ABSTRACT

Title of Document: THE EFFECTS OF THE DURATION OF SPECIAL EDUCATION ON STUDENT'S EXTERNALIZING BEHAVIOR

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To date, the direct effects of the number of years students spend in special education on behavior outcomes has not been explored. This study sought to fill a gap in the existing literature by investigating the extent to which the number of years (i.e. *duration*) spent in special education and other aspects of special education (e.g. classroom setting and primary disability type) affected externalizing behavior in the fifth grade. Multiple regression analysis was used on data from the Early Childhood Longitudinal Study (ECLS-K; National Center for Education Statistics, 2002) longitudinal study to address the research questions. Results showed that longer placements were associated with higher rates of externalizing behavior. Additionally, receiving services in less inclusive settings and having a primary disability code of ED were associated with higher rates of externalizing behavior. Existing research findings and psychological theory were utilized to provide potential explanations for the results.

THE EFFECTS OF THE DURATION OF SPECIAL EDUCATION ON STUDENT'S EXTERNALIZING BEHAVIOR

By

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Chapter 1: Introduction

Students with disabilities receive special education services at some point in their schooling. Some students receive their education inclusively with peers without disabilities; others are placed in resource rooms for certain academic subjects throughout the day; and still others receive their entire education in self-contained classrooms or schools with other disabled peers. Regardless of the setting in which it takes place, special education is typically not a one to two year placement. Rather, on the whole, students continue to receive services for many years after their initial placement. It would, therefore, be helpful to know what the effects of special education are for students in long-term placement.

Duration of Special Education as a Predictor

Trends in special education show that students are identified for services early in their schooling. It was reported that in 2006 5.8% of American children ages 3 to 5 received services under IDEA (Office of Special Education and Rehabilitative Services, 2008). After beginning special education students typically remain classified for at least several years. The National Center for Education Statistics found that of students in special education in third grade 43% were receiving services for one year, 23% for three years, and 34% for all four years, from kindergarten through third grade (Holt, McGrath, & Herring, 2007).

Given that special education is not a transient placement for many students, the question becomes what are the effects over time of being in special education? Although the impact of specific aspects of special education have received much

analysis – such as placements in an inclusive versus self-contained setting – research using number of years spent in special education (i.e. *duration*) as an independent variable of interest remains glaringly inadequate. We are, thus, left to wonder whether long-term placements in special education have an influence on student outcomes? The present study sought to address this absence of research by asking whether the duration of time a student spends in special education has an effect on their externalizing behavior.

Externalizing Behavior as an Outcome Variable

Externalizing behavior in children is characterized by hyperactivity, aggression, defiance, and/or destructive behavior (Fanti & Henrich, 2010). Research into the developmental progression of externalizing behaviors into adolescence and adulthood is critical since childhood aggression has been shown to be predictive of adult crime and violence (Farrington, 2001; Moffitt, 1993), making the study of early externalizing behavior a public health concern (Hann, 2002).

Why use externalizing behavior as an outcome variable for the study of long-term special education placement? The answer is multidimensional. First, as mentioned before, the study of early externalizing behavior is a public health concern and it behooves the research community to examine as many predictors as is possible so that we may understand why externalizing behavior accelerates over time in some youngsters and ways to curb acceleration. Second, externalizing behavior has been shown to be influenced by environmental factors. Some examples include physical abuse in the home and sibling aggression (Price, Chiapa, & Walsh, 2013) as well as peer rejection (Prinstein & La Greca, 2004). Being that special education is not

transitory for many students, it is important to understand whether the special education "environment"—be it a self-contained classroom or the way students view their environment after receiving a label of student with a disability—produces differential outcomes as a function of time spent in said environment. Third, externalizing behavior is present in special education (Coutinho, 1986). For example, it's been reported that students with LD (Mccarthy & Paraskevopoulos, 1969; McConaughty, 1986; Shepard & Smith, 1983) and ID (Dekker, Koot, van der Ende, & Verhulst, 2002; De Ruiter, Dekker, Verhulst, and Koot, 2007) exhibit more externalizing behaviors than their non-disabled peers. There are several explanations for why externalizing behavior may be elevated in some special education populations. Some studies implicate problem behavior as a precipitant to a student being referred for placement (Bradshaw, Buckley, & Ialongo, 2008; Lloyd, Kauffman, Landrum, & Roe, 1991) while others suggest low academic performance, which is pervasive in special education, is a predictor of problem behavior (Maguin & Loeber, 1996).

Many non-school related predictors of externalizing behaviors have been identified and, while they are not included in the present study, they deserve a brief mention. Environment-specific predictors include, but are not limited to, parent psychopathology and peer rejection (Laird, Jordan, Dodge, Pettit, & Bates, 2001). Child-specific variables, such as emotion dysregulation, tendency towards inattention, and comorbid psychopathology have also been identified as predicting elevated problem behavior (Hill, Degnan, Calkins, & Keane, 2006).

Proposed Study

The current study pursued questions of how special education and externalizing behavior are related. The specific research questions were as follows:

Question 1 (Main Research Question): To what degree does the duration of time (in years) a student spends in special education have an effect on externalizing behavior in fifth grade?

Question 2: To what extent, if any, does the primary disability type or the setting in which special education services are received contribute to externalizing behavior in fifth grade?

Question 3: Is the duration-externalizing behavior relationship moderated by duration-by-setting and/or duration-by-disability interactions?

To the best of the author's knowledge, the *duration* of special education has not been used in any previous study as a primary independent variable in predicting student behavior. Thus, this study will fill a significant gap in the extant literature. Although studies do not exist to assist in hypothesizing the existence of a duration-externalizing behavior relationship, several psychological theories of behavior change provided a foundation for suggesting a potential relationship.

Theoretical Frameworks

Labeling theory (Tannenbaum, 1938) posits that the behavior and self-identity of individuals is influenced by that which they perceive as inherent in the label or classification they have been given. For some students the label of "student with a disability" implies that society believes them to be different from "normal kids" and, thus, deserve a classification apart from them. To be given this label during childhood

or adolescence—stages of development where relationships with and perception of peers is particularly important—could lead to the student identifying themselves as an outsider and influence behavior by beginning to act out against a society that has made them feel inferior. A case study presented in The Atlantic magazine depicts the negative influence that a label can have on a student in special education:

> *"…Matthew has a reading disability…He had lots of friends and no trouble until he started first grade. But very quickly a bright child who doesn't learn knows something is wrong and begins to try and compensate in various ways. Matthew became bossy and attention-seeking, and began to alienate other kids because of his behavior, even though we were quite clear that the initial problems were academic." (p.54; Fisman, 1991)*

Based on labeling theory, the psychological effects of a student receiving a label suggesting they deviate from the norm could contribute to increased problem behavior. Along this line of reasoning, the longer a student is labeled as having a disability, the more negative consequences, such as problem behavior, will result.

Additionally, opponents of labels in special education posit that teachers and administrators lower their expectations of a student with a disability label, creating a vicious cycle in which the student is given fewer challenges and falls further behind academically. As research has shown, falling behind academically is correlated with an increase in externalizing behavior (Nelson, Benner, Lane, & Smith, 2004; Hinshaw, 1991). This relationship is certainly bidirectional in that students' behavior problems and consequences of behavior (such as suspension) lead to lower achievement while one can reason that the opposite, students falling behind

academically compare themselves to higher achieving peers, reducing their self-concept and contributing to acting out behavior (Henderson, Dakof, Schwartz, & Liddle, 2006), is equally true.

Another theory that suggests longer periods of time in special education may have a negative effect on student behavior is that of peer contagion. Peer contagion (Dishion & Dodge, 2005) refers to the degree to which peer behavior induces similar behavior in others. In the delinquency literature, the effects of peer behavior have been found to be so powerful, in fact, that if even one peer with problem behavior exists in a group, there is a high probability that others will also act out (Cairns, Cairns, Neckerman, Gest, & Gariepy, 1988; Dishion, Andrews, & Crosby, 1995). Although the delinquency literature focuses on severe cases of deviancy, such as gang membership, it underscores the important role that peers can play in behavior change. Whereas labeling theory could be used to explain the effects of time in special education on all special education populations, regardless of setting, peer contagion theory is more relevant to students receiving services via resource rooms or self-contained classrooms/schools. This is because peer contagion theory posits that influence occurs when students are in proximity contact with one another. In less inclusive settings, such as self-contained classrooms and resources rooms, which remain a prominent placement for students with ED and several other severe disabilities, the presence of one or several students who act out frequently could influence other peers to act out. It may come as no surprise that externalizing behavior is viewed by teachers as more contagious to classmates than internalizing behavior. Safron and Safron (1987) surveyed general and special education teachers

(N=83) on, amongst other things, how contagious they viewed their student's behaviors to be. They found that in both regular and special education classrooms, teachers viewed externalizing behavior (negative aggression) to be more contagious to peers than internalizing behavior (social withdrawal).

Reinforcement and imitation have been suggested as the mechanisms through which peer contagion influences behavior (Burgess & Akers, 1966), thus, social learning theory (Bandura, 1973) is also relevant. That is, students who may not have otherwise acted out in class may observe that students who act out get attention from peers and teachers or escape from an undesirable work or social environment, leading them to imitate this type of behavior to gain the same outcome (i.e. attention or escape). These students may also begin to act out in an attempt to gain social acceptance from peers exhibiting problem behavior in these self-contained classrooms. The implication here is not that problem behavior is exclusive to students with disabilities or in self-contained classrooms. Indeed, problem behavior exists across age, gender, race, development, and environment. Research has shown, however, that self-contained classrooms/schools are common placements for students with ED—a disability category heavily populated by externalizing rather than internalizing students (Greenbaum, Dedrick, Friedman, Kutash, Brown, Lardieri, and Pugh, 1996)—and other students with behaviors that were disruptive in the general education classroom, suggesting there is a good chance that these environments will have a higher percentage of students with externalizing behaviors than other types of classrooms.

Chapter 2: A Review of the Literature

Search Methods

A consultation session was initially conducted with a librarian at the University of Maryland McKeldin Library to discuss available electronic databases. Electronic databases were the primary sources for the review of literature. Three electronic databases, EBSCO, ERIC, and Social Sciences Citations Index, were searched. Search terms included ‘externalizing’, ‘externalizing behavior’, ‘problem behavior’, ‘behavior outcomes’, ‘high incidence disability’, ‘special education’, ‘problem behavior stability’, ‘duration’, and ‘special education duration’.

