI are most likely to be declassified. In junior high and high school the trend shifts from SLI to LD. At all ages, a child who is declassified is more likely to have received services under one of the judgmental disability categories (e.g., LD, ED, SLI, OHI) than a physical disability (e.g., hearing or visual impairment) or a cognitive disability (e.g., autism or intellectual disability). Research on the disability categories of children who are declassified is well-established and consistent enough, that I do not believe it is necessary for my study to reexamine this area. Therefore, my study examined all students who exit special education as a group, instead of examining children who were declassified from different

disability categories separately, in order to examine issues related to students who exit special education which have not been examined before (e.g., the trend of declassified students' reading and mathematics scores compared to their continually classified and never classified peers).

Demographic characteristics. Demographic characteristics including gender and race/ethnicity were reported by several studies (e.g. Carlson et al., 2008; SEELS, 2005). According to the SEELS data the probability of a student being declassified from special education did not vary significantly according to a student's grade level, race/ethnicity, or gender (SEELS, 2005). Declassification rates in the PEELS study also did not differ significantly by gender or race/ethnicity (Carlson et al., 2008). However, children declassified in elementary schools were more likely to live in families with a combined household income of \$50,000 a year or more (SEELS, 2005). In contrast, when the relationship between family income and declassification status was examined in the PEELS data set, there were no statistically significant differences in declassification by family income for preschoolers (Carlson et al., 2008). Future studies need to examine the demographic characteristics of children who exit special education including gender, race/ethnicity, and SES, to help develop a better description this population of students.

Predictive factors. Several studies went beyond the examination of descriptive statistics to examine inferential statistics or predictive factors of declassification. Ruedel (2008) used HGLM to determine which student and school-level demographic, economic, academic, and behavioral variables in the ECLS-K data set, as measured in the third grade would be the strongest predictors of whether or not a child would still be receiving services in fifth grade. Results of her analysis indicated that children from higher-SES

backgrounds were more likely to stop receiving special education services between third and fifth grade than children from lower-SES backgrounds, and children with higher mathematics achievement scores were more likely to be declassified at any age. Walker et al. (1988) found that children with SLI or LD were more likely to be declassified if they only received related services or were in late elementary school (i.e., grades 4-6). Using multivariate logistic regression Daley and Carlson (2009) found several variables to be significant predictors of declassification. These included being female, classified as SLI, having no or few behavior problems, and scoring well on the Peabody Picture Vocabulary Test. Carlson et al. (2009) found that children who were declassified from special education at some point during the PEELS study had higher mean scores on an inventory of social skills. Further, males who were declassified scored lower on a scale measuring rates of problem behaviors than males who remained in special education throughout the study.

When Ruedel (2008) examined school-level factors, she found that children who attended schools with fewer minority children were less likely to be declassified, and children who attended economically disadvantaged schools were more likely to be declassified than children who attended wealthier schools. Similarly, analysis of the PEELS data set found that low-wealth districts have higher rates of declassification and children are more likely to be declassified in districts with small preschool special education programs (Daley & Carlson, 2009). The research on factors that predict which children will exit from special education is still limited. My study provides needed research on the academic, behavioral, and demographic factors that predict declassification.

Methodological considerations. The 15 studies that were reviewed shared some strengths and weaknesses. All were primarily descriptive and utilized either existing data or collected data through surveys, interviews, and questionnaires. Thus, while they do generalize to national, state, and district populations the data collection methods varied and there was often opportunity for measurement error. In addition, the data for 9 of the 15 studies were collected a decade or more ago (Bielinski & Ysseldyke, 2000; Carlson & Parshall, 1996; Carlson & Reavey, 2000; Clarizio & Halgren, 1993; Halgren & Clarizio, 1993; Kane & Johnson, 1995; New Jersey State Department of Education, Division of Special Education, 1992; Walker et al., 1988; Ysseldyke & Bielinski, 2002). Trends in special education, such as the inclusion movement, may have altered declassification rates over the past 10 to 20 years making the results of some of these studies dated.

The studies reviewed also defined the factors they examined related to children leaving special education differently. Many of the studies used the term “declassified” to describe children who had stopped receiving special education services. However, only one study (Carlson & Parshall, 1996) parceled out children’s reasons for leaving special education to separate the children who had been declassified and returned to general education from children who had left the special education system because they had dropped out of school, moved out of the district, graduated, were expelled, hospitalized or dead, or could not be located for other reasons. The remaining studies considered children to be declassified or to have discontinued special education services if their school records no longer reported them being in special education (e.g., Clarizio & Halgren, 1993) or an interview or survey question about whether the student had stopped receiving special education services posed to the child’s parents or teacher was answered

affirmatively (e.g., Innocenti, 2005, SEELS, 2005). Other variables examined in relation to special education status by many of the studies were either not defined or varied from one study to another. For example, the percentage of children from different racial/ethnic groups was examined by many of the studies. However, some studies simply reported that they gathered information on ethnicity but did not state which ethnicities were included in their study (e.g., Carlson & Parshall, 1996) and other studies only examined certain ethnicities. For example, Walker et al. (1988) examined the percent of children who were Black, White, Hispanic, or other, while Halgren and Clarizio (1993) only included Whites and Native Americans in their study. Another variable, which was examined by multiple studies but was defined differently by each, was a measure of SES, poverty status, or household income. Ruedel (2008) used the most comprehensive measure of SES: a standardized composite supplied by NCES which reflected parents' income, educational attainment, and occupational status at the time of children's entry into kindergarten. In comparison, SEELS (2005) reported several ranges of household income (e.g., \$25,001-\$50,000) and Walker et al. reported poverty status based on each family's size and their income relative to the poverty line. Thus, the dependent and independent variables vary widely across studies both in terms of how they are defined and the variables examined.

Chapter Summary

The IDEA's evaluation, reevaluation, EIS/RTI, and IEP provisions help ensure that each student with a disability receives an appropriate education and determine when children no longer qualify as disabled and should stop receiving special education and related services. In recent years, increased attention has been paid to children who stop

receiving special education. The U.S. Department of Education started requiring states to report how many secondary school-aged children “transferred to regular education” every year beginning in the 1990s, and the number of studies reporting on children who stop receiving special education services has increased consistently every decade since the 1980s. However, the literature base on children who stop receiving special education services remains limited. The 15 studies reviewed in this paper provide a glimpse into the characteristics of children who stop receiving special education services, their disability categories, when they are most likely to leave special education, and how many return to special education. However, there is still much more which we do not know. The most commonly reported data in the reviewed studies were overall declassification rates and the disability categories, which represented the highest numbers of children exiting special education. There is limited information on other characteristics of children who exit special education such as race/ethnicity, SES, gender, academic achievement, or behavior measures, and how these children compare to children who remain in special education or general education on factors that predict exiting. In addition, the literature on children who are declassified from special education has yet to compare the achievement scores of declassified children to children who have never received special education services and to children who have remained in special education. To better understand and support students who exit special education, studies that examine the characteristics of children who exit special education, the factors that predict exiting from special education, and how declassified children fare after they stop receiving IEP services are needed.

Chapter III: Methodology

In this chapter, I describe the dataset and the procedures that I used to identify my analytical samples and conduct my analyses. First, I describe the ECLS-K including the purpose of the study, the study design, sampling methods, and instrumentation. Second, I describe the variables I used in my analyses. Finally, I provide an overview of the methods I used to answer my research questions, how I handled missing data, and the statistical analyses I used.

The ECLS-K Dataset

The ECLS-K was funded by the U.S. Department of Education's National Center for Education Statistics (NCES) to collect data on the early school experiences of a nationally representative sample of children from the time they entered kindergarten through their eighth grade year. The school experiences focused on in the ECLS-K included the services children received, their transitions both from kindergarten to elementary school and elementary school to junior high, and their performance in elementary school and early secondary school. The ECLS-K sample included 21,260² children attending kindergarten in over 1,200 public and private schools. In addition to collecting data on the participating children, data were collected on their parents and family, teachers, service providers, and school administrators.

² All sample sizes in this study have been rounded to the nearest 10.

Data collection began in the 1998-1999 school year. Data were collected seven times between the fall of 1998 and the spring of 2007 when the majority of children participating in the ECLS-K were in eighth grade: in the fall and spring of kindergarten (i.e., fall 1998 and spring 1999), the fall and the spring of their first grade year (i.e., fall 1999 and spring 2000), third grade year (i.e., spring 2002), fifth grade year (i.e., spring 2004), and eighth grade year (i.e., spring 2007). The sample was freshened in the spring of 2000 during the children's first grade year to sustain a nationally representative sample. As a result, the data collected on the children, classrooms, and teachers in kindergarten (1998-1999) or first grade (1999-2000) can be generalized to the entire U.S. population of children attending kindergarten in 1998 and children attending first grade in 1999. The data were not freshened prior to the 2002, 2004, or 2007 data collections. The ECLS-K data collected in the children's third grade, fifth grade, and eighth grade years are not nationally representative of children in the same grades. Instead, the data represent children who were in kindergarten in 1998, in first grade in 1999 and who were followed, when possible, through third, fifth, and eighth grade.

ECLS-K research design and sampling strategy. To obtain a nationally representative sample of children attending kindergarten in 1998-99, researchers used a multistage probability sample design. The primary sampling units (PSUs) used in the base year were geographic areas consisting of counties or groups of counties, the second-stage units were schools selected from within the sampled PSUs, and finally, the third-stage units were children randomly selected from within schools. This process resulted in a sample of approximately 21,200 kindergarteners that is representative of the national population of children in kindergarten in 1998-1999. Asian and Pacific Islander children,

children attending private schools, and private schools were over-sampled. However, children with disabilities were not over-sampled. Therefore, the sample sizes of children within the 14 federally defined disability categories are not large enough to conduct certain statistical analyses and may not be representative of all disability categories. However, the number of children entering special education was greater than the number of children exiting special education between kindergarten and eighth grade, resulting in the sample of children receiving special education and related services increasing in both number and in the proportion of the sample population during the course of the study.

ECLS-K instrumentation. Data for the ECLS-K were collected from children, parents, teachers, and school administrators. Data collection instruments employed during each wave of data collection for the ECLS-K included direct and indirect child assessments, a self-description questionnaire, parent interviews, teacher questionnaires, school administrator questionnaires, school records abstracts, and a school facilities checklist. In addition, several instruments were developed and administered for special studies, including: Head Start verification, the Salary and Benefits Survey, and the Food Consumption Survey. I did not examine any variables developed from instruments administered for special studies.

ECLS-K data were collected in seven waves over the course of nine years, from 1998 through 2007. In the following sections, I first describe the training of the data collection staff who worked on the ECLS-K. Then I provide a brief description of each of the questionnaires used in the ECLS-K data collection.

Data collection staff. ECLS-K data collection teams, consisting of one field supervisor and three assessors, administered the various instruments. The teams were

responsible for all data collection activities in their designated areas including: conducting the direct child assessments and parent interviews, distributing and collecting questionnaires for school administrators and general and special education teachers, completing school facilities checklists, and collecting school records abstracts. Field supervisors and assessors attended several training sessions to help ensure accurate data collection. A thorough discussion of the training and certification requirements of the ECLS-K data collection teams is provided in Appendix B.

Descriptions of the instruments used to collect data on the variables I examined in my study are provided in the following sections. Table 1 displays the waves of data collection for each of the instruments in the ECLS-K.

Direct child assessments. Direct child assessments were administered in all seven waves of data collection. Prior to the assessment, field supervisors determined student's home language through a school records check. When information on children's home language was not included in their school records, field staff gathered information on the languages spoken in children's homes from their teachers. All children whose home language was not English completed the Oral Development Scale (OLDS). In the fall of 1998, 15% of the sampled kindergarteners were screened using the OLDS. Children with sufficiently high scores on the OLDS took the Standard English version of the ECLS-K direct assessment. Children who spoke Spanish at home and failed to meet the established cutoff score on the English OLDS were administered the Spanish OLDS, the ECLS-K mathematics assessment translated into Spanish, and a psychomotor assessment conducted in Spanish. Children who spoke a language other than Spanish or English at home and failed to meet the required OLDS score did not

participate in any of the direct child assessments other than recording of their height and weight. Over 60% of children who spoke a language other than English or Spanish at home scored at or above the cut score on the OLDS, as did 42% of children who spoke Spanish at home.

Field supervisors were also responsible for determining which children receiving services or accommodations under an IEP or a 504 Plan could participate in the direct child assessment with accommodations and which would be excluded from the direct assessment portion of the ECLS-K. The ECLS-K permitted environmental accommodations typically used by children (e.g. a quiet room, special lighting, or an adaptive chair), temporal accommodations (e.g. scheduling testing during the time of day that was best for the student or splitting tests into shorter segments), assistive technology/devices (e.g. hearing aids, canes, or voice synthesizers), and personal attendants or health care aides, provided they did not provide answers, hints, or prompts to the children during the assessment. The ECLS-K was not provided in Braille or large-print format nor was it administered in sign-language. Children who required Braille, enlarged print, or sign-language as accommodations were excluded from the direct assessment portion of the ECLS-K; however, they remained in the sample and all other data were collected for them. Less than one percent of children who participated in the ECLS-K assessment in the fall of kindergarten were provided with an accommodation (n=182) or excluded from the direct assessment due to having a disability that could not be accommodated (n=88).

The direct assessment included assessments in the following areas: (a) the language screener (OLDS), (b) reading (language and literacy), (c) general knowledge

(science and social studies), (d) mathematical thinking, (e) psychomotor abilities, and (f) height and weight. The direct cognitive assessment children received in kindergarten and first grade included reading, mathematics, and general knowledge items. In the third, fifth, and eighth grades waves of data collection the general knowledge section was replaced with a science assessment. A 12 to 20 item routing test was given in each subject area to determine the appropriate level of the assessment to administer the child. In the following sections, I provide an overview of the skills and knowledge assessed by the ECLS-K direct child assessments in reading and mathematics. An overview of the general knowledge/science direct child assessment, the school administrator questionnaire, the student records abstract file, and other ECLS-K data collection instruments that were not used in this study can be found in Appendix B.

Reading. The reading assessment included questions designed to measure a variety of skills in the areas of language and literacy, beginning with basic literacy skills (print familiarity, letter recognition, beginning and ending sounds, rhyming sounds, and word recognition), and followed by sections on receptive vocabulary and comprehension (listening comprehension and words in context). Reading comprehension was assessed during each wave of ECLS-K data collection. The skills assessed in reading comprehension section ranged from listening comprehension in Kindergarten to the ability to critically evaluate prose, understand the effect of literary devices, and interpret the author's intentions in eighth grade. Reading proficiency levels from kindergarten through eighth grade included (a) Letter Knowledge—identifying upper- and lower-case letters; (b) Beginning Sounds—associating letters with the sounds they make at the beginning of words; (c) Ending Sounds—associating letters with the sounds they make at

the end of words; (d) recognizing common “sight” words; (e) reading words in context; (f) Literal Inference—making inferences using key word clues that were directly stated in the text; (g) Extrapolation—identifying information used to make inferences; (h) Evaluation—demonstrating understanding of author’s intention and making connections between a problem in the text and personal background knowledge or similar problems in real life; (i) comprehension and evaluation of nonfiction and (j) evaluating complex syntax and understanding high-level vocabulary.

Mathematics. The kindergarten through eighth-grade mathematics assessments were designed to measure skills in the following content areas: number sense, properties, and operations; measurement; geometry and spatial sense; data analysis, statistics, and probability; and patterns, algebra, and functions. In the later waves of data collection, some of the items drew upon knowledge from more than one mathematical skill set. For example, an item may have required a student to apply knowledge about geometry, measurement, and number operations to answer a question correctly. The kindergarten through eighth-grade mathematics proficiency levels include (a) identifying one-digit numbers, recognizing geometric shapes, and counting up to 10 objects; (b) counting beyond 10, recognizing a sequence of patterns, and using nonstandard units of length to compare the size of objects; (c) reading two-digit numbers, recognizing the next number in a sequence, identifying the ordinal position of an object, and solving a simple word problem; (d) solving simple addition and subtraction problems; (e) solving simple multiplication and division problems and recognizing more complex number patterns; (f) demonstrating understanding of place value in integers to hundreds’ place; and (g) solving word problems involving measurement, rate, fractions, or area and volume.

Mathematics proficiency levels remained the same between fifth and eighth grade because the fifth grade assessment was determined to be sufficiently “difficult” to allow for the demonstration of growth in the higher proficiency levels at eighth grade.

Other direct student assessments. In addition to receiving the direct cognitive assessments, kindergarteners received motor assessments, third, fifth, and eighth graders received socioemotional assessments, and children in all seven rounds of ECLS-K data collection had their height and weight measured and recorded (height to the nearest quarter inch, weight to the nearest half-pound). Researchers assessed both fine and gross motor skills through a variety of activities such as manipulating blocks, drawing, standing on one foot and skipping. Beginning in the third grade, researchers asked children to complete questionnaires on their perceptions of their abilities and achievement, their interest in and enjoyment of reading, mathematics, and other school subjects, their peer relationships, and their own problem behaviors. The eighth grade questionnaire, also asked children about their school experiences, their activities, their perceptions of themselves, and their weight, diet, and level of exercise.

Indirect assessments. ECLS-K researchers used two scales to indirectly assess children’s knowledge, skills, and behaviors: the academic rating scale, completed by the student’s teacher, and the social rating scale, completed by both the student’s teacher and parent. The academic rating scale (ARS) was a rating form that allowed teachers to evaluate children’s knowledge and skills in the domains assessed in the cognitive battery. The ARS was designed to overlap and augment the information obtained through the direct cognitive assessment by measuring both the process and the products of children’s academic learning, as compared to the direct cognitive assessment which only measured

the products of student achievement. The ARS included items designed to measure the process of children's learning and thinking in skills areas that could not be directly assessed due to constraints on time, space, and cost such as use of computers, strategies employed in solving math problems or investigating scientific phenomena, oral expression, and writing skills. Teachers rated each student in comparison to their peers on a five point scale ranging from "Outstanding (5)" to "Poor (1)" in the areas of reading/English, mathematics, general knowledge (kindergarten and first grade), science (third, fifth and eighth grade) and social studies (third and fifth grade).

In the kindergarten and first grade waves of data collection, the social rating scale (SRS), a scale designed to measure the social/emotional development of children, was completed by both the children's teachers and parents. Items on the social rating scale covered five areas of children's socioemotional development in home and at school. The teacher version of the SRS consisted of items pertaining to children's approaches to learning, self-control, interpersonal skills, and externalizing and internalizing problem behaviors. The parent version of the SRS examined similar factors to the teacher SRS but items were geared to the home environment. The five scales on the parent SRS were: approaches to learning, self-control, social interaction, impulsive/overactive, and sad/lonely. In the third and fifth grade rounds of data collection, children were asked to complete a self-description questionnaire based on a published instrument developed for children of their age level that explored children's perceptions of their own social skills, interest in different academic subjects, self-concept and control over various aspects of their lives. In the eighth grade round of data collection, another self-description questionnaire was developed based on instruments designed for adolescents.

Table 1

Data collection timeline by instrument

	Fall-K	Spring-K	Fall-1st	Spring-1st	Spring-3rd	Spring-5th	Spring-8th
Direct and Indirect Child Assessments	X	X	X	X	X	X	X
Parent Interview	X	X	X	X	X	X	X
Teacher Survey Part A	X	X	X	X	X		
Teacher Survey Part B	X	X	X	X	X		
Teacher Survey Part C	X	X	X	X	X		
Teacher Survey						X	X
Reading Teacher Survey						X	X
Mathematics Teacher Survey						X	X
Science Teacher Survey						X	X
Special Education Teacher Survey		X		X	X	X	X
Adaptive Behavior Scale		X		X			
Student Self-description Survey					X	X	X
Food Consumption Survey						X	
Student Record Abstract		X		X	X	X	
School Fact Sheet					X		
School Facilities Checklist		X		X	X	X	
Salary and Benefits Survey		X					
Head Start Verification		X					

Parent interviews. In all seven waves of the ECLS-K, the parent or guardian of each child was asked to complete a computer-assisted interview (CAI). During the interview, the parent was asked about family structure, parental involvement in school, and the child's health, schooling, home environment and cognitive activities (e.g., literacy activities, computer use, homework, and family routines). In addition, the parent/guardian was asked questions about their household; the parents' health, education, discipline practices, marital relationship, and expectations for their child; the family's resources, and family's background. The interviews were conducted in English and Spanish by bilingual interviewers, and interpreters were provided for parents who spoke other languages.

