2010

An analysis of predictors of exclusionary discipline practices and the relationship with student achievement using hierarchical linear modeling

Amanda Dahir
Louisiana State University and Agricultural and Mechanical College

AN ANALYSIS OF PREDICTORS OF EXCLUSIONARY DISCIPLINE PRACTICES AND THE RELATIONSHIP WITH STUDENT ACHIEVEMENT USING HIERARCHICAL LINEAR MODELING

A Dissertation

Submitted to the Graduate Faculty of the
Lousiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Psychology

By
Amanda Dahir
B.S., University of Florida, 2003
M.A., Louisiana State University, 2007
August 2010

ACKNOWLEDGEMENTS

I would to extend my deepest and most sincere gratitude to my mentor and advisor, Dr. George Noell. Thank you for all that you have taught me. I strive to be the professional that you are. Dr. Kristin Gansle, thank you for your help with the data and your input on the document. I would also like to thank my entire committee, Dr. Frank Gresham, Dr. Jeffery Tiger, and Dr. S. Kim MacGregor for their expertise and input. This study would not have been possible without the help Dr. Bethany Gleason and Maria Knox. Thanks for your help with the data, editing, and your support. I have thanked you 1000 times and I will thank you 1000 more. Lastly, I would like to recognize my husband, Tam Nguyen Ly. Your faith in me has strengthened me when I needed it most. I am so grateful for your love.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

School discipline plays an important role in maintaining a safe and orderly learning environment for students. Disruptive behavior in the classroom interferes with classroom learning time making it difficult to accomplish academic goals. A common method of handling discipline problems within schools is removing the disruptive student from their classroom (e.g. suspension or expulsion). There is a great need to study and understand the differences between school disciplinary practices and to allow research findings to guide the way in which discipline is administered. The current study examined a large database for the entire state of Louisiana to determine the relationship between discipline practices and academic achievement for students receiving exclusionary discipline sanctions through the use of hierarchical linear modeling (HLM). Analyses also examined which student and school level variables predict discipline through the use of logistic regression (LR). The LR analysis showed that students identified as male, African American, and Emotionally Disturbed significantly increased their odds of being disciplined. A student identified as Gifted, Mild Mentally Retarded, and Special Education-Other significantly decreased their odds of being disciplined. Results of the HLM analyses showed all discipline variables had significant negative effects on both English Language Arts and Mathematics achievement test scores.

INTRODUCTION

Delinquency, school failure, school dropout, depression, alcohol and drug abuse, violence towards others, incarceration, and lifelong dependence on social service systems have been demonstrated to be some of the long-term outcomes for children who repeatedly come into contact with school disciplinary systems (Kazdin, 1985; Patterson, Reid, & Dishion, 1992; Cameron, 2006; Loeber, Green, Lahey, Frick, & McBurnett, 2000; Costenbader & Markson, 1998; Martinez, 2009). Moreover, researchers have found that it is possible to make long-term predictions about the future arrest status of at-risk fifth graders by using three marker variables with 80% accuracy. The marker variables in this study were: (1) the number of discipline contacts the student has during the school year, (2) the amount of negative behavior a student typically displays with classmates on the playground and that is reciprocated by peers, and (3) the teacher's impression of the student's social skills as reflected by teacher ratings (Walker, Colvin, & Ramsey, 1995; Walker & McConnell, 1995). Individual life trajectories are greatly influenced by their experiences in their education. School discipline plays an important role in maintaining a safe and orderly learning environment for students. When disruptive behaviors occur in the classroom it interferes with the entire classroom's ability to learn. This disruption competes with instructional time making it less likely that other students will achieve. There is a great need to study and understand the differences between effective and ineffective school discipline practices and to allow research findings to guide reform.

Cameron (2006) defines school discipline as, "school policies and actions taken by school personnel with students to prevent or intervene with unwanted behaviors, primarily focusing on school conduct codes and security methods, suspension [and expulsion] from school, corporal punishment, and teacher methods of managing students' actions in class" (p. 219).

Within school discipline there are differences in the ways in which schools respond to student misbehavior. Schools use preventative measures which occur before a discipline violation such as school security measures or school conduct codes. Schools also use corrective measures which occur after the discipline violation and serve as a consequence for the misbehavior such as suspension and expulsion. Approaches to school discipline vary depending on state regulations, individual school districts, as well as, individual school's administration (Rusby, Taylor, & Foster, 2007).

A few approaches to school discipline that have surfaced in recent years include "get tough" or "zero tolerance" policies which primarily rely on excluding students who engage in challenging behaviors from the school environment (Martinez, 2009). "Zero-tolerance" and similar practices require that disciplinary action be taken regardless of the severity of the infraction made by the student. This practice alone has led to an increase in suspension rates (American Psychological Association, 2008). Martinez (2009) notes that while these approaches have received a lot of media attention, these approaches "do not have compelling evidence that they actually change student behavior and there is little evidence showing significant improvements in student outcomes" (p. 155).

REVIEW OF THE LITERATURE

Categories of Discipline

There are many reasons for taking disciplinary action in schools. The types of infractions vary as well as the amount of subjectivity involved in deciphering whether or not an infraction occurred (Rusby et al., 2007). Mayer (1995) found that although antisocial behavior may be the most apparent reason for administering disciplinary action within school systems, there are many other reasons disciplinary action is taken which range from treating authority with disrespect to murder or assault. The ways in which modern school systems respond to disciplinary problems can be described as falling under four main categories: administering office discipline referral, corporal punishment, suspension – in-school, out-of-school, or alternate site, and expulsion in-school, out-of-school, or alternate site (Cameron, 2006).

Office Discipline Referrals. Office discipline referrals sometimes referred to as school discipline referrals are used as a citation for various discipline problems. Research in school discipline interventions often uses office discipline referrals as a measure of discipline intervention effectiveness (Tidwell, Flannery, & Lewis-Palmer, 2003; Ervin, Schaughency, Matthews, Goodman, & McGlinchey, 2007; Rusby et al., 2007; Winbinger, Katsiyannis, & Archwamety, 2000). There is great variation regarding the extent to which schools and teachers use office discipline referrals (Rusby et al., 2007; Sugai, Sprague, Horner & Walker, 2000; Winbinger et al., 2000).

Corporal Punishment. Corporal punishment is used to describe, "purposeful infliction of pain or confinement as a penalty for an offense" and is assumed to change the behavior that precedes it (Hyman, 1995, p. 114). Cameron's (2006) review noted that, although attitudes towards corporal punishment have shifted and 28 states have outlawed the practice in public

schools, between 1 and 2 million incidents still take place each year (American Academy of Pediatrics, 2000).

Suspension. Suspension is the single most commonly used form of school discipline beyond informal teacher mediated interventions which is given for a variety of different conduct infractions (American Psychological Association, 2008). The most common reason for getting suspended is fighting (Skiba & Peterson, 2000), although many suspensions are given for much more minor incidents such as tardiness or dress code violations (Brooks, Schiraldi, & Zeidenberg, 1999). Suspension is a common disciplinary action; however, research suggests it has very little positive effect on student behavior (Christle, Nelson, & Jolivette, 2004).

The goal of all disciplinary action is to reduce problem behavior; however, Atkins, Frazier, Jakobsons, Arvanitis, Cunningham, Brown, and Lambrecht (2002) show that students who are suspended from school are often repeat offenders. Several studies have demonstrated that suspension is not an effective change agent in that students who are suspended return to school displaying the same or more severe behaviors (Christle et al., 2004; Skiba, 2000; Martinez, 2009). This finding alone should be alarming in that suspending students may have the reverse effect in that those who are suspended are actually *more* likely to be suspended again in the future. Schools may actually be rewarding students who enjoy time off from school [suspension] when they are disruptive or violent (Atkins et al., 2002). Additionally, the use of suspension may be ineffective in that it appears that misbehavior continues regardless of whether the student is suspended making the use of the practice irrelevant.

There is a plethora of negative effects associated with suspension including high rates of absenteeism following the suspension (Fine, 1991) and exacerbating other problem behaviors that are not related to the suspension such as drug abuse, and mental health problems (Walker,

Colvin, & Ramsey, 1995; Walker & McConnell, 1995; Walker & Sprague, 1999; Hahn, Crosby, Moscicki, Scone, & Dahlberg, 2007). Several studies have shown a strong correlation between early behavior problems in school and later contact with juvenile justice system (American Psychological Association, 2008; Costenbader & Markson, 1998; Walker & Sprague, 1999; Christle et al., 2004; Skiba & Peterson, 1999; Tremblay, Masse, Perron, Leblanc, Schwartzman, & Ledingham, 1992). Studies have also shown a strong association between academic failure and suspension (Fine, 1991; Tremblay et al, 1992; Walker & Sprague, 1999; Cameron, 2006; White, 1982; Luiselli et al., 2005; DuPaul et al., 1998; Nelson, 1996) as well as increased dropout rates (Walker & Sprague, 1999; Costenbader & Markson, 1998; Luiselli et al., 2005; Vuchinick, Bank, & Patterson, 1992; Cassidy & Jackson, 2005; Skiba & Peterson, 1999, Skiba, 2001). While advocates of suspension suggest that removing disruptive students will create an environment where teachers and non-disruptive students can learn, research clearly demonstrates that suspension is not an effective behavior change agent for suspended students (Martinez, 2009).

Expulsion. In the United States there are many reasons why students may be expelled, or involuntarily withdrawn, from their school. Specific reasons vary state by state. Examples of reasons why a student may be expelled from a U.S. school include: violence, drugs, hate crimes, property destruction, failure to attend school regularly, or persistent rebellion (Louisiana Department of Education, 2009). Much like the reasons for suspension, the reasons for administering expulsion cover a wide range of behaviors. Furthermore, the decision to expel a student is made by a group of individuals (i.e. school board or hearing committee) and is largely subjective in nature (Rusby, et al., 2007; Cameron, 2006; Winbinger et al., 2000). In Louisiana, expulsion can be given in-school where the student is permanently assigned to another

classroom, to an alternate site where the student is permanently assigned to another school, or out-of school where the student is permanently removed from their school where no arrangements are made for instructional/educational provisions (Louisiana Department of Education, 2008, pp. 16-17). In the latter type of expulsion (e.g. out-of-school) the school is "automatically excluding students from educational instruction . . . [which] is contradictory to the mission of education" (Christle et al., 2004, p. 521).