Research Literature

It is tempting to ask the question “How does special education affect students?” This may, however, be too broad a question for a system that serves a heterogeneous population in a wide variety of environments. As McLeskey (2004) points out, literature has focused on subfields of special education rather than comprehensive reviews of special education in general. Some subfields have yielded a significant number of studies (i.e. setting where services are received; disability type) while other fields have only a small amount of literature dedicated to them (i.e. number of years spent in special education). The following literature reviews 12 studies organized to address two lines of research. First, what limited research exists covering the influence of duration of special education on student outcomes is presented. Second, other aspects of special education (i.e. setting and disability type) affecting student outcomes, namely student behavior, are discussed.

Duration of Special Education Placement

The school environment has significant developmental implications for students, both academically and otherwise. Just as students' academic skills evolve with every year they spend in school, it stands to reason that behavior patterns similarly develop over time, in part, as a function of the school environment. Along this line of reasoning, the behavior of a student who spends five years in a self-contained special education classroom would be more influenced by elements of that placement than a student who was there for only two years and then returned to a general education classroom. Similarly, a student who has received special education services in an inclusive general education classroom for four years and is embarrassed about being labeled as having a disability may perceive and interact with his social environment differently than his counterpart who has received services for only one year.

Surprisingly, the potential role that duration of placement plays in the link between special education and behavior change has not been explicitly examined. Indeed, it seems that no study exists that looks directly at the effects of duration of special education on behavioral outcomes of students and limited research exists on how it affects academic outcomes. Instead, duration appears in the literature as a side note, a variable that is mentioned but not explored in depth. An example of this can be found in Carlberg and Kavale's (1980) meta-analysis of 50 studies comparing inclusive and self-contained special education. The authors found that the effect size of the posttreatment difference between inclusive and self-contained settings was not correlated with the length of special education placement. In other words, duration of

placement did not make a difference in the superiority of one setting to another. This should not be interpreted, however, to mean that there were no effects of duration in general, just that any effects were not setting specific. Although it is true that Carlberg and Kavale included duration as a variable in their analysis, it was given only two sentences of mention throughout the paper and its potential importance was not further explored.

Longitudinal research designs, which provide insight into changes in student variables over time, offer the possibility of looking directly or indirectly at the effects of duration. In order to be useful in this way longitudinal designs would ideally follow a cohort with disabilities versus without disabilities over two or more post-baseline time points. At the very least, if a non-disabled cohort cannot be included as a control group, a minimum of two post-baseline time points would be needed to properly evaluate student variable changes at multiple durations of special education services. Unfortunately, most longitudinal studies in the special education literature follow students at only two time periods: baseline and several years later (Anderson, Kutash, & Duchnowski, 2001; Richardson & Koller, 1996). Several exceptions exist, however, and are discussed below.

Peetsma, Vergeer, Roeleveld, and Karsten (2001) conducted a longitudinal study in which they tracked the academic and psychosocial progress of special education students throughout their primary school years. Students were part of a large, longitudinal study cohort in the Netherlands known as PRIMA. All were beginning primary school and were classified as having mild disabilities at the time of baseline data collection. Matched pairs of students in inclusive special education and

self-contained schools were formed and the pairs were followed for two post-baseline time points: two years and four years post-baseline. At each time point mean scores on academic (achievement tests in language and math) and psychosocial (teacher-rated student self-confidence and motivation) measures were compared for the inclusion group versus self-contained group in order to examine differences in their development over time.

Results on psychosocial measures showed minimal, non-significant change in the self-confidence and motivation levels of both groups of students throughout the duration of the study. One explanation for the absence of change over time could be that these variables were based on teacher-ratings of students' subjective experiences. Academic achievement, however, did appear to change over time. Both groups of students improved their language and math achievement scores at two years post-baseline and four years post-baseline. While groups did not differ in their rate of growth during the first two years of primary school, those who remained in self-contained special education made significantly fewer gains than their counterparts in inclusion four years after entering primary school.

Although the main objective of their study was to compare outcomes in inclusive versus self-contained settings, Peetsma et al.'s (2001) study indirectly addressed the question of whether the duration of time students spend in special education is associated with differential outcomes. Their results suggested that while special education is effective at increasing academic achievement in primary school students, the environment may begin to deplete returns the longer a student remains in special education. In this way, duration does matter. It should also be noted here that

since a non-disabled group was not included in the study, we cannot be sure that the rate of academic improvement seen in either of the groups was significantly better or worse or was consistent with the rate of growth seen in students not receiving special education services. Indeed research has shown that students in special education continue to perform academically below the rate of their non-disabled peers (Coutinho, 1986). While this study is important in that it demonstrates that the duration of time a student spends in a specific environment has an effect on outcomes such as academic achievement, it does not address the question of whether behavior is likewise impacted the longer a student remains in special education.

De Ruiter, Dekker, Verhulst, and Koot (2007) compared behavior change in students with ID to that of students without ID over six years. Students with ID (N=978) received their education in a school in Holland for children with borderline to moderate ID; non-ID students (N=2,047) were recruited from the general education community. The Child Behavior Checklist (CBCL; Achenbach, 1991) was completed by each child's parent at three time points over six years and growth modeling was used to create a cohesive profile of behavior change over time. Only results related to externalizing behavior are reported here.

Throughout the course of the study, students with ID exhibited higher levels of externalizing behavior than their non-ID peers. Surprisingly, however, students with ID experienced a significantly larger decrease in externalizing behavior than non-ID students over time. The latter finding was not in line with the study's hypothesis and the authors did not go into great detail when postulating an explanation other than to suggest it was reflective of age-related maturation. It could

be, however, that some element of their placement in a school specifically for students with ID influenced student's behavior change over time. One of the reasons de Ruiter et al.'s (2007) study is important is their inclusion of a comparison group. We can see that students with ID in special education exhibited a continuous decrease in externalizing behavior over time such that declines were larger five years post-baseline than they were one year post-baseline and, importantly, that their slope of change was greater than the general education group. Although causal inferences are limited as to why externalizing behavior decreased, this study suggests that externalizing behavior may decrease in students with ID the longer they remain in self-contained special education environments, in part, as a function of the environment. The differences in the slope of change for students with ID compared to their non-disabled peers indicate this may be an explanation worthy of consideration.

Summary. For many students, special education is not a transient placement. It is important, then, to know what the effects of special education are for students over long-term placements. There have been many longitudinal studies, which allow for the evaluation of changes over time, conducted in special education but most do not facilitate consideration of whether the duration of time a child spends receiving services plays a role in changes observed over time. One reason appears to be that most longitudinal research designs in special education include only one post-baseline data collection point, meaning changes after, say, one year of services cannot be compared to changes after five years. Of the existing studies that use multiple post-baseline points, it appears duration of placement is a variable worthy of exploration. For example, students with ID show decreased momentum in achievement (Peetsma

et al., 2001) and continuously greater declines in externalizing behavior (De Ruiter et al., 2007) after several years in self-contained special education.

Setting and Disability Type

Unlike the duration of receiving special education services, the impact that other aspects of special education have on student outcomes has a decent amount of coverage in the existing literature. Two such subfields include comparisons of the effects of inclusive versus self-contained programs and how these environments differentially affect students based on disability.

Inclusive vs. Self-Contained Setting

Until recent decades, special education was thought to involve a classroom or school designated exclusively for students with disabilities. Although it continues to be a controversial shift, including students with disabilities in classes with their general education peers has become the norm in many schools across the United States and, indeed, the world. Advocates for inclusion programs argue that the environment allows students with disabilities the opportunity to learn alongside typically developing peers and follow a curriculum that is more achievement-oriented than a special education curriculum, resulting in higher achievement (Cole, Waldron, & Majd, 2004; Myklebust, 2007). In addition, students with and without disabilities could benefit socially by the presence of diversity of ability within the class and, academically, by the presence of additional staff in inclusive classrooms. Zigmond (2003) describes the benefits of inclusion this way:

> *The general education classroom provides students with disabilities with access to students who do not have disabilities; access to the curricula and*

> *textbooks to which most other students are exposed; access to instruction from a general education teacher whose training and expertise are quite different from those of a special education teacher; access to subject matter content taught by a subject matter specialist; and access to all of the stresses and strains associated with the preparation for, taking of, and passing or failing of the statewide assessments*. (p. 197)

On the other hand, others argue that if students with disabilities remain in general education they will compare themselves to their typical peers, which may decrease their motivation and self-esteem. Inclusion may also disadvantage typically developing students because teachers will pay more attention to students with disabilities, the academic standards of the class may decrease, and because students with disabilities may be disruptive (Dyson et al., 2004). Zigmond (2003) describes the benefits of self-contained settings this way:

> *Pull-out settings allow for smaller teacher-student ratios and flexibility in the selection of texts, choice of curricular objective, pacing of instruction, scheduling of examinations and assignment of grades…allow students to learn different content in different ways and on a different schedule.* (p. 197)

McLesky (2004) provides a picture of how the progression towards our current view of inclusion as the preferred special education placement has unfolded. He used citation analysis in key scholarly journals (i.e., *Exceptional Children, The Journal of Special Education,* and *Remedial and Special Education*) that focused broadly on special education rather than on specific disabilities to identify classic articles that have shaped the field of special education. Ultimately, McLesky

described the 10 articles from the aforementioned journals that were found by *Social Sciences Citation Index* (SSCI) to be the most frequently cited in literature before 2002. Of these 10, three were directly relevant to the discussion of inclusion programs (Dunn, 1968; Will, 1986; Fuchs & Fuchs, 1994).

Dunn (1968) is considered the catalyst for the growth of research into the inclusive special education programs that have populated the recent decades. In his largely opinion piece, Dunn questioned the status quo of educational placements for students with mild intellectual disability (ID) in self-contained classrooms and schools by pointing out the lack of demonstrated effectiveness of these environments for students with mild ID. He concluded by calling for a reevaluation of educational placement for this category of student. Nearly 20 years later, with self-contained special education continuing to predominate, Will (1986) echoed Dunn's call-to-action claiming a higher level of "shared responsibility" in general education classrooms could contribute to a higher level of achievement in students with mild disabilities. Finally, Fuchs and Fuchs (1994) extended this argument to insist that students with severe disabilities should also be taught in general education classes.