In the sixth wave of data collection (i.e., the 5th grade round), new construct areas were added to the parent interview. These new construct areas included a series of questions about when the child was diagnosed if the child had a disability related to learning or paying attention (e.g., LD, ADHD, autism, or developmental delay) or related to vision, hearing, or emotional problems. In addition, questions about the use of cochlear implants and medication for ADD or ADHD were inserted when parents reported their child had a cochlear implant or a disability related to attention. When parents reported their child was no longer receiving special education services, therapy, or any other program for children with disabilities they had reported their child received in previous school years, a question was asked about when the child's use of the program or services ended, and a second question was asked about why the child no longer participated in such services.

Teacher questionnaire. Participating children's general and special education teachers were asked to complete a self-administered survey about their instructional practices, the characteristics of children in their classroom, their own professional background, and the participating child's academic and social skills. In the first five rounds of ECLS-K data collection (i.e., from kindergarten through third grade), the general education teacher questionnaire was sent to the teacher who taught the sampled child for the majority of the school day. In fifth and eighth grades, sampled children's reading/English teacher and either a science or mathematics teacher were asked to complete the survey.

Field supervisors determined the primary special education service provider for each sampled child who had an IEP from a list of all special education and related services staff working with the child. The ECLS-K User's Manual defines a child's primary special education teacher/service provider as: (a) the teacher who managed the child's IEP; (b) the teacher who spent the most amount of time providing special education services to the child; (c) the teacher who was most knowledgeable about the child's special needs and equipment (Tourangeau, Nord, Lê, Sorongon, & Najarian, 2009). Each special education teacher of one or more sampled children had to complete a questionnaire about his or her professional background and experience. In addition, for each sampled child for whom the teacher was the primary special education service provider, the teacher had to complete a child focused questionnaire covering the following topics: (a) disability category; (b) IEP goals for the school year; (c) extent of services; (d) types of services provided for the year; (e) primary placement; (f) teaching practices, methods, and materials; (g) assistive technologies used by the child; (h) general

education goals, expectations, and participation in school-wide assessments; (i) collaboration/communication with the child's general education teacher; (j) frequency of communicating with the child's parents; (k) child receipt of formal evaluations in the past year; (l) when the child first had the IEP; (m) likelihood that the child would have an IEP next school year; (n) percentage of IEP goals that were met during this school year; and (o) receipt of special education or related services because of AD/HD.

Adaptive behavior scale. If a sampled child was excluded from the direct assessment due to a disability, the child's primary special education teacher was responsible for completing the Adaptive Behavior Scale. Children were excluded from the direct assessment if they needed assessments administered in Braille, enlarged print, or sign language, or if their IEP prohibited them from participating in standardized assessments. The Adaptive Behavior Scale questionnaire asked the primary special education provider to rate the sampled child in three domains: independent functioning, language development, and numbers and time.

Variables. In order to answer the research questions in this study, I used variables from the parent interviews, teacher questionnaire, and the direct child assessments from the five spring waves of data collection. In this section, I provide an overview of the child and family-level variables used in the analyses. First, I provide a description of the variable indicating each child's special education status.

Special education status. My analyses included a dichotomous variable indicating whether or not a student received special education services (FxSPECS). Multiple variables within the ECLS-K identify children as having disabilities or receiving special education services. Several variables denoting whether a child had a disability or

received special education services were based on information contained in questionnaires completed by a child's parent, teacher, or school's staff. However, I chose to use the composite variable FxSPECS, which was based on information collected by the ECLS-K field management supervisors. Data collected by school staff from student records reported higher numbers of children with IEPs each year than the numbers reported by the ECLS-K field management supervisors; however, it is possible that children's school records were not updated every year and some children whose records reported them as being in special education had been declassified. In addition, since the staff responsible for searching student records differed from school to school and school staff were not trained to conduct ECLS-K data collection, the data obtained by school staff are not as reliable as the data reported by the field management supervisors.

I used the information collected by the field management supervisors and entered into the ECLS-K dataset as the variable FxSPECS to answer all three of my research questions. In the ECLS-K dataset, FxSPECS is a dichotomous variable (1 = child received special education services; 2 = child did not receive special education services). I recoded this variable into a dummy variable (0 = child received special education services; 1 = child did not receive special education services).

I also used the FxSPECS variables from the five waves of data collection I considered in my study to create a variable denoting all combinations of years a child could have received special education services, from no special education, to special education in a single wave only, to various combinations of two, three, or four waves, to receiving special education for all five data points. Table 2 shows all the combinations considered for this variable and their relative frequencies.

Table 2

Special Education Classification/Declassification Status K thru 8

		Frequency	Percent	Valid %	Cumulative %
Valid	SpEd All Years	100	.4	.9	.9
	No SpEd	7600	35.4	84.4	85.2
	K Only	100	.4	1.0	86.2
	1st Only	100	.4	.9	87.1
	3rd Only	100	.5	1.2	88.3
	5th Only	100	.5	1.3	89.6
	8th Only	200	.9	2.1	90.0
	K & 1st	50	.2	.4	92.2
	K & 3	<50	.1	.2	92.3
	K & 5	<50	.0	.0	92.4
	K & 8	<50	.0	.0	92.4
	1 & 3	<50	.1	.2	92.6
	1 & 5	<50	.0	.0	92.7
	1 & 8	<50	.0	.1	92.7
	3 & 5	100	.4	1.0	93.7
	3 & 8	50	.1	.4	94.1
	5 & 8	150	.7	1.7	95.8
	K, 1 & 3	<50	.1	.3	96.1
	K, 1 & 5	<50	.0	.1	96.1
	K, 1 & 8	<50	.0	.0	96.2
	K, 3 & 5	<50	.0	.1	96.3
	K, 3 & 8	<50	.0	.0	96.3
	K, 5 & 8	<50	.0	.1	96.4
	1, 3 & 5	50	.1	.3	96.6
	1, 3 & 8	<50	.0	.1	96.7
	1, 5 & 8	<50	.1	.2	96.9
	3, 5 & 8	150	.7	1.6	98.5
	K, 1, 3, & 5	<50	.1	.2	98.7
	K, 1, 3, & 8	<50	.1	.1	98.8
	K, 1, 5, & 8	<50	.0	.1	98.9
	K, 3, 5, & 8	<50	.1	.2	99.1
	1, 3, 5, & 8	100	.4	.9	100.0
	Total	9000	42.0	100.0	
	Missing	12400	58.0		
Total		21400	100.0		

¹ Per US Department of Education privacy rules, N's are rounded to the nearest 50.

Note that these are combinations of data waves and do not necessarily indicate the special education status of students for *every* year between kindergarten and the eighth grade. For example, 200 students were identified as receiving special education services for the first time in the eighth grade; nonetheless, it is possible that these students received special education services in a non-wave year (i.e., the second, fourth, sixth or seventh grade). Although the five years of data included in ECLS-K are sufficient to capture the special education status of most students in kindergarten through the eighth grade, it is possible that some students will be “misclassified” in the analyses.

Using the various possibilities of special education placement encompassed in that variable, I developed several dummy coded variables used in conducting the missing data analyses and answering my research questions: (a) Received Special Education Services between Kindergarten and 8th Grade; (b) Identified for Special Education Services between K and 3rd Grade, [Classified Early]; (c) Identified for Special Education Services between 4th and 8th Grade, [Classified Late]; (d) Left Special Education between Kindergarten and 3rd Grade; and (e) Reclassified [Classified twice].

Gender. I used the ECLS-K gender composite variable derived from the child’s gender indicated in the parent interview, the child report, and the field management system (FMS). When discrepancies were found in the reports of a child’s gender across sources in a particular year, the most frequently reported gender from the three data sources across all rounds of data collection was used. ECLS-K researchers derived the gender composite variable primarily from information obtained in the parent interview. In the ECLS-K dataset, gender is a dichotomous variable (male = 1; female = 2). I recoded this variable into a dummy variable (male = 0; female = 1).

Race/ethnicity. A composite variable (RxRACE) denoting a child's race/ethnicity based on the parent reported data or if that was missing on data collected in the FMS was provided in the ECLS-K. I recoded the variable from eight categories (White, non-Hispanic; Black or African American, non-Hispanic; Hispanic, race specified; Hispanic, no race specified; Asian; Native Hawaiian or other Pacific Islander; American Indian or Alaska Native; and more than one race specified, non-Hispanic) into four (Black or African American, Hispanic, White, and Other). I collapsed the two categories of Hispanic, race specified and Hispanic, no race specified into one category (i.e., Hispanic), and I combined the categories of Asian, Native Hawaiian or other Pacific Islander; American Indian or Alaska Native, and more than one race specified, non-Hispanic into the category Other. For the regression models, I dummy coded the recoded categories for this variable and used White as the reference group in all analyses.

Retained in grade. The ECLS-K contains a variable for each wave of data collection, which denotes whether a child was in the expected grade for that wave of data collection or behind or ahead of the majority of the 1998 kindergarten cohort. I used this variable from each wave first through eighth to create a variable denoting students who were retained in grade once or more. I dummy coded the variable (never retained = 0; retained once or more = 1).

Student mobility/changed school by 5th grade. I created this variable from an ECLS-K variable that denoted whether or not a child had changed schools between waves of data collection. I originally looked at the increase in number of students who had changed schools between each wave of data collection separately. I found that student mobility increased an approximately equivalent amount between each wave until

the wave between fifth and eighth grade, when it increased three-fold more than it had previously due to the number of students leaving elementary schools for middle schools and junior highs. Therefore, when I created a dummy-coded variable for whether or not a child had changed schools, I only examined school change up to fifth grade because I was primarily interested in mobility associated with students moving to a different neighborhood or “non-structured” school change.

SES. In the ECLS-K dataset, SES is a composite variable computed using data from the parent interview regarding parents’ levels of education, occupations, and household income. The SES variable I used is a continuous variable.

Region. Geographic region was obtained from the school demographic information in the sampling frame. Children’s schools were in one of four regions: Northeast (CT, ME, MA, NH, RI, VT, NJ, NY, and PA); Midwest (IL, IN, MI, OH, WI, IA, KS, MN, MO, NE, ND, SD); South (DE, DC, FL, GA, MD, NC, SC, VA, WV, AL, KY, MS, TN, AR, LA, OK, TX); and West (AZ, CO, ID, MT, NV, NM, UT, WY, AK, CA, HA, OR, WA).

School type. School type, either Public or Private, was included in the school fact sheet, which was completed by the school administrator for the first two waves of data collection and by school staff for the remaining three waves of data collection.

Urbanicity. ECLS-K staff designated one of seven levels of urbanicity to the schools children attended using the following guidelines: a Large city was a “central city of Consolidated Metropolitan Statistical Area (CMSA) with a population greater than or equal to 250,000;” a Mid- size city was a “central city of a CMSA or Metropolitan Statistical Area (MSA) with a population less than 250,000;” a Large suburb or the urban

fringe of large city was “any incorporated place, Census Designated Place, or nonplace territory within a CMSA or MSA of a large city and defined as urban by the U.S. Census Bureau;” a Mid-size suburb or the urban fringe of mid-size city was “any incorporated place, Census Designated Place, or nonplace territory within a CMSA or MSA of a mid-size city and defined as urban by the U.S. Census Bureau;” a Large town was “an incorporated place or Census Designated Place with a population greater than or equal to 25,000 and located outside a CMSA or MSA;” a Small town was an “incorporated place or Census Designated Place with a pop. less than 25,000 and greater than 2,500 - located outside a CMSA or MSA;” and finally an area was designated Rural if it was “any incorporated place, Census Designated Place, or nonplace territory designated as rural by the U.S. Census Bureau” (p. 275, National Center for Education Statistics, 2004). I consolidated these seven categories into 3 categories of roughly equal size: Urban, which consisted of the Large and Mid-size city categories; Suburban, which consisted of the Large and Mid-size suburb categories; and, Rural, which was made up of the two sizes of towns and the Rural category.

Behavior measures. To assess children’s social skills ECLS-K researchers adapted the Social Skills Rating Scale developed by Gresham and Elliott (1990). Social skill areas assessed by the ECLS-K included approaches to learning, self-control, interpersonal skills, externalizing and internalizing problem behaviors, and peer relations. A series of items resulting in a composite score ranging from 1 = never to 4 = very often were used to measure each aspect of behavior. I examined two categorical variables, the approaches to learning and externalizing problem behaviors composite scores, in my

study. I used both approaches to learning and externalizing problem behaviors as independent variables to answer my research questions.

The approaches to learning variable accesses a variety of behaviors related to the ease with which children can benefit from the learning environment including attentiveness, task persistence, eagerness to learn, learning independence, flexibility, and organization. ECLS-K staff have recommended the approaches to learning variable as the behavior variable with the most variance and as the best variable to use in terms of school performance (Ruedel, 2008). I examined the externalizing problem behaviors variable, in addition to the approaches to learning variable, because it reflects the frequency of children's behaviors that may interfere with their learning and their ability to interact positively with teachers and peers (i.e., the frequency with which a child argues, fights, gets angry, acts impulsively, disturbs ongoing activities, and talks during quiet study time). These behaviors are often associated with referral to special education, and I wanted to examine if they were also associated with a reduced likelihood of exiting special education.

Academic achievement. Reading and mathematics achievement were measured during the direct cognitive assessment of children. Items used to assess children's reading and mathematics skills were either borrowed from assessments used in other large scale studies of similar-aged children (e.g., National Assessment of Educational Progress, the National Education Longitudinal Study of 1988) or developed by the ECLS-K staff based on their review of curricula and standards for each grade level. ECLS-K researchers piloted all the direct cognitive assessments and evaluated their psychometric properties.

Administration of the direct cognitive assessment began with a 10 to 20 item routing test used to determine the appropriate level of assessment for each student for the second-stage form. Questions of similar format (e.g. multiple choice or open-ended) were grouped together in order of increasing difficulty. On average, children took between 50 and 70 minutes to complete the entire direct cognitive assessment. Broad-based scores based on the full set of direct cognitive assessment items were calculated using Item Response Theory (IRT) procedures. The use of IRT procedures made it possible to calculate scores that could be compared regardless of which second-stage form of the assessment a child took. IRT places each child on a continuous ability scale based on the child's pattern of right, wrong, and omitted responses and the difficulty, discriminating ability, and "guess-ability" of each item. A common scale was established from the items in the routing test, plus a core set of items was shared among the different second-stage forms. Using this scale it is possible to estimate the score the child would have achieved if all of the items in all of the test forms were administered. In my study, I used continuous IRT scores for mathematics and reading.

Methods of Analysis

This portion of the Chapter deals with the procedures I used to answer my research questions. To manage data, create variables, and answer my research questions, I used SPSS (originally, Statistical Package for the Social Sciences) 19.0 (SPSS Inc., 2011). I begin with a discussion of weighting methods and how I dealt with missing data.

Sampling weights. To generalize from ECLS-K sample data to the U.S. national population appropriate weighting is essential. Weights adjust estimates for instrument

non-response across waves of data collection and for differential selection probabilities, (e.g., due to oversampling of private schools, and Asian/Pacific Islander children).

Weights are required for estimates to be nationally representative of the target population.

Because response rates in the ECLS-K varied across instruments (i.e., Parent Interview, Teacher Questionnaires, and direct-child assessments) and across waves of data collection, weights were created for each instrument within each wave of data collection. In addition, weights were created for analyses using data from more than one instrument and analyses using data across waves. My analyses incorporated data from different instruments, as well as from across waves of data collection. Therefore, I used weights designed for analyses that used data from the parent interviews, teacher questionnaires, and child files from Waves 2 through 7 of data collection (C2_7FP0), or spring of kindergarten through spring of eighth grade.

Missing data. A primary concern with survey data and longitudinal research is missing data. Despite the efforts of ECLS-K staff to limit the amount of missing data through imputation and other methods, there are still missing data in the ECLS-K data set. McKnight, McKnight, Sidani, and Figueredo (2007) report three broad sources of missing data problems: missing cases (i.e., a participant fails to show up or otherwise fails to provide data for the study); missing variables (i.e., a respondent fails to provide data on some but not all variables); and missing occasions (i.e., a participant is not available for a particular wave of data collection in a longitudinal study). Missing data is often prevalent in large-scale longitudinal studies such as the ECLS-K and can have consequences relating to the quality of researchers' observations, the validity of their

conclusions, and their ability to generalize study results because it affects the study's reliability as well as both the internal and external validity of the results (McKnight et al., 2007).

Researchers address missing data in a variety of ways including (a) deleting cases with missing data, (b) ignoring the problem and simply using all data available, and (c) imputing values calculated from the data for the missing values. I conducted missing data analysis to determine where data are missing in the ECLS-K and the distribution of missing data (i.e., whether or not missing data are randomly distributed). Certain statistical analyses can accommodate missing data better than others. For example, multilevel models of change, such as growth curve modeling, can accommodate missing data at a given time point quite easily. Growth curve analysis allows for variation in the numbers of waves of data collection between participants and individualized collection schedules (Singer & Willet, 2003). Using maximum-likelihood estimates, growth curve modeling uses participants' available data to estimate their individual growth trajectories for the within-child level (i.e., level 1) outcome (Judge & Watson, 2011).

In order to create my analytic sample, I removed all children who did not have a valid C2_7FP0 weight covering the spring of kindergarten wave through the final spring of eighth grade wave of data collection ($n = 12,750$). Excluding these cases left a sample of approximately 8,500 participants who were relevant to my first and third research questions. The baseline sample for my second research question only included students who both had a valid weight and had received special education services at some point between kindergarten and eighth grade. Therefore, to create my second sample I removed an additional 7,050 cases of students who did not receive special education. I

did not consider the 12,750 cases that I excluded for my first research question or the 19,800 cases I excluded for the second research question to be cases with missing data. Rather, I intentionally removed them from my dataset because my research questions only apply to children who participated in all waves of data collection relevant to my research questions. Consequently, I did not include these excluded cases in any of the missing data analyses.

All the statistical analyses I used in my study, regardless of how well they accommodate missing data, are affected by the small sample size of children who received special education services. Because children who received special education services were not over-sampled in the ECLS-K, only approximately 1,400 of the 21,250 children in the ECLS-K ever received special education services and approximately half as many ($n = 750$) stopped receiving special education at some point between kindergarten and eighth grade. I conducted missing data analyses to determine how many children I would lose from my analytic samples using a listwise or casewise treatment of missing data. If I lost a significant percentage of cases because of missing data I would be restricted to an imputation method, such as mean imputation or multiple imputation.

Mean imputation fills in missing data cells with a reasonable estimate for the missing data allowing analyses to be conducted as if no data were missing. In mean imputation, one fills in a single value for each missing value. In contrast, in a multiple imputation (MI) procedure, each missing value is replaced with a set of reasonable possibilities that represent the uncertainty regarding the correct value to impute (Rubin, 1987). Unlike mean imputation, MI does not assume that data are missing completely at

random (MCAR). Assuming data are MCAR is impossible to verify and generally implausible in social science research (Allison, 2002). MI may therefore appear to be the better choice; however, when Ruedel (2008) conducted analyses to see how much more closely aligned the data with MI were to the original ECLS-K data than the data with mean imputation, she found the differences were very slight. The mean imputation data's mean was the same as the mean of the original ECLS-K data. The n of the mean imputation data was increased by exactly the same number as the n of the MI data. Finally, the original data's standard error (SE) and the mean imputed data's SE only differed by one hundredth in precision (i.e. 0.17 vs. 0.16). Ruedel (2008) concluded that MI was more difficult to implement than other methods of dealing with missing data in the ECLS-K but did not decrease the chance of type-one error enough to make it preferable to other methods.

In order to use a data imputation method such as MI or mean imputation I needed to substitute a reasonable estimate for the missing data. I explored using an imputation method with my missing data. However, the majority of the cases missing data were missing the entire parent interview and/or teacher survey for one or more waves of data collection making determining a reasonable value for imputation nearly impossible. Because I could not determine a reasonable estimate for most of the missing data and my percentage of missing data was low (9.1%), I used listwise deletion and deleted all cases with missing data. In order to maximize the amount of data included in my analyses, I used two analytic samples. For both analytic samples, I removed cases that were missing a valid weight for the waves of data collection I was examining (i.e., Spring of kindergarten, first, third, fifth, and eighth grades; $n = 12,750$). For analytic sample one, I

removed all cases that were missing data on whether or not a student had received special education services or not ($n = 750$). This analytic sample ($n = 7,600$) was used in analyses that examined the characteristics of students who received special education and those who did not. For the second analytic sample, I restricted the sample further from those who had a valid kindergarten to eighth grade weight to those who had both a valid weight and had received special education services, then I planned to remove any cases that were missing data on special education status for one or more wave of data collection; however, there were no cases missing data on special education status. This sample ($n = 1,450$) was used in analyses that examined the characteristics of students who remained in special education after their initial eligibility determination and those who exited it.