Negative Consequences of Common Discipline Practices

It is widely known that children who exhibit disruptive behavior are at an elevated risk for continued social and academic difficulties throughout elementary school (Moffitt, 1993; Patterson, Reid, & Dishion, 1992). Rusby, Taylor, and Foster (2007) point to these early behavior problems along with a failure to provide positive peer relationships as being associated with the development of later social adjustment problems such as dropout, delinquency, teenage pregnancy, substance abuse, violence, and criminal activity later in life (Gabel & Shindledecker, 1991; Loeber, Green, Lahey, Frick, & McBurnett, 2000). Although research clearly supports the importance of early prevention efforts for disruptive problem behaviors, schools often neglect to screen students early enough to provide early intervention to remediate problems (Walker, Horner, Sugai, & Bullis, 1996).

Given the subjective nature of referrals of problem behaviors within school systems (Tidwell, et al., 2003; Winbinger et al., 2000), bias within school disciplinary practices are another major area concern (Monroe, 2005; McFadden & Marsh, 1992; Shaw & Braden, 1990). Studies have found schools and teachers discriminatively administer disciplinary action based on race, gender, and socio-economic status. A study by Skiba, Peterson, and Williams (1997) found that teachers disproportionately refer African-American students to administrators for

disciplinary action. Not only were African-American students referred more often, but they were referred for corporal punishment for less severe infractions when compared to their Caucasian counterparts (Shaw & Braden, 1990). African American students have also been found to be suspended more often than their Caucasian student counterparts (Skiba, 2001).

Another negative consequence of current discipline practices is that they may be reinforcing for some students thereby having a paradoxical effect. The use of suspension and expulsion, collectively called exclusionary disciplinary practices (EDP), for students who misbehave tacitly assumes all students are driven by the same reinforcers; therefore, practices such as EDP should function as "punishment" which should decrease the future likelihood of misbehavior (Mayer, 1995). Mayer (1995) argues that using EDP assumes that behavior is primarily driven by and maintained by the principles of positive reinforcement and the school environment is a reinforcing environment. Therefore, if we remove a student from this reinforcing environment the student will no longer engage in the problem behavior. While this may be true for some students, evidence suggests that it is not true for all students and, in fact, the opposite may be true for some students with chronic behavior problems (Atkins et al., 2002; Vuchinick, et al., 1992; Loeber et al, 2000; Tremblay et al., 1992; Walker & Sprague, 1999)

There is another body of research that suggests that problem behavior of many students is maintained by negative reinforcement (Shores et al., 1993). The underlying concept of this idea is that for some students, academic activities/tasks, teacher interactions, and the overall school environment are aversive. Some students (especially students who chronically engage in disruptive behaviors) engage in disruptive behavior in order to escape these aversive situations. Mayer (1995) summarizes the primary areas of concern with respect to discipline in the schools as three-fold: (1) continued over-reliance of exclusionary practices; (2) the limited use of

consistent preventative approaches that have been demonstrated to be effective in the reduction of problem behavior; and (3) the continued use of ineffective discipline strategies.

Instead of using corrective measures, which are often ineffective, several research studies demonstrate several preventive measures that are much more effective at reducing rates of misconduct (Henggeler et al., 1992; Wilson et al., 2003; Wilson & Lipsey, 2007; Luiselli et al., 2005; Reid et al., 1999; Luiselli et al., 2001; Hahn et al., 2007). Meta-analytic research has shown positive effects for the following interventions: (1) social skills training; (2) system-wide behavioral intervention (Positive Behavioral Support – PBS); and (3) academic curricula modifications (Gottfredson, 1997).

RATIONALE AND PURPOSE OF CURRENT STUDY

To date, research on school discipline has primarily consisted of descriptive studies (Reid et al., 1999; Rusby et al., 2007; Tidwell et al., 2003) or been based on survey data (Winbinger et al., 2000; Christle et al., 2004; Hyman & Perone, 1998; Costenbader & Markson, 1998; Psunder, 2005). Survey data are usually collected by school administrators and used to gain insight on behavior problems from school administrator, teacher, and student perspectives (Psunder, 2005). Studies that have employed correlational data techniques and other statistical methods have typically been done on a small scale such as a school or a district (Ervin et al., 2007; Reid et al., 1999; Nelson, 1996; Tidwell et al., 2003; Shores & Jack, 1993) or using statistics that may not best describe the data.

A statistical method which has been useful for analyzing large sets of data across different levels is Hierarchical Linear Modeling (HLM). HLM allows variance in outcome variables to be analyzed at multiple hierarchical levels, whereas in linear regression all effects are modeled to occur at a single level (Raudenbush, Bryk, Cheong, Congdon, du Toit, 2004). HLM is appropriate for analyzing educational data in that it provides a properly structured model in which a large data set such as a state level data set can be modeled in a way that appropriately captures the nesting of students within schools and classrooms and the resulting correlated error terms. HLM has been used in applications where there is a naturally nested hierarchical data structure. For example, in educational systems, students are nested within classrooms, classrooms are nested within schools, and schools are nested within a school district and so forth. Within the context of the current investigation, HLM is a good candidate for data analyses given the structure of the data under investigation is such that each student is contained within one classroom and each classroom is contained within one school.

Disciplinary practices potentially are a function of the state where schools are located as well as individual school administrator beliefs (Winbinger et al., 2000). Within the state of Louisiana there are several types of disciplinary actions that may result from a disciplinary infraction. Analyzing Louisiana's discipline data linked to student achievement using HLM will produce a model which will inform which discipline practices produce outcomes that have the least adverse effect in reference to student achievement. The results of this study will allow educators to re-evaluate disciplinary practices based on outcome data to improve student outcomes. For example, if the HLM which is produced suggests that being suspended *out-of-school* more adversely effects student achievement than being suspended *in-school* then educators may want to shift from discipline practices that have a more adverse impact on student achievement to those discipline practices which have a less adverse impact.

The purpose of the current study is to examine a large database in Louisiana to determine the relationship of current discipline practices on academic achievement. The current study is twofold. First, this study will analyze individual student level variables that significantly predict whether they will be suspended or expelled (e.g. EDP). Secondly, an analysis will be conducted examining the relationship between EDP status and standardized Mathematics and English Language Arts achievement scores. This investigation will answer the following two research questions: (1) what variables significantly predict student suspension and expulsion (out-of-school) and (2) what is the relationship between EDP and standardized Mathematics and English Language Arts scores?

METHODOLOGY

Participants

The current investigation built upon a large pre-existing multivariate longitudinal database for all analyses (Noell, Patt, & Porter, 2007). Augmentations were necessary in order to adapt the existing database to meet the needs of the current investigation. All of the data that was used to construct this database was obtained from the Louisiana Department of Education.

The current study examined data for students enrolled in grades 4 through 9 for the academic school year 2007-2008 for the state of Louisiana (N = 244,893). These grades were selected in order to include the grades in which standardized tests are administered in order to gain an understanding of how suspension and expulsion or EDP are related to student achievement in English Language Arts and Mathematics.

Measures

The Louisiana Educational Assessment Program for the 21st Century (LEAP-21) and the Integrated Louisiana Educational Assessment Program (iLEAP) are standardized tests given to all students in the state of Louisiana to measure academic achievement.

LEAP-21. The LEAP-21 is a criterion-referenced test that was initiated in 1997 to align with new content standards (Mitzel & Borden, 2000). The LEAP-21 test is validated based on content validity. Content validity is verified by a content review committee comprised of professionals in the field to determine whether the test aligns with state standards. Reliability for the LEAP-21 was assessed using a traditional, Cronbach's alpha, and ranges from .87 to .94 (Louisiana Department of Education, 2006a). Reliability coefficients above .85 are considered excellent; therefore the LEAP-21 has excellent reliability (Louisiana Department of Education, 2006a). For more information regarding the LEAP-21's reliability, validity, and test development

data is available at the Louisiana Department of Education website http://www.doe.state.la.us/lde/saa/2273.html.

The LEAP-21 is a high-stakes test which measures how well a student has mastered the state content standards and is only administered in grades 4 and 8. Administering "high stakes" achievement tests is thought to play an important role in improving student achievement. The LEAP-21 tests are designed and implemented to ensure that grade 4 and grade 8 students have adequate knowledge and skills before moving on to the next grade. If a student does not meet certain criteria scores they are retained.

LEAP-21 English Language Arts and Mathematics are administered to public school students in grades 4 and 8 starting in 1999 and beginning the following year (2000), LEAP-21 Science and Social Studies tests were added. The LEAP-21 test measures whether grade 4 and grade 8 students have adequate knowledge and skills to progress to the next grade. Students taking the LEAP-21 test do not receive either a passing or failing score; instead, they receive one of the following five achievement ratings: (1) *Advanced:* superior performance beyond the level of mastery (2) *Mastery:* demonstrated competency over challenging subject matter and is well prepared for the next level of schooling (3) *Basic:* demonstrated only the fundamental knowledge and skills needed for the next level of schooling (4) *Approaching Basic:* only partially demonstrated the fundamental knowledge and skills needed for the next level of schooling (5) *Unsatisfactory:* has not demonstrated the fundamental knowledge and skills needed for the next level of schooling. See Table 1 for details at each criterion level. Beginning in spring 2004, grade 4 students are required to score at least a minimum score *"Basic"* or above on either the English Language Arts or the Mathematics test and a minimum score of *"Approaching Basic"* or above on the other to progress to grade 5. The current standard (since

2006) for grade 8 students is that they must score *"Basic"* or above on either the English Language Arts or the Mathematics test and *"Approaching Basic"* or above on the other test to progress to grade 9. Intensive summer remediation is required to be offered to students who do not score at the achievement level required for promotion and those students have the opportunity to retest after remediation concludes in the summer.