With inclusive education widespread in schools, the question now becomes how do the effects of inclusion differ from those of self-contained classrooms and schools? As will be seen in the subsequent discussion, results of studies in both settings have varied, and in studies that have found significant effects for setting, the effects have been mostly small (Baker, 1994a; Lindsay, 2007; Ruijs & Peetsma, 2009). Thus, conclusions about the superiority of one special education setting over another should be made with extreme caution.

Baker (1994a) summarized the results of three important previous meta-analyses that evaluated the effects of inclusive special education on student's academic and social outcomes. All studies used achievement test scores to evaluate academic outcomes and one or several of the following to evaluate social outcomes: self, peer, teacher, and observer ratings of student's relatedness to others. Carlberg and Kavale (1980), Wang and Baker (1986), and Baker (1994b) all found positive, yet small to moderate, effect sizes ranging from 0.08 to 0.44 for academic outcomes and 0.11 to 0.28 for social outcomes favoring the inclusive settings. A more recent review (Lindsay, 2007) included studies from 2000 to 2005 with direct comparisons between outcomes of students in inclusive versus self-contained education. Results were mixed in that some showed no group differences and others found positive results of inclusion for students with disabilities. Additionally, interaction effects appeared present in the literature such that inclusion may be more beneficial for students with certain disabilities than others. Overall, Lindsay (2007) concluded that research thus far fails to provide a clear, indisputable endorsement for comprehensive positive effects of inclusion over self-contained special education.

In their comprehensive review of literature on inclusion, Ruijs and Peetsma (2009) also found mostly positive effects, though still variable, for inclusion on the academic achievement of students with disabilities. The authors raised several concerns, however, with the existing literature on inclusion. First, they pointed out that many of the existing studies do not include a comparison group in self-contained environments. Comparison groups are ideal for making conclusions about the effects of specific environments on a particular group of students.

Second, Ruijs and Peetsma (2009) pointed out that inclusion programs do not look the same across schools. Inclusion can mean that students are present in their general education classroom all day with the support of special educators or that students are taught separately from their general education peers for only a portion of the day. Though these inclusion environments are distinctly different from the traditional self-contained classrooms and schools, the variation within the applied definition of inclusion may produce different outcomes (Markussen, 2004). Finally, Ruijs and Peetsma (2009) concluded that existing literature couldn't provide definitive insight into the effects of inclusion on the social development of students with disabilities. Of the studies reviewed that included a control or comparison group, the authors found significant variability in the direction (positive, negative, no difference) of student's self-perception, emotional functioning, and social functioning across studies.

Summary. Overall, the research suggests that the inclusive special education model is at least mildly beneficial for student's academic and social development, with social development research being less definitive. The variability of results across studies, however, makes it difficult to assert that inclusion programs are superior to self-contained educational settings. Although inclusion programs have been widely implemented across the United States, it has been suggested that the shift has been driven by arguments of social justice rather than research showing the superiority of one educational setting over another to influence meaningful outcomes in the special education population as a whole (Lindsay, 2007).

Effects of Educational Setting by Disability Type

Another approach to the question of how special education affects students has been to examine the influence of different educational settings on students with specific disabilities (e.g. intellectual disability, emotional disability, learning disability). In fact, in their meta-analysis of 50 studies comparing inclusive and self-contained special education, Carlberg and Kavale (1980) found differential effects by setting for different disability classifications; no other such differential effects were found. Their results, based on effect sizes defined as each study's post-treatment difference between inclusive and self-contained special education, showed self-contained settings to be academically and socially beneficial for students with emotional disability and learning disability, but not for those with intellectual disability. Hocutt (1996) supported the findings of Carlberg and Kavale (1980), as her review of the literature revealed that studies consistently find that students with learning disabilities and emotional disabilities benefit most academically from self-contained settings while students with ID benefit most from inclusion. Hocutt (1996) went a step further, however, to say that it is not the type of placement in isolation that is responsible for academic gains, but instead the quality of the instructions and classroom environment are the critical factors and that, given adequate resources, more students with LD and ED could benefit from inclusion in general education.

As continues to be seen, the question of "How does special education affect students?" is a nuanced and complex question indeed. The following discussion contains a review of the literature related to student outcomes in self-contained and inclusive settings, separated by disability. As will be seen, in line with Carlberg and

Kavale (1980) and Hocutt (1996), some disability categories benefit more from inclusion than others.

Intellectual Disability

Intellectual disability (ID) is characterized by significant limitations in both intellectual functioning and in adaptive behavior (Bradley, 2007). Historically, intellectual disability was referred to as "mental retardation"; this review will use the term "intellectual disability", which is the current terminology recommended by the American Association of Intellectual and Developmental Disabilities. Freeman and Alkin (2000) reviewed literature on academic and social outcomes for students with ID in a variety of special education placements. Their methodology was to search the psycLIT and ERIC computer databases for studies that met the following five criteria. First, studies had to be published in a peer-reviewed journal. Second, studies had to take place in the school context and include only elementary to high school aged students. Third, the primary group studied had to be comprised of students with ID. Fourth, studies had to either compare outcomes for students with mental retardation to nondisabled peers in a general education setting or compare students with ID in an inclusive setting (full or partial inclusion) to those in a self-contained special education setting. Fifth, the independent variable had to be educational placement and the dependent variables had to be academic and/or social outcomes. Ultimately, 28 studies from 1957 to 1997 were reviewed to shed light on outcomes for students with ID based on their placement setting were reviewed.

Freeman and Alkin (2000) found mostly positive academic achievement outcomes for students in inclusive versus self-contained settings, with full inclusion leading to more significant positive outcomes than partial inclusion. The authors

suggested these results could be due to teacher expectations and instructional level being higher in general education classrooms, which facilitated enhanced academic performance in the student with ID in a fully integrated setting.

Social outcome results were slightly more variable, especially for students in partially inclusive settings. Results of the 28 studies reporting social outcomes in inclusive settings varied from significantly positive, not significantly different from self-contained settings, to significantly negative. The authors suggested that in order to better understand these results, one must separate social acceptance from social competence outcomes. Social acceptance evaluates how much others like the student and social competence evaluates how others perceive the student's social behavior.

Once the authors made this distinction, results showed that fully inclusive programs benefited student's social competence more than partially inclusive and self-contained. Conversely, social acceptance outcomes appeared lower to non-significant in inclusive versus self-contained classrooms. In other words, although students with ID may improve their social skills and competence by participating fully in general education, they may not be accepted by their typically developing peers.

For students with ID, some important conclusions arise from Freeman and Alkin's review. It seems that the movement towards inclusion is beneficial for the academic achievement and social competency of this population, although these conclusions are more convincing for academic outcomes. Fully inclusive settings, rather than partial inclusion, appear to be particularly beneficial.

Emotional Disability

Emotional disability (ED) is characterized by one or more of the following: an inability to learn that cannot be explained by intellectual, sensory, or health factors; an inability to build or maintain satisfactory interpersonal relationships with peers and teachers; inappropriate types of behavior or feelings under normal circumstances; a general pervasive mood of unhappiness or depression; a tendency to develop physical symptoms of fears associated with personal or school problems (COMAR 13A.05.01.03(23)). Emotional disability is variably referred to as "emotional disturbance/disorder/disability", "emotional/behavioral disturbance/disorder/disability", and "serious emotional disturbance/disorder/disability"; this review will use the term "emotional disability", which is the current terminology recommended by the Code of Maryland Regulations.

Traditionally, students with ED have been placed in self-contained schools and classrooms. This trend has begun, however, to change whereby students with ED are being placed in inclusive settings at higher rates than before. This increase is promising given the positive outcomes seen for students with ID in inclusive settings. Much of the existing literature, however, does not reflect such optimism. Nelson, Benner, Lane, and Smith (2004) conducted a cross-sectional study looking at the academic and behavioral characteristics of students in special education with the classification of ED. The researchers collected data for a random sample of 155 students aged 5 to 18 receiving special education service for ED in a medium-size, urban school district. The sample was divided into two groups: one group (n = 88)

included children (operationally defined as age 5 to 12) and the other (n = 67) and adolescents (defined as age 13 to 18).

Academic achievement was measured using the WJ-III (Woodcock et al., 2001) and problem behavior was measured using the Child Behavior Checklist: Teacher Report Form (TRF; Achenbach, 1991a). All students were assessed during a 4-month period. Scores were compared for children versus adolescents to determine whether academic achievement improved or declined over time for students with ED in special education and whether problem behavior was related to achievement.

Results showed that 83% of students performed below the mean of the WJ-III norm group across all content areas. Independent samples t tests found adolescents scored significantly lower on statistically significant mean differences in the Broad Math cluster with adolescents scoring lower, while all other clusters remained stable with no significant mean differences between groups. Taken together, these results indicate students with ED underperformed academically in reading, writing, and math and that over time this underachievement remained stable in reading and writing, while math skills declined. Using multiple regression analysis, externalizing behavior was found to be related to academic achievement in all content areas.

These results are not encouraging but, unfortunately, are consistent with the existing research. Students with ED have been found to have the lowest outcomes of high-incidence disabilities groups as evidenced by low reading and math scores, high grade retention, and low rates of graduation (Kauffman, 2001; Trout et al., 2003). But why? Nelson and colleagues (2004) suggested the perpetuation of underachievement and widening gap of deficit could be due to a combination of problems associated ED

(e.g., noncompliance, inattention) and the special education environment. Specifically mentioned by the authors was the absence of challenging curriculum for these students in special education (Knitzer, Steinberg, & Fleisch, 1990).

A criticism of the existing literature has been that it does not reflect real-world placement settings for students with ED. Research has tended to focus only on students with ED within self-contained settings rather than exploring outcomes in inclusive settings. As was initially stated by Epstein et al. (1989) and supported by Trout et al. (2003), the majority of research on the academic status of students with ED has been conducted in residential treatment settings. Trout and colleagues discussed ED researchers' acknowledgement that inclusive settings should be incorporated into their studies and we can see the beginnings of this line of research in Reid et al.'s (2004) meta-analysis.

Reid, Gonzalez, Nordess, Trout, and Epstein (2004) conducted a meta-analysis with the expressed purpose of exploring academic outcomes of students with ED compared with their same-age, non-disabled peers. Differences across age, gender, race, and socioeconomic status were evaluated and special education setting as a possible moderator of academic outcomes was considered. The authors identified their initial articles relevant to the research questions using electronic database searches, manual journal searches, and email contact of prominent ED researchers and then manually searched articles for compliance with inclusion criteria. In order to be included in the meta-analysis, articles had to meet all of the following criteria: publication in a peer reviewed journal between 1961-2000, population studied classified as ED by either IDEA guidelines or comparable DSM-IV diagnosis,

dependent variable of academic achievement in at least one academic content area as determined by a mean score and standard deviation, and sample ranging anywhere from 5 years old to 21 years old. After inclusion criteria was applied, total of 25 articles were included in the meta-analysis.