Because the exclusion of participants may result in a biased sample, I ran a series of analyses to test for differences between the first analytic sample and the cases that were excluded due to missing data. I conducted a series of chi-square analyses for categorical variables and t-tests for continuous variables to test for statistically significant differences on key variables including direct assessment scores and student, family, and district characteristics. In order to evaluate the external validity of my analytic sample, I considered the results of these analyses, as well as the amount of missing data. I discuss the results of these analyses in the next chapter.

Analyses. I conducted four types of analyses to answer my research questions: chi-squares, t-tests, logistic regression, and growth curve analysis. I conducted the first three analyses using the SPSS 19.0 software program (SPSS Inc., 2011) and the growth curve modeling using HLM 6.0 software (Raudenbush, Bryk, Cheong, & Congdon,

2004). My research questions are listed below followed by a description of each part of the analyses.

Research questions. Research question 1. What are the characteristics of children who receive special education services between kindergarten and eighth grade, and those who do not receive special education services between kindergarten and eighth grade? To what extent do the following student and family factors predict whether a student will receive special education or not between kindergarten and eighth grade: race/ethnicity, gender, SES, behavior (i.e., Approaches to Learning and Externalizing Behavior), and reading and mathematics achievement?

Research question 2. What are the characteristics of children who stay in special education after their initial placement and those who stop receiving special education at some point between kindergarten and eighth grade? To what extent do the following demographic, behavioral, and academic factors predict whether a student will exit special education or not between kindergarten and eighth grade: race/ethnicity, gender, SES, behavior (i.e., Approaches to Learning and Externalizing Behavior), receipt of special education services by third grade, and reading and mathematics achievement?

Research question 3. How does growth in reading and mathematics achievement compare between those children who stopped receiving special education between kindergarten and eighth grade, children who remained classified, and those who never received special education (i.e., what are the academic achievement trajectories of different groups)?

Chi-square analyses and t-tests. To answer the first part of research questions 1 and 2, I conducted a series of chi-square analyses for categorical variables and t-tests for

continuous variables to test for statistically significant differences between groups on the following variables: gender, race/ethnicity, region, urbanicity, student mobility, retention in grade, school type, SES, approaches to learning, externalizing behavior, and academic achievement (reading and mathematics). For these analyses, I used analytic sample 1 for question 1 and analytic sample 2 for question 2.

I used chi-square analyses to examine the group difference for all categorical variables including gender, race/ethnicity, region, urbanicity, student mobility, retention in grade, and school type. Using chi-square analyses allowed me to compare two or more groups on a categorical variable by establishing if there is a difference between the observed frequency of an occurrence and the expected frequency (Hinkle, Wiersma, & Jurs, 2003). For these analyses, I considered chi-square statistics with a corresponding p-value of less than .05 statistically significant. Chi-square statistics indicate whether the proportions of participants within a group differ across categories, but they do not indicate which groups or categories are the sources of the differences (Hinkle et al., 2003; Smith, 2010). Therefore, I used standardized residuals to identify the cells that contributed the most significantly to these differences. Standardized residuals of more than ± 1.96 for a specific cell indicate that the cell is a major contributor to the significant chi-square value (Hinkle et al., 2003).

For my continuous variables: SES, behavior (i.e., approaches to learning, and externalizing behavior), and academic achievement (reading and mathematics), I used t-tests to examine group differences. To evaluate the differences between group means in research questions 1 and 2 on the independent variables, I used two-sample independent t-tests.

Logistic regression. I used logistic regression in question 1 to predict whether children would receive special education between kindergarten and eighth grade and in question 2 to predict whether they would exit special education. Logistic regression, like bivariate and multiple regression, deals with the relationship between a dependent variable and one or more independent variables (Huck, 2008); however, logistic regression differs from the other forms of regression in that the dependent variable in a logistic regression is dichotomous in nature. The independent variables in logistic regression can be categorical or continuous. The purpose of logistic regression can be either explanation or, as was the case in my study, prediction.

For question 1, I used classification status (i.e., received special education between kindergarten and 8th grade or not) as my dependent variable. For question 2, I used exit from special education as my dependent variable. My study analyzed the ECLS-K data on student background characteristics (i.e., race/ethnicity, gender, and SES), student-level behavior measures (i.e., externalizing problem behaviors and approaches to learning), and student achievement in reading and mathematics. Using a logistic regression model, each variable's effect on the odds of a student being in special education or exiting special education was estimated. I entered my independent variables in blocks and examined the contribution of each set of variables separately. I entered the independent variables into the equations in a series of three blocks. The first block included reading and mathematics achievement scores. The second block added in the two student behavior measures (i.e., externalizing problem behaviors and approaches to learning). Finally, in the third block, I added in student and family characteristics including (a) the student's gender, (b) the student's race/ethnicity, and (c) the family's

SES. For research question 2, I also included a variable on whether a student had received special education or not by third grade in the final block. Adding the variables in blocks allowed me to determine whether students' academic achievement in early elementary school was a statistically significant predictor of whether a student would receive special education (question 1) or exit from special education by eighth grade (question 2) and, if so, whether or not it remained predictive after controlling for behavior and background characteristics.

Growth curve analysis. I used growth curve modeling as my method of analysis for answering research question 3. Singer and Willett (2003) identify three required methodological features for any study of change, such as growth curve analysis: (a) access to multiple waves of data, (b) a sensible metric for time, and (c) a continuous outcome whose values change systematically over time. My study complied with these requirements in the following ways. First, the multiple waves of data requirement states one should have access to three or more waves of data; I had access to five waves of data (i.e., spring-kindergarten, spring-1st grade, spring-3rd grade, spring-5th grade, and spring-8th grade). Second, school year semesters, which are available in the ECLS-K data, provide a sensible metric of time for the academic achievement outcomes I used in my study. Finally, the continuous IRT scores for reading and mathematics, which I used as my outcome or dependent variables, change systematically over time as students' reading and mathematics skills built in complexity based on previously acquired skills.

There is more than one way for achievement scores in reading and mathematics to change systematically, however. Students' scores could change systematically in a linear pattern (i.e., increasing at a consistent rate over time) or in a quadratic pattern (i.e.,

increasing more quickly in the early grades than in the later grades). Since I did not know if reading and mathematics achievement would fit a linear model or a quadratic model better, I plotted both the reading and mathematics growth trajectories and retained the linear model because it was a better fit.

In my study, I examined a two-level model of time nested within individuals. At level 1, each student's achievement is represented by an individual growth trajectory that depends on his or her own unique set of values (Judge & Watson, 2011). Because I was interested in students' growth between kindergarten and eighth grade, I centered the intercept in student achievement at the end of kindergarten. I assumed the error terms (e) to be independent and normally distributed (Raudenbush & Bryk, 2002). My level-1 variables include the reading and mathematics scores at the five time points.

The basic level-1 model is: $Y_{it} = \pi_{0i} + \pi_{1i} \text{Time}_{it} + e_{it}$, where Y is the outcome (i.e., individual achievement at time t); π_{0i} is the intercept or average achievement in the spring of kindergarten (where the model is centered); π_{1i} is the student's reading/mathematics slope or rate of change on the outcome; TIME_{it} is a given observation's time point; and e is the error term (or more specifically, the portion of student i 's outcome that is not predicted at time t). In addition, my level-1 model included measures of student special education status and an estimate of the years in or out of special education as time varying covariates (i.e., number of years since special education began in a current wave; number of years since exiting special education in a current wave; classified in the current wave of data collection; exited special education in the current wave).

My Level-1 model was:

$$Y_{it} = \pi_{0i} + \pi_{1i}YearsSinceClassified_{it} + \pi_{2i}YearsSinceExiting_{it} + \pi_{3i}Classified_{it} \\ + \pi_{4i}YearExited_{it} + \pi_{5i}Time_{it} + e_{it}$$

For the intercept term and the Time slope, the Level-2 models are

$$\pi_{0i} = \beta_{00} + \beta_{01}Gender + \beta_{02}Race(Black) + \beta_{03}Race(Hispanic) + \beta_{04}Race(Other) + r_{0i}$$

$$\pi_{2i} = \beta_{10}$$

$$\pi_{3i} = \beta_{20}$$

$$\pi_{4i} = \beta_{40}$$

$$\pi_{5i} = \beta_{50} + \beta_{51}Gender + \beta_{52}Race(Black) + \beta_{53}Race(Hispanic) + \beta_{54}Race(Other) + r_{5i}$$

where π_{0i} and π_{5i} represent the corresponding Level-2 random effects for the intercept (β_{00}) and time (β_{50}) respectively; female is the dummy variable for gender; Black is the dummy variable identifying children as Black/African American; Hispanic is the dummy variable identifying children as Hispanic; Other is the dummy variable identifying children as Asian or Pacific Islander, American Indian or Alaskan Native, or bi- or multiracial; and r_{0i} is the error term representing the between-person deviations from the predicted values for the intercept and time.

Software for statistical analyses. I used the SPSS 19.0 software program (SPSS Inc., 2011) to store the database, apply appropriate sampling weights, and conduct the analyses of questions one and two. HLM 6.0 (Raudenbush, Bryk, Cheong, & Congdon, 2004) was employed to conduct the growth curve analyses for question three. HLM 6.0 allows the researcher to specify weights, and I used the ECLS-K child-level longitudinal weights in my analysis to account for unequal probability sampling and participant nonresponse.

Summary

The ECLS-K is a large-scale nationally representative sample of the children who attended kindergarten in 1998 and first grade in 1999, the schools they attended, and their teachers. ECLS-K data was collected at seven time points between the children's kindergarten and eighth grade years, creating a data set that can be used for both cross-sectional and longitudinal analyses. To address my research questions, I conducted secondary data analysis of data from the ECLS-K. The ECLS-K includes data on the children's characteristics, families' characteristics, and direct and indirect assessments of children's academic, social, and behavioral functioning. These data were collected through parent interviews, direct and indirect-child assessments, school records, and questionnaires administered to teachers and school administrators. I used data from the parent interviews, the teacher questionnaire and the direct-child assessments in my analyses. I conducted several types of analyses. First, I used chi-square tests and t-tests to determine the characteristics of and examine the group differences between children who were continually classified for special education services, children who were declassified from special education, and children who remained in general education. Second, I conducted logistic regression analysis to predict which children would receive special education, and which of those children would exit special education by examining background characteristics, behavior, and academic achievement. Finally, I used growth curve analysis to compare the academic achievement trajectories of children who stop receiving special education compared to children who remain in special education and children who never received special education.

Chapter IV: Findings

The purpose of this study was two-fold. This study's first purpose was to examine the characteristics of three groups of students in the ECLS-K dataset, those who: (a) received special education services continually, (b) stopped receiving special education and related services, and (c) never received special education. In addition, I examined whether there are characteristics that predict which students with disabilities will stop receiving IEP services after being classified between kindergarten and the eighth grade. The second purpose of this study was to examine the academic growth trajectories of students who continually received special education services, students who never received special education, and students who stopped receiving special education between kindergarten and eighth grade. To accomplish the purpose of the study I organized the analysis according to the three research questions that I posed in Chapter 3. Before presenting those results, I provide the results of the missing data analysis.

Missing Data Analysis

I conducted missing data analyses to examine the impact of excluding cases with missing data from the analytic sample and to determine how the analytic sample compares to the base sample in the ECLS-K of students with data from spring of their kindergarten year through eighth grade. Missing data analyses helped to determine the population to which I could generalize the findings. The analyses and summary follow. Results from the missing data analyses are presented in Tables 3 and 4.

Table 3

Comparison of Participants Excluded Due to Missing Data and Analytic Sample 1

	Cases with Missing Data (<i>n</i> = 750) ¹	Analytic Sample 1 (<i>n</i> = 7,600) ¹
	%	%
Race/Ethnicity**		
White	25.8 ^a	60.4 ^a
Black	10.7 ^a	17.8
Hispanic	55.4 ^a	14.7 ^a
Other	8.1	7.1
Gender		
Male	53.7	51.4
Female	46.3	48.6
Region***		
Northeast	18.1	12.6 ^a
Midwest	24.3	13.1 ^a
South	39.4	37.5
West	18.2 ^a	36.8 ^a
Urbanicity**		
Urban	52.3 ^a	34.7 ^a
Suburban	36.7 ^a	42.9
Rural	11.1 ^a	22.4 ^a
Changed School by 5 th ***		
No	60.0 ^a	52.9
Yes	40.0 ^a	47.1
Retained in Grade**		
Not Ascertained	0.0	0.2
Never Retained	81.7	85.5
Retained 1x or More	18.3 ^a	14.4
School Type***		
Public	90.4	84.8
Private	9.6 ^a	15.2
Continuous Variables	Mean Score in Dropped Cases (SD)	Mean Score in Analytic Sample (SD)
SES**	-0.4 (0.7)	0.1 (0.8)
Approaches to Learning***	3.0 (0.7)	3.1 (0.7)
Externalizing Behavior	1.6 (0.6)	1.7 (0.6)
Reading IRT Score	31.4 (9.9)	32.3 (10.3)
Math IRT Score***	23.3 (8.9)	28.0 (8.7)

¹ Per US Department of Education privacy rules, N's are rounded to the nearest 50.

p* ≤ .05, *p* ≤ .01, ****p* ≤ .001

^a=standardized residual > ±1.96

Table 4
Comparison of baseline sample and analytic sample 1

	Baseline Sample	Analytic Sample 1
	(<i>n</i> = 8,500)	(<i>n</i> = 7,600) ¹
	%	%
Race/Ethnicity		
White	57.4	60.4
Black	17.2	17.8
Hispanic	18.1	14.7
Other	7.1	7.1
Gender		
Female	51.9	51.4
Male	48.1	48.6
Region		
Northeast	18.1	12.6
Midwest	23.1	13.1
South	38.9	37.5
West/Southwest	20.0	36.8
Urbanicity		
Urban	36.8	34.7
Suburban	42.0	42.9
Rural	21.2	22.4
Changed School by 5th		
No	51.7	52.9
Yes	48.3	47.1
Retained in Grade		
Never Retained	85.2	85.5
Retained 1x or More	14.8	14.4
School Type		
Public	84.8	84.8
Private	15.2	15.2
Received Special Education Services between Kindergarten and 8th Grade		
Not Ascertained	5.3	0.0
No	76.9	81.2
Yes	17.8	18.8
Identified for Special Education Services between K and 3rd Grade		
Not Ascertained	5.3	0.0
No	83.1	87.7
Yes	11.6	12.3
Identified for Special Education Services between 4th and 8th Grade		
Not Ascertained	5.3	0.0
No	86.9	91.7

Yes	7.8	8.3
Left Special Education between Kindergarten and 3rd Grade		
Not Ascertained	5.3	0.0
No	89.7	94.7
Yes	5.0	5.3
Left Special Education Services between 4th and 8th Grade		
Not Ascertained	5.3	0.0
No	88.9	93.8
Yes	5.9	6.2
Reclassified (Classified twice)		
Not Ascertained	5.3	0.0
No	92.5	97.6
Yes	2.3	2.4
Continuous Variables	Mean Score in Baseline Sample (SD)	Mean Score in Analytic Sample (SD)
SES	0.0 (0.8)	0.0 (0.8)
Approaches to Learning	3.1 (0.7)	3.1 (0.7)
Externalizing Behavior	1.7 (0.6)	1.7 (0.6)
Reading IRT Score	32.4 (10.3)	32.3 (10.3)
Math IRT Score	27.6 (8.9)	27.6 (8.8)

¹ Per US Department of Education privacy rules, N's are rounded to the nearest 50.

Analytic sample compared to dropped cases. I conducted statistical analyses of the cases included in the analytic sample compared to the cases dropped due to missing data. The base sample included 8500 cases; 7600 cases from the base sample were included in analytic sample one, and 750 cases (9.1%) were excluded due to missing data. Table 3 shows the descriptive statistics for cases that were dropped from the sample and those that were retained in analytic sample one. Statistically significant differences between the dropped cases and analytic sample one were evident. A student was more likely to have missing data under the following conditions, he or she: was Hispanic; lived in the Northeast or Midwest; stayed in the same school through 5th grade; lived in an urban area; was retained in grade once or more; and had below average socioeconomic status, a lower approaches to learning score, and lower reading and math IRT scores than

a student without missing data. A student was less likely to have missing data under the following conditions, he or she was: White or Black; lived in the West, changed schools once or more by fifth grade, and attended a private school. Several discrepancies between the dropped cases and those in the first analytic sample stand out in Table 3. For example, students with missing data were far more likely to be Hispanic (55.4% v. 14.7%), and less likely to be White (25.8% v. 60.4%) or Black (10.7% v. 17.8%). Students with missing data were also more likely to have a low SES value (approximately 2/3 of a standard deviation lower) and a low Math IRT score (approximately 3/4 of a standard deviation lower).

Base samples compared to analytic samples. In addition to comparing the analytic samples to the cases that were excluded due to missing data, I compared the characteristics of the first analytic sample to the baseline sample (i.e., the 8,500 cases that met my inclusion criteria) to determine the degree to which dropping the cases with missing data changed the characteristics of the intended sample. I examined the means, standard deviations, and distributions of the base sample of students with a valid weight for each spring wave of data collection between kindergarten and eighth grade compared to the first analytic sample, which included only students with full data on the variables used in this study. The comparisons are presented in Table 4. There are some observable differences but these differences are smaller than those in Table 3. For example, the analytic sample has about 3 percentage points more White students and about 3 percentage points fewer Hispanic students, despite the larger differences between students with and without missing data. The largest differences are observed in the regions of the United States where students attended school. The analytic sample has

almost 17 percentage points more students from the western or southwestern regions of the United States, 10 percentage points fewer students from the Midwest, and 5.5 percentage points fewer students from the Northeast than the baseline sample. For all the other variables, with the exclusion of variables reporting special education status, differences are less than 3 percentage points.

The comparisons of the first analytic sample and the baseline sample provide evidence that the first analytic sample does not differ drastically from the baseline sample. As shown in Table 4, the characteristics of the first analytic sample are similar to those of the baseline sample, indicating that the exclusion of cases with missing data is unlikely to affect the external validity of the findings from analyses using this analytic sample. The one exception is region. The analytic sample includes an over representation of students attending kindergarten in the West and Southwest and an under representation of students attending kindergarten especially in the Midwest.

Summary. Overall, the results of the missing data analyses indicate that the two analytic samples differ only slightly or not at all from their own baseline samples. Therefore, the results of analyses using the first analytic sample can be generalized to the students in the original kindergarten and first grade cohort of ECLS-K. Because the second analytic sample is simply a subset of the first (students with disabilities), the results of the analyses using this sample can be generalized to the original kindergarten and first-grade cohorts who were identified as receiving special education services in at least one wave of the study. However, in both cases, caution should be used when considering the possible influence of region. Although sample weights will help to minimize the influence of region on the findings (region is a component of the weights),

it is still possible the national averages will over represent that special education practices of schools in the West and Southwest and under represent the special education practices of schools in the Midwest or Northeast.

Research Question 1

Research Question 1: What are the characteristics of students who receive special education services between kindergarten and eighth grade, and those who do not receive special education services between kindergarten and eighth grade? To what extent do academic, behavioral, and demographic factors predict whether a student will receive special education or not between kindergarten and eighth grade?

To answer the first part of research question 1, I compared the characteristics of students who never received special education services to students who had received special education services using chi-square analyses and t-tests. To answer the second part of question 1, I created a logistic regression model with a dichotomous outcome (received special education v. did not receive special education). More specifically, I examined whether academic factors (end-of-kindergarten reading and mathematics IRT scores), behavioral factors (end-of-kindergarten teacher assessment of approaches to learning and externalizing behaviors), and personal factors (SES, gender, and race) predict students special education status across all five waves of ECLS-K (1 = identified in one or more waves as receiving special education services, 0 = never identified).

Descriptive results. Table 8 displays results of the series of bivariate comparisons between students who received special education in any one wave (18.5%) and those who did not (81.5%). All the comparisons are statistically significant at the .01 level or lower, though some differences are much larger in magnitude than others.