Table 1: Scaled Score Range for each Achievement Level for LEAP-21 for 2007-2008 (Louisiana Department of Education, 2009)

	English Language Arts		Mathematics		Science		Social Studies	
	Scaled Score Range		Scaled Score Range		Scaled Score Range		Scaled Score Range	
Achievement Level	Grade 4	Grade 8	Grade 4	Grade 8	Grade 4	Grade 8	Grade 4	Grade 8
Advanced	408–500	402–500	419–500	398–500	405–500	400–500	399–500	404–500
Mastery	354–407	356–401	370–418	376–397	360–404	345–399	353–398	350–403
Basic	301–353	315–355	315–369	321–375	306–359	305–344	301–352	297–349
Approaching Basic	263–300	269–314	282–314	296–320	263–305	267–304	272–300	263–296
Unsatisfactory	100–262	100–268	100–281	100–295	100–262	100–266	100–271	100–262

*i*LEAP. The *No Child Left Behind Act* (NCLB), enacted in 2002, requires that individual state assessments be aligned to their state specific content standards and that student results be expressed in terms of the state's performance standards (e.g. Louisiana's five achievement levels, ranging from *Unsatisfactory* to *Advanced*). Prior to 2006, the Iowa Tests of Basic Skills (ITBS) was administered in Louisiana. Given that the ITBS is not aligned to Louisiana content standards it does not fulfill the NCLB's requirement, thus a new standardized test was adopted in Louisiana. The Integrated Louisiana Educational Assessment Program (*i*LEAP) was developed and replaced the ITBS beginning in spring 2006. "By making this change in assessment standards [ITBS to iLEAP], this should improve the content validity of the assessment by assuring tighter alignment between what is expected to be taught and what is assessed" (Noell, Porter, & Patt, 2007, p. 7).

The *i*LEAP test is administered within the public school system in the state of Louisiana to students in grades three, five, six, seven, and nine. The *i*LEAP English Language Arts and Mathematics tests are administered to all grades, while the *i*LEAP Science and Social Studies tests is only administered at grades three, five, six, and seven. All items were specifically developed for the *i*LEAP according to the Louisiana state content standards benchmarks. The criterion referenced component of *i*LEAP measures how well a student has mastered the state content standards where each student's results are reported by the same achievement levels as the LEAP-21 (*Advanced*, *Mastery*, *Basic*, *Approaching Basic*, and *Unsatisfactory)*, scaled scores, and content standard scores. The norm referenced component of *i*LEAP measures student performance in English Language Arts, Reading, and Mathematics, which provides normative scores including standard score, national percentile rank, national stanine, and normal curve equivalent scores. Standard scores were used in this study.

Evidence for the validity of the *i*LEAP is built in to the test in the same way it is for the LEAP-21 (e.g. content validity). Reliability for the *i*LEAP was also assessed using Cronbach's alpha and ranges from .80 to .96 (Louisiana Department of Education, 2006b). Again, reliability coefficients above .80 are considered good while those above .85 are considered excellent (Louisiana Department of Education, 2006b). For more information regarding test development, reliability, and validity data for the *i*LEAP, please refer to the Louisiana Department of Education's website at: http://www.doe.state.la.us/lde/saa/2273.html.

Exclusionary Disciplinary Practices. For the purposes of the current study, exclusionary discipline practices (EDP) are defined as including any type of school discipline which excludes/removes the student from their usual classroom for a period of time. In Louisiana there are six types of EDP including: suspension out-of-school, expulsion out-of-school, suspension

in-school, expulsion in-school, suspension alternate site, and expulsion alternate site. Suspension and expulsion were analyzed as separate variables of interest, but also were analyzed as a single unit (e.g. EDP).

The six types of EDP are defined in the Louisiana Department of Education Student Information System (SIS) User Guide: "Suspension in-school," is when the student is temporarily removed from his/her usual classroom and moved to an alternative setting/program on the same campus for a minimum of one complete school day and no interruption of instructional/educational services occurs. "Expulsion in-school," is when a student is removed from his/her usual classroom and moved to an alternative setting/program on the same campus for a period of time specified by the LEA and no interruption of instructional/ educational services occurs. "Suspension alternate site," is when a student is temporarily removed from his/her usual classroom and moved to an alternative setting/program not on the same campus for a minimum of one complete school day. No interruption of instructional/educational services occurs, but the setting must be off-site. "Expulsion alternate site," is when a student is removed from his/her usual classroom and moved to an off-site alternative setting/program not on the same campus for at least the remainder of the school semester and no interruption of instructional/educational services occurs. "Suspension out-of-school," is defined as when the student is temporarily prohibited from participating in school and no provision is made for instructional/educational services during this period. Suspensions were only coded as this if they resulted in removal of the student for at least one full day. "Expulsion out-of-school," is defined as when the student is removed from school for at least the remainder of the school semester with no provision made for instructional/educational services (Louisiana Department of Education, 2009, pp. 16-17). For the purposes of the current study, in-school and alternate site

suspension and expulsion were grouped together, and out-of-school suspension and expulsion were grouped in order to more clearly examine the effects contingent on where the consequences were delivered (e.g. on school campus versus off site).

Constructing the Database

The database that was constructed for this analysis will link data points from Louisiana's student achievement and discipline databases. The student database included student demographic information and testing information for the current and prior year (2006-2007 and 2007-2008).

The student and discipline databases were merged in order to create one comprehensive record for each student which includes: student demographics variables, student achievement variables, and all disciplinary related variables for each student.

Preliminary work was conducted in order to resolve the issue of duplicate records that describe the same student. Following this work, the LEAP-21 and *i*LEAP data files were merged followed by an additional round of duplication resolution. Students' data was then linked based upon unique matches on multiple identifiers used in each stage of the matching process. As in Noell, Porter, and Patt (2007), a five step matching process will be used in this current investigation in order to ensure that all unique cases are included. The first match will consist of trying to match students on their 12-digit identification number, their last name, and gender. Students who did not match uniquely on this step will then be matched on their identification number, gender, and birthday. Students who do not match uniquely on this sequence will then be matched on their last name, first name, gender, and birthday. Next, any unmatched students will be match based on their identification number, last name, and birthday. Finally, any unmatched students will then be matched on their identification number, last name, and first

name. Those student records that did not uniquely match at any stage will be retained as isolated records of student performance and will not be used in the current analyses (Noell & Burns, 2006).

In addition to achievement data, a number of additional variables were gathered and/or computed from the available database. As in previous studies examining student achievement, the following variables were created at the student level to be used in the analyses: free and reduced lunch status, gifted status, special education status, 504 accommodation status, limited English proficiency, gender status, attendance, and minority status.

Specific to the current investigation, the following variables were created: suspension status (including in-school, out-of-school, alternate site), expulsion status (including in-school, out-of-school, alternate site), Provision status, No Provision status, EDP status, and moved status. "Suspension status" and "expulsion status" were used in order to identify those who have received "EDP." "Moved status" was used in order to identify those students who have been in more than one school for the academic year.

Within the discipline variables some measures were taken to further break down the variables of interest. Within the six discipline types in Louisiana there is a natural division between those types of EDP which provides instructional/educational provisions and those in which no provision is made for instructional/educational services. The difference that accounts for whether provisions are provided lies in grouping suspension out-of-school and expulsion out-of-school and grouping the remaining four types of EDPs in that suspension out-of-school and expulsion out-of-school exclude the student from participating in school and typically do *not* make provisions for instructional/educational services; therefore, two variables were created in order to account for this difference ("provision" and "no provision").

In summary, the current investigation examined suspension and expulsion collectively and separately. Also, several additional variables were created. Suspension and expulsion were further broken down to differentiate the type of EDP where the student was kept in-school and educational provisions were provided ("provisions") versus when the student was out-of school and no educational provisions were provided ("no provisions.")

Students who move to a different school(s) during the school year will be kept in the analysis given that moving is hypothesized to have a relationship between EDP and achievement; however, the way in which these students are included warrants modification. A student who moves during the school year will have more than one school to which their data contributes, but it is unclear which school contributes to that individual student's data and to what degree. Therefore, these students will be assigned "moved status" and will be analyzed in separate LR and HLM. This grouping allowed for students who move to be included and their effects to be analyzed.

At the classroom level, percentage of the class with all the aforementioned variables as well as the discipline variables were created to determine the relationship of being in a class with different percentage of individuals with the discipline variables of interest on individual student achievement. At the school level, percentage of school with all the aforementioned variables including the discipline variables was created to determine the relationship different percentage of school mates with the discipline variables of interest has on individual student achievement.

Procedure and Analyses

The data was analyzed by using two different types of analyses, logistic regression and hierarchical linear modeling (HLM).

Logistic Regression. Logistic regression is a type of multiple regression which is used to determine the simultaneous relationship between several predictors (e.g. variables) and one outcome variable. Generally speaking, multiple regression is used to determine the linear combination of all the variables that correlate maximally with the outcome variable. Specifically, multiple regression analyses are used in order to determine the best fit equation of predictors where student demographic variables will be entered to determine any significant predictors of students who receive exclusionary disciplinary action.

Logistic regression is a method of multiple regression analysis that is appropriate when the outcome is dichotomous. Logistic regression was chosen to for this analysis in order to determine the significant student level predictors on the dichotomous outcome variable "EDP status." The Logistic regression analysis was conducted to examine patterns in the data where the linear least squares computational technique will provide simple expressions for the associated statistical values such as the standard errors of the parameters (Field, 2005).

The criterion variable for the logistic regression was "EDP status" and blocks of conceptually meaningful predictor variables were then progressively added in order to examine the relationship. Student achievement test scores were standardized to a mean of zero and a unit standard deviation depending on grade and year. All demographic variables were entered as dummy codes ("1" = yes or present, "0" = no or absent).

To examine the predictive power of conceptually meaningful blocks of variables all variables were entered sequentially in blocks. The variables of interest were prior achievement, student demographic variables, and all the discipline variables.

Hierarchical Linear Modeling. HLM is used for applications in which there is a hierarchical data structure with multiple levels of variation in which the errors of prediction at each level can be assumed to be normally distributed. Within the context of the current investigation, HLM was used because of the structure of the data under investigation is such that each student is contained within one classroom and each classroom is contained within one school. For those students who are in more than one classroom or school, modifications will be made (e.g. "moved" variable). HLM is appropriate for this application given that there are three levels of random variation: variation among students within classrooms, variation among classrooms within schools, and variation among schools (Raudenbush, Bryk, Cheong, Congdon, & duToit, 2004).

"HLM or mixed linear models have several important advantages over traditional analytic approaches. First, they readily capture the grouping of students within classrooms. Second, they permit appropriate modeling of variables at multiple levels such as student, teacher, and school. Third, they provide a model in which estimates of teacher effectiveness can be adjusted to account for unreliability of estimates" (Noell, Porter, & Patt, 2007, p. 12).