After running tests of sample independence and homogeneity, overall grand effect sizes with pooled standard deviations and moderator effect sizes were calculated. Results showed a moderate to large effect size in the negative direction, indicating worse academic outcomes in all subject areas sampled for students with ED than their non-disabled peers. Placement setting did not appear to make a difference in academic outcome. Considering that an academic impairment must be demonstrated in order to qualify for special education services, it is not entirely surprising that students with ED perform academically below their non-disabled peers. These results, combined with the research showing students with ED performing academically below their peer groups in other high-incidence categories, contribute to the view that students with ED are one of the most underserved groups in special education.

The finding that placement setting did not make a difference in academic outcomes for students with ED is a surprising one, considering the results reported previously for students with ID and results of other studies that suggest students with ED experience better outcomes in self-contained settings (Fuchs, Dempsey, Roberts, & Kintsch 1995). Reid and colleagues (2004), however, report a high amount of variability within each setting. This is consistent with much of the special education literature, which samples highly heterogeneous populations and must deal with vague

and sometimes inaccurate descriptions of placement settings as inclusive or self-contained.

In addition to their important findings, Reid and colleagues (2004) pointed out several problems with the current state of research on students with ED. These limitations included little to no disaggregated gender data, inconsistently reported race and ethnicity and SES data, and the almost exclusive use of convenience samples.

Summary. Current research is not optimistic about the status quo of how students with ED are functioning in special education. These students have lower academic outcomes than both their non-disabled counterparts and students in other high-incidence disability groups. While some research suggests students with ED are better served in self-contained settings (Carlberg & Kavale, 1980), there is also evidence that these disheartening outcomes result regardless of setting (Reid, Gonzalez, Nordess, Trout, & Epstein, 2004).

Learning Disability

A learning disability (LD) is characterized by an impairment in one or more of the basic psychological processes involved in understanding or in using language that may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or to do mathematics (COMAR 13A.05.01.03(73)). Historically, learning disability was referred to as "specific learning disability;" this review will use the term "learning disability."

Much of the literature thus far suggests students with LD receive the most academic benefits from some form of special education classroom rather than purely inclusive settings. An early investigation by Sabatino (1971) explored the academic

growth of 7 to12 year old students over one academic year when placed in one of the following settings: fully inclusive (n=11), fully self-contained (n=11), resource room one hour every day (n=27), resource room one-half hour twice per week (n=48). Standardized measures of thirteen dimensions of academic achievement in a variety of subject areas were administered at the beginning of the year and end of the year. Results showed that students with LD in the fully inclusive classroom had the worst academic outcomes on most measures of achievement. The highest achievement gains were seen in the settings that provided students with the most supports, oscillating between self-contained classrooms and resource rooms one hour every day. The authors proposed increased benefits from self-contained classrooms and resource rooms could be due to some combination of behavioral supports, prescriptive teaching, and emotional support. Sabatino's (1971) study, however, is outdated and was done during a time when LD was still a new disability, thus the interventions used in the self-contained and resource rooms cannot be compared to interventions used today. More recent literature has reported similar results, however. Carlberg and Kavale (1980), discussed previously, found in their meta-analysis of 50 studies that students with LD placed in self-contained classes were better off academically than 61% of their counterparts in inclusion classes, based on effect sizes.

In a review of literature, Harrington (1997) found somewhat different results for academic progress of students with LD fluctuating between self-contained settings being most beneficial and setting not having a significant impact on achievement. Harrington failed, however, to identify any studies in which students made significant

academic gains in inclusive settings over those of their counterparts in self-contained settings. Aside from achievement, studies of peer acceptance were also reviewed and mixed results, ranging from higher acceptance of students with LD when they were placed in self-contained classrooms to higher acceptance in inclusive classrooms, were found. Harrington (1997) suggested social acceptance is a process that occurs over time and more definitive results may be found if researchers begin to take into account the duration of time students are in a given special education setting.

Even more recently, still, Swanson, Hoskyn, and Lee's (1999) meta-analysis confirmed previous findings of the superiority of some level of self-contained over inclusive education for students with LD. The primary purpose of this meta-analysis was to provide a resource for interventions that have been shown as effective for students with LD. The authors identified their initial articles relevant to the research question using electronic database searches, hand-searches of peer-reviewed journals, and written correspondence with authors. The pool of studies was then narrowed to include only those that used an experimental design in which children or adults with learning disabilities received treatment to enhance their academic, social, and/or cognitive performance. Studies also had to include a control condition, provide enough quantitative information to calculate effect sizes, focus on subjects with average intelligence who were exposed to at least three sessions of intervention, be written in English, and be published between 1963-1997. In the end, 272 studies were included in the meta-analysis.

Although setting type was not the focus of the meta-analysis, these data were nevertheless collected and yielded studies in self-contained (n = 80), regular class (n

= 8), resource room (n = 72), and those that didn't report setting type (n = 160). Results showed significantly larger effect sizes occurred in resource rooms when compared to the other settings. Although effect sizes for full-time self-contained settings were not significantly larger than full-time inclusion, the authors still concluded that special education was superior to general education when looking at outcomes for students with LD. This conclusion is in line with previously discussed studies, as earlier research likely included resource room settings in their self-contained groups. Of note here, however, is the small sample size for general education interventions. Although this limitation could not be helped by Swanson, Hoskyn, and Lee (1999), it would benefit the field of LD intervention research to replicate this meta-analysis to include more recent studies, which would likely include many more inclusion-based interventions than were available in 1999.

Summary. Similar to literature on emotional disability, research thus far finds more positive outcomes for students with LD in less inclusive educational settings. This may come as a surprise at first glance. Students with LD may be viewed by some as more similar to their non-disabled peers in that they may experience less global deficits than, say, students with ID and less behavioral deficits than students with ED; thus, it is plausible to hypothesize that they'd benefit from less-restrictive educational settings. Indeed the literature suggests resource rooms are more beneficial for students with LD than full-time self-contained education, but this setting still involves students being removed from their non-disabled peers in order to learn, which sets is significantly apart from inclusion programs. A potential explanation for the enhanced benefits of special education settings for students with LD could be the

specialized and individualized instruction they receive that allows for their skills to increase exponentially in comparison to that which would result from the more generalized instruction of inclusion classes.

Summary of the Effects of Educational Setting by Disability

As was discussed in an earlier section of this review, research has found inclusive special education to be at least mildly beneficial for students with disabilities. The results of these studies, however, have been highly variable and, after reviewing literature that parcels out outcomes based on disability type, it appears plausible that disability type accounts for some of the variability in results addressing the broad question "Is inclusive or self-contained special education more beneficial?" Luckily, a large portion of the extant literature is dedicated to the discussion of how different placement settings influence students with specific disabilities. As the literature reviewed suggests, while an inclusive special education setting may be beneficial for students with ID, it may be less effective at improving outcomes for students with ED or LD (Carlberg & Kavale, 1980).

An alternative argument, posed by Zigmond (2003), is that no specific setting is superior to another, even when specified by disability. Zigmond (2003) argued that due to methodological flaws in existing studies such conclusions couldn't be made. Such flaws include inadequate descriptions of settings that make it difficult to say whether they are truly inclusive; insufficient monitoring of treatment implementation and long-term outcomes; and minimal use of random assignment. Although true experimental conditions are extremely difficult to achieve in schools, the limitations discussed by Zigmond (2003) suggest we still have a long road ahead in understanding which environments are most beneficial for students with disabilities.

Chapter 3: Method

Purpose

This study sought to explore the extent to which the duration of time a student spends in special education has an effect on the amount of externalizing behavior exhibited. The results address a notable hole in the existing literature—the absence of duration of special education as a variable—and contribute to our knowledge of how long-term placements are affecting students with disabilities.

Design

This study used longitudinal, non-experimental, archival data from The Early Childhood Longitudinal Study: Kindergarten Cohort (ECLS-K; National Center for Education Statistics, 2002). Data used spanned from student's first to fifth grade year as follows: first, third, and fifth grade. The use of longitudinal data is a strength of this study as it facilitated the tracking of within-student changes over time.

Participants

The ECLS-K study followed a nationally representative sample of U.S. children enrolled in 1,000 kindergarten programs during the 1998-1999 school year through to the 2003-2004 school year. The sampling plan was three-fold. First, counties were selected based on census areas and demographic characteristics. Second, schools within selected counties were chosen to represent the stratification of public or private school status, school size, and proportion of Asian-Pacific Islander students. Lastly, 24 students were selected from each school. Students were enrolled

in both public and private kindergartens with full- and half-day programs and were evenly distributed across all regions of the U.S. regions.

Participants in the present study were a subset of the original sample; they were students receiving special education during the sixth wave of data collection (Spring 2004), when they should have in the fifth grade. Only students with complete data (after missing data imputations) were included, resulting in a final sample of 638 students (see Appendix B for descriptive information). The final sample was majority male (64%) with an average age of 11 years old. The majority of students had been identified by their parents as Caucasian (appx. 60%), followed by Hispanic (appx. 21%) and African American (appx 15%), with a third of the sample falling into the 1st quintile of socioeconomic status and a fourth falling into the 2nd quintile. Though all students began ECLS-K data collection at the same time and should have been in the fifth grade during the Wave 6, approximately 29% of students had reached only a third or fourth grade level, suggesting that over a quarter of the sample had been retained before the Wave 6 of data collection. Throughout their first, third, and fifth grade years, the 638 students in the sample were consistently around one standard deviation below the mean in their reading and math achievement and approximately half a standard deviation above the mean in externalizing behavior. Descriptives of the sample were consistent with research indicating an overrepresentation of males (Skarbrevik, 2002; Wehmeyer & Schwartz, 2001) and, to some extent, students from lower SES families (Coutinho, Oswald, & Best, 2002; Oswald, Coutinho, & Best, 2002) in special education as well as lower achievement and higher reports of

behavior problems for special education students compared to their general education peers (Coutinho, 1986).