Among the categorical variables, the largest differences are by gender and whether or not a student was ever retained. Males and students who have been retained one or more times are more likely to receive special education services than not (48.0% v. 67.0% and 10.8% v. 30.3%, respectively). Among the continuous variables, a student's reading and mathematics achievement at the end of kindergarten stand out. Students identified as receiving special education services in at least one wave had reading IRT and mathematics IRT scores 80 percent of a SD lower than students never identified as receiving services. Students receiving special education services also had a lower socioeconomic status (-.30 SD) and higher levels of externalizing behavior (.40 SD).

Statistically significant but smaller differences exist for the other variables in Table 5. For example, students who received special education services in at least one wave were significantly less likely to be classified as Other³ (7.6% v. 4.8%), live in the Western region of the United States (29.4% v. 13.2%), live in an urban area (35.9% v. 29.6%), and attend a private school (16.9% v. 7.1%) than students who never received special education. On the other hand, students who received special education services were significantly more likely to have changed schools (46.2% v. 51.1%), live in the Southern region of the United States (38.1% v. 44.5%), live in a rural area (21.5% v. 27.0%), and attend a public school (83.1% v. 92.9%). Students receiving special

³ The category Other combines the categories of Asian, Native Hawaiian or other Pacific Islander; American Indian or Alaska Native, and more than one race specified, non-Hispanic.

education also had lower assessments on the approaches to learning scale, differing from those not receiving special education services by .09 SD.

Table 5
Percent of students who received and did not receive special education services between kindergarten and 8th grade

	Received IEP Between K and 8 th Grade?			
	No (N ¹ =6300)		Yes (N ¹ =1400) ^a	
	N ¹	%	N ¹	%
Percentage		81.5		18.5
<i>Demographics</i>				
Gender***				
<i>Male</i>	3000	48.0 ^c	1000	67.0 ^c
<i>Female</i>	3300	52.0 ^c	450	33.1 ^c
Race***				
<i>White</i>	3800	60.0	900	60.9
<i>Black</i>	1100	17.3	300	19.8
<i>Hispanic</i>	950	14.8	200	14.5
<i>Other</i>	500	7.6	100	4.8 ^c
Changed Schools Once or More by 5 th **				
<i>Yes</i>	2900	46.2	700	51.1 ^c
<i>No</i>	3350	53.8	700	48.9
Census Region***				
<i>Northeast</i>	1150	18.1	300	18.3
<i>Midwest</i>	1550	24.4	350	23.9
<i>South</i>	2400	38.1	650	44.5 ^c
<i>West</i>	1200	29.4 ^c	200	13.2 ^c
Urbanicity***				
<i>Urban</i>	2300	35.9	400	29.6 ^c
<i>Suburban</i>	2700	42.5	600	43.4
<i>Rural</i>	1350	21.5	400	27.0 ^c
School Type***				
<i>Public</i>	5250	83.1	1350	92.9 ^c
<i>Private</i>	1100	16.9 ^c	100	7.1 ^c
Retained in Grade***				
<i>Not Ascertained</i>	0	0.2	0	0.1
<i>Never Retained</i>	5600	89.0 ^c	1100	69.5 ^c
<i>Retained Once or More</i>	750	10.8 ^c	500	30.3 ^c

SES ^b	6100	0.1	1400	-0.2
Approaches to Learning ^{b***}	6100	0.2	1400	-0.7
Externalizing Behavior ^{b***}	6100	-0.1	1400	0.3
Reading IRT Score ^{b***}	6100	0.2	1400	-0.6
Math IRT Score ^{b***}	6100	0.2	1400	-0.6

* $p \leq .05$

** $p \leq .01$

*** $p \leq .001$

^aSample size was unweighted, and analyses were weighted.

^bVariables were standardized. Mean = 0, SD = 1.

^c = standardized residual $> \pm 1.96$

¹ Per US Department of Education privacy rules, N's are rounded to the nearest 50.

Table 6
Logistic regression for the odds of being in special education

Independent Variables	Odds Coefficients ^a (n = 7,600) ^b		
	Model 1	Model 2	Model 3
Constant	0.17***	0.16***	0.26***
Academic Variables			
Mathematics IRT Score	0.58***	0.68***	0.55***
Reading IRT Score	0.53***	0.62***	0.66***
Behavioral Variables			
Approaches to Learning		0.60***	0.64***
Externalizing Behavior		1.03	1.03
Demographic Variables			
Socioeconomic Status			1.00
Female			0.58***
Black/African-American			0.52***
Hispanic			0.62***
Other			0.50***

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

^a Coefficients are in an odds metric. Coefficients greater than one indicate an increase in the odds; coefficients less than one indicate a decrease in the odds.

^bAnalyses were weighted

^cChi-square for the log-likelihood for Model 3 is 1267.83. The model accurately predicts 97.5% of those who never received special education and 21.0% of those who received special education.

Logistic regression results. I used a multivariate logistic regression to explore more fully the bivariate relationships in Table 5, the results of which are displayed in Table 6. The dependent variable was whether a student was identified as receiving special education services in at least one wave of the ECLS-K (1 = yes, 0 = no). I entered the independent variables hierarchically, beginning with reading and mathematics IRT scores (Model 1), and then behavioral predictors (Model 2). The full model also adds student demographic factors (Model 3). All of these independent variables come from the second wave of the ECLS-K, at the end of the kindergarten year. Coefficients are displayed in odds. Statistically significant odds are significant at .05 or lower.

In all three models, I found that IRT scores in reading and mathematics were statistically significantly associated with the odds of receiving special education. That is, low scores in one or both subjects at the end of kindergarten increased the odds of receipt of special education at one of the grades included in the study. Using the coefficients reported in Model 3 as an example, the odds of receiving special education decreased by approximately 45% for every standard deviation increase in the student's mathematics IRT score and by 34% for every one standard deviation increase in the student's reading IRT score. In addition, a student's odds of receiving special education decreased by approximately 36% for every standard deviation increase in his/her approaches to learning score.

When I introduced the demographic characteristics into the model, they did not change the coefficients associated with either the academic or behavioral factors. In other words, the odds associated with the academic and behavioral factors are irrespective of students' socioeconomic status, gender, and race. Regarding the

demographic factors, females were 42% less likely than males to receive special education services; Black/African American students, Hispanic students, and Other students were 48%, 38%, and 50% less likely, respectively, to receive special education services than Whites. Neither socioeconomic status nor Externalizing Behavior was associated with the odds of being identified as receiving special education services.

Research Question 2

Research Question 2: What are the characteristics of students who stay in special education after their initial placement and those who stop receiving special education at some point between kindergarten and eighth grade? To what extent do academic, behavioral and personal factors predict whether a student will continue receiving special education or will stop receiving special education and related services?

I first compared group differences between students who had stayed in special education and students who had exited special education using chi-square analyses and t-tests. Then to determine the relative magnitudes of the associations between academic factors (reading and mathematics IRT scores), behavioral factors (approaches to learning and externalizing behaviors), and personal factors (SES, gender, race, and whether they received special education services by third grade) to whether students exited special education by eighth grade, I used a logistic regression model. The logistic regression model had a dichotomous outcome (remained in special education v. stopped receiving special education). I entered the academic, behavioral, and personal predictors in three steps; this allowed me to examine how the effects of particular variables on special education status changed when other factors were introduced.

Descriptive results. Table 7 displays results of the series of comparisons between students who remained in special education for every wave of data collection after they were initially identified (47.1%) and those who stopped receiving special education services during at least one wave of data collection by eighth grade (52.9%). Reported differences are statistically significant at the .05 criterion or lower. Among the categorical variables, students who continually received special education services were more likely to have remained in the same school through fifth grade (53.3% v. 46.7%), lived in the Midwest (25.1% v. 19.5%), lived in an urban area (34% v. 28.5%), and been retained in grade at least once (34.8% v. 26.7%) than students who had exited special education at some point. Students who stopped receiving special education services were more likely to have changed schools by the time they were in fifth grade (53.3% v. 46.7%), to live in the Southern United States (47.6% v. 41.7%), or have lived in a suburban area (47.7% v. 38.6%) than students who continued receiving special education services. Among the continuous variables, students who discontinued special education services during at least one wave of the study had higher approaches to learning scores (.50 SD) and higher reading and mathematics IRT scores (.40 SD) than students who remained in special education after their initial placement. The demographic factors of gender, race/ethnicity, type of school attended (i.e. public or private), externalizing behavior score, and socioeconomic status did not statistically distinguish between those who had and had not exited special education.

Logistic regression results. I used a multivariate logistic regression to expand on the bivariate relationships in Table 7, the results of which are displayed in Table 8. The dependent variable was whether a student had stopped receiving special education

services in at least one wave of the ECLS-K (1 = yes, 0 = no). I entered the independent variables hierarchically, in the same manner used for the previous logistic regression, beginning with reading and mathematics IRT scores at the end of kindergarten (Model 1), and then behavioral predictors (Model 2). The full model also adds student demographic factors (Model 3), including, in this analysis, a measure of whether or not a student started receiving special education services by the third grade or not. With the exception of the variable examining whether special education services were started by third grade, all of these independent variables come from the second wave of the ECLS-K, at the end of the kindergarten year. Coefficients are displayed in odds. Reported statistically significant odds are significant at .05 or lower.

In all three models, I found that IRT scores in mathematics were statistically significantly associated with the odds of a student exiting special education. For example, Model 3 shows the odds of a student exiting special education services increased by approximately 80% for every standard deviation increase in the student's mathematics IRT score. In addition, a student's odds of exiting special education increase by approximately 48% for every standard deviation increase in his/her Approaches to Learning score. In contrast, in the first two models, a student's odds of no longer receiving special education services was not significantly correlated with their reading IRT scores, but in the third model, after demographic variables were introduced, a student's odds of exiting special education decreased by approximately 21% for every standard deviation increase in the reading IRT score. This unexpected result may indicate an interaction with one or more of the variables entered in Model 3.

Table 7

Weighted number and percent of students who received and stopped receiving special education services between kindergarten and 8th grade

	Exited Special Education Between K and 8 th Grade?			
	No (N ¹ =600)		Yes (N ¹ =700) ^a	
	N ¹	%	N ¹	%
Percentage		47.1		52.9
<i>Demographics</i>				
Gender				
<i>Male</i>	450	69.4	450	65.0
<i>Female</i>	200	30.6	250	35.0
Race				
<i>White</i>	350	57.5	400	58.3
<i>Black</i>	150	20.1	100	17.4
<i>Hispanic</i>	100	16.7	150	19.8
<i>Others</i>	50	5.6	50	4.4
Changed Schools by 5 th Grade*				
<i>Yes</i>	300	46.7 ^c	350	53.3 ^c
<i>No</i>	350	53.3 ^c	300	46.7 ^c
Census Region*				
<i>Northeast</i>	100	17.4	100	18.8
<i>Midwest</i>	150	25.1 ^c	150	19.5 ^c
<i>South</i>	250	41.7 ^c	300	47.6 ^c
<i>West</i>	100	15.8	100	14.1
Urbanicity**				
<i>Urban</i>	200	34.0 ^c	200	28.5 ^c
<i>Suburban</i>	250	38.6 ^c	300	47.7 ^c
<i>Rural</i>	150	27.4	150	23.8
School Type				
<i>Public</i>	600	92.6	600	92.9
<i>Private</i>	50	7.4	50	7.1
Retained in Grade**				
<i>Never Retained</i>	400	65.2 ^c	500	73.0 ^c
<i>Retained Once or More</i>	200	34.8 ^c	200	26.7 ^c
SES ^b	600	-0.1	650	0.1
Approaches to Learning ^{b**}	600	-0.3	650	0.2

Externalizing Behavior ^b	600	0.1	650	-0.1
Reading IRT Score ^{b*}	600	-0.2	600	0.2
Math IRT Score ^{b*}	600	-0.2	650	0.2

* $p \leq .05$

** $p \leq .01$

*** $p \leq .001$

^aSample size was unweighted, and analyses were weighted.

^bVariables we standardized. Mean = 0, SD = 1.

^c = standardized residual $> \pm 1.96$

¹ Per US Department of Education privacy rules, N's are rounded to the nearest 50.

Table 8
Logistic regression for the odds of exiting special education

Independent Variables	Odds Coefficients ^a (n = 1300) ^b		
	Model 1	Model 2	Model 3
Constant	1.06	1.07	1.68***
Academic Variables			
Mathematics IRT Score	1.55***	1.39**	1.79***
Reading IRT Score	0.97	0.90	0.79*
Behavioral Variables			
Approaches to Learning		1.48***	1.48***
Externalizing Behavior		1.03	0.99
Demographic Variables			
Socioeconomic Status			1.01
Female			1.24
Black/African-American			1.33
Hispanic			1.88*
Other			1.19
Classified Early (by 3 rd grade)			0.13***

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

^a Coefficients are in an odds metric. Coefficients greater than one indicate an increase in the odds; coefficients less than one indicate a decrease in the odds.

^b Analyses were weighted

^c Chi-square for the log-likelihood for Model 3 is 1476.58. The model accurately predicts 57.9% of those who remained in special education and 64.7% of those who exited special education.

I found two demographic factors that significantly changed a student's odds of exiting special education. One factor that increased the odds of a student exiting special education was Hispanic ethnicity. Hispanic students' odds of exiting special education are almost 90% higher than those of White students. In contrast, a personal characteristic that decreased the odds of a student exiting special education was an onset of special education services by third grade or earlier. Students' odds of exiting special education decreased by approximately 87% if they started receiving special education services by the third grade.

Research Question 3

Research Question 3: How does growth in reading and mathematics achievement compare between those students who stopped receiving special education between kindergarten and eighth grade, students who remained classified, and those who never received special education (i.e., what are the academic achievement trajectories of the different groups)?

For these analyses, I examined average reading and math achievement for students at the end of kindergarten and average change in reading and math achievement between the end of kindergarten and the end of eighth grade. Additional variables in the model identify the change in the growth trajectory for students classified and declassified for special education services each year. The average raw score for reading achievement across all waves of data collection is 87.8, whereas the average raw score for math achievement across all waves of data collection is 104.4.

Reading growth. Tables 9 and 10 present the final model for average reading achievement at the end of kindergarten and change in reading achievement between kindergarten and eighth grade. All coefficients are statistically significant at .05 or lower.

Table 9
Final Model of Reading Growth from Kindergarten to 8th Grade^a

Fixed Effect	Coefficient	SE	t	p
Intercept				
Intercept	43.21	0.40	108.42	0.000***
Female	2.40	0.46	5.19	0.000***
Black	-5.43	0.71	-7.65	0.000***
Hispanic	-5.18	0.57	-9.05	0.000***
Other	-2.29	0.72	-3.17	0.002**
Year Exited Spec. Ed.	-5.89	1.49	-3.96	0.000***
In Sp. Ed. during Wave	-6.73	1.02	-6.62	0.000***
# of Years in Special Ed.	-2.98	0.42	-7.05	0.000***
Years since Exiting Sp. Ed.	-2.76	0.41	-6.73	0.000***
Time				
Female	0.28	0.11	2.56	0.011*
Black	-2.59	0.19	-13.93	0.000***
Hispanic	-1.62	0.14	-11.21	0.000***
Other	-0.82	0.16	-5.30	0.000***

*p ≤ .05; **p ≤ .01; ***p ≤ .001

^aAnalyses were weighted

Table 10
Random Effects Final Model of Reading Growth

Random Effect	Variance Component	χ^2	p
Intercept (r_0)	49.68	9451.10	0.000***
Time Slope (r_1)	1.94	11308.78	0.000***

*p ≤ .05; **p ≤ .01; ***p ≤ .001

Note. For both intercept and time slope, $df = 8211$.

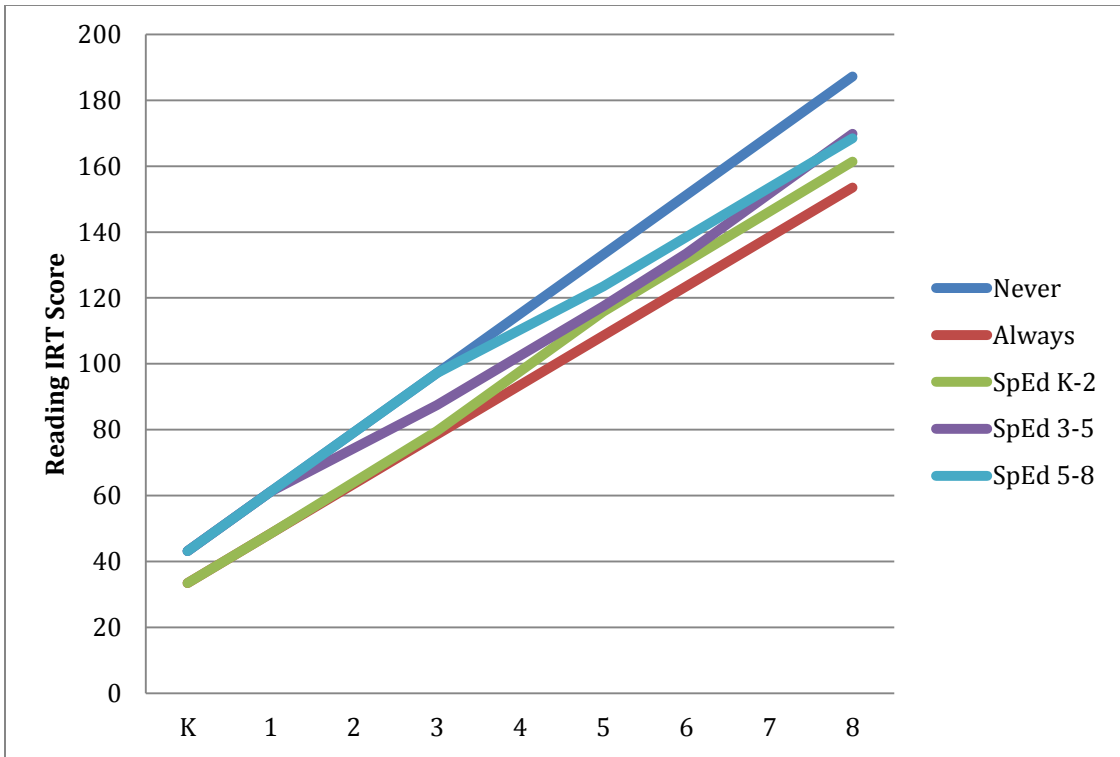


Figure 1. Reading Growth and Achievement for White Males with Different Amounts of Time in Special Education

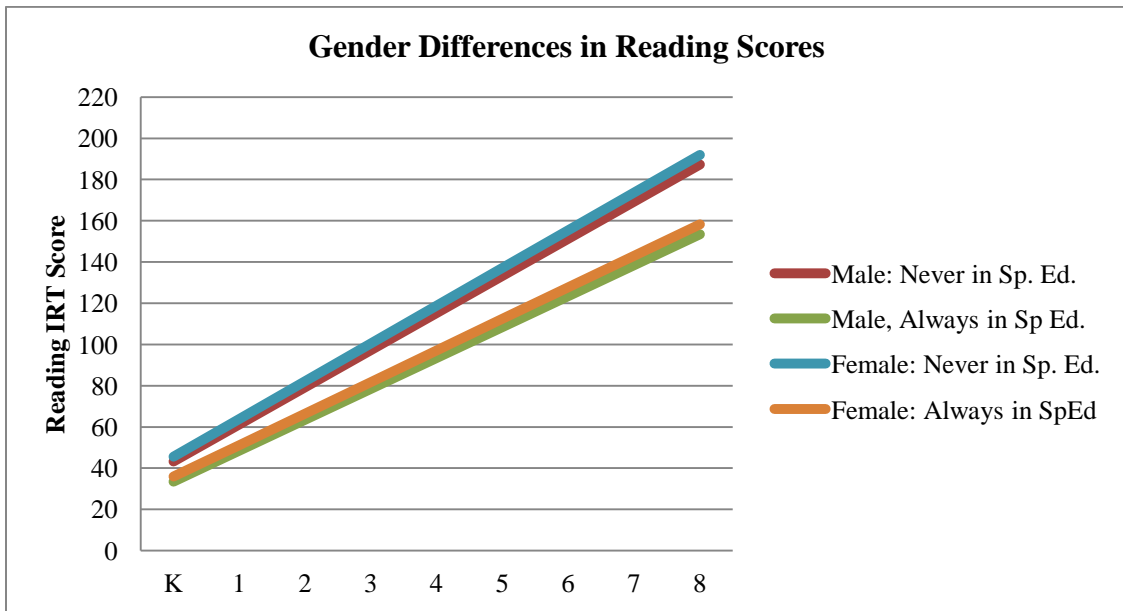


Figure 2a. Gender Differences in Reading Growth and Achievement from Kindergarten to Eighth Grade