The model that was used in the current analysis was also a three-level structure. Students were grouped within classrooms, and those classrooms were grouped within schools (see Figure 1). This three level model was chosen for several reasons. First, the school building level was used to account for the variance component at the school building level. Prior analyses have demonstrated that however small the effect it is still important (Noell, 2006). The classroom level allowed for the analysis of various classroom characteristics that may affect individual student scores.

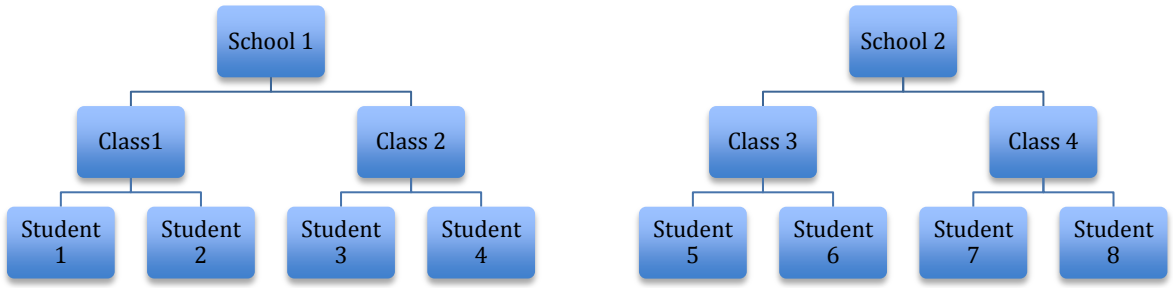

Figure 1: Nesting Structure of Students within Teachers and Teachers within Schools (Figure reprinted with permission from Noell, Porter, & Patt, 2007).

The modeling approach for the current study followed a similar procedure as in Noell (2006) and Noell, Porter, and Patt (2007). The same approach was used for English Language Arts and Mathematics. Error at each level (student, classroom, and school) is assumed to be normally distributed with a mean of zero and common variance at that level. First, an initial three level model was specified in which achievement was modeled with no prior predictors in order to use as a basis for comparison with more complex models. Next, prior achievement was added in blocks as fixed effects. Then, demographic variables were added as a one block. Variables were then removed one at a time in order of the lowest *t* value until only variables with significant effects (p = .01) remain. The same procedure was conducted for each level. The variables that were examined at each level are presented in Tables 2, 3, and 4.

Table 2: Student Level Demographic Variables Examined

Prior Year English Language Arts (ELA) Test
Prior Year Mathematics (MTH) Test
Prior Year Reading (RDG) Test
Prior Year Science (SCI) Test
Prior Year Social Studies (SST) Test
Gender (Male)
African American
(Table 2 continued)
Asian American
Hispanic
Native American
Receiving Free Lunch
Receiving Reduced Lunch

(Table 2 continued)
Gifted
Emotionally Disturbed
Speech and Language
Mild Mental Retardation
Specific Learning Disability
Other Health Impaired
Special Education - Other
Section 504 Identification
Limited English Proficiency
Student Attendance
Total Schools Attended
EDP Status
Suspension Status
Expulsion Status
Provision Status
No Provision Status
Moved Status

Table 3: Classroom Level Variables Examined

Class' mean prior achievement in ELA
Class' mean prior achievement in MTH
Class' mean prior achievement in RDG
Class' mean prior achievement in SCI
Class' mean prior achievement in SST
Percentage of students who are Male
Percentage of students who are Minorities
Percentage of students who received Free Lunch
Percentage of students who received Reduced Priced Lunch
Percentage of students who were identified as Gifted
Percentage of students who were identified as Special Education
Percentage of students who received 504 Accommodations
Percentage of students who exhibited Limited English Proficiency
Percentage of students who Moved Schools
Percentage of students who received EDP
Percentage of students who received Suspension
Percentage of students who received Expulsion
Percentage of students who received EDP with Provisions
Percentage of students who received EDP with No Provisions

Table 4: School Level Variables Examined

School's mean prior achievement in ELA
School's mean prior achievement in MTH
School's mean prior achievement in RDG
School's mean prior achievement in SCI
School's mean prior achievement in SST
Percentage of students who are Male
Percentage of students who are Minorities
Percentage of students who received Free Lunch
Percentage of students who received Reduced Priced Lunch
Percentage of students who were identified as Gifted
Percentage of students who are identified as Special Education
Percentage of students who receive 504 Accommodations
Percentage of students who exhibited Limited English Proficiency
Percentage of students who Moved Schools
Percentage of students who received EDP
Percentage of students who received Suspension
Percentage of students who received Expulsion
Percentage of students who received EDP with Provisions
Percentage of students who received EDP with No Provisions

An explanation of the models which were used is provided below. Equations for intercepts and for the student level (e.g. Level 1) effects for variables modeling the impact of exclusionary discipline status are presented. In the equations presented below Σ is used to indicate summing across the p, q, and s coefficients at the student, class, and school levels of the model respectively (Noell, Porter, & Patt, 2007).

Once the final models for English Language Arts 2008 and Mathematics 2008 were extracted, the HLM that reflects student achievement independent of the variables of interest in this study was run as a point of comparison (e.g. Base Model). The discipline variables were included at Level 1 in the model and were modeled as fixed across higher level units. Students are identified in the data as having EDP by using indicator variables for suspension and expulsion status. For example, if a student has been identified as having a suspension/out-of-

school infraction, he or she will have a '1' in this column in the data and was identified as EDP present status. A HLM which produces a coefficient that is negative represents a negative relationship on student scores whereby a positive coefficient represents having a positive impact on student scores. For example, if the coefficient for EDP status in the final model is -5.00 that would mean that having EDP status would be associated with a score that is 5 points lower than in a model containing all the other retained variables. Only significant ($p<.01$) coefficients for all variables of interests are reported.

Level 1: Students

$$Y_{ijk} = \pi_{0jk} + \sum(\pi_{pjk})a_{pijk} + \sum(\pi_{EDP\bullet jk})\, a_{EDP\bullet ijk} + e_{ijk}$$

where

Y_{ijk} is the achievement of student i in class j at school k in the target subject

π_{0jk} is the mean achievement for classroom j at school k

π_{pjk} are the p coefficients that weight the contribution of the student level data in the prediction of Y for $p = 1$ to the total number of coefficients

a_{pijk} are the student level data (prior achievement, demographic variables, attendance, etc) that predict achievement for $p = 1$ to the total number of data points for all variables other than exclusionary discipline practice status

$\pi_{EDP\bullet jk}$ the coefficient for EDP status summed across the j classrooms and k schools

$a_{EDP\bullet ijk}$ student level data indicating the presence of EDP

e_{ijk} the student level random effect, the deviation of the predicted score of student i in classroom j in school k from the obtained score

Level 2: Classroom

$$\pi_{0jk} = \beta_{00k} + \sum(\beta_{q0k})X_{q0jk} + r_{0jk}$$

where

π_{0jk} is the mean achievement for classroom j at school k

β_{00k} is the mean achievement for school k

β_{q0k} are the q coefficients that weight the relationship between the classroom characteristics and π_{0jk}, q = 1 to the total number of coefficients

X_{q0jk} are the classroom level data that are used to predict achievement

r_{0jk} the classroom level random effect, the deviation of classroom jk's measured classroom mean from its predicted mean

Level 3: School

$$\beta_{00k} = \gamma_{000} + \sum(\gamma_{s00})W_{s00k} + u_{00k}$$

where

β_{00k} is the mean achievement for school k

γ_{000} is the grand mean achievement in the target subject

γ_{s00} are the s coefficients that weight the relationship between the school characteristics and β_{00k} for s = 1 to the total number of coefficients

W_{s00k} are the school level data that are used to predict achievement

u_{00k} the school level random effect, the deviation of school k's measured classroom mean from its predicted mean

RESULTS

Logistic Regression Results

Several logistic regressions (LR) were run in order to determine the extent to which variables significantly predict different disciplinary outcome variables, as well as, the odds of each predictor given the different dichotomous outcome variables. The five dichotomous outcome variables that were examined included: EDP Status, EDP with educational Provision Status, EDP without educational Provision Status, Suspension Status, Expulsion Status, and Moved Status. Each LR was run by entering blocks of conceptually meaningful variables and examining the contribution of individual predictor variables, as well as, how well each block contributed to the overall fit of the model.

Three blocks of predictors were included in all LR analyses. The first block of predictors included prior year achievement scores for all subjects (ELA, Mathematics, Science, Social Studies, and Reading). The second block of predictors included all student demographic variables including: gender (male), race (African American, Caucasian, Hispanic, and Native American), whether each student receives free or reduced lunch (indicator of poverty), gifted, emotionally disabled, specific learning disability, mild mental retardation, other health impaired, speech and language, special education other, receives 504 accommodations, limited English proficiency, student absences, and total times the student moved schools. All demographic variables were coded as "1" indicating variable is present or "0" indicating variable was not present. For example, an Asian girl would have a "1" in the Asian variable column and a "0" in gender (male) column. The third block of predictors included a few interactions terms that were hypothesized to affect the model. The interaction terms that were added included race by gender and race by poverty (e.g. Free Lunch status). None of the interaction terms significantly

improved the models. These results were not reported. The remaining LR results are discussed below.

Overall, there were 244,893 cases included in the LR analyses. Of the 244,893 cases, 105,904 were African American, 127,679 were Caucasian, 2, 079 were Native American, 3,441 were Asian, and 5,790 were Hispanic. There were 121,632 males and 123,261 females. Within the special education categories, there were 4,119 who were categorized as Limited English Proficiency, 9,614 who were Gifted, 697 who were Emotionally Disturbed, 12,449 receiving 504 Accommodations, 4,702 Speech and Language, 3,587 Other Health Impaired, 9,916 Specific Learning Disability, 641 with Mild Mental Retardation, and 1,224 categorized as Special Education Other. There were 132,887 receiving Free Lunch and another 20,972 cases receiving Reduced Lunch. Those students receiving Free or Reduced Lunch comprised 63% of all students analyzed and these variables are considered an indicator of poverty.