Related to their special education services, a majority of the sample had a primary disability classification of LD during the Wave 6 of data collection, followed by speech/language disability (appx. 11%), ID (appx. 9%), ED and OHI (each appx. 8%), and all other disabilities totaling a combined approximately 4%. The majority of students received special education services in an inclusive general education setting during the Wave 6 of data collection (appx. 73%), although this trend differed by disability with a majority of students with ED and ID receiving services primarily outside of general education (see Appendix C). The highest percentage of students had received 3 years of services (22%), with 2 years of services and 4 years of services being almost as common (21% and 19%, respectively).

Measures

Demographics

Demographic information, including gender, race, age, SES during Wave 6 of data collection was collected via parent report.

Special Education Status

To calculate the independent variable (IV), *duration* of special education services, information from the Special Education Teacher Questionnaire during the Wave 6 of data collection was used. Based on an item that asked whether the student had an IEP on file for their current year (*U6RIEP*; yes/no) and during what grade they had received their first IEP (*E6FIRIEP;* before kindergarten, during kindergarten, first, second, third, fourth, or fifth grade), the IV was generated. To calculate, the

grade during which the student first received an IEP was given a number 1 (before kindergarten) through 7 (fifth grade) that was then subtracted from 7. For example, a student who received their first IEP in kindergarten was given a duration value of 5 (7-2=5) years. Students who received their first IEP in fifth grade (7-7=0) had a recoded duration value of 0.5.

Externalizing Behavior

Externalizing behavior in the fifth grade was the dependent variable in the first grade was used as a control variable for "previous" externalizing behavior. Externalizing behavior during the student's first (*T4EXTERN*) and fifth grade year (*T6EXTERN*) was measured using teachers' responses on the Externalizing subscale of the Social Rating Scale (SRS). The SRS is an adaptation of the Social Skills Rating Scale (SSRS; Gresham & Elliot, 1990) that includes Internalizing and Externalizing Problem Behavior subscales, eliminating the third subscale, Hyperactivity, included in the SSRS.

The Externalizing subscale of the SRS includes five self-administered questionnaire items asking whether the child acts out, argues, gets angry, acts impulsively, and disturbs ongoing activities. Teachers respond using a 4-point, Likert-type scale addressing the frequency of these behaviors as "never", "sometimes", "often", or "very often". Numerical responses to the five items are then averaged and an overall externalizing behavior score is given, with higher scores indicating a higher degree of externalizing behavior. The split-half reliability coefficient, a measure of internal consistency, for the externalizing subscale of the SRS is .90 (NCES, 2001). Prior to analyses, externalizing behavior variables were

standardized using the mean and standard deviation for all cases, not just those in special education in the fifth grade. This was done so that findings could be discussed as deviations from a zero center, thus simplifying interpretability.

Setting and Disability Type

The student's primary disability and setting in which they received services in Wave 6 were covariates of interest and were obtained using the Special Education Teacher Questionnaire. For the *setting type* variable (*U6PLCMNT*), the teacher answered yes or no to whether the student's primary placement in Wave 6 was in general education. For the *disability type* variable (*E6PRMDIS*), the teacher identified the primary disability based on the following list: learning disability, emotional disability, intellectual disability, speech/language impairment, other health impaired, hearing impairment, deafness, visual impairment, orthopedic impairment, deaf/blindness, multiple disabilities, traumatic brain injury, autism, and developmental delay. So as not to dilute the data with too many categories—many of them characterizing only around 1% of the sample—several categories were collapsed into an "other" category such that the final *disability type* variable for this study included the following categories: learning disability, emotional disability, intellectual disability, speech/language impairment, other health impaired, other. Prior to analyses, effects coding was used for all disability categories, with "other" as the referent group, so that results could be discussed in terms of each individual disability category versus all remaining special education categories.

Academic Achievement

Reading and math achievement during the student's first, third, and fifth grade years was obtained using 70-90 item tests designed to reflect appropriate grade-level curriculum. Achievement scores were T-scores resulting from direct assessments of the child. Extensive evidence supporting the tests' validity is reported in the ECLS-K manuals. Similar to the externalizing behavior variables, academic achievement variables were standardized prior to analyses.

Data Preparation

Weights

Prior to beginning analyses, the data were weighted to adjust for disproportionality in the sample due to subjects dropping out and non-random sampling. The weight entitled *C456CWO* was used, which is appropriate for child direct assessment data from three rounds of data collection involving the full sample of children (spring-first grade, spring-third grade, and spring- fifth grade), alone or in conjunction with any of the school, teacher, or classroom data, or a limited set of child characteristics (e.g., age, sex, and race/ethnicity). This weight was subsequently normalized via linear transformation by dividing the aforementioned weight by the DEFF (design effects) of the dependent variable (3.136) found in Table 9.4 of the ECLS-K User Manual (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006). The resulting normalized weight accounted for design effects and thus controlled for otherwise inflated standard errors. This normalized weight was used for correlation and regression analyses.

Missing Value Analysis

Because the ECLS-K dataset is longitudinal, there was significant missing data resulting from problems with attrition over waves of data collection. This was especially true for the externalizing behavior and achievement—the only two variables this study relied on over multiple waves of data collection (i.e. 1st and 5th grade externalizing behavior; 1st, 3rd, and 5th grade achievement). The expectation maximization (EM) technique was used in SPSS to impute missing externalizing behavior and achievement values. The EM technique is a maximum likelihood approach that is ideal for large sample sizes with multivariate normal distributions (Schlomer, Bauman, & Card, 2010). Steps towards EM imputation are three-fold (Schafer & Olsen, 1998). First estimates of the means, variances, and covariances are generated based on students with complete data. Second, regression equations are generated that relate each variable to each other variable. Finally, these equations are used to estimate the missing values. Since this study focused exclusively on students in special education, the main predictor in the EM analysis was whether or not students had an IEP in fifth grade, which meant the EM steps were executed within these two separate parameters.

Standardization

All externalizing behavior and achievement variables were standardized to ease interpretability (i.e. change is discussed in terms of units of standard deviation change). To standardize, the mean and standard deviation of each variable was calculated. The mean was then subtracted from the total value and the difference was subsequently divided by the standard deviation.

Filter

In line with the research questions that focused exclusively on special education effects, all students who did not have an IEP in the fifth grade were filtered out of the dataset, resulting in an N of 638.

Assumptions

Assumptions underlying multiple regression were tested prior to analysis and violations were not detected.

Chapter 4: Results

Research Questions

Three research questions were posed for the present study. In a general sense, the questions explored how duration and other aspects of special education may affect student's externalizing behavior in the fifth grade. Specifically, the research questions were as follows:

Question 1: To what degree does the duration of time (in years) a student spends in special education have an effect on externalizing behavior in fifth grade?

Question 2: To what extent, if any, does the primary disability type or the setting in which special education services are received contribute to externalizing behavior in fifth grade?

Question 3: Is the duration-externalizing behavior relationship moderated by duration-by-setting and/or duration-by-disability interactions?

To gain a preliminary sense of how key variables related to the dependent variable (5^{th} grade externalizing behavior) and the main independent variable (*duration* of special education), Pearson Product Moment Correlations were initially calculated. Next, to specifically address the research questions, a series of regression analyses were used to model the relationship between duration, externalizing behavior, and other variables. Utilizing regression analyses allowed for the control of confounding factors. Regression analyses were looked at in terms of the model as a

whole as well as the individual variables included in the model. A significance level of $p \leq .05$ was used for each analysis when interpreting effects.

Correlations

Pearson correlations (Appendix D) showed that fifth grade externalizing behavior and duration of special education shared a small positive relationship (r = .240), meaning more years in special education was associated with higher externalizing behavior. Of the covariates, setting and disability type, fifth grade externalizing behavior had a medium relationship with setting (r = .381) and a small relationship with ED (r = .278) and ID (r = .166) disabilities. In other words, less inclusive special education settings and a classification of ED or ID was associated with higher externalizing behavior ratings. Of the control variables, higher rates of previous externalizing behavior (r = .574) and males (r = -.237) were associated with higher externalizing behavior in the fifth grade.

To gain a better sense of variables associated with longer special education placements, Pearson correlations for the *duration* variable were also calculated. Results showed that higher levels of previous and current externalizing behavior, placement in less inclusive settings, a disability code of ID, being male, and lower achievement scores all shared a small relationship with the number of years students spent in special education. Additionally, student age had a small positive correlation with *duration* and SES a small negative correlation, meaning longer placements were associated with older students and those in lower SES quartiles.

Regression Model Change Data

Four regression models were created and fit to the data to examine how much variance was explained by the sequential addition of variables to each model. An illustration of variables included in each model is presented in Table 1.

Table 1

Variables Included in Each Regression Block

Block 1 (Control Variables)	Gender, Race, Age, SES, Achievement, Previous Ext Beh
Block 2 (Covariates)	Gender, Race, Age, SES, Achievement, Previous Ext Beh, Disability Type, Setting
Block 3 (Primary Research Question)	Gender, Race, Age, SES, Achievement, Previous Ext Beh, Disability Type, Setting, Duration of Special Ed
Block 4 (Moderation)	Gender, Race, Age, SES, Achievement, Previous Ext Beh, Disability Type, Setting, Duration of Special Ed, Duration x Setting (interaction), Duration x ED (interaction)

Table 2 illustrates the value of each model as a whole in predicting fifth grade externalizing behavior. Although omnibus questions of model change do not address the research questions as well as variable-specific analysis (presented later), significant changes in variance explained by each model tells an important story of whether, taken together, variables are predictive of the dependent variable.

Table 2

Regression Model Change

	R^2	F	Sig. F	ΔR^2	$F\ \Delta R^2$	Sig. ΔR^2
Block1 (Control Variables)	.363	9.605	≤.001**	---	---	---
Block 2 (Covariates)	.432	8.059	≤.001**	.070	3.693	.002*
Block 3 (Primary Research Ques)	.448	8.068	≤.001**	.016	5.100	.025*

Block 4 (Moderation)	.460	7.519	≤.001**	.011	1.866	.158

Note. * $p \leq .05$, ** $p \leq .01$

In Block 1, the dependent variable, fifth grade externalizing behavior, was regressed onto control variables (achievement, race, age, gender, previous externalizing behavior, SES) to reduce unwanted variability and the overall multiple regression was statistically significant [$R^2 = 0.363$, $p \leq .001$]. These results indicated that, taken together, achievement, race, age, gender, previous externalizing behavior, and SES significantly predicted fifth grade externalizing behavior and approximately 36% of the variability in the dependent variable was explained by a combination of the control variables.