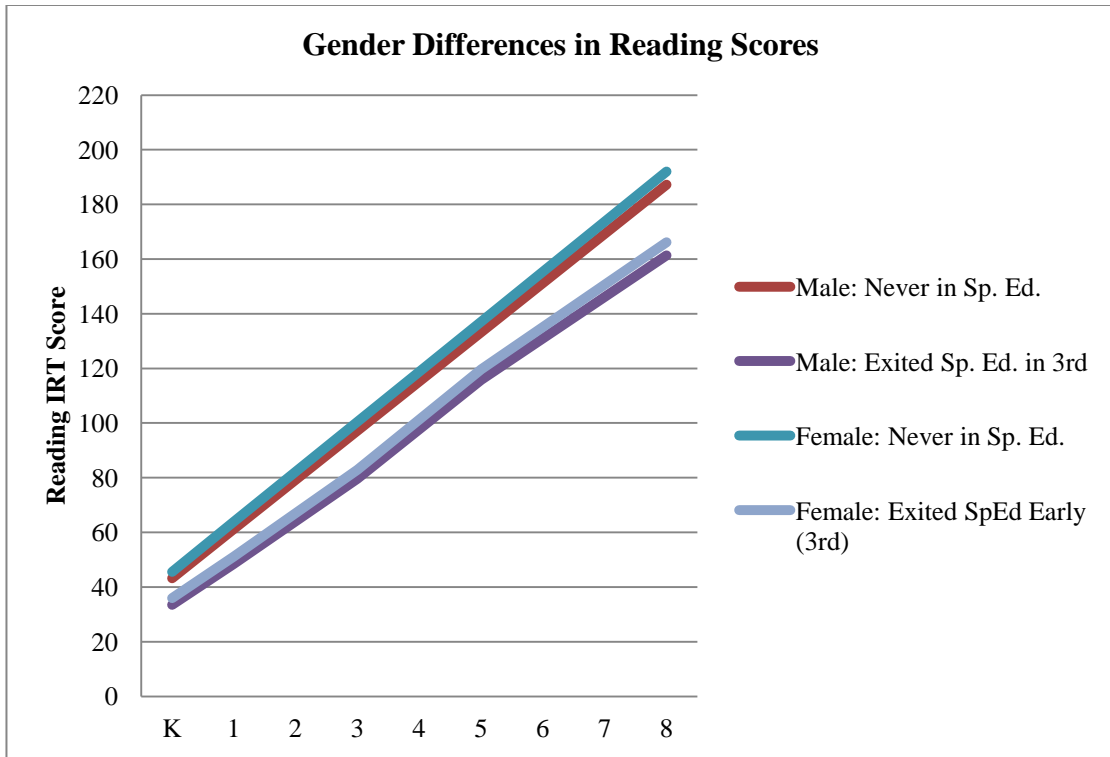


Figure 2b. Gender Differences in Reading Growth and Achievement from Kindergarten to Eighth Grade

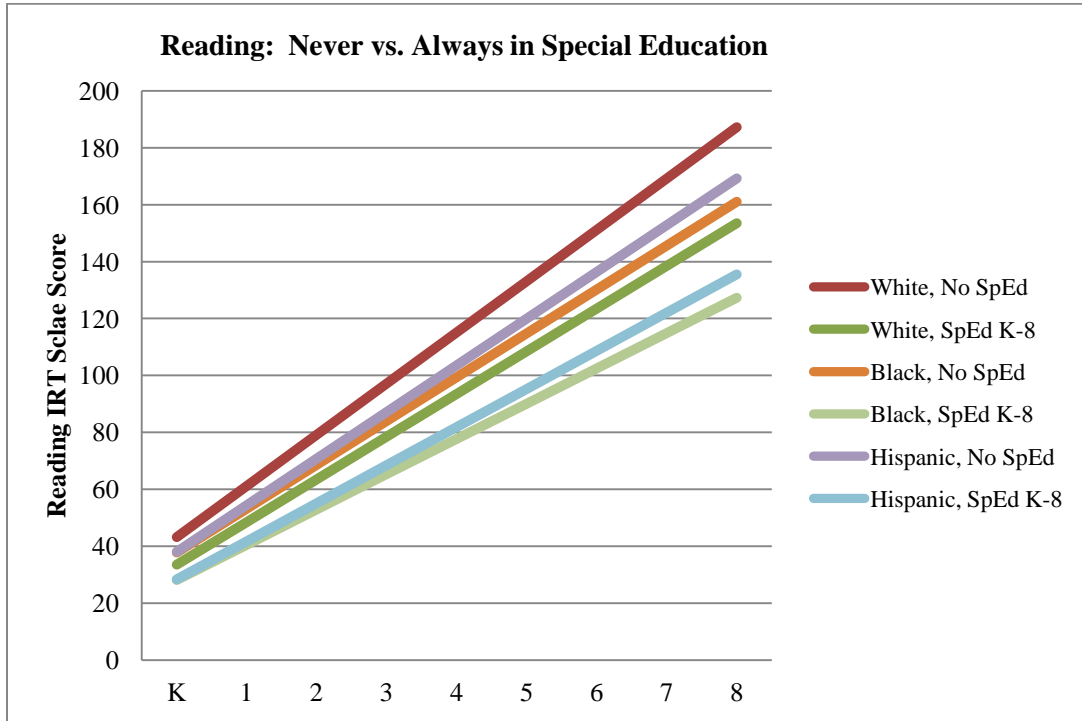


Figure 3a. Reading Growth and Achievement of White, Black, and Hispanic Males

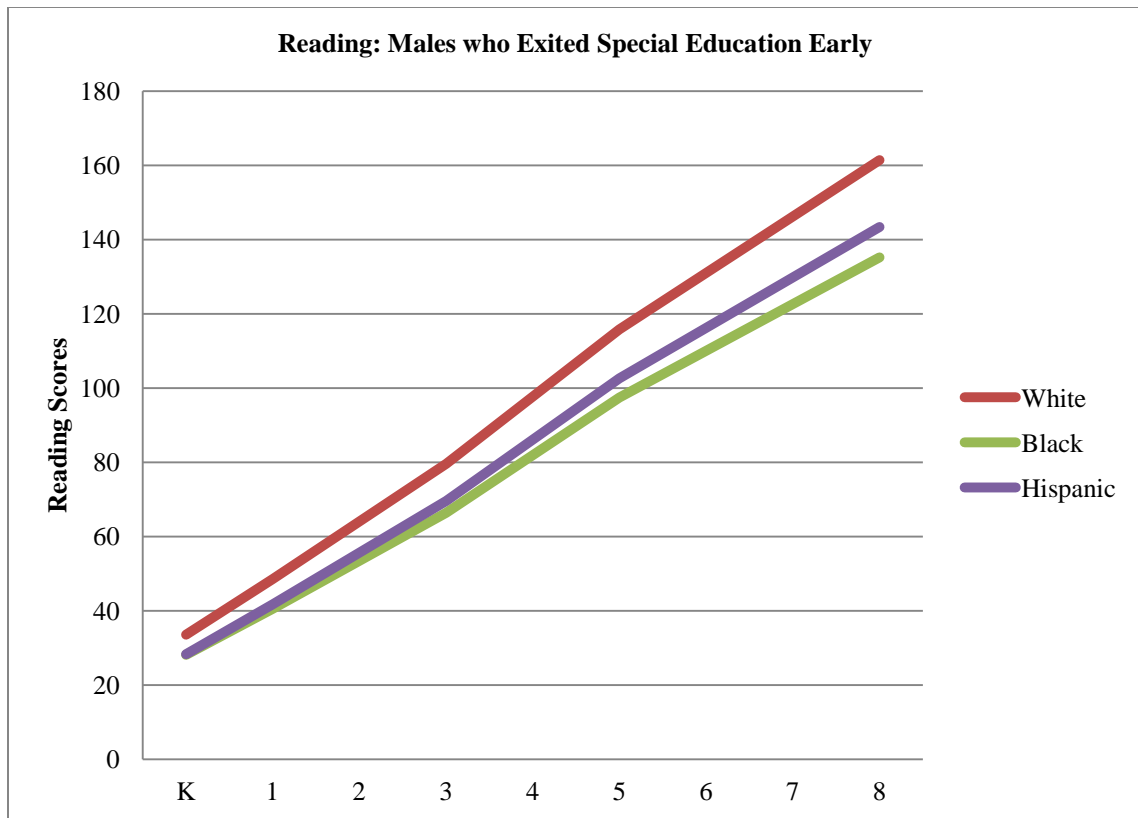


Figure 3b. Reading Growth and Achievement of White, Black, and Hispanic Males

In the spring of kindergarten (see Intercept), the mean reading score for a White male who was not receiving special education was 43.2 compared to 45.6 for females. The average reading score in the spring of kindergarten for a White female (45.6) was over 2 points higher than the average score for a White male. The average IRT reading score for males from racial/ethnic groups other than White was 38.7. Black males had average kindergarten reading scores of 37.8, and Hispanic males had average kindergarten reading scores of approximately 38.0. Others had an average kindergarten score more similar to White males but still lower – approximately, 40.9. If a student was classified as receiving special education service at the end of kindergarten, regardless of gender or race/ethnicity, he/she had a reading achievement score roughly 6 points lower than other students.

The reading trajectory slope measured the amount of reading growth for each year of instruction (see Time). All students made gains in reading over time, however, students who received special education services made fewer gains than students who did not receive services. Figure 1 displays the kindergarten through Grade 8 mean reading IRT scores of students by special education status. The mean IRT reading scores for all groups increased. However, over time the mean scores for students receiving special education remained lower than those who did not receive special education (approximately, $18.0 - 6.7$ or 13.5). Students who stopped receiving special education at some point after baseline had substantially lower IRT reading scores both while receiving special education and at the point they were reported to no longer be receiving services (-5.9). However, these students' reading IRT growth trajectories indicated that they experienced more rapid growth than their peers who remained in special education during the years after they initially stopped receiving special education services. Nonetheless, as indicated in Figure 1, the gains are not sufficient to catch up with the achievement gains of students who never received special education services.

As seen in Figure 2, there were minimal differences in reading growth between males and females regardless of special education status. Females' reading scores were slightly higher in kindergarten (2.4 points) and grew at the rate of 0.28 points per year faster than their male counterparts to a difference of 4.8 points by eighth grade. Racial differences in reading IRT scores were more pronounced. As seen in Figure 3, White males had higher growth rates than Black or Hispanic males of the same special education status, whether that status was having never received special education, having continually received special education from kindergarten to eighth grade, or having

exited special education early (i.e. received special education in kindergarten and first grade and exited by third grade). The initial kindergarten reading scores of Black and Hispanic males were similar (37.8 v. 38.0), but Hispanic males' reading scores grew at a faster rate and by eighth grade Hispanic males' reading scores were on average more than eight points higher than Black males' reading IRT scores.

Mathematics growth. Tables 11 and 12 display the model for average math achievement at the end of kindergarten and change in IRT mathematics scores between kindergarten and eighth grade. In the spring of kindergarten, the mathematics score for a White male who was not receiving special education was 36.0. The average kindergarten mathematics IRT score for a White female was 35.2 while the scores of males from other racial groups ranged from 3 to 7 points lower than White males (Black = 29; Hispanic = 31; Other = 33). Students who were classified as receiving special education services in kindergarten had scores approximately 5 points lower, regardless of gender or race/ethnicity.

The mathematics growth trajectories for all students indicate that gains were made over the five waves of data collection (roughly 15.2 points per year). However, students who received special education services continuously or who had exited special education demonstrated lower growth than students who had never received services (15.2-5.1 or 10.1). Figure 4 displays the kindergarten through eighth grade mean mathematics IRT scores of students by special education status. The mean scores for all groups increased. However, over time, the mean scores of students continuously receiving or having received special education services remained lower than those of students who never received special education.

Table 11
Final Model of Mathematics Growth from Kindergarten to 8th Grade^a

Fixed Effect	Coefficient	SE	t	p
Intercept				
Intercept	36.03	0.29	122.93	0.000***
Female	-0.80	0.33	-2.41	0.000***
Black	-7.03	0.43	-13.43	0.000***
Hispanic	-4.90	0.36	-13.32	0.000***
Other	-3.01	0.47	-6.60	0.000***
Year Exited Spec. Ed.	-6.05	1.08	-5.59	0.000***
In Sp. Ed. during Wave	-5.11	0.65	-7.90	0.000***
# of Years in Spec. Educ.	-2.38	0.28	-8.44	0.000***
Years since Exiting Sp. Ed.	-2.57	0.31	-8.25	0.000***
Time	15.24	0.07	211.47	0.000***
Female	-0.43	0.09	-4.92	0.000***
Black	-2.01	0.14	-14.12	0.000***
Hispanic	-0.81	0.11	-7.31	0.000***
Other	-0.35	0.15	-2.31	0.021*

*p ≤ .05; **p ≤ .01; ***p ≤ .001

^aAnalyses were weighted

Table 12
Random Effects Final Model of Mathematics Growth

Random Effect	Variance Component	χ^2	p
Intercept (r_0)	38.49	10737.74	0.000***
Time Slope (r_1)	3.10	14066.24	0.000***

*p ≤ .05; **p ≤ .01; ***p ≤ .001

Note. For both intercept and time slope, $df = 8211$.

Differences in mathematics IRT growth trajectories were evident for males and females and among different racial or ethnic groups. As was the case with reading, the differences between males and females' mathematics growth was very small (see Figure 5). Males scored less than a point better than females in kindergarten, and gained slightly less than half a point each year thereafter, making their mathematics scores about four points higher than females by the eighth grade. As displayed in Figure 6, the mathematics IRT scores of Black and Hispanic males not only started several points

lower in kindergarten but also grew at a slower rate every year thereafter increasing the gap with White males over time. The mathematics IRT growth trajectory of Black males who had never received special education was almost identical to that of White males who had continually received special education services.

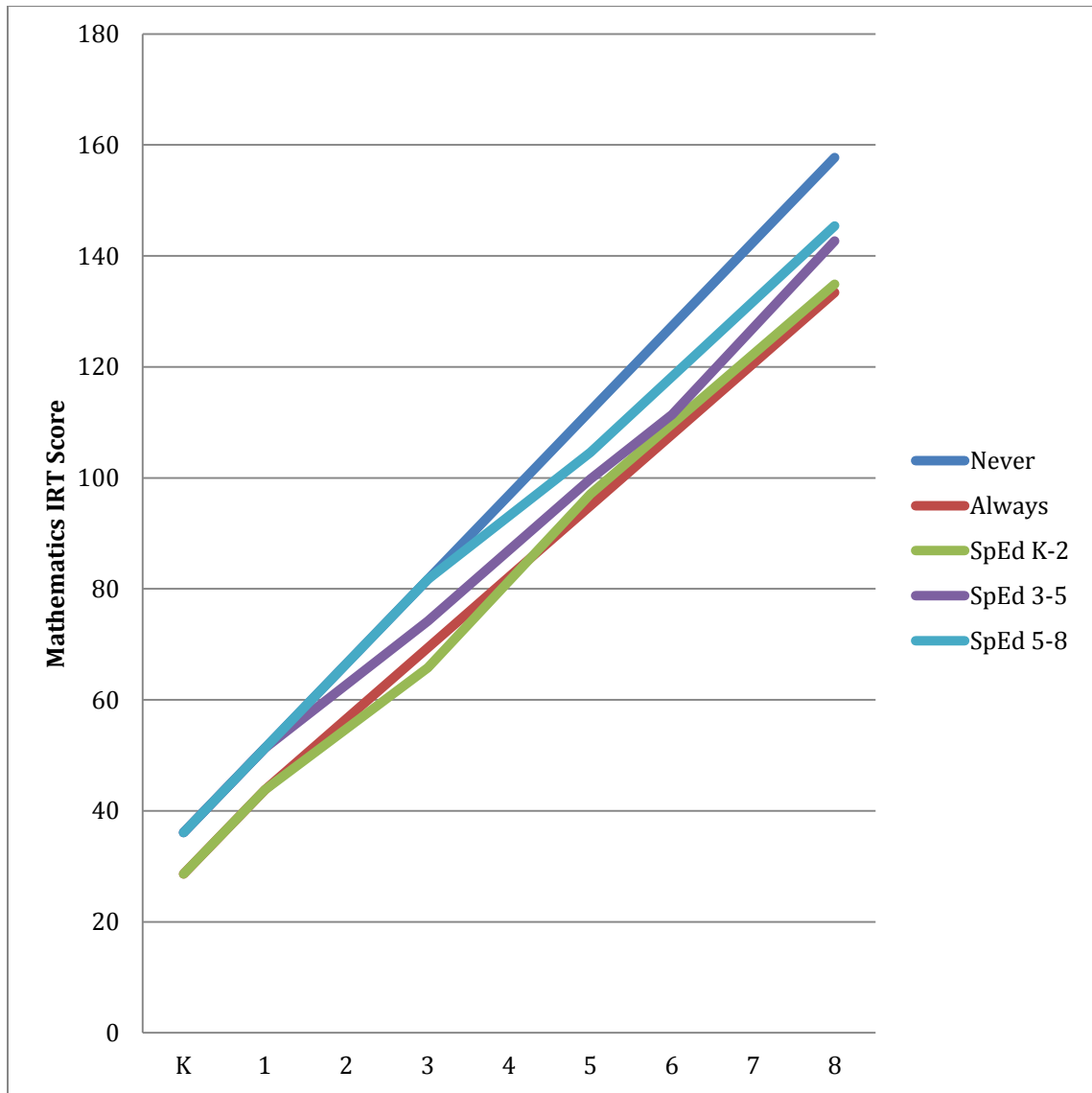


Figure 4. Mathematics Growth and Achievement for White Males with Different Amounts of Time in Special Education

Figure 5. Gender Differences in Mathematics Growth and Achievement from Kindergarten to Eighth Grade