Only significant predictors ($p<.01$) and their corresponding odds ratios, Exp(B) in SPSS, are reported. The value of Exp(B) indicates that for every one unit of change in the predictor variable the odds either increase or decrease the odds of membership in the outcome variable (i.e. EDP for the first LR) present category. This means that when interpreting Exp(B), all values greater than one indicate that for every one unit in change in the predictor variable, you can expect to see odds *increase* by the percent difference than one; however, a value less than one would indicate that for every one unit increase in the predictor, you can expect a *decrease* in EDP present by the percent difference (e.g. less than one). For example, the Exp(B) for African American is 1.48; therefore, students identified as African American, have a 48% greater odds of EDP compared to Caucasian students.

The first LR examined the extent to which individual predictors significantly predicted

"EDP status." After adding the first block of predictors there was an R^2 of .091 indicating that 9.1% of the variance in EDP status is shared with the first block of predictors. After adding the second block of predictors, the R^2 improved to .225 increasing the shared variance to 22.5% as well as indicating significant contribution of this block of predictors ($p<.01$). It should be noted that while R^2 is statistically significant after each block of predictors, further evaluation of the contributions of individual predictors is warranted based on the large χ^2 value ($\chi^2 = 24{,}443$).

The results for the first LR "EDP status" are shown in Table 5 below. Overall, the results of the LR EDP status showed that the variables with the highest odds ratio which were significant ($p<.01$) were Emotionally Disturbed (Exp(B) = 3.25), African American (Exp(B) = 2.29), and gender (male) (Exp(B) = 2.15). These values indicate that for students identified as Emotionally Disturbed, African American, or male will *increase* an individual's odds of EDP by 3.25 times, 2.29 times, and 2.15 times respectively. The variables with the lowest odds were Special Education other (Exp(B) = .39) and Mild Mentally Retarded (Exp(B) = .57). These values indicate that students identified as Special Education other and Mild Mentally Retarded will *decrease* their odds of being classified as EDP by 61% and 43% respectively.

Table 5: Summary of Logistic Regression Analysis - EDP Status

Variable	B	Exp(B)	Confidence Interval	*p* value
Prior Year ELA	-0.13	0.88	(0.87, 0.89)	<.01
Prior Year Mathematics	--	--	--	--
Prior Year Reading	--	--	--	--
Prior Year Science	-0.10	0.90	(0.89, 0.91)	<.01
Prior Year Social Studies	-0.16	0.85	(0.85, 0.86)	<.01
Gender (Male)	0.77	2.15	(2.14, 2.16)	<.01
African American	0.83	2.29	(2.27, 2.3)	<.01
Asian	-0.29	0.75	(0.68, 0.81)	<.01
Hispanic	0.20	1.22	(1.18, 1.27)	<.01
Native American	--	--	--	--
Reduced Lunch	0.14	1.15	(1.12, 1.17)	<.01
Free Lunch	0.30	1.35	(1.33, 1.36)	<.01

(Table 5 continued)

Student Absences	0.06	1.07	(1.07, 1.07)	<.01
Total Student Moves	--	--	--	--
504 Accommodations	-0.09	0.92	(0.9, 0.94)	<.01
Emotionally Disturbed	1.18	3.25	(3.16, 3.34)	<.01
Gifted	-0.39	0.68	(0.64, 0.72)	<.01
Limited English Proficiency	-0.34	0.71	(0.65, 0.77)	<.01
Mild Mental Retardation	-0.56	0.57	(0.48, 0.66)	<.01
Other Health Impaired	0.31	1.36	(1.32, 1.4)	<.01
Special Education Other	-0.95	0.39	(0.3, 0.48)	<.01
Specific Learning Disability	-0.08	0.93	(0.9, 0.95)	<.01
Speech and Language	-0.53	0.59	(0.55, 0.63)	<.01

The second LR examined the extent to which variables significantly predicted "EDP without educational provision status." After adding the first block of predictors there was an R^2 of .077 indicating that 7.7% of the variance in EDP No Provision status is accounted for by the first block of predictors. After adding the second block of predictors, the R^2 improved to .212 increasing the known variance to 21.2% as well as indicating significant contribution of this block of predictors ($p<.01$). It should be noted that while R^2 is statistically significant after each block of predictors, further evaluation of the contributions of individual predictors of this LR is warranted based on the large χ^2 value ($\chi^2 = 20{,}071$).

The results for the second LR "No Provision status" are shown in Table 6 below. Overall, the results of the LR No Provision status showed that the variables with the highest odds ratio which were significant ($p<.01$) were again Emotionally Disturbed (Exp(B) = 3.78), African American (Exp(B) = 2.09), and gender (male) (Exp(B) = 2.11). These values indicate that for students identified as Emotionally Disturbed, African American, or male will *increase* an individual's odds of being classified as EDP without provisions by 3.78 times, 2.09 times, and 2.11 times respectively. The variables with the lowest odds were Special Education other (Exp(B) = .43) and Asian (Exp(B) = .57). These values indicate that students identified as

Special Education other and Asian will *decrease* their odds of being classified as EDP without provisions by 57% and 43% respectively.

Table 6: Summary of Logistic Regression Analysis - No Provision Status

Variable	B	Exp(B)	Confidence Interval	*p* value
Prior Year ELA	-0.11	0.89	(0.89, 0.9)	<.01
Prior Year Mathematics	--	--	--	--
Prior Year Reading	--	--	--	--
Prior Year Science	-0.10	0.91	(0.9, 0.92)	<.01
Prior Year Social Studies	-0.14	0.87	(0.86, 0.88)	<.01
Gender (Male)	0.75	2.11	(2.1, 2.13)	<.01
African American	0.74	2.09	(2.08, 2.11)	<.01
Asian	-0.56	0.57	(0.47, 0.67)	<.01
Hispanic	--	--	--	--
Native American	--	--	--	--
Reduced Lunch	0.20	1.22	(1.19, 1.25)	<.01
Free Lunch	0.41	1.51	(1.5, 1.53)	<.01
Student Absences	0.07	1.07	(1.07, 1.07)	<.01
Total Student Moves	0.30	1.35	(1.27, 1.43)	<.01
504 Accommodations	0.12	1.13	(1.11, 1.16)	<.01
Emotionally Disturbed	1.33	3.78	(3.69, 3.86)	<.01
Gifted	-0.47	0.63	(0.57, 0.68)	<.01
Limited English Proficiency	-0.38	0.68	(0.62, 0.75)	<.01
Mild Mental Retardation	-0.26	0.77	(0.68, 0.87)	<.01
Other Health Impaired	0.34	1.41	(1.37, 1.45)	<.01
Special Education Other	-0.84	0.43	(0.32, 0.54)	<.01
Specific Learning Disability	--	--	--	--
Speech and Language	-0.54	0.59	(0.54, 0.64)	<.01

The third LR examined the extent to which variables significantly predicted "EDP with educational provisions." After adding the first block of predictors there was an R^2 of .063 indicating that 6.3% of the variance in EDP with Provision status is accounted for by the first block of predictors. After adding the second block of predictors, the R^2 improved to .141 increasing the known variance to 14.1% as well as indicating significant contribution of this block of predictors ($p<.01$). It should be noted that while R^2 is statistically significant after each

block of predictors, further evaluation of the contributions of individual predictors is warranted based on the large χ^2 value (χ^2 = 11,929).

The results for the third LR "EDP with Provision status" are shown in Table 7 below. Overall, the results of the LR EDP with Provision status showed that the variables with the highest odds ratio which were significant (p<.01) were African American (Exp(B) = 2.05), and gender (male) (Exp(B) = 1.95). These values indicate that for students identified as African American or male will *increase* an individual's odds of being classified as EDP with Provisions by 2.05 times and 1.95 times respectively. The variables with the lowest odds were Special Education other (Exp(B) = .41) and Mild Mentally Retarded (Exp(B) = .48). These values indicate that those classified as Special Education other and Mild Mentally Retarded will *decrease* their odds of being classified as EDP with provisions by 59% and 52% respectively.

Table 7: Summary of Logistic Regression Analysis - Provision Status

Variable	B	Exp(B)	Confidence Interval	*p* value
Prior Year ELA	-0.11	0.90	(0.89, 0.9)	<.01
Prior Year Mathematics	--	--	--	--
Prior Year Reading	--	--	--	--
Prior Year Science	-0.09	0.91	(0.9, 0.92)	<.01
Prior Year Social Studies	-0.15	0.86	(0.85, 0.87)	<.01
Gender (Male)	0.67	1.95	(1.94, 1.96)	<.01
African American	0.72	2.05	(2.04, 2.07)	<.01
Asian	-0.22	0.8	(0.73, 0.88)	<.01
Hispanic	0.28	1.33	(1.28, 1.37)	<.01
Native American	--	--	--	--
Reduced Lunch	0.11	1.12	(1.09, 1.14)	<.01
Free Lunch	0.22	1.25	(1.23, 1.26)	<.01
Student Absences	0.04	1.04	(1.04, 1.04)	<.01
Total Student Moves	--	--	--	--
504 Accommodations	-0.20	0.82	(0.79, 0.84)	<.01
Emotionally Disturbed	0.78	2.17	(2.09, 2.25)	<.01
Gifted	-0.40	0.67	(0.62, 0.72)	<.01
Limited English Proficiency	-0.32	0.73	(0.66, 0.79)	<.01
Mild Mental Retardation	-0.74	0.48	(0.37, 0.58)	<.01
Other Health Impaired	0.25	1.29	(1.25, 1.33)	<.01

(Table 7 continued)

Special Education Other	-0.89	0.41	(0.31, 0.51)	<.01
Specific Learning Disability	-0.11	0.90	(0.87, 0.92)	<.01
Speech and Language	-0.54	0.59	(0.54, 0.63)	<.01

The fourth LR examined the extent to which variables significantly predicted "Suspension status." After adding the first block of predictors there was an R^2 of .091 indicating that 9.1% of the variance in Suspension status is shared with the first block of predictors. After adding the second block of predictors, the R^2 improved to .225 increasing the shared variance to 22.5% as well as indicating significant contribution of this block of predictors ($p<.01$). It should be noted that while R^2 is statistically significant after each block of predictors, further evaluation of the contributions of individual predictors is warranted based on the large χ^2 value (χ^2 = 24,435).