In Block 2, covariates of interest (setting and disability type) were added to the regression model to evaluate whether adding these variables better predicted fifth grade externalizing behavior. Indeed, results showed that the addition of setting and disability type accounted for an additional 7% of variance of fifth grade externalizing behavior above and beyond what the control variables in Block 1 explained [$\Delta R^2 = 0.070$, $p = .002$].

In Block 3 the main research question was addressed with the addition of *duration* of special education to the regression model. The results showed that the addition of the duration of special education explained an additional 2% of variance in fifth grade externalizing behavior above and beyond what the control variables and covariates explained [$\Delta R^2 = 0.016$, $p = .025$].

In Block 4, two interaction variables were added to the model to examine whether the effect of duration was being moderated. The results indicated the addition

of duration-by-setting and duration-by-ED interactions were not significantly moderating the relationship between duration and fifth grade externalizing behavior above and beyond what Blocks 1, 2, and 3 explained [$\Delta R^2 = 0.011$, $p = 0.158$]. In sum, it appeared the control variables, taken together, predicted about one third of the variance in fifth grade externalizing behavior, while the addition of disability type and setting, taken together, and then duration of special education predicted a small, but statistically significant, amount of additional variance.

Variable-Specific Data

To more directly explore the research questions, data on the individual elements of the model were examined (see Table 3).

Table 3

Variable-Specific Data

		Unstandardized Coeff		Stand Coeff		
Block		*B*	*S.E.*	*Beta*	*t*	*Sig*
1	(Constant)	-2.033	1.831	---	-1.111	.268
	Age	0.018	0.013	0.083	1.337	.183
	Gender	-0.237	0.163	-0.094	-1.450	.149
	Race	0.018	0.049	0.022	0.358	.721
	SES	-0.048	0.060	-0.055	-0.807	.421
	Reading Ach (1st grade)	0.190	0.121	0.090	0.900	.369
	Reading Ach (3rd grade)	-0.029	0.146	-0.026	-0.200	.842
	Reading Ach (5th grade)	-0.241	0.158	-0.198	-1.525	.129
	Math Ach (1st grade)	0.127	0.128	0.109	0.993	.322
	Math Ach (3rd grade)	0.101	0.177	0.087	0.573	.568
	Math Ach (5th grade)	-0.051	0.145	-0.044	-0.353	.724
	Ext Beh (1st grade)	0.578	0.068	0.518	8.444	≤.001**
		Unstandardized Coeff		Stand		

				Coeff		
Block 2		*B*	*S.E.*	*Beta*	*t*	*Sig*
	(Constant)	-2.311	1.819	---	-1.270	.206
	Age	0.019	0.013	0.088	1.436	.153
	Gender	-0.177	0.159	-0.070	-1.117	.265
	Race	0.002	0.048	0.003	0.050	.960
	SES	-0.031	0.061	-0.035	-0.502	.616
	Reading Ach (1st grade)	0.046	0.122	0.038	0.373	.709
	Reading Ach (3rd grade)	0.022	0.141	0.020	0.156	.876
	Reading Ach (5th grade)	-0.260	0.159	-0.214	-1.634	.104
	Math Ach (1st grade)	0.115	0.128	0.099	0.895	.372
	Math Ach (3rd grade)	0.096	0.172	0.082	0.559	.577
	Math Ach (5th grade)	-0.004	0.141	-0.003	-0.028	.978
	Ext Beh (1st grade)	0.486	0.071	0.435	6.874	≤.001**
	Setting	0.602	0.185	0.219	3.259	.001**
	Disability - ED	0.538	0.249	0.286	2.156	.032*
	Disability - ID	-0.273	0.251	-0.150	-1.087	.278
	Disability - OHI	-0.095	0.224	-0.051	-0.425	.672
	Disability - Speech/Lang	0.163	0.208	0.092	0.786	.433
	Disability - LD	0.267	0.319	0.126	0.835	.405
	Disability - other	0.600	---	0.303	---	---
		Unstandardized Coeff		Stand Coeff		
Block 3		*B*	*S.E.*	*Beta*	*t*	*Sig*
	(Constant)	-1.269	1.857	---	-0.683	.495
	Age	0.008	0.014	0.038	0.591	.555
	Gender	-0.142	0.158	-0.056	-0.901	.369
	Race	0.019	0.048	0.023	0.399	.691
	SES	-0.019	0.061	-0.021	-0.311	.756
	Reading Ach (1st grade)	0.091	0.122	0.075	0.741	.459
	Reading Ach (3rd grade)	-0.008	0.140	-0.007	0.059	.953
	Reading Ach (5th grade)	-0.232	0.158	-0.191	-1.470	.143
	Math Ach (1st grade)	0.154	0.128	0.132	1.202	.231
	Math Ach (3rd grade)	0.081	0.170	0.070	0.480	.632

	Math Ach (5th grade)	-0.037	0.140	-0.032	-0.265	.791
	Ext Beh (1st grade)	0.470	0.070	0.187	2.757	.006*
	Setting	0.515	0.187	0.187	2.757	.006*
	Disability - ED	0.600	0.248	0.319	2.420	.017*
	Disability - ID	-0.330	0.250	-0.181	-1.320	.189
	Disability - OHI	-0.042	0.223	-0.022	-0.186	.853
	Disability - Speech/Lang	0.119	0.206	0.067	0.578	.564
	Disability - LD	0.286	0.316	0.135	0.907	.366
	Disability - other	0.633	---	0.318	---	---
	Duration	0.115	0.051	0.153	2.258	0.025*
		Unstandardized Coeff		Stand Coeff		
Block 4		*B*	*S.E.*	*Beta*	*t*	*Sig*
	(Constant)	-0.973	1.862	---	-0.523	.602
	Age	0.006	0.014	0.026	0.406	.685
	Gender	-0.171	0.158	-0.068	-1.081	.281
	Race	0.024	0.047	0.030	0.506	.613
	SES	0.000	0.061	0.000	0.002	.998
	Reading Ach (1st grade)	0.094	0.122	0.077	0.772	.441
	Reading Ach (3rd grade)	0.006	0.140	0.005	0.043	.966
	Reading Ach (5th grade)	-0.253	0.158	-0.208	-1.606	.110
	Math Ach (1st grade)	0.156	0.128	0.134	1.221	.224
	Math Ach (3rd grade)	0.048	0.172	0.041	0.281	.779
	Math Ach (5th grade)	-0.009	0.143	-0.008	-0.062	.950
	Ext Beh (1st grade)	0.457	0.071	0.409	6.470	≤.001**
	Setting	1.094	0.453	0.398	2.413	.017*
	Disability - ED	0.774	0.323	0.412	2.397	.018*
	Disability - ID	-0.212	0.256	-0.116	-0.827	.409
	Disability - OHI	-0.091	0.224	-0.049	-0.406	.685
	Disability - Speech/Lang	0.094	0.206	0.053	0.455	.650
	Disability - LD	0.287	0.315	0.135	0.910	.364
	Disability - other	0.852	---	0.435	---	---
	Duration	0.118	0.072	0.158	1.640	0.103
	Duration x Setting	-0.152	0.106	-0.249	-1.435	.153
	Duration x ED	-0.068	0.071	-0.138	-0.969	.334

Note. * $p \leq .05$, ** $p \leq .01$

Research Question 1. With regard to the specific effects of duration on externalizing behavior, the unstandardized coefficient from Block 3 showed that for each additional year in special education, there was a 0.115 SD increase in fifth grade externalizing behavior ($B = 0.115$, $p = .025$), controlling for all other variables.

Research Question 2. With regard to the specific effects of setting on externalizing behavior, the unstandardized coefficient from Block 2 showed that the externalizing behavior of students receiving services primarily outside of general education in fifth grade was 0.602 SD above their counterparts receiving services primarily in general education settings ($B = 0.602$, $p \leq .001$), controlling for all other variables.

The effects of disability type were also found in Block 2 and only a disability code of ED exhibited a significant effect on externalizing behavior. The unstandardized regression coefficient for a disability code of ED in fifth grade was 0.538 ($p = .032$), meaning the externalizing behavior of students with ED was 0.538 SD higher than that of students in special education in fifth grade, controlling for all other variables.

Research Question 3. With regard to the moderating effects of setting and/or ED on the relationship between duration and externalizing behavior, the interaction terms added in Block 4 were found to be not significant ($B = -0.152$, $p = .153$; $B = -0.068$, $p = .334$), controlling for all other variables.

Control Variables. With regard to control variables, the standardized regression coefficient for previous (1st grade) externalizing behavior was 0.518 ($p \leq .001$), meaning that for each one standard deviation increase in externalizing behavior

in first grade (as reported by the student's teacher), there was a 0.578 SD increase, respectively, in fifth grade externalizing behavior, controlling for all other control variables. Notably, age, gender, race, SES, achievement, all other disability types did not appear to have a significant effect on the dependent variable, when accounting for all other variables.

Chapter 5: Discussion

This study explored the effects of long-term placement in special education on student's externalizing behavior. Of primary interest was whether the duration of time (in years) that a child spends in special education was associated with behavior change—a question that has not been addressed by literature to date. Secondarily, the contribution of other aspects of special education, such as disability type and setting in which services are received, was explored.

Findings: Duration

Using multiple regression, years spent in special education had a small yet statistically significant effect on fifth grade externalizing behavior. Specifically, for every year spent in special education there was approximately a 0.115 SD increase in externalizing behavior. This finding was true even after disability type and setting of services were controlled for. Although 0.115 SD is a small increase in relation to the 1.00 SD that, in some cases, characterizes clinical significance, even a small increase in externalizing behavior each year can add up to a significant behavior problem. This finding suggests that longer placements in special education may be more detrimental for student behavior than shorter placements. This statement should be read with caution, however, as the present study does not provide enough information to interpret specifically why longer placements in special education could lead to increased externalizing behavior. Rather, it found a small effect of, simply, time in special education on behavior, opening the door to future exploration of variables

specific to special education that may accumulate over time to affect these student's behavior.

One direction for future explorations could be an examination of the contribution of labeling theory (Tannenbaum, 1938) to the duration—externalizing behavior relationship. It could be that the stigma associated with having the label "student with a disability" accumulates over time, leading to a negative self-image (e.g. as an outcast) and/or interactions with others (e.g. being bullied), and eventually contributing to behavior change. Building upon this idea, perhaps there are some windows over development more influenced by the stigma of labeling. Indeed, peer acceptance becomes increasingly more important as youngsters grow older (Asher & Coie, 1990), thus it is possible that negative effects of the special education label were felt more in the older students in this study, suggesting the increases in externalizing behavior could have been clustered in the later years of sampling, such as fourth and fifth grade.