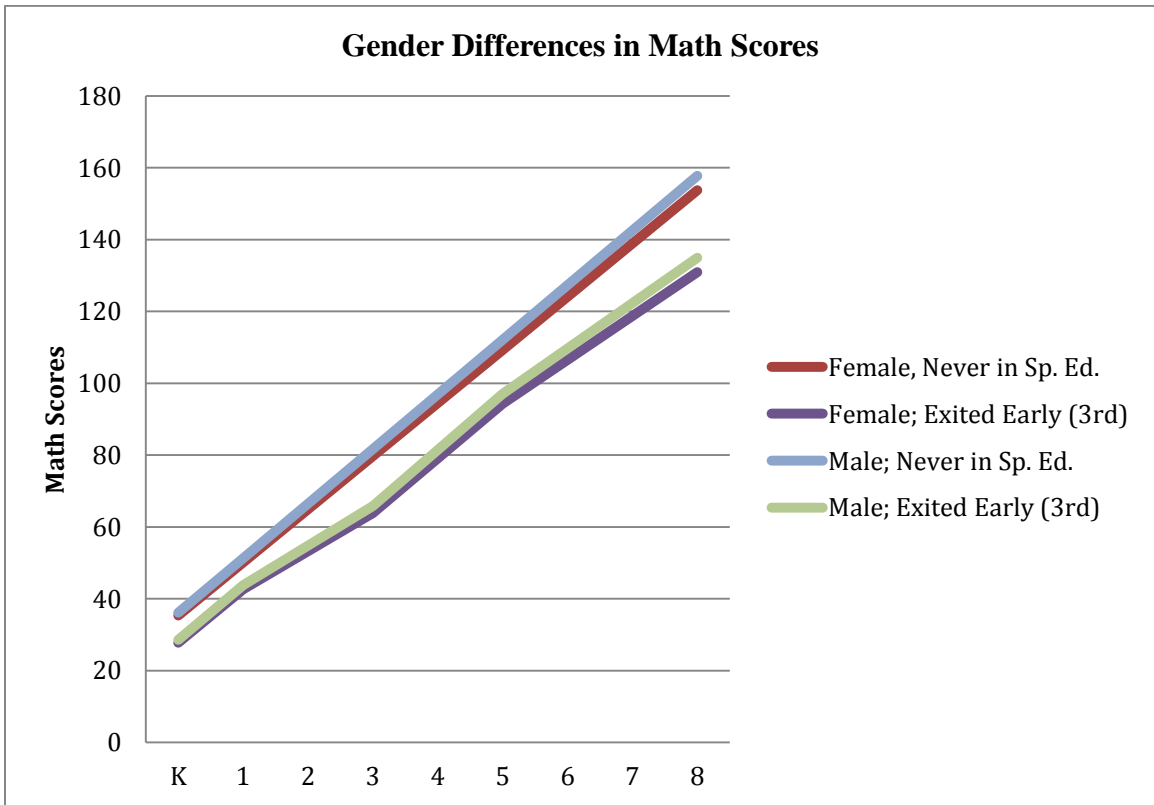
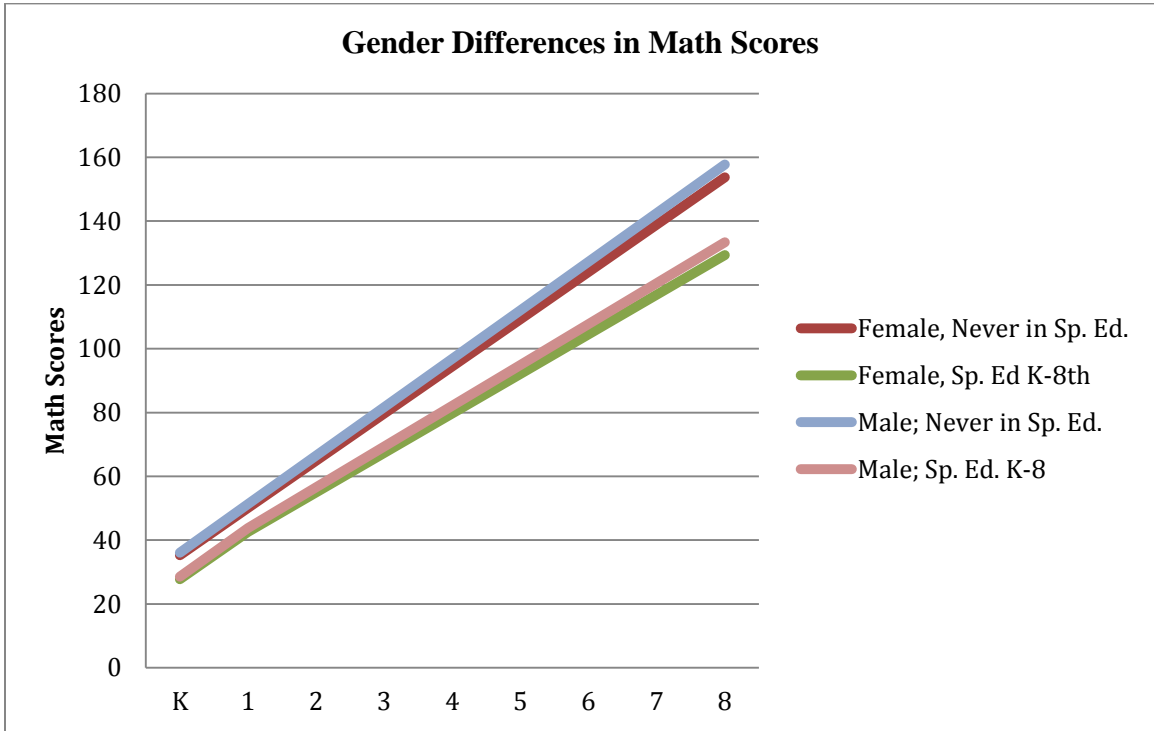
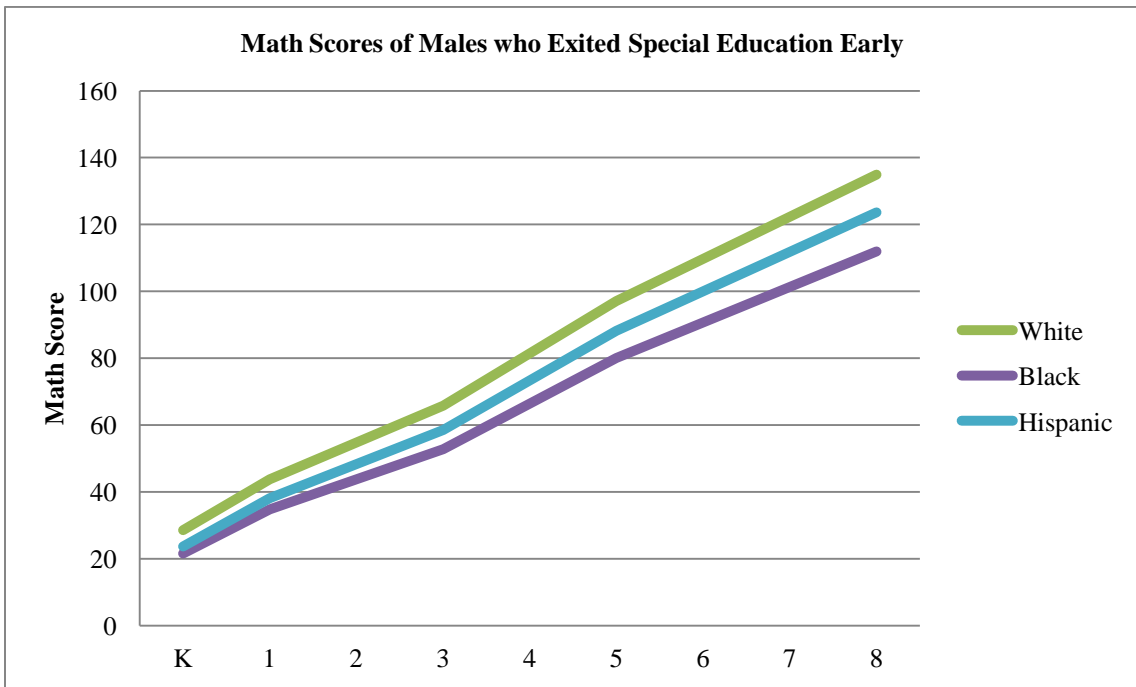
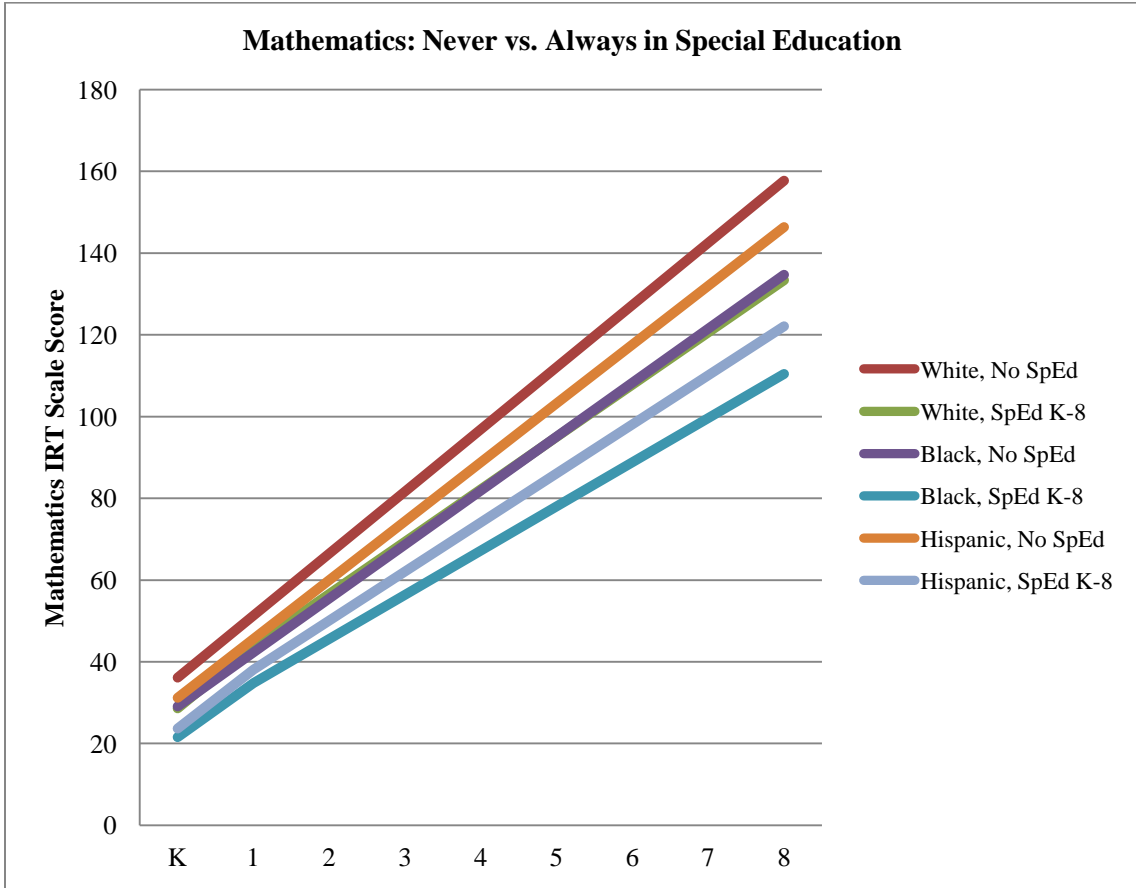


Figure 6. Mathematics Growth and Achievement of White, Black, and Hispanic Males



Summary

Students in the ECLS-K who received special education services were more likely than students who remained in general education to be male, change school once or more by fifth grade, be retained in grade, be educated in public schools, live in the South, be from families with below average socioeconomic status, and have below average approaches to learning scores, and reading and mathematics IRT scores. More than half of students in the ECLS-K who received special education services stopped receiving special education during the course of the study. Students who stopped receiving special education services were more likely than students who continued receiving special education to change schools, live in a suburban area, never be retained in grade, live in the southern U.S., and have higher approaches to learning and mathematics achievement scores.

The results of the logistic regression analyses indicated that the odds of a student receiving special education decrease as that student's mathematics achievement score or approaches to learning score increase. In addition, White males were more likely than females or males of any other race or ethnicity to receive special education services in the ECLS-K sample. For the students who were reported to have received special education services at some point between kindergarten and eighth grade, certain factors increased the odds that they would not be reported as receiving special education services at a future data collection point. These factors include having a higher mathematics IRT score or approaches to learning score. In contrast, students' likelihood of exiting special education was reduced slightly if they had a higher reading IRT score in the spring of

their kindergarten year and the odds were reduced greatly if they started receiving special education services at or by the third grade.

Finally, the results of the linear growth curve modeling I conducted indicated that the slope of students' reading and mathematics achievement growth is reduced both by time spent in special education and immediately upon exiting special education and returning full time to general education. However, the longer a student remains out of special education the more the gap in reading IRT achievement between him/her and those students never receiving special education closes. Race and gender also influence students' growth trajectories. Race exerts the most influence on achievement growth trajectories. For both reading and mathematics IRT scores, White students' scores grew at a faster rate than students who were Black, Hispanic, or from any other minority group from kindergarten to eighth grade, resulting in a widening of the achievement gap over time. Gender differences were less pronounced. Males had slightly higher mathematics IRT scores at kindergarten while females had slightly higher reading scores; however, the growth trajectories for both genders in both subjects were similar.

Chapter V

Discussion

This study utilized data from the kindergarten, first grade, third grade, fifth grade, and eighth grade Spring waves of the Early Childhood Longitudinal Study – Kindergarten cohort (ECLS-K) database to explore the characteristics, predictors, and growth trajectories of students who exit special education between kindergarten and eighth grade, those who stay in special education, and those who are only educated in general education. The results of this study indicate that within this specific dataset more than 50% of students in the sample who are reported to have received special education services at one of the waves of data collection were indicated to no longer be receiving special education at a different data collection point. In addition, the results indicated that there are predictive factors both for students receiving special education services and for a student's likelihood of exiting from special education. Finally, the results indicated that both placement in special education and exit from special education services were influenced by grade level at which receipt of special education services was first reported. For instance, the most significant predictor of exiting special education was the grade in which a student was reported to have first received special education services. If a student was found eligible for an IEP and started receiving special education services by the third grade they were significantly less likely to exit special education. In this chapter, I discuss the findings of this study, their implications for policy and practice, and potential future research on this topic.

Discussion of Findings and Implications for Policy and Research

Due to the dearth of research examining students who stop receiving special education services, and the complete lack of research up to this point examining the differences between students who exit special education and both students who remain in special education and students who are educated exclusively in general education, this study was largely exploratory; the purpose was to provide an initial look at the characteristics of students who exit special education in comparison with their general and special education counterparts as well as the predictive factors of belonging to one of the three groups, and the academic growth trajectories of each group. In this section, I discuss the findings, both of the analyses examining the characteristics and predictive factors of students who exited special education, remained in special education, or never received special education and of the analyses examining their academic achievement growth curves. The findings from a single study are insufficient to warrant changes in policy and practice; however the results of this study do provide insight regarding students who exit special education between kindergarten and eighth grade and how they compare to their peers in general and special education.

Academic achievement. When considering this study's results related to achievement in reading and mathematics, one must remember that the achievement scores being examined are from the spring of students' kindergarten year. I was interested in whether students' academic achievement in kindergarten was a statistically significant predictor of whether students would receive special education or exit from special education by eighth grade and, if so, whether or not it remained predictive after controlling for behavior and background characteristics.

The results of this study indicate that while the odds of students receiving special education increase when they have lower reading and mathematics achievement scores than their peers at the end of kindergarten, the odds of students exiting special education is increased only by higher scores in mathematics. Previous research on students with learning disabilities in mathematics has shown that students with LD progress at the rate of approximately one year of mathematics achievement for every two years in school (Cawley & Miller, 1989); and the mathematics achievement growth of students with LD eventually reaches a plateau, with minimal growth between the ages of 10 and 12 (Cawley, Parmar, Yan, & Miller, 1998). This study's finding that the mathematics achievement of children receiving special education at the end of kindergarten is predictive of their likelihood of exiting special education by eighth grade makes sense in light of research showing the achievement gap between students who have disabilities in mathematics and their normally achieving peers tends to grow with each academic year. The results of this study also indicate that the odds of exiting special education increase when students' have above average math achievement in early elementary school. This finding is consistent with previous research showing that the mathematics achievement gaps of children in later elementary and middle school are difficult to ameliorate and often grow over time regardless of the interventions provided (Cawley & Miller, 1989; Cawley, Parmar, Yan, & Miller, 1998; Fuchs & Fuchs, 2001). These findings underscore the long-term impact of a strong foundation in mathematics by the end of students' kindergarten year.

In contrast, the impact of students' reading scores at the end of kindergarten did not predict exiting from special education in my first two regression models. However,

when demographic characteristics were added to the model, students were slightly more likely to exit special education if they had below average reading IRT scores than if their reading achievement in kindergarten was above average. This finding is counterintuitive, since one of the eligibility requirements for receiving special education services under IDEA is that the disability “adversely affects a child’s educational performance,” (IDEA, CFR 34 §300.8) and the adversely affected educational performance that qualifies many students for services is in the area reading. Therefore, why are students exiting special education if one of the deficits that can be used to qualify them for special education services is still present? Unlike some studies reviewed earlier (e.g. SEELS), the ECLS-K did not gather survey information from parents or teachers on the reasons students stopped receiving special education services during each wave of data collection; therefore, it is unknown whether students in the ECLS-K, who reportedly stopped receiving IEP services during one or more waves of the study, had actually stopped receiving services because their IEP teams decided they had met their goals and no longer qualified as a student with a disability, if the students’ parents withdrew them from services, or if there was another reason special education services reportedly stopped. Factors influencing why students with below average reading IRT scores at the end of kindergarten were more likely to exit special education may include: the effects of higher approaches to learning scores, an interaction among one or more variables that were entered in the final regression model, or perhaps an unknown effect of the early reading assessment. It could also be that a student who struggles with reading during kindergarten but has average or above average mathematics achievement is more likely to

meet his/her IEP goals, be determined to no longer qualify as a child with a disability, and be declassified from special education services by eighth grade.

Academic achievement trajectories. The results of the growth curve analyses in this study indicate that regardless of which academic subject was examined (i.e., mathematics or reading) students' academic growth is influenced by similar factors: number of years the student received special education, number of years since exiting special education, race, and to a lesser extent gender. Receiving special education had the largest negative impact on student's growth in reading achievement. The more years a student was reported to receive special education, the slower his/her growth in reading IRT achievement over time. However, reading was not the only academic area negatively impacted by students' special education status. Students who continuously received special education or who exited special education between kindergarten and eighth grade demonstrated slower growth in both their reading and mathematics IRT scores than students who had never received IEP services.

When I analyzed the growth curve trajectories of students based on demographic characteristics (i.e., race and gender), the results indicated that students' race/ethnicity impacts math and reading achievement over time in a similar way as special education placement. For example, Black males who had never received special education had mathematics growth trajectories nearly identical to those of White males who had been reported to receive special education continuously. The growth trajectory for Hispanic students' mathematics IRT scores fell below those of White males who had never received special education. However, Hispanic males who never received special education experienced faster growth than White males who had always received special

education as well as Black males who had never received special education. Reading growth trajectories differed in that White, Hispanic, and Black males who had never received special education had faster growth in reading than students who had always received special education. However, there was minimal difference in achievement growth between Black males who had never received special education and White males who had continually received special education. The results of this study indicate that while belonging to a racial minority group may not predict receipt of special education services, it does influence academic growth trajectories in both mathematics and reading. The impact of race on academic growth is greatest for students who identify as Black/African-American followed by those who identify as Hispanic/Latino.

Behavior. The findings from this study indicate that differences in behavioral characteristics can be seen both between students who receive special education and those who do not, and between students who remain in special education and those who exit. In addition, behavioral ratings can be predictive of both who enters special education and who leaves it. However, not all behavioral characteristics are equally important. Levels of positive traits, such as attentiveness, task persistence, eagerness to learn, and flexibility, reflected in the ECLS-K's approaches to learning variable, are significantly higher in students who have never received special education than students who have received special education and, in addition, are higher in students who exit special education than students who stay in special education. Likewise, approaches to learning scores are predictive of both special education placement and exit. Students with low approaches to learning scores are more likely to receive special education

placement, and students receiving special education whose teachers rate them highly on approaches to learning traits are more likely to exit special education.

In contrast, this study's findings that students' externalizing behavior scores are not predictive of either special education placement or of the likelihood that a student in special education will stop receiving IEP services indicate that students' negative behaviors measured by the externalizing behavior score, such as the frequency with which students argue, fight, get angry, act impulsively, or disturb ongoing activities, may not play a significant role in students' special education status. The approaches to learning findings were consistent with the findings presented in the review of the literature, where multiple studies reported that positive ratings on behavioral and social skills inventories were linked to students likelihood of exiting special education (Carlson et al., 2009; Daley & Carlson, 2009; Innocenti, 2005; Kane & Johnson, 1995; SEELS, 2005); however, the findings on externalizing behaviors differed from the two studies utilizing the PEELS dataset (Carlson et al., 2009; Daley & Carlson, 2009) which found that students with lower rates of externalizing behaviors were also more likely to exit special education.

Demographic characteristics. As noted in the review of literature, findings from previous research regarding the characteristics of students who receive special education services and the subset of those students who stop receiving services are inconsistent. Ruedel (2008) did not find either a student's racial/ethnic background or level of reading achievement to be a significant predictor of whether or not a student who received special education in third grade would be in special education in fifth grade. However, she did find that students who were either Black or Hispanic were underrepresented in several

subgroups, including students who received special education continually from kindergarten through fifth grade and students who exited special education in third grade and were reclassified in fifth. Walker et al. (1988) found that of the largest group of students who exited special education, those with SLI, those who were Black were significantly less likely to stop receiving special education services than students of any other race. When examining SES, Ruedel (2008) found students from higher-SES backgrounds were more likely than students from lower-SES groups to stop receiving special education by fifth grade. In contrast, Carlson et al. (2009) found no statistically significant differences related to family income and whether preschoolers stopped receiving IEP services. In relation to SES, the findings of this study were most consistent with the previous research by Carlson et al. (2009), which examined the results of the nationally representative Pre-Elementary Education Longitudinal Study (PEELS). In regards to race/ethnicity as a predictor for special education placement, the findings of this study were most consistent with the previous research by Ruedel (2008), who examined three of the five waves of the ECLS-K used in this study.