The results for the fourth LR "Suspension status" are shown in Table 8 below. Overall, the results of the LR Suspension status showed that the variables with the highest odds ratio which were significant ($p<.01$) were Emotionally Disturbed (Exp(B) = 3.26), African American (Exp(B) = 2.29), and gender (male) (Exp(B) = 2.15). These values indicate that for students identified as Emotionally Disturbed, African American, or male will *increase* an individual's odds of being suspended by 3.26 times, 2.29 times, and 2.15 times respectively. The variables with the lowest odds were Special Education other (Exp(B) = .39), Mild Mentally Retarded (Exp(B) = .57), and Gifted (Exp(B) = .68). These values indicate that students identified as Special Education other, Mild Mentally Retarded, and Gifted will *decrease* their odds of being suspended by 61%, 43%, and 32% respectively.

Table 8: Summary of Logistic Regression Analysis - Suspension Status

Variable	B	Exp(B)	Confidence Interval	*p* value
Prior Year ELA	-0.13	0.88	(0.88, 0.89)	<.01
Prior Year Mathematics	--	--	--	--
Prior Year Reading	--	--	--	--
Prior Year Science	-0.10	0.90	(0.89, 0.91)	<.01
Prior Year Social Studies	-0.16	0.85	(0.85, 0.86)	<.01
Gender (Male)	0.77	2.15	(2.14, 2.16)	<.01
African American	0.83	2.29	(2.27, 2.3)	<.01
Asian	-0.29	0.75	(0.68, 0.81)	<.01
Hispanic	0.20	1.23	(1.18, 1.27)	<.01
Native American	--	--	--	--
Reduced Lunch	0.14	1.15	(1.13, 1.17)	<.01
Free Lunch	0.30	1.35	(1.33, 1.36)	<.01
Student Absences	0.07	1.07	(1.07, 1.07)	<.01
Total Student Moves	--	--	--	--
504 Accommodations	-0.09	0.92	(0.9, 0.94)	<.01
Emotionally Disturbed	1.18	3.26	(3.17, 3.35)	<.01
Gifted	-0.39	0.68	(0.64, 0.72)	<.01
Limited English Proficiency	-0.34	0.71	(0.65, 0.77)	<.01
Mild Mental Retardation	-0.56	0.57	(0.48, 0.67)	<.01
Other Health Impaired	0.3	1.35	(1.31, 1.39)	<.01
Special Education Other	-0.94	0.39	(0.3, 0.48)	<.01
Specific Learning Disability	-0.08	0.93	(0.9, 0.95)	<.01
Speech and Language	-0.53	0.59	(0.55, 0.63)	<.01

The final and fifth LR examined the extent to which variables significantly predicted "Expulsion status." After adding the first block of predictors there was an R^2 of .051 indicating that 5.1% of the variance in Expulsion status is share with the first block of predictors. After adding the second block of predictors, the R^2 improved to .126 increasing the shared variance to 12.6% as well as indicating significant contribution of this block of predictors ($p<.01$). It should be noted that while R^2 is statistically significant after each block of predictors, further evaluation of the contributions of individual predictors is warranted based on the large χ^2 value ($\chi^2 = 1{,}713$).

The results for the fifth LR "Expulsion status" are shown in Table 9 below. Overall, the results of the LR Expulsion status showed that the variables with the highest odds ratio which

were significant (p<.01) were Total Moves (Exp(B) = 2.79), African American (Exp(B) = 2.42), and gender (male) (Exp(B) = 2.27). These values indicate that for students identified as African American or male will *increase* an individual's odds of being expelled by 2.42 times or 2.27 times respectively. For each time a student moves schools they will increase their odds of being expelled by 2.79 times. The variables with the lowest odds were Speech and Language (Exp(B) = .18) and Mild Mentally Retarded (Exp(B) = .18). These values indicate that students identified as Speech and Language Disorder and Mild Mentally Retarded will *decrease* their odds of being expelled by 82%.

Table 9: Summary of Logistic Regression Analysis - Expulsion Status

Variable	B	Exp(B)	Confidence Interval	*p* value
Prior Year ELA	-0.14	0.87	(0.84, 0.9)	<.01
Prior Year Mathematics	--	--	--	--
Prior Year Reading	--	--	--	--
Prior Year Science	-0.20	0.82	(0.79, 0.86)	<.01
Prior Year Social Studies	-0.19	0.82	(0.79, 0.86)	<.01
Gender (Male)	0.82	2.27	(2.22, 2.32)	<.01
African American	0.88	2.42	(2.36, 2.47)	<.01
Asian	--	--	--	--
Hispanic	--	--	--	--
Native American	--	--	--	--
Reduced Lunch	--	--	--	--
Free Lunch	0.24	1.27	(1.21, 1.33)	<.01
Student Absences	0.05	1.05	(1.05, 1.05)	<.01
Total Student Moves	1.03	2.79	(2.62, 2.97)	<.01
504 Accommodations	--	--	--	--
Emotionally Disturbed	--	--	--	--
Gifted	--	--	--	--
Limited English Proficiency	--	--	--	--
Mild Mental Retardation	-1.75	0.18	(-0.33, 0.68)	<.01
Other Health Impaired	--	--	--	--
Special Education Other	--	--	--	--
Specific Learning Disability	-0.54	0.58	(0.48, 0.69)	<.01
Speech and Language	-1.72	0.18	(-0.16, 0.51)	<.01

LR in SPSS also produces a classification table that shows how well we can predict group membership for EDP and No EDP based on the data. Table 10 shows that based on these data, we can correctly predict 96% of those individuals that do not have EDP status and can correctly predict 23% of those who do have EDP status. The overall correct classification based on the model results in 78% correct classification of all cases.

Table 10: Classification of Cases by EDP Prediction Model

		Predicted			
		No EDP	**Yes EDP**		**Correct %**
Actual	**No EDP**	178,483	7,597		95.6
	Yes EDP	45,539	13,274		22.6
				Overall %	**78.3**

Table 11 shows that based on these data, we can correctly predict 99.9% of those individuals who do not get expelled, but we can correctly only predict .1% of those who actually get expelled. The overall correct classification based on the model results in 99.1% correct classification for expulsion status, but this is primarily the result of the low base rate of expulsion. The result is heavily determined by those we can correctly identify as not getting expelled.

Table 11: Classification of Cases by Expulsion Prediction Model

		Predicted			
		No Expulsion	**Yes Expulsion**		**Correct %**
Actual	**No Expulsion**	242,781	37		99.9
	Yes Expulsion	2,073	2		.1
				Overall %	**99.1**

HLM Results

The final models for each HLM that was conducted are specified based on the primary discipline variable under investigation, as well as, the content analyzed (e.g. ELA and Mathematics). First, base models were created as a point of comparison to compare the HLM model minus the discipline variables against the HLM model with the discipline variable in question. There were four additional models run after the base model was constructed for each content area (ELA and Mathematics) totaling eight HLM analyses. The variables that were added to the base model included: EDP status, No Provision and Provision status, Suspension and Expulsion status, and Moved status.

First, coefficient values were obtained before entering the research variables for the study in order to create the base model. It is important to note that differences in how the variables were scaled (i.e. achievement scores) requires caution in comparing the coefficients across different types of predictors such as categorical variables such as demographic variables (i.e. special education status). Due to differences in scales of measurement and the meaning of the measurements it is difficult to make direct comparisons across different types of measures (Noell, 2006; Noell, Porter, and Patt, 2007). For the current study, comparisons were only made among similar type variables. For example, categorical variables were compared to other categorical variables and continuous variables were compared to other continuous variables. In all analyses, all demographic variables were coded "1" if present and "0" if absent. Prior achievement was measured in standard deviation units from the grand mean prior achievement. Classroom percentages are measured in 10% units, so that the value presented would be the expected change in students' scores if the percentage of the indicated group increased by *10%*.

Results for the first HLM in ELA "EDP status" are shown in Table 12 below. Only statistically significant ($p<.01$) results are presented. Results indicate that at the student level, the two variables with the largest negative effects included those categorized as mild mentally retarded (coefficient = -22.10) and those with specific learning disabilities (coefficient = -16.99). Among all prior achievement, the variable with the largest positive effect was prior year ELA (coefficient = 16.82). The demographic variable with the largest positive effect was gifted (coefficient = 8.48). Not surprisingly, the strongest positive coefficient showed that those that did well on the prior year ELA test also did well on the current year ELA test.

Specific to this particular HLM, those students that were identified as EDP present can expect to score 4.52 points lower on the ELA test when all other variables are retained. At the classroom level, the largest negative effect on the current year ELA test included classrooms with a large percentage of those receiving free lunch (coefficient = -7.09). Also, those classrooms with a large percentage of those receiving EDP and Special Education status also had significant negative effect (-5.04 and -6.67 respectively). Therefore, students contained in classrooms with 10 percent of students classified as EDP or Special Education can expect to score 5.04 and 6.67 points respectively lower on the ELA test when all other variables are retained. At the school level, no discipline related variables were significant.

Table 12: Results HLM Analysis ELA EDP Model

	Predictor	Coefficient	Confidence Interval
Student Level	EDP	-4.52	(-4.73, -4.3)
	Prior Year ELA	16.82	(16.55, 17.08)
	Prior Year Mathematics	7.93	(7.75, 8.11)
	Prior Year Reading	5.15	(4.98, 5.32)
	Prior Year Science	3.48	(3.32, 3.64)
	Prior Year Social Studies	3.85	(3.68, 4.01)
	Gender (Male)	-11.16	(-11.35, -10.97)
	African American	3.28	(3.06, 3.49)
	Asian	5.93	(5.39, 6.48)

(Table 12 continued)

	Hispanic	1.66	(1.19, 2.13)
	Native American	--	--
	Reduced Lunch	-1.21	(-1.48, -0.95)
	Free Lunch	-2.66	(-2.84, -2.47)
	Student Absences	-0.33	(-0.34, -0.32)
	504 Accommodations	-8.94	(-9.4, -8.49)
	Emotionally Disturbed	-10.41	(-12.46, -8.35)
	Gifted	8.48	(7.99, 8.98)
	Limited English Proficiency	--	--
	Mild Mental Retardation	-28.1	(-29.85, -26.36)
	Other Health Impaired	-9.48	(-10.3, -8.65)
	Special Education Other	-7.14	(-8.39, -5.9)
	Specific Learning Disability	-16.99	(-17.58, -16.41)
	Speech and Language	-3.74	(-4.3, -3.19)
Classroom Level	% EDP	-5.04	(-6.55, -3.54)
	Mean Prior Year ELA	-3.83	(-4.63, -3.04)
	% Free Lunch	-7.09	(-8.54, -5.63)
	% Male	-3.69	(-4.99, -2.4)
	% Special Education	-6.67	(-8.11, -5.24)
School Level	Mean Prior Year ELA	8.36	(6.62, 10.09)
	Mean Prior Year Reading	6.28	(4.31, 8.25)
	Mean Prior Year Science	-7.55	(-9.45, -5.66)
	% Free Lunch	11.61	(9.29, 13.92)
	% Reduced Lunch	13.7	(8.96, 18.44)

Results for the next HLM in ELA "No Provision and Provision status" are shown in Table 13 below. Only statistically significant ($p<.01$) results are presented. Results of this HLM paralleled the results of the previous HLM in that at the student level, the two variables with the largest negative effects included those categorized as mild mentally retarded (coefficient = -28.22) and those with specific learning disabilities (coefficient = -16.98). Among all prior year achievement variables, the variable with the largest positive effects was again prior year ELA (coefficient = 16.81). Among all demographic variables, the variable with the largest positive effect was gifted (coefficient = 8.52).