Findings: Setting and Disability Type

The setting in which students received special education services in fifth grade also appeared to predict fifth grade externalizing behavior. Specifically, the externalizing behavior of students receiving services primarily outside of general education was 0.602 SD above their counterparts receiving services primarily in general education settings. In line with social contagion theory (Dishion & Dodge, 2005), problem behavior may arise over time due to close proximity with peers who are acting out. As discussed previously, less inclusive education settings tend to have a disproportionately high number of students with behavior problems, possibly

because they were viewed as too disruptive for general education classrooms and requiring the structure and access to behavior interventions characteristic of self-contained classrooms. Problem behavior may be imitated by students in these settings and, through doing so, the students may even gain reinforcement of behaviors via teacher attention or escape from tasks.

Of the six disability categories used in this study (LD, ED, ID, OHI, Speech/Language, other), only a primary disability code of ED predicted fifth grade externalizing behavior. One possible explanation is that students with ED have inherently higher levels of problem behavior. A second possibility is that students with ED are more likely to experience the effects of peer contagion since a majority of students with ED wind up in less inclusive classrooms. Indeed, Table 4 shows that 68.6% of this study's students with ED were receiving services primarily outside of general education in the fifth grade.

Table 4

Setting by Disability Crosstabulations

		Special Ed Services Received Primarily in General Ed	
	N	Yes	No
LD	381	81.4%	16.6%
ED	51	31.4%	68.6%
ID	60	28.6%	71.7%
OHI	54	81.5%	18.5%
Speech/Lang	67	91%	9%
Other	24	79.2%	20.8%

This reason alone is unlikely, however, since, as Table 4 supports, students with ID are also more likely to be placed in less inclusive classrooms than not. Thus, perhaps an interaction between characteristics of students with ED and less inclusive

classrooms exists and is influencing the extent to which a classification of ED predicts fifth grade externalizing behavior. Future studies should, thus, include an ED-by-setting interaction term in their analysis. Another explanation could be that students' disability code influenced the way teachers rated their behavior. In other words, perhaps teachers were more likely to endorse higher externalizing behavior for students with ED because problem behavior is more characteristic of ED than other disabilities.

Findings: Moderation

Two potential interactions, setting-by-duration and ED-by-duration, were investigated as moderators of the duration-externalizing behavior relationship. These interactions were selected because contagion theory suggests longer placements in self-contained classrooms may influence student behavior and because ED is the disability code most associated with externalizing behavior. Results showed no moderation effects. This conclusion was based on the two interaction terms not significantly predicting the dependent variable in Block 4 of the variable-specific regression analysis and the inclusion of these interaction terms did not result in an overall regression model that better predicted externalizing behavior above and beyond the model that did not include interaction terms.

It should be noted that when these interactions were added to Block 4 of the variable-specific analysis, the effect of *duration* lost significance, suggesting the interactions exerted some influence. Since the *duration* coefficient remained the same in Block 4, it could be that these interactions increased the variability of effect of duration, perhaps due to collinearity. In other words, some of the variance in fifth

grade externalizing behavior that appeared to be accounted for uniquely by duration could have instead been variance accounted for by an interaction between setting and the ED disability sharing variance with duration. Since the effect of *duration* was initially small in Block 3, removing even a minimal amount of variance accounted for would logically cause it to lose significance.

Other Findings

Several interesting findings above and beyond the stated research questions arose from this study. These findings, while ancillary to any stated research questions, are important to mention as they provide information about students placed in special education. First, a large number--25%--of students in special education in the fifth grade had begun receiving services in kindergarten (9%) and even before (16%). See Table 5 for more detail. It appears that the majority of these early classifications were for LD and ID. Assuming that special education is indeed not a transient placement for some students, this finding may suggest students with LD and ID are particularly at risk for long-term placements given that they tend to enter special education earlier in their schooling.

Table 5

Grade When Fifth Graders Received First IEP

		LD	ED	ID	OHI	S/L	Other	Total
Before K	N (% within disability type)	59 (16%)	4 (8%)	22 (37%)	3 (6%)	8 (12%)	5 (20%)	101 (16%)
K	N (% within disability	22 (6%)	4 (8%)	17 (30%)	6 (11%)	7 (10%)	1 (4%)	57 (9%)

	type)							
1st grade	N (% within disability type)	74 (20%)	15 (29%)	8 (14%)	3 (6%)	11 (16%)	11 (44%)	122 (19%)
2nd grade	N (% within disability type)	75 (20%)	11 (21%)	9 (15%)	13 (25%)	28 (41%)	7 (28%)	143 (22%)
3rd grade	N (% within disability type)	89 (23%)	7 (14%)	1 (2%)	23 (43%)	10 (15%)	0 (0%)	130 (20%)
4th grade	N (% within disability type)	58 (15%)	1 (2%)	0 (0%)	5 (9%)	4 (6%)	1 (4%)	69 (11%)
5th grade	N (% within disability type)	3 (1%)	10 (19%)	2 (3%)	0 (0%)	0 (0%)	0 (0%)	15 (2%)
Total	N (% within disability type)	380 (100%)	52 (100%)	60 (100%)	54 (100%)	67 (100%)	24 (100%)	637 (100%)

The second and third supplemental findings relate to control variables—demographic characteristics and academic achievement of the sample, respectively. Because they were entered along with first grade externalizing behavior, the interpretations are limited to whether the control variables predicted behavior change between first and fifth grade in this sample of students with IEPs. None of the demographic variables (gender, race, age, SES) appeared to predict changes in externalizing behavior. Although this finding may come as a surprise, the

interpretation of demographic variables was restricted by being able only to report the predictive value of, for example, race *in general* rather than reporting differences between African-Americans and Latinos. Future studies specifically exploring whether demographic variables predict behavior change should dummy code these variables in order to provide a nuanced interpretation. It should be noted that, although not a predictive relationship, simple correlations showed that males were exhibiting more externalizing behavior than females in fifth grade.

Similar to the results for demographic variables, neither reading nor math achievement predicted externalizing behavior change between the first and fifth grade. This finding may appear contrary to research suggesting a negative relationship between achievement and problem behavior (Nelson, Benner, Lane, & Smith, 2004; Dekker, Koot, van der Ende, & Verhulst, 2002; Hinshaw, 1992); however, this research concedes the directional relationship of these variables is still not understood. Thus, it could be that behavior affects achievement more than achievement affects behavior or, alternatively, achievement and behavior may not share a predictive relationship at all for students receiving special education services.

Limitations

There were several limitations of the present study. First, the data used were more than 10 years old and, thus, may not represent the current state of the education system as accurately as more recent data. For example, the past decade has seen a push for inclusive special education classrooms in public education, thus, had the ECLS-K data been collected more recently, a higher percentage of students would likely be receiving services with their general education peers. As such, it is possible

that the stigma of having a disability is less intense now than in the past based purely on the increased heterogeneity of inclusive general education classrooms. This could potentially nullify the small but significant effect of *duration* of special education due to decreased negative effects of a disability label. Additionally, Response to Intervention (RtI; Fuchs & Fuchs, 2006)—a system for identifying and intervening in academic and behavior problems early that did not exist during the time of ECLS-K data collection but has since been implemented extensively in schools nationwide—underlies another reason the ECLS-K data does not represent the current state of education. Specifically, RtI's focus on early identification and intervention of academic and behavior problems has likely reduced the number of students referred for an IEP who would've been better served with a Tier 1 or 2 intervention in their general education classroom. As such, it is likely that students in this study, especially those receiving services primarily for behavior problems, would not have been included had the data been collected in 2013 because the RtI system would have led to less intense, more appropriate interventions than special education referral.

Second, the data used were not collected for the expressed purposes of this study. As a result, otherwise valuable research questions could not be asked. For example, the predictor model could have been made more accurate had I included child- and family-specific predictors of externalizing behavior, such as emotion regulation and parental attachment, which have been shown in previous studies to be significant predictors of child behavior (Hill, Degnan, Calkins, & Keane, 2006). Third, given that the ECLS-K dataset was not designed specifically for special education research, no variables exist to account for students leaving and re-entering

special education, directly affecting the independent variable, *duration* of special education. Similarly, changes in primary disability and in setting of services received prior to fifth grade were not accounted for, complicating the interpretation of the effects of these variables. Fourth, the disability categories used were treated as homogeneous when, indeed, variables such as *duration* and *setting* likely affect students in the same disability category differently.

Fifth, externalizing behavior was measured only by a short teacher questionnaire, subjecting the dependent variable to issues of content validity (i.e. Are the questions representative of the whole construct of externalizing behavior?) and reporter bias, since only the teacher's perception of student behavior was measured. Sixth, even with a sample of over 600 students, power may have been an issue. A lack of power could have been especially influential in the nonsignificance of the interaction terms, which are notoriously unstable and require higher levels of power. Seventh, the use of longitudinal regression analyses that controlled for a baseline of the outcome variable (e.g. externalizing behavior) may have resulted in inflated regression coefficients (Glymour et al., 2005). To avoid this inflation future studies should consider using more sophisticated longitudinal analyses that better manage correlations among repeated measures, such as prior and current externalizing behavior.

Implications and Future Research

For many students, special education is not a transient placement. It is important, then, to know what the effects of special education are for students over long-term placements. This study showed that longer placements in special education

had a direct, though small, effect on student externalizing behavior in the fifth grade. Being that this is the first study to directly address the predictive value of duration of place on externalizing behavior and has found significant results, future research should expand on understanding what factors underlie this relationship. Although longer placements may be detrimental to behavior for some students, I do not mean to suggest that long-term placement is more bad than good. Indeed, some students, especially with moderate to severe disabilities, gain enormous academic and socioemotional benefits from special education that they could not have otherwise achieved. In practice, perhaps the results of this study could serve as a reminder to IEP teams of the importance of re-evaluating global (academic and socioemotional) progress made in special education and whether the student should still be receiving services. Additionally, being that students do not tend to leave special education quickly, if ever, once they enter and since this study suggests there may be detrimental effects of these placements for some students, the importance of comprehensive evaluations of student functioning prior to initial placement to ensure special education is indeed the best way to facilitate success for the student can not be emphasized enough.