The findings from this study indicate that SES is not a significant predictor of a student either receiving an IEP or exiting from special education. In contrast, a student's race or ethnic background is a predictor both of receiving an IEP and stopping IEP services. White students were the most likely to receive special education services and, with the exception of Hispanic students, significantly more likely to stop receiving special education services than any other racial/ethnic group.

The latter finding may be a reflection of students who are English language learners (ELL) being given IEP services instead of, or in addition to, ELL services, until

their English language abilities are strong enough for them to participate in the general education curriculum without additional supports. However, other possibilities for this result point to deeper issues with special education placement and reevaluation practices for bilingual or ELL students. For example, it has been suggested that Hispanic students are overrepresented nationally in the category of LD because many teachers and school psychologists report that they largely disregard the exclusionary clause in the IDEA's definition of LD when determining special education eligibility for minority and ELL students (Fletcher & Navarrete, 2011; Harris, Gray, Davis, Zaremba, & Argulewicz, 1997; Ochoa, Rivera & Powell, 1997). The exclusionary clause explicitly states that the category of "specific learning disability does not include learning problems that are primarily the result of visual, hearing, or motor disabilities, of intellectual disability, of emotional disturbance, or of environmental, cultural, or economic disadvantage" (34 CFR §300.8). In one study examining the effect of English language proficiency on the special education placement of Hispanic students, Artiles, Rueda, Salazar, and Higareda (2005) compared the special education representation of Hispanic students who were considered English language learners (ELL) and Hispanic students who were English proficient (EP; i.e., who knew English sufficiently to be in classes with native English speakers). They found that ELL students were underrepresented in special education between kindergarten and fifth grade and overrepresented between sixth and twelfth grade. In contrast, EP students were underrepresented between sixth and twelfth grade. In addition, a subgroup of ELL students who demonstrated limited Spanish language skills as well, were overrepresented throughout elementary and secondary school in the categories of LD and speech-language impairment, and at the secondary level in the

category of intellectual disability (formerly called mental retardation). These previous research studies suggest that both initial and reevaluations of Hispanic students may be biased in such a way that they lead to either the overrepresentation or underrepresentation of Hispanic students in certain special education categories at different ages. The current study found that Hispanic students were significantly less likely than White students to receive special education services between kindergarten and eighth grade, but significantly more likely than Whites to stop receiving special education services. These findings support previous research findings on the underrepresentation of Hispanic students in special education and raise the possibility that Hispanic students who need special education services are not being properly identified as eligible for services and others may be exited from special education prematurely.

The finding that White students are more likely than students from any minority group to receive special education services is initially surprising in light of the extensive research on the disproportionate representation of minorities, especially African-Americans, in special education (e.g., Donovan & Cross, 2002; Heller, Holtzman, & Messick, 1982; Hosp & Reschly, 2004; Oswald, Coutinho, Best, & Nguyen, 2001; Skiba, Poloni-Staudinger, Simmons, Feggins-Azziz, Chung, 2005). However, recent studies have documented what appears to be a change towards less overrepresentation of African-Americans in special education (Daley & Carlson, 2009; Hibbel, Farkas, & Morgan, 2006; Ruedel, 2008) particularly when factors such as SES, disability category, and academic achievement are controlled for. This study did not consider the interaction of a student's disability category with their likelihood of being in or exiting from special education, which leaves possible explanations for the finding that White students are

more likely to receive special education services than any other racial group unexplored. For example, historically African-Americans have been overrepresented in certain categories, such as intellectual disability and ED (Ruedel, 2008). If White students are overrepresented in other special education categories, especially ones which account for the greatest percentage of students qualifying for IEP services in the kindergarten to eighth grade age range, namely LD and SLI, then they could appear overall to be more likely than students of any other race to receive special education services, even if African-Americans are still overrepresented in smaller categories like intellectual disability. Since the ECLS-K was a nationally representative sample of all students entering kindergarten, as opposed to a nationally representative sample of kindergarteners who received special education services specifically, there were not enough students receiving special education services in some of the smaller disability categories to perform statistical analyses on the interaction between race and specific disability in the ECLS-K. Even in Ruedel's (2008) study, which focused on disproportionate representation in special education, the 14 IDEA categories were divided into two broad groups (judgmental disabilities and others) to ensure that enough students would be included in each group to conduct regression analyses. Future research, using datasets with a larger sample of students receiving special education services, could explore if race differentially predicts placement in various special education categories, and interactions between special education categories and other factors such as race and SES.

In addition to the demographic factors of gender, race, and SES, I examined the grade at which students were first reported to have received special education services. The results indicated that receiving special education services by third grade significantly

decreased a student's likelihood of exiting special education by 8th grade. This is consistent with Walker et al.'s (1988) finding that students in upper elementary school (4th-6th grade) were more likely than students in the earlier elementary grades to stop receiving special education services within two years. The results of the present study may be due to a correlation between early special education eligibility determination and severity of a student's disability. However, even students who qualify for special education services under what are often considered less severe disability categories in the early grades may be more likely to remain in special education. For example, students identified with SLI in the early grades, while more likely to stop receiving special education services than students of the same age in any other disability category, are also the most likely to be reclassified (most often as LD) and remain in special education (Carlson & Parshall, 1996; Halgren & Clarizo, 1993; Walker et al., 1988). Future research examining the factors which contribute to differing rates of students exiting special education between early elementary school and late elementary/secondary school would be helpful in determining whether this difference is a reflection of the greater likelihood of students with moderate or severe/multiple disabilities being identified for special education early and students with milder disabilities being identified later, or whether other factors play a significant role in when and if a student exits special education.

In addition to students' personal demographic characteristics, I examined several school characteristics in relation to students' placement in or exit from special education services. These characteristics included: region (Northeast, Midwest, South, West), urbanicity (urban, suburban, or rural), and school type (public or private). Among the

school characteristics, the results related to region stand out. Students in the southern United States were significantly more likely both to receive special education and to exit special education. In contrast, students were significantly less likely to receive special education services if they lived in the western U.S., and significantly less likely to exit special education between kindergarten and eighth grade if they lived in the Midwest. The relationship between school region and special education placement and exiting has not been explored in previous studies so these results are preliminary and difficult to interpret. However, there has been research on the relationship between school region as reported in the ECLS-K data and the type of kindergarten students attended (full-day or half-day) and their literacy and mathematics achievement scores (Lee, Burkam, Ready, Honigman, & Meisels, 2006). Lee et al. (2006) found that the western United States differed from all other regions of the U.S. because kindergarteners in the West showed no increase in literacy or mathematics learning in full-day kindergartens compared to half-day kindergartens. The researchers postulated this difference may be due to how much less common and more recent a phenomenon full-day kindergartens are in the western U.S. than the rest of the country. Since regional differences in special education have not been studied to the extent of regional variations in kindergartens, it is not possible to explain the results of my study based on previous research on regional special education placement trends. However, the regional variations found in this study suggest that future studies examining differences in how special education is implemented and to whom special education services are provided in the United States may be warranted.

Limitations and Future Research

The results of this study provide insight regarding students who stop receiving special education between kindergarten and eighth grade and how they compare to their peers who continually receive special education services or never receive special education services. However, there are several limitations of the study that may affect both the external and internal validity of the findings and should be evaluated when considering its implications.

Missing data. Missing data are often prevalent in large-scale datasets and this was the case for the data I used from the ECLS-K. Overall, I excluded approximately 9% (750) of the potential cases from my analyses due to missing data. Exclusion of missing data can have an effect on both the internal and external validity of one's findings (McKnight et al., 2007). For example, because excluding missing data results in a smaller sample, the statistical power to detect significant differences is decreased. In addition, the use of listwise deletion to exclude cases with missing data for one or more variables may have caused my analytic samples to be biased. In order to examine the potential bias in my samples due to the exclusion of cases with missing data, I conducted missing data analyses comparing my analytic sample to cases that were excluded, and comparing my analytic sample to the baseline ECLS-K sample. These analyses indicate that there are several differences between my analytic samples and the ECLS-K baseline sample but the only ones with differences greater than three percentage points were in the area of geographic region. Compared to the ECLS-K baseline sample, my samples tended to over-represent students from the West and Southwest United States. In addition, students from the Midwest and Northeast are under-represented. These regional

differences should be considered when generalizing the findings from this study to the national population.

Analytic sample. In addition to issues with missing data, there are limitations to the data that made up my analytic sample, which should be considered when determining the potential implications of this study.

Waves of data collection. This study employed data from every spring wave of data collection available in the ECLS-K dataset; however, data was only collected in five of the nine years between when the students entered kindergarten (1998-1999) and their typical eighth grade year (2007-2008). Throughout my analyses I operated as if a student who was reported as beginning or exiting from special education services in the 3rd, 5th, or 8th grade had experienced a change in special education status that year; however, each of those waves of data collection was preceded by at least one school year when data was not collected, which could have been the actual year a student's special education status changed. Likewise, students may have changed special education status during a period when data was not collected and changed again before the next ECLS-K data collection (e.g., been reclassified for special education or received special education for one year only) resulting in no change in special education status being reported in the data though, in fact, a change in status had occurred. Therefore, while the five years of data included in ECLS-K capture the special education status of most students in kindergarten through the eighth grade, it is likely that some students were "misclassified" in the analyses due to the four years during which data was not collected. Future research using data sets where data was collected every year over the course of the study would help to ameliorate these concerns.

Age of the data. This study provided insight into how the academic growth curve trajectories of students who exit special education compare to their general and special education peers for the first time. The longitudinal design of the ECLS-K allowed both for the analysis of growth curve trajectories and, on a more fundamental level, for the study of changes in students' special education status over time. However, using a longitudinal data set necessitates looking into past to try to arrive at conclusions about education today. Though the data collection for the ECLS-K was only concluded approximately five years ago (i.e., 2008) the first wave of data collection I used in this study was collected in 1999. Broad trends in patterns of special education eligibility determination, reevaluation, and exiting from special education may or may not have changed significantly in that amount of time. It is possible that recent changes in special education policy and practice may influence students' eligibility for and exit from special education services in ways not reflected in this study. For example, the 2004 reauthorization of the IDEA allows school districts to use up to 15% of their IDEA Part B funds to implement early intervening services for students who are not currently identified as students with disabilities but who have been determined through screening or teacher observation to need support to succeed in the general education environment (Hozella, 2007). This shift in national education policy towards intervening early with students who are struggling while they are still in the general education classroom may lead to changes in the characteristics of the students who receive special education services and subsequently of those who stop receiving special education services. For example, if early intervening leads to a decline in the number of students referred for special education evaluations for LD, there would likely be a change not only in

characteristics of students receiving special education but in the characteristics of students exiting special education. Although the findings from this study provide important insight into the characteristics of students with disabilities and their changes in special education status, future research should extend these findings using more recent data.

Students with disabilities. Students with disabilities were not oversampled in the ECLS-K resulting in very small numbers of students receiving special education under some of the less populated disability categories in the IDEA (e.g. deaf-blindness, multiple disabilities, traumatic brain injury, etc.). Therefore, I was not able to examine the interactions between the variables I examined and students' categories of special education placement. In addition, the ECLS-K direct assessments excluded students who required the accommodations of Braille, large print, or sign language. All other accommodations that students would normally be provided with during assessments were permitted and it was estimated that the number of students with disabilities receiving the direct assessment portion of the ECLS-K was reduced by less than one percent due to these restrictions. However, the ECLS-K user guides do not provide detailed information on which kindergarten programs for students with disabilities were sampled and which were excluded from the study. For example, some programs for kindergarten-age children with disabilities located in special centers or in separate parts of neighborhood public schools are considered ungraded and therefore may not be designated specifically as kindergartens. Whether or not the ECLS-K would have included children who attended these types of ungraded programs or separate centers for children with disabilities in the sampling is unclear. However, the possibility exists that a greater

number of children with disabilities were excluded from the ECLS-K sample due to their placement in programs that may not have met the ECLS-K criteria for kindergartens than the less than one percent estimate suggested in the ECLS-K User's Manual (Tourangeau et al., 2009).

Finally, one issue, which impacts all nationally representative datasets like the ECLS-K, is the question of whether the data on who is receiving special education services is being accurately reported. The ECLS-K used several different methods of establishing special education status. They surveyed students' parents, teachers, and other school staff members about students' special education status and reviewed school records including IEPs. I used the variable for special education status determined by the ECLS-K field management supervisors. All the ECLS-K field management supervisors received training in how to properly compile student data and used the same procedures in determining students' special education status making the variable for special education they reported the most valid and reliable of the special education status variables available in the ECLS-K. However, the possibility that some student's special education status was misreported in one or more years can never be completely eliminated.

Policy and Practice

Currently, the federal special education law, IDEA, has regulations pertaining to initial special education evaluations and reevaluations for special education students to determine if they still qualify for services. While these parts of the IDEA influence school policy and classroom practice for students who stop receiving IEP services during their elementary and secondary school years, they do not directly address their needs

either when they are receiving special education services or when they are transitioning back into general education. However the IDEA does provide provisions requiring transition statements for another subgroup of special education students. The IDEA's provisions on transition services require transition-related goals in the IEPs of students who are transitioning from high school to post-secondary education, employment, or community living. The IDEA provisions on transition services state:

Transition services. Beginning not later than the first IEP to be in effect when the child turns 16, or younger if determined appropriate by the IEP Team, and updated annually, thereafter, the IEP must include—

- (1) Appropriate measurable postsecondary goals based upon age appropriate transition assessments related to training, education, employment, and, where appropriate, independent living skills; and
- (2) The transition services (including courses of study) needed to assist the child in reaching those goals. (34 CFR §300.320)

Similar provisions designed for students of all ages who are receiving special education services and are planning to transition back to full time placement in the general education classroom without IEP supports and services could help mitigate some of the losses in academic achievement growth students experience not only during the years they receive special education but in the years after they stop receiving IEP services.

The results of this study indicate a majority of the students who receive special education services between kindergarten and eighth grade (53%) will stop receiving

special education services at some point during that time frame. According to state-reported data collected by the U.S. Department of Education (2011), student exiting from special education continues at a rate of approximately 11% a year for special education students between the ages of 14 and 21 years old. Considered together these data suggest that significantly more students exit special education between kindergarten and 12th grade to return to full-time instruction in general education classrooms without IEP services than exit special education after high school to pursue postsecondary goals. However, there are no formal policies or practices in place to help students make this transition or encourage their success once IEP mandated supports are removed.

Various policies and practices to support transition to general education are possible. One or more IEP goals could be designated for K-12 transition services. Requiring students to not only to demonstrate they have the level of competency required to no longer qualify as a student with a disability under IDEA, but also to have accomplished one or more goals individualized to their needs preparing them to study, take tests, work in groups, organize assignments, manage time, or execute assignments in the general education classroom without supports would help to prepare students for engaging in the general education curriculum without the presence of IEP services. For example, a student receiving special education services under the category of Other Health Impairments (OHI) for attention-deficit hyperactivity disorder (ADHD) might have a K-12 transition goal based on a positive approaches to learning behavior they need to develop such as organization, attentiveness, or task persistence. A student with an LD in reading might have a goal to learn study skills to break down reading tasks, such as pre-reading textbook chapters or reading with assignment questions in mind. A student

with SLI might have a goal to practice self-advocacy skills. As with all IEP goals, these goals would need to be individualized based on what was appropriate for each student given their age, disability, and the particular demands of the general education environment they would transition into.

The IDEA's requirements for students' annual goals closely align with what should be required if a specific K-12 transition goal were included in the IEP; they explain the annual IEP goals as:

(2)(i) A statement of measurable annual goals, including academic and functional goals designed to—(A) Meet the child's needs that result from the child's disability to enable the child to be involved in and make progress in the general education curriculum; and (B) Meet each of the child's other educational needs that result from the child's disability... [CFR 34 §300.320(a)(2)(i)(A) and (B)]

In this section and others, the IDEA stresses the importance of preparing students to participate in the general education curriculum. One could interpret all IEP goals as preparing students to “make progress in the general education curriculum” and therefore as goals with at least a partial intention to prepare students to participate in general education without the support of IEP services. However, the annual goals provisions stop short of requiring IEP teams to consider goals that prepare students for the removal of IEP services and supports. A student may meet all his or her IEP goals, demonstrating the ability to complete academic and functional goals with the required levels of accuracy and efficiency; however, the same student may be overwhelmed when supports are removed and he lacks the organizational skills to keep track of or complete assignments, or he does not know how to break an assignment down into manageable pieces on his

own. Including IEP goals that focus on providing students with the skills they need not only to access the general curriculum but to succeed within it without the support of special education services would further the existing intent of the IDEA to provide students with a free and appropriate public education and would help ensure better outcomes for the largest segment of special education students—those who exit special education.

Chapter Summary

The purpose of this study was to examine the characteristics of three groups of students: those who exit special education, those who remain in special education, and those educated exclusively in general education, as well as the factors that predict receipt of special education services and exiting. Furthermore, an additional purpose was to examine the academic growth curve trajectories of the three groups of students as well as the impact of demographic characteristics on student's growth trajectories.

I found that the majority of students with disabilities who receive special education services between kindergarten and eighth grade discontinue receiving those services during the same period of time, confirming what has been found in previous studies. In addition, this study confirms findings from previous studies that students with high teacher ratings on approaches to learning behaviors were less likely to receive special education, and if they did were more likely to stop receiving special education by eighth grade. Several findings confirmed some previous studies and conflicted with others. For example, this study found that neither student's SES nor externalizing behavior score predicted whether they would receive or exit from special education.

This study also extended previous research on students who stop receiving IEP services. This is the first study to examine growth curve trajectories not only of students who received special education or general education services, but also students who had exited special education after varying amounts of time. The growth curve analyses showed that the trajectories of students who exited special education were impacted both in the years during which they received special education services and after they stopped receiving them. However, while reduced below the levels of students educated only in general education, the growth curve trajectories of students who exited special education at various points in time remained higher than those of students who received uninterrupted special education services.

I recommend future research on the academic growth curve trajectories of students who exit special education in comparison to students who remain in general or special education. In addition, throughout this chapter, I discussed potential avenues for future research to extend the findings of this study, explore interactions between variables, or in cases where this study's findings were in agreement with some previous research and disagreement with others, to gain a better understanding of current trends of special education placement and exit. Finally, I recommend that policy makers and educators give greater consideration to how to provide a truly free and appropriate public education to the special education students who will stop receiving IEP services during their K-12 school careers. Though there are several limitations to this study, it is the first to examine the growth curve trajectories of students who stop receiving special education services and their general and special education peers and it provides important insight regarding students who exit special education.

Appendix A

Table A1

Articles Included in Literature Review: Type of Dataset Used

Study	Nationally representative dataset	State-level dataset	District/School-level dataset
Bielinski and Ysseldyke (2000)		Texas Education Agency's database of 4th graders who took the Texas Assessment of Academic Skills (TAAS) in 1993	
Carlson, Daley, Bitterman, Heinzen, Keller, Markowitz, and Riley (2009)	Pre-Elementary Education Longitudinal Study (PEELS)		
Carlson and Parshall (1996)		Michigan Department of Education's Special Education Student Database (1989-1993)	
Carlson and Reavey (2000)	National Longitudinal Transition Study (NLTS) (1985; 1990)		
Clarizio and Halgren (1993)			10 rural school districts in a Great Lakes state.
Daley and Carlson (2009)	Pre-Elementary Education Longitudinal Study (PEELS)		

Halgren and Clarizio (1993)		10 school districts in a rural north central state
Innocenti (2005)	The Utah Early Intervention Project (UTEIP)	
Kane and Johnson (1995)		4 School Districts in Vermont.
New Jersey State Department of Education, Division of Special Education (1992)	New Jersey State Special Education Plan, End of the Year Report, Application for State School Aid (ASSA), and Fall Report	
Ruedel (2008)	The Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K)	
SEELS (2005)	Special Education Elementary Longitudinal Study (SEELS) (1999; 2002)	
Wagner, Newman, Cameto, Levine, and Marder (2003)	The 2nd National Longitudinal Transition Study (NLTS2)	
Walker, Singer, Palfrey, Orza, Wenger, and Butler (1988)		Charlotte Mecklenburg, NC; Milwaukee, WI; and Rochester, NY (1982; 1984)
Ysseldyke and Bielinski (2002)	Texas Education Agency's database of fourth graders who took the TAAS in 1993	

Table A2

Articles Included in Literature Review: Description of Purpose & Findings

Study	Description of Purpose & Findings
Bielinski and Ysseldyke (2000)	<p><i>Purpose:</i> To examine how the dynamic nature of disability status influences performance trends for students with disabilities as a group differently than for students without disabilities.</p> <p><i>Findings:</i> Approximately 13% of students receiving special education services in 4th grade were declassified from special education in 5th grade. A slightly smaller percentage of students were declassified from special education the next few years reaching a low of 9.6% in 7th grade. Of the students who were declassified between 4th and 5th grades, 16% were reclassified for special education services between 6th and 7th grade. In every grade the students who exited special education were higher achieving than the students who entered special education.</p>
Carlson, Daley, Bitterman, Heinzen, Keller, Markowitz, and Riley (2009)	<p><i>Purpose:</i> To examine the characteristics of students who received special education during pre-school, the impact of transitions (e.g., from pre-school to K or K to 1st grade) on these children and the services they received, and changes in their performance on academic and adaptive performance measures over time.</p> <p><i>Findings:</i> Approximately, 15% of students were declassified from special education services each year between preschool and 2nd grade. However, the declassification rates for students who were transitioning between preschool and K or K and 1st grade were significantly higher</p>

than for students who were not transitioning. In addition, declassification status was related to children's scores on behavioral inventories.