Specific to this particular HLM, both of the student level discipline variables were significant in that those students identified as EDP without educational provisions, as well as,

those classified as EDP with educational provisions can expect to score 3.56 and 3.88 points (respectively) lower on the ELA test when all other variables are retained. At the classroom level, the largest negative effect on the current year ELA test included classrooms with a large percentage of those receiving free lunch (coefficient = -6.89). Classrooms with a large percentage of those with Special Education status also had a significant negative effect (coefficient = -6.70). Therefore, students contained in classrooms with a large percentage of students identified as Special Education can expect 6.70 points lower on the ELA test for every 10 percentage points of peers who are identified as Special Education when all other variables are retained. None of the classroom level discipline variables were significant. At the school level, percentage of EDP with educational provisions actually had a positive effect (3.90).

Results for the next HLM in ELA "Suspension and Expulsion status" are shown in Table 14 below. Only statistically significant ($p<.01$) results are presented. Results of the non discipline related variables in this HLM were consistent with the previous HLMs. Specific to this particular HLM, both of the student level discipline variables were significant in that those students that were suspended, as well as, those having been expelled an expect to score 4.28 and 9.89 points (respectively) lower on the ELA test when all other variables are retained. At the classroom level, results were similar to previous HLM analyses. Specific to this analysis, those classrooms with a large percentage of those who have been suspended had a significant negative effect (coefficient = -4.59). Therefore, students contained in classrooms with higher percentages of students who have been suspended can expect to score 4.59 points lower for every increase of 10 percentage points of peers suspended on the ELA test when all other variables are retained. At the school level, none of the discipline variables were significant.

Table 13: Results HLM Analysis ELA No Provision and Provision Model

	Predictor	Coefficient	Confidence Interval
Student Level	Provision Status	-3.88	(-4.14, -3.62)
	No Provision Status	-3.56	(-3.82, -3.3)
	Prior Year ELA	16.81	(16.54, 17.08)
	Prior Year Mathematics	7.94	(7.76, 8.12)
	Prior Year Reading	5.15	(4.98, 5.32)
	Prior Year Science	3.46	(3.3, 3.62)
	Prior Year Social Studies	3.83	(3.66, 4)
	Gender (Male)	-11.11	(-11.3, -10.92)
	African American	3.39	(3.17, 3.61)
	Asian	5.97	(5.42, 6.52)
	Hispanic	1.66	(1.19, 2.13)
	Native American	--	--
	Reduced Lunch	-1.22	(-1.49, -0.95)
	Free Lunch	-2.65	(-2.84, -2.46)
	Student Absences	-0.32	(-0.33, -0.31)
	504 Accommodations	-8.92	(-9.37, -8.47)
	Emotionally Disturbed	-9.97	(-12.02, -7.92)
	Gifted	8.52	(8.02, 9.02)
	Limited English Proficiency	--	--
	Mild Mental Retardation	-28.22	(-29.97, -26.47)
	Other Health Impaired	-9.41	(-10.24, -8.58)
	Special Education Other	-7.2	(-8.44, -5.96)
	Specific Learning Disability	-16.98	(-17.57, -16.4)
	Speech and Language	-3.78	(-4.34, -3.22)
Classroom Level	Mean Prior Year ELA	-3.76	(-4.34, -3.18)
	% Free Lunch	-6.89	(-8.11, -5.66)
	% Male	-3.6	(-4.67, -2.54)
	% Special Education	-6.7	(-7.66, -5.74)
School Level	% EDP with Provisions	3.9	(1.88, 5.91)
	Mean Prior Year ELA	8.22	(6.79, 9.64)
	Mean Prior Year Reading	6.04	(4.27, 7.8)
	Mean Prior Year Science	-7.07	(-8.7, -5.44)
	% Free Lunch	11.62	(9.56, 13.67)
	% Reduced Lunch	13.35	(8.71, 17.99)

Table 14: Results HLM Analysis ELA Suspension and Expulsion Model

	Predictor	Coefficient	Confidence Interval
Student Level	Suspension Status	-4.28	(-4.5, -4.06)
	Expulsion Status	-9.89	(-10.89, -8.89)
	Prior Year ELA	16.81	(16.54, 17.08)
	Prior Year Mathematics	7.93	(7.75, 8.11)
	Prior Year Reading	5.15	(4.98, 5.32)
	Prior Year Science	3.46	(3.3, 3.62)
	Prior Year Social Studies	3.84	(3.67, 4.01)
	Gender (Male)	-11.13	(-11.32, -10.94)
	African American	3.33	(3.12, 3.54)
	Asian	5.94	(5.39, 6.49)
	Hispanic	1.66	(1.19, 2.13)
	Native American	--	--
	Reduced Lunch	-1.22	(-1.48, -0.96)
	Free Lunch	-2.67	(-2.86, -2.48)
	Student Absences	-0.33	(-0.34, -0.32)
	504 Accommodations	-8.95	(-9.4, -8.5)
	Emotionally Disturbed	-10.43	(-12.48, -8.38)
	Gifted	8.51	(8.01, 9.01)
	Limited English Proficiency	--	--
	Mild Mental Retardation	-28.24	(-29.98, -26.5)
	Other Health Impaired	-9.52	(-10.35, -8.69)
	Special Education Other	-7.17	(-8.41, -5.93)
	Specific Learning Disability	-17.04	(-17.63, -16.45)
	Speech and Language	-3.79	(-4.35, -3.23)
Classroom Level	% Suspension Status	-4.59	(-6.13, -3.05)
	Mean Prior Year ELA	-3.79	(-4.58, -3)
	Mean Prior Year Science	2.43	(1.49, 3.38)
	% Free Lunch	-7.06	(-8.51, -5.61)
	% Male	-3.47	(-4.77, -2.17)
	% Special Education	-6.72	(-8.16, -5.27)
School Level	Mean Prior Year ELA	8.28	(6.55, 10)
	Mean Prior Year Reading	6.18	(4.22, 8.14)
	Mean Prior Year Science	-7.55	(-9.43, -5.66)
	% Free Lunch	11.33	(9.06, 13.61)
	% Reduced Lunch	13.67	(8.94, 18.41)

Results for the final ELA HLM "Moved Status" are shown in Table 15 below. Only statistically significant ($p<.01$) results are presented. Results of this HLM were consistent with the base model HLM. None of the variables that were specific to this particular HLM were

significant at any level. This indicates that the number of moves "total moves" at the student level did not have a significant effect, nor did percentage of classroom with students that moved or percentage of school with students who moved. All other variables (demographics, prior achievement, etc) had similar effects as the ELA base model.

Table 15: Results HLM Analysis ELA Moved Status Model

	Predictor	Coefficient	Confidence Interval
Student Level	Prior Year ELA	16.89	(16.62, 17.16)
	Prior Year Mathematics	7.92	(7.74, 8.1)
	Prior Year Reading	5.14	(4.97, 5.31)
	Prior Year Science	3.55	(3.39, 3.71)
	Prior Year Social Studies	3.94	(3.77, 4.11)
	Gender (Male)	-11.69	(-11.88, -11.5)
	African American	2.65	(2.44, 2.86)
	Asian	6.06	(5.51, 6.61)
	Hispanic	1.74	(1.27, 2.21)
	Native American	--	--
	Reduced Lunch	-1.26	(-1.53, -0.99)
	Free Lunch	-2.85	(-3.04, -2.66)
	Student Absences	-0.38	(-0.39, -0.37)
	504 Accommodations	-9.01	(-9.47, -8.55)
	Emotionally Disturbed	-11.65	(-13.69, -9.61)
	Gifted	8.47	(7.97, 8.97)
	Limited English Proficiency	--	--
	Mild Mental Retardation	-27.81	(-29.56, -26.06)
	Other Health Impaired	-9.79	(-10.62, -8.96)
	Special Education Other	-6.55	(-7.8, -5.3)
	Specific Learning Disability	-16.99	(-17.58, -16.4)
	Speech and Language	-3.56	(-4.12, -3)
Classroom Level	Mean Prior Year ELA	-3.72	(-4.52, -2.92)
	Mean Prior Year Science	2.52	(1.56, 3.48)
	% Free Lunch	-7.23	(-8.69, -5.77)
	% Male	-3.97	(-5.27, -2.67)
	% Special Education	-6.77	(-8.21, -5.33)
School Level	Mean Prior Year ELA	8.02	(6.3, 9.74)
	Mean Prior Year Reading	6.97	(4.97, 8.97)
	Mean Prior Year Science	-8.05	(-9.94, -6.16)
	% 504 Accommodation	15.01	(9.75, 20.27)
	% Free Lunch	12.36	(10.06, 14.66)
	% Reduced Lunch	12.57	(7.84, 17.3)

Results for the first HLM in Mathematics "EDP status" are shown in Table 16 below. Only statistically significant ($p<.01$) results are presented. Results indicate that at the student level, the two variables with the largest negative effects included those categorized as mild mentally retarded (coefficient = -14.12) and those with specific learning disabilities (coefficient = -7.21). Among all prior year achievement, the predictor with the largest positive effects is prior year Mathematics (coefficient = 27.77). Among all demographic variables, the predictor with the largest positive effect is gifted (coefficient = 10.25). Specific to this particular HLM, those students identified as EDP present can expect to score 2.89 points lower on the Mathematics test when all other variables are retained.