To date, the debate over the superiority of inclusive versus self-contained special education rages on, with studies comparing settings producing variable results. This study found less inclusive settings to be related to more externalizing behavior in a fifth grade population. Granted this study cannot provide reasons why less inclusive settings were detrimental to students' behavior, it does, in a general sense, have implications for practice. If it is determined that a student would be better

served in a self-contained classroom, staff should be on the lookout for any signs of problem behavior and be given sufficient resources to implement behavior interventions early. Perhaps self-contained classrooms could also benefit from class-wide prevention programs targeting externalizing behavior to prevent contagion effects over time. If special educators are made aware of the link between these classrooms and externalizing behaviors, they may be even more motivated to form or facilitate positive teacher-student or student-student relationships that could act as a preventative buffer against future problem behaviors. Additionally, future studies should examine what specifically about the self-contained setting might contribute to an increase in externalizing behavior.

This study also found a primary disability of ED in the fifth grade to be related to externalizing behavior in that grade. It could be that students with ED were referred to special education primarily because of their externalizing behavior, thus making it more likely that across time those students with ED would exhibit more externalizing behavior. It could also be that students with ED are more likely to be placed in self-contained classrooms, putting them at risk for developing externalizing behavior as discussed above. Future research should explore the reasons behind the ED-externalizing behavior relationship. Regardless of the reasons, schools should take note of this relationship and focus more attention on implementing behavior interventions specifically for students with ED. Perhaps these students feel particularly affected by the "disability" label, since their disability is not as overtly obvious to the outside world as other physical and cognitive disabilities. Students

with ED, then, may benefit from additional interventions to increase self-esteem and positive social relationships.

Appendix A

Literature Review Summary Table

Author Name (Year)	Topic	Study Type	Major Findings	Limitations
Carlberg & Kavale (1980)	Duration of Special Education	Meta-analysis	Effect sizes of salient variables not correlated with the length of special education placement.	- Effects of duration were not a central finding and thus implications were not discussed.
Peetsma, Vergeer, Roeleveld, & Karsten (2001)	Duration of Special Education	Longitudinal (4 years; two post-baseline time points)	Special education students improved academically after 2 and 4 years. The trajectory of improvement plateaued between the 2nd and 4th year for students in self-contained schools but not for those in inclusive education. No significant changes over 4 years in self-confidence or motivation.	- Student self-confidence and motivation were teacher-rated. - No non-disabled control group.
De Ruiter, Dekker, Verhulst, & Koot (2007)	Duration of Special Education	Longitudinal (4 years; two post-baseline time points)	Students with ID exhibit higher levels of externalizing behavior than non-ID peers. Students with ID have a larger decrease in externalizing behavior over time.	- Student behavior was parent-reported only. - Limited description of educational settings. - Authors did not consider the possibility that behavior decrease could be a function of setting rather than developmental differences.

McLesky (2004)	Setting Type	Review	Identified 10 classic articles that have shaped the field of special education, 3 of which (Dunn, 1968; Will, 1986; Fuchs and Fuchs, 1994) are applicable to current lit review.	- Used citation review, which may reflect trends other than identifying classic articles. This method has, however, also been suggested to be a better measure of the prevalence of an article in the field than a review.
Baker (1994a)	Setting Type	Review	Summarized that 3 meta-analyses (Carlberg & Kavale, 1980; Wang & Baker, 1986; Baker, 1994b) found small to moderate, positive effects of inclusive special education placement on academic and social outcomes.	- This review is a short summary of important literature that leaves out detailed information specific to each meta-analysis.
Lindsay (2007)	Setting Type	Review	Very few studies compare groups (different settings; disabled versus non-disabled) to address the question of effectiveness of inclusion. Furthermore, interaction effects appear present such that effectiveness of inclusion depends on disability type. In studies directly comparing outcomes for students in inclusive versus self-contained special education, results vary between no group differences to positive effects of inclusion. The author concludes that a clear endorsement for the superiority of inclusion over other settings cannot be made.	- Studies included in the review were not consistent across age range, types of outcome variables, and used different definitions of inclusion, making generalizations more difficult.

Ruijs & Peetsma (2009)	Setting Type	Review	Positive but variable effects of inclusion on academic achievement of students with disabilities.	- Studies included in the review differed in their definition of inclusion and some did not use a control group, making it difficult to draw the conclusion that positive effects were due to inclusive settings.
Carlberg & Kavale (1980) *also discussed above	Setting Type	Meta-analysis	Disability classification was the only independent variable associated with differential effects by setting. Self-contained settings were academically and socially beneficial for students with emotional disability and learning disability, but not for those with intellectual disability	n/a
Hocutt (1996)	Setting Type	Review	Much of the research looking at the effectiveness of special education settings is methodologically flawed (e.g. failing to use comparison groups) and can be best interpreted when separated by disability type. The existing research doesn't support full inclusion for all students with disabilities.	- Limited number of studies used in review of outcome research in ED and ID populations.
Freeman & Alkin (2000)	Disability Type ID	Review	In comparing outcomes of students in inclusion versus self-contained settings, achievement outcome results varied between no group differences to positive effects of inclusion. Social outcome results highly variable.	- The definition of ID has changed over the 30 years covered by this review. - Academic outcomes vary by study. - Social competence

			Fully inclusive settings benefit student's social competence more than partially inclusive and self-contained settings.	studies use others' evaluation of students' social competence rather than an objective measure.
Nelson, Benner, Lane, & Smith (2004)	Disability Type ED	Cross-sectional	Students with EBD perform below age-expected norms in reading, writing, and math. Over time, underachievement in reading and writing remains stable while math declines. Externalizing behavior was related to achievement in all content areas.	- Cross-sectional design, preventing the evaluation of possible interaction effects. This also limits causal implications of results. - Small sample size (N = 155), limiting statistical power. - Multi-operationalizations of constructs of interest - Sample drawn from one school district.
Reid, Gonzalez, Nordess, Trout, & Epstein (2004)	Disability Type ED	Meta-analysis	Students with EBD perform below same-age non-disabled peers in academic achievement. Special education placement setting did not have an effect on academic achievement outcome.	- High variability of academic achievement within special education settings may have contributed to setting not moderating the ED/achievement relationship. - No longitudinal studies were included in the meta-analysis, thus within student changes over time couldn't be evaluated. - Small number of studies included (N =

				25)
Sabatino (1971)	Disability Type LD	Longitudinal (1 year)	Students with LD had better academic outcomes in fully self-contained classrooms and one hour resource room placement than in fully inclusive classrooms.	- Study was published at a time (1970's) when special education environments were somewhat different from today.
Carlberg & Kavale (1980) *also discussed above	Disability Type LD	Meta-analysis	Students with LD placed in self-contained classes were better off academically than 61% of their counterparts in inclusion classes, based on effect sizes.	n/a
Harrington (1997)	Disability Type LD	Review	Research fluctuates between setting not significantly impacting academic outcomes for students with LD and self-contained settings being more beneficial than inclusive. Research on peer acceptance is inconclusive in that it varies greatly from higher peer acceptance in inclusive education to higher acceptance in self-contained.	- No systematic method was used in selecting literature to be included in the review.
Swanson (1999)	Disability Type LD	Meta-analysis	Special education, namely resource rooms, superior setting for interventions for students with LD.	- Only eight out of 160 studies had interventions occurring in general education.

Appendix B

Descriptives and Frequencies
(N=638)

Demographics

Variable	Percent
Gender	
Male	64
Female	36
Ethnicity	
Caucasian	59.5
Af Amer	14.4
Hispanic	20.9
Asian	0.9
Pacific Isl	0.9
Am Indian	2.6
More than 1	0.8
SES	
1st Quintile	32.7
2nd Quintile	24.5
3rd Quintile	16.7
4th Quintile	14.6
5th Quintile	11.5
Grade Level	
3rd	2.4
4th	26.3
5th	71
6th	0.2

	Mean	S.D.
Age (months)	136.04	5.79

Control Variables

Variable	Mean	S.D.
Ext Beh		
1st	0.45	1.09
Reading Ach		
1st	-1.16	1.00
3rd	-1.24	1.11
5th	-1.18	1.01
Math Ach		
1st	-1.00	1.04
3rd	-1.01	1.04
5th	-1.09	1.05

Note. All control variables are standardized.

Variables of Interest

Variable	Percent	
Years in SpEd (Duration)		
<1 year	2.4	
1 year	10.7	
2 years	20.5	
3 years	22.4	
4 years	19.1	
5 years	8.9	
≥ 6 years	15.9	
Services Received Primarily in Gen Ed (Setting)		
Yes	73	
No	27	
Primary Disability		
LD	58.6	
ED	8.1	
ID	9.4	
OHI	8.4	
Speech/Lang	10.6	
Other	3.8	
	Mean	S.D.
Ext Beh		
5^{th}	0.47	1.22

Note. 5^{th} grade externalizing scores are standardized

Appendix C

Where Students Are Receiving Services in the Fifth Grade

		LD	ED	ID	OHI	S/L	Other	Total
Services in Gen Ed	Count	310	16	17	44	61	19	467
	(% within setting)	(66%)	(3%)	(4%)	(9%)	(13%)	(4%)	(100%)
	(% within disability type)	(81%)	(31%)	(28%)	(82%)	(91%)	(79%)	(73%)
Services OUTSIDE of Gen Ed	Count	71	35	43	10	6	5	170
	(% within setting)	(42%)	(21%)	(25%)	(6%)	(4%)	(3%)	(100%)
	(% within disability type)	(19%)	(69%)	(72%)	(19%)	(9%)	(21%)	(27%)
Total	Count	381	51	60	54	67	24	637
	(% within setting)	(60%)	(8%)	(9%)	(9%)	(11%)	(4%)	(100%)
	(% within disability type)	(100%)	(100%)	(100%)	(100%)	(100%)	(100%)	(100%)

Appendix D

Correlations

	EB5	Dur	EB1	Set	Dis LD	Dis ED	Dis ID	Dis OHI	Dis S/L	Dis Oth	Gend	Race	Age	SES	All Achievement
EB5	--	.240**	.547**	.381**	-.136	.278**	.166*	.100	.101	.136	-.237**	.058	.093	-.089	-.103 to .070
Dur	.240**	--	.141*	.276**	-.124	.058	.199**	.039	.089	.124	-.161*	-.102	.253**	-.174*	-.280** to -.126

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