Carlson and Parshall (1996)

Purpose: To examine the academic, social, and behavioral adjustment of students who were declassified from special education services in Michigan over a 5-year period.

Findings: Students who exited special education were comparable in terms of gender and ethnicity to the entire population of students receiving special education in Michigan. The highest number of students exited special education between the ages of 8 and 11. Students with SLI accounted for the largest percentage of students age 6 to 12 exiting special education, at age 13 the number of students with SLI and LD exiting special education was approximately equal, and from age 14 to 19+ students with LD accounted for the largest percentage of students exiting special education. Most students who returned to general education (80%) had spent between 1 and 4 years in special education. The longer students spent in special education the lower their grade point average was on average one year after returning to general education. Most teachers and counselors (79%) reported students who exited special education were socially as well adjusted or better adjusted than their peers. One year after students stopped receiving special education services, general education teachers and counselors reported 11% of those students required further special education services. Of the students identified as needing further special education services, half were rated as less socially well adjusted than their peers, and almost half returned to special education in the next 4 years. Of the students who returned to special education within 4 years of exiting, over half

returned under a different disability classification (most commonly SLI to LD).

Carlson and Reavey (2000)

Purpose: To determine some of the causes of and stories behind declassification by interviewing 5 people in their mid-20s who were declassified during high school.

Findings: Two participants thought they never should have been declared eligible for special education and felt that being declassified represented the correction of a mistake in placement. One participant initiated her own exit from special education when she no longer felt she required services. One participant exited special education when she entered high school but was reevaluated in her junior year and started receiving services again under another disability classification. The outcomes of the declassified youth in these cases studies varied depending on: a) the severity of their disabilities, b) their families' expectations for them and level of financial support, c) their relationships with peers, and d) their personal goals and ambition.

Clarizio and Halgren (1993)

Purpose: To determine what proportion of students had a change in classification over 3 years and what factors were associated with that change.

Findings: The school records of 654 rural students receiving special education services over a period of 3 years showed 38.2% of students had change in classification (21.9% by discontinuing special education services and 16.3% by reclassification). Students receiving special education services for SLI (55%) were the most likely to discontinue special education services followed by students with LD (10%), sensory motor impairments (11%), and ED (5%). Students served under only one disability category were more likely to stop receiving

special education (64%) than be reclassified (36%), while the reverse was true for children with two or more disability classifications. Reading, written language, and mathematics achievement were predictive of a child being reclassified.

Daley and Carlson (2009)

Purpose: To investigate whether the process of declassifying pre-school students from special education is logical and based on relevant child-level factors or if the declassification process varies according to demographic or district-level factors.

Findings: Approximately 16% of children tracked in the PEELS study stopped receiving special education services each year. Several variables were significant predictors of declassification. The characteristics of children and districts predictive of declassification were: being female, or classified with SLI; having fewer than average problem behaviors, higher than average scores on the Peabody Picture Vocabulary Test; and living in a low-wealth district or a district with small preschool special education programs.

Halgren and Clarizio (1993)

Purpose: To determine rates of classification change for a group of rural special education students over the course of 3 years and what factors were predictive of those changes.

Findings: Approximately 22% of the students stopped receiving special education services over a 3-year period. Parents' reported satisfaction with their child's school was unrelated to whether or not their children had discontinued special education. Reading, written language, and mathematics achievement were predictive of a child being reclassified.

Innocenti (2005)

Purpose: To longitudinally follow and examine the status of a group of children who were once enrolled in early intervention programs in the state of Utah in regard to classification/declassification.

Findings: Approximately half of the children who had received early intervention services were no longer receiving special education services in elementary school. The two largest categories of disability classification during early intervention services had been developmental delay and communication disorders. Four variables were predictive of declassification: high scores on the Cognitive Subtest of the BDI or the Vineland Adaptive Behavior Scale, a parent report of the child's health being good and low stress scores on the Parent-Child Dysfunction Scale of the Parenting Stress Index.

Kane and Johnson (1995)

Purpose: To synthesize the data collected for three studies of Vermont's Act 230, which was intended to create a comprehensive system of services to identify students at risk of school failure and provide greater support for students in general education.

Findings: Teachers of students who were declassified from special education considered them to be successful and felt that full-time placement in general education was appropriate for them. Parents of declassified students rated them as successful in behavior, forming friendships, participating in after-school activities, and academic performance. Students' grades remained the same after they stopped receiving special education services as they were when receiving services. Students who had exited special education within the previous two years reported that they liked school and felt successful there. Over 90% of special education

directors reported the needs of students no longer on IEPs were being met in the regular classroom.

New Jersey State Department of
Education, Division of Special
Education (1992)

Purpose: To report on trends in special education in the state of New Jersey over a 5 year period.

Findings: Over the five year span between 1986 and 1991, declassification rates and rates of reclassification from one special education category to another both hovered around 2% when end-of-year reports were compared with Fall reports.

Ruedel (2008)

Purpose: To examine the influence of student and school-level demographic, economic, academic, and behavioral variables on a student's probability of not receiving special education services two year later and to examine the differences among students who discontinue special education, students who remain in special education, and students who never received special education services.

Findings: Among 3rd graders, minority students were overrepresented in special education programs, were from lower SES backgrounds, had lower reading and mathematics scores, and had lower scores on behavior measures compared to White students. Likewise, a higher percentage of minority students attended poorer schools and schools with lower average academic achievement scores. SES and mathematics achievement measured in the 3rd grade were predictors to receipt of special education services in the 5th grade.

SEELS (2005)

Purpose: To examine the placement, services, demographic characteristics, academic, personal, behavioral, and parental factors of students who are declassified from special education.

Findings: One in every 6 elementary school students (17%) receiving special education services will not be receiving special education services 2 years later. Students receiving special education and related services for SLI compose the single largest group of students declassified from special education (34%). Students with high-incidence disabilities such as orthopedic impairments, OHI, LD, and ED had declassification rates ranging between 9 and 12%. Students with lower incidence or more severe disabilities such as visual and/or hearing impairments, intellectual disability, autism, TBI, or multiple disabilities were declassified less frequently (2% to 6%). Gender, race/ethnicity, and students' grade level did not account for significant differences in declassification rates. Students living in households with annual incomes greater than \$50,000 were more likely to be declassified from special education than students in families with lower annual incomes. "No longer needing special education services," was the reason over 8 out of 10 parents provided for their child's declassification. Students who were declassified were more likely to be described by their parents as highly persistent (i.e., very often continuing to work at something until finished) than students who remained in special education. Parents of students who were declassified were also more likely to describe their children as having strong computer skills, athletic ability, creativity, artistic ability, mechanical abilities and being well organized and sensitive to others feelings.

Parents of declassified students were also more likely to expect their children to graduate from high school and obtain some postsecondary education.

Wagner, Newman, Cameto, Levine,
and Marder (2003)

Purpose: To examine the classroom experiences of students with disabilities.

Findings: NLTS2 data suggest that in a nationally representative group of 14- through 18-year-olds; more than 5% are reported by their schools to discontinue special education services in a 16- month period, including almost 1% who receive disability-related accommodations under section 504 of the Vocational Rehabilitation Act. When parents of students who no longer received special education services were asked why they were not receiving special education services, 85% reported that their children no longer needed or no longer qualified for services or had met their IEP goals.

Walker, Singer, Palfrey, Orza,
Wenger, and Butler (1988)

Purpose: To follow a group of students receiving special education services in three large school districts over a two-year period in order to determine how many students are declassified from special education and related services and how many continue receiving special education but are reclassified under a different disability category.

Findings: Students initially classified as SLI were the most likely to exit special education within 2 years, followed by students receiving special education and related services under the categories of LD, ED, and visually impaired. Students served under the categories of hearing impairments, multiple disabilities, or intellectual disability rarely exited the special education system. Children in the upper elementary grades (4-6) were the most likely to be declassified

from special education within 2 years. Students with LD were more likely to exit special education if they were in the appropriate grade for their age. Students with SLI who had no parentally reported learning or emotional problems, were not Black, and received speech therapy as their only special education service were the most likely to exit special education. Similarly, for students with LD the more time spent each day in separate special education classes the less likely they were to stop receiving special education services within 2 years. Students initially classified as SLI were the most likely to be reclassified under a different special education category, particularly if they received special education instruction in addition to speech therapy, their parents reported a learning problem or were dissatisfied with the school's education program, or if the student was not in the appropriate grade for his age.

Ysseldyke and Bielinski (2002)

Purpose: To evaluate the extent to which declassification and reclassification of special education students influences the size of the achievement gap between students in general education and special education across five grades.

Findings: 13% of students receiving special education services in 4th grade were declassified from special education in 5th grade. A slightly smaller percentage of students were declassified from special education in the next few years reaching a low of 9.6% in 7th grade. Of the students who were declassified between 4th and 5th grades, 16% were reclassified for special education services between 6th and 7th grade. In every grade the students who exited special education were higher achieving than the students who entered special education.

Appendix A3

Articles Included in the Review of the Empirical Literature: Data Source and Analytic Sample

Study	Data Source	Subjects	Sample Size	Variables Examined
Bielinski and Ysseldyke (2000)	Database of tests scores for the reading and mathematics portions of the Texas Assessment of Academic Skills (TAAS)	All students who took the reading and mathematics portions of the TAAS in 4th through 8th grades	217,519 students in 4 th through 8 th grades	Age/grade, receipt of special education services, declassification status, reclassification status, reading and mathematics achievement scores on the TAAS
Carlson et al., (2009)	Pre-Elementary Education Longitudinal Study (PEELS)	A nationally representative sample of children with disabilities who were between 3 and 5 years old in 2003-04 school year	3,104 children	Gender, declassification status, transition type, performance on Problem Behaviors and Social Skills Scales of the Social Skills Rating System (SSRS)
Carlson and Parshall (1996)	Michigan Department of Education's Special Education Student Database and school district surveys of general education teachers and counselors	Children and youth ages 6 to 26 years old that were declassified from special education between 1989 and 1993.	51,624 students	Gender, race, disability category, age when returned to general education, approximate grade performance one year after returning to general education, social adjustment, continuing need for special education, and return to special education after exiting.

Carlson and Reavey (2000)	National Longitudinal Transition Study (NLTS)	Adults in their mid-twenties who were declassified from special education and participated in the first wave of the NLTS during the 1985-86 school year.	5 adults who were declassified from special education during secondary school and their parents	Interviews and school records were used to determine: disability classification and severity, family SES, size of secondary school, high school experiences, post-secondary experiences, and reaction to declassification.
Clarizio and Halgren (1993)	Student record reviews	Students ranging from preschool to secondary school who received special education services in one of 10 rural districts in a Great Lakes state between 1984 and 1988.	654 students	Disability classification, frequency of services, gender, initial grade level, local school district, initial primary category of disability, number of concurrent classifications, related services, minutes of IEP services per week.
Daley and Carlson (2009)	Pre-Elementary Education Longitudinal Study (PEELS)	A nationally representative sample of children with disabilities who were between 3 and 5 years old in 2003-04 school year	3,104 children	Special education eligibility status, preschool status, gender, race/ethnicity, disability category, household income, district wealth, metropolitan status, and size of the district's preschool special education program; school/program outreach, parent involvement and parent satisfaction; functioning, behavior, and emerging literacy.

Halgren and Clarizio (1993)	Record reviews and parent interviews	Students ranging from preschool to secondary school who received special education services in one of 10 rural districts in a Great Lakes state between 1984 and 1988.	654 students and 223 parents	Disability classification, frequency of services, gender, initial grade level, local school district, initial primary category of disability, number of concurrent classifications, related services, minutes of IEP services per week.
Innocenti (2005)	Utah Early Intervention Project (UTEIP) 3-year longitudinal study of children who received services either through Baby Watch (Part C of IDEA) or through preschool special education.	Children who were newly enrolled in Part C intervention programs and children enrolled in preschool special education	300 children (150 children who were newly enrolled in Part C intervention programs and 150 children enrolled in preschool special education)	Age/grade, disability classification, Cognitive Subtest of the Battelle Developmental Inventory (BDI), the Vineland Adaptive Behavior Scale, parent report of the child's health, and stress scores on the Parent-Child Dysfunction Scale of the Parenting Stress Index.
Kane and Johnson (1995)	Interviews with students, their parents, and teachers; students grades and performance on the Quality of School Life Scale (QSL)	Students were randomly selected from three categories a) students receiving special education and related services, b) students who had been declassified in the past two years, and c) students receiving Instructional Support Team services	220 students from each of the three categories. 1200 interviews with students, parents, and teachers.	Success of students declassified from special education, teachers' assessments of the appropriateness of students being served in general education, participation in after school activities, behavior, academic performance, grades, feelings of success, opinion of school.

NJ State Dept. of Ed., Division of Special Education (1992)	New Jersey State Special Education Plan, End of the Year Report, the Application for State School Aid (ASSA), and Fall Report (1990-1992)	All students receiving special education and related services in the state of New Jersey	Approximately 180,000 students in any school year	Classification, race, gender, age, graduation, declassification, reclassification, evaluations, reevaluations, referrals, staffing, placement, related services.
Ruedel (2008)	The Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K)	Children starting kindergarten and followed through 8 th grade	Over 21,000 children attending more than 1,200 public and private kindergartens	Race/ethnicity, SES, special education status, children classified in judgmental disability categories, reading and mathematics IRT scores
SRI International (2005)	Special Education Elementary Longitudinal Study (SEELS)	Elementary school students who received special education services during the 1999-2000 school year and stopped receiving services before the spring of 2002.	11,000+ students, who were 6 through 13 years old in the 1999-2000 school year	Disability category, gender, declassification status, grade level, race/ethnicity, income, reason declassified, behaviors, health, classroom settings, and parental expectations
Wagner, Newman, Cameto, Levine, and Marder (2003)	The second National Longitudinal Transition Study (NLTS2)	Youth who were ages 13 to 16 and were receiving special education services in grade 7 or higher at the inception of the study on December 1, 2000.	A nationally representative sample of 11,000+ youth	Classification status, accommodations under section 504, parental report of reason for students' declassification

Walker, Singer, Palfrey, Orza, Wenger, and Butler (1988)	Parent interviews and special education records of students in three large school districts	A stratified random sample of students receiving special education and related services in Charlotte, NC; Milwaukee, WI; and Rochester, NY	1,829 elementary school students enrolled in special education, split among the 3 districts	School related characteristics (study site, initial grade for age, types of services received, parents' satisfaction with program); child and family background characteristics (race, poverty, primary disability, student age); declassification status, and reclassification status
Ysseldyke and Bielinski (2002)	Database of tests scores for the reading and mathematics portions of the Texas Assessment of Academic Skills (TAAS)	All students who took the reading and mathematics portions of the TAAS in fourth through eighth grades	217,519 students	Age/grade, receipt of special education services, declassification status, reclassification status, reading and mathematics achievement scores on the TAAS

Appendix B

An account of the training provided to ECLS-K data collection staff and the ECLS-K instruments other than those used in my study which were detailed in Chapter 3 are provided in this appendix. Additional information on the design and implementation of the ECLS-K study can be found at <http://nces.ed.gov/ecls/kindergarten.asp>.

Data Collection Staff Training

Field supervisors were required to participate in a three-day training covering topics such as reviewing materials, contacting school coordinators, identifying children who have moved and locating them, identifying participating children's regular and special education teachers, distributing and following up on questionnaires for teachers and school administrators, completing the facilities checklist, and conducting observations to ensure quality control. After completing the three day training, field supervisors joined assessors in a five day assessor training workshop.

Following the training workshops the field supervisors and assessors were required to complete certification exercises including both written exercises and observations of them administering the direct assessment to students recruited for the training sessions. Approximately three quarters of the field staff passed the certification exercises on the first attempt. Field staff who failed the first attempt were required to complete an additional training and retake the certification exercises. All the trainees passed the certification exercises on their second attempt. Other than these trainings no specific attempts were made within the ECLS-K study to quantify the reliability and

validity of measures (e.g., the field management supervisors' records of special education services received).

Direct child assessments were administered in all waves of data collection by field staff that had been employed and trained to administer the one-on-one assessments to the participants. The assessors completed a five day training focused on administering the direct child assessments. Areas covered by the training included the standardized procedures for administering all assessment items, administration of role-play scripts used in the direct child assessment, precertification exercises, and ways of building rapport with children.

General knowledge assessment. In kindergarten and first grade, assessors administered a general knowledge assessment consisting of science and social studies items. The science items were designed to measure students' science competency in conceptual understanding of scientific facts and understanding of and ability to form questions about the natural world. Social studies items were designed to measure students' knowledge of history, government, economics, culture, and geography. In third, fifth, and eighth grades, the general knowledge assessment was replaced with a science assessment. As noted previously, the third- and fifth-grade batteries only addressed the science domain with equal emphasis placed on life science, earth and space science, and physical science. In the third, fifth, and eighth grade science assessments, students were required to demonstrate understanding of the physical and natural world, draw inferences, interpret scientific data, formulate hypotheses, comprehend relationships, and identify the best plan to investigate a given question.

School administrator questionnaire. The principal, administrator, or headmaster of each sampled child's school was asked to complete the school administrator questionnaire. This self-administered questionnaire was divided into sections on factual information about the school and its programs and sections on the school administrator's background and his or her evaluations of the school's climate. Either the principal or a designee familiar with the requested information could complete most of the sections, including those on: school characteristics (e.g., type of school, length of school year and start and end dates, school size, average daily attendance, highest and lowest grades); academic course offerings; child population characteristics (e.g., race/ethnicity, participation in special education services, percent Limited English Proficient); school facilities and resources; community characteristics and school safety; average starting salary of full-time first year teachers; school policies and programs (e.g., assessments and testing, or free and reduced-price breakfast and lunch); availability of different types of foods during school hours; and programs for special populations (e.g., ESL and bilingual education, special education, gifted and talented). The school administrators were asked to complete two sections themselves. One section focused on principal characteristics (e.g., sex, race/ethnicity, age of principal, experience and education). The second section required principals to report on their evaluations of the school's governance and climate (e.g., goals and objectives for teachers, school functioning and decision making).

Student records abstract file and school facilities checklist. After the end of the school year in which the kindergarten, first, third, and fifth grade waves of ECLS-K data were collected, school staff completed a student records abstract form for each

sampled child. The student records abstract file contains information from school records about each child's school enrollment and attendance; Individualized Education Program (IEP) and disability status; participation in a Head Start program before entering kindergarten, and languages used at home and in school.

During the same years the student records abstract files were collected, a school facilities checklist was completed by ECLS-K supervisors for each school with a sample child enrolled. The facilities checklist always collected information about the (a) presence of security measures, and (b) school neighborhood characteristics. Facilities checklists completed during the spring of the kindergarten, first grade, and third grade waves also collected information about the (a) availability and condition of selected school facilities such as gymnasiums, toilets, portable classrooms, etc., (b) the presence of environmental factors that may affect the learning environment, and (c) the overall learning climate of the school.

During the final wave of ECLS-K data collection (i.e. eighth grade), the student records abstract files and school facilities checklists were discontinued due to budget constraints. Items pertaining to students' IEPs and disability status which had been collected as part of the student records abstract files were collected in the special education teacher questionnaire instead.

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