At the classroom level, the largest negative effect on the current year ELA test included classrooms with a large percentage of those who are classified as EDP (coefficient = -5.84) Therefore, students contained in classrooms with higher percentages of students classified as EDP can expect to score 5.84 points lower on the Mathematics test for every increase of 10 percentage points of peers who are classified as EDP when all other variables are retained. Additionally, those classrooms with a large percentage of those receiving Free Lunch and Special Education status also had significant negative effect (-5.79 and -4.68 respectively). At the school level, no discipline related variables were significant.

Results for the next HLM in Mathematics "No Provision and Provisions status" are shown in Table 17 below. Only statistically significant ($p<.01$) results are presented. Results of this HLM were consistent with the previous Mathematics HLM. Specific to this particular HLM, both of the student level discipline variables were significant in that those students that were classified as receiving EDP without educational provisions, as well as, EDP with educational provisions can expect to score 2.14 and 2.61 points (respectively) lower on the Mathematics test

when all other variables are retained. At the classroom level, results were similar to the previous HLM analysis. Specific to this analysis, there were no significant discipline variables at the classroom or school levels.

Table 16: Results HLM Analysis Mathematics EDP Model

	Predictor	Coefficient	Confidence Interval
Student Level	EDP	-2.89	(-3.06, -2.72)
	Prior Year ELA	2.93	(2.82, 3.05)
	Prior Year Mathematics	27.77	(27.57, 27.96)
	Prior Year Reading	1.21	(1.1, 1.32)
	Prior Year Science	5.53	(5.4, 5.67)
	Prior Year Social Studies	2.48	(2.35, 2.61)
	Gender (Male)	2.45	(2.31, 2.59)
	African American	-4.34	(-4.52, -4.16)
	Asian	5.97	(5.45, 6.5)
	Hispanic	--	--
	Native American	--	--
	Reduced Lunch	-0.83	(-1.04, -0.61)
	Free Lunch	-1.9	(-2.05, -1.75)
	Student Absences	-0.24	(-0.25, -0.23)
	504 Accommodations	-3.77	(-4.15, -3.4)
	Emotionally Disturbed	--	--
	Gifted	10.25	(9.82, 10.69)
	Limited English Proficiency	3.02	(2.36, 3.68)
	Mild Mental Retardation	-14.12	(-15.6, -12.64)
	Other Health Impaired	-7.06	(-7.67, -6.46)
	Special Education Other	-4.71	(-5.75, -3.67)
	Specific Learning Disability	-7.21	(-7.67, -6.75)
	Speech and Language	-1.56	(-1.99, -1.12)
Classroom Level	% EDP	-5.84	(-7.18, -4.5)
	% Free Lunch	-5.79	(-7.09, -4.5)
	% Gifted	4.27	(3.41, 5.13)
	% Special Education	-4.68	(-5.71, -3.65)
School Level	Mean Prior Year Math	3.56	(2.54, 4.58)
	% Free Lunch	11.14	(9.1, 13.19)

Table 17: Results HLM Analysis Mathematics No Provision and Provision Model

	Predictor	Coefficient	Confidence Interval
Student Level	Provision Status	-2.61	(-2.81, -2.41)
	No Provision Status	-2.14	(-2.35, -1.92)
	Prior Year ELA	2.93	(2.81, 3.05)
	Prior Year Mathematics	27.77	(27.57, 27.97)
	Prior Year Reading	1.21	(1.1, 1.32)
	Prior Year Science	5.52	(5.39, 5.65)
	Prior Year Social Studies	2.47	(2.34, 2.6)
	Gender (Male)	2.49	(2.35, 2.63)
	African American	-4.28	(-4.46, -4.1)
	Asian	5.99	(5.46, 6.52)
	Hispanic	--	--
	Native American	-1.74	(-2.4, -1.07)
	Reduced Lunch	-0.83	(-1.05, -0.62)
	Free Lunch	-1.89	(-2.04, -1.74)
	Student Absences	-0.23	(-0.24, -0.23)
	504 Accommodations	-0.23	(-4.12, -3.37)
	Emotionally Disturbed	--	--
	Gifted	10.27	(9.84, 10.7)
	Limited English Proficiency	3.01	(2.35, 3.67)
	Mild Mental Retardation	-14.13	(-15.61, -12.66)
	Other Health Impaired	-7.03	(-7.63, -6.43)
	Special Education Other	-4.74	(-5.78, -3.7)
	Specific Learning Disability	-7.21	(-7.66, -6.75)
	Speech and Language	-1.58	(-2.01, -1.14)
Classroom Level	% Free Lunch	-5.96	(-7.26, -4.66)
	% Gifted	4.45	(3.59, 5.31)
	% Special Education	-4.75	(-5.79, -3.73)
School Level	Mean Prior Year Math	3.66	(2.66, 4.66)
	% Free Lunch	11.27	(9.21, 13.32)

Results for the next HLM in Mathematics "Suspension and Expulsion status" are shown in Table 18 below. Only statistically significant ($p<.01$) results are presented. Results of this HLM were consistent with the previous HLMs in Mathematics. Specific to this particular HLM, both of the student level discipline variables were significant in that those students that were suspended, as well as, those having been expelled can expect to score 2.71 and 7.22 points (respectively) lower on the Mathematics test when all other variables are retained. At the

classroom level, results were similar to the previous HLM analyses for non discipline related variables. Specific to this analysis, if a student is contained in a classroom with a larger percentage of students who have been suspended there is a significant negative effect (coefficient = -5.82). Therefore, students contained in classrooms with higher percentages students who have been suspended can expect to score 5.82 points lower on the Mathematics test for every increase in 10 percentage points of peers who are classified as suspended when all other variables are retained. At the school level, none of the discipline variables were significant.

Results for the final HLM in Mathematics "Moved Status" are shown in Table 19 below. Only statistically significant ($p<.01$) results are presented. Results of this HLM were consistent with the original base model in Mathematics. Specific to this particular HLM, none of the additional variables were significant at any level (student, classroom, or school levels) indicating that the addition of "total moves" at the student level, percentage of classroom with students who moved, or percentage of school with students who moved did not significantly contribute to the model.

Given the large number of statistically significant predictors, an effect size estimate was calculated in order to determine the degree to which each predictor variable is related to the outcome variable. With a few modifications, odd ratios can be interpreted as an effect size calculation. Chin (2000) demonstrated how to convert the odds ratio, Exp(B), into Cohen's *d* by multiplying the Exp(B) by the natural log and then dividing by 1.81. Cohen's *d* becomes less convenient in multivariate statistics when comparisons are more complex than simply the difference between two means (Tabachnick and Fidell, 2007). Therefore, Tabachnick and Fidell recommend converting Cohen's *d* to η^2. To derive η^2, Chin (2000) states that you square Cohen's *d* then divide by *d* squared minus 4. Cohen (1988) presents guidelines for interpreting η^2 as

follows: η^2 = .01 is a small effect, η^2 = .09 is a medium effect and η^2 = .25 is a large effect. See Table 20 for effect size results for all discipline categories.

Table 18: Results HLM Analysis Mathematics Suspension and Expulsion Model

	Predictor	Coefficient	Confidence Interval
Student Level	Suspension Status	-2.71	(-2.9, -2.56)
	Expulsion Status	-7.22	(-8.01, -6.43)
	Prior Year ELA	2.93	(2.81, 3.05)
	Prior Year Mathematics	27.77	(27.57, 27.97)
	Prior Year Reading	1.21	(1.13, 1.35)
	Prior Year Science	5.52	(5.45, 5.71)
	Prior Year Social Studies	2.48	(2.35, 2.61)
	Gender (Male)	2.48	(2.34, 2.62)
	African American	-4.30	(-4.49, -4.13)
	Asian	5.98	(5.45, 6.51)
	Hispanic	--	--
	Native American	-1.72	(-1.42, -0.10)
	Reduced Lunch	-0.84	(-1.05, -0.63)
	Free Lunch	-1.91	(-1.06, -0.76)
	Student Absences	-0.23	(-0.24, -0.22)
	504 Accommodations	-3.78	(-4.16, -3.40)
	Emotionally Disturbed	--	--
	Gifted	10.27	(10.16, 10.70)
	Limited English Proficiency	3.01	(2.37, 3.69)
	Mild Mental Retardation	-14.21	(-15.69, -12.73)
	Other Health Impaired	-7.10	(-7.63, -6.43)
	Special Education Other	-4.76	(-5.80, -3.72)
	Specific Learning Disability	-7.25	(-7.71, -6.79)
	Speech and Language	-1.59	(-2.02, -1.15)
Classroom Level	% Suspension	-5.82	(-7.18, -4.46)
	% Free Lunch	-5.86	(-7.16, -4.56)
	% Gifted	4.30	(3.44, 5.16)
	% Special Education	-4.66	(-5.69, -3.63)
School Level	Mean Prior Year Math	3.49	(2.47, 4.51)
	% Free Lunch	11.03	(8.98, 13.08)

Table 19: Results HLM Analysis Mathematics Moved Status Model

	Predictor	Coefficient	Confidence Interval
Student Level	Prior Year ELA	2.99	(2.87, 3.11)
	Prior Year Mathematics	27.76	(27.56, 27.96)
	Prior Year Reading	1.2	(1.09, 1.31)
	Prior Year Science	5.59	(5.45, 5.72)
	Prior Year Social Studies	2.55	(2.42, 2.68)
	Gender (Male)	2.1	(1.96, 2.24)
	African American	-4.76	(-4.94, -4.58)
	Asian	5.99	(5.46, 6.53)
	Hispanic	--	--
	Native American	--	--
	Reduced Lunch	-0.87	(-1.08, -0.65)
	Free Lunch	-2.03	(-2.18, -1.88)
	Student Absences	-0.27	(-0.28, -0.26)
	504 Accommodations	-3.8	(-4.18, -3.42)
	Emotionally Disturbed	--	--
	Gifted	10.21	(9.77, 10.64)
	Limited English Proficiency	3.12	(2.46, 3.79)
	Mild Mental Retardation	-13.92	(-15.4, -12.43)
	Other Health Impaired	-7.25	(-7.85, -6.64)
	Special Education Other	-4.29	(-5.34, -3.25)
	Specific Learning Disability	-7.21	(-7.66, -6.75)
	Speech and Language	-1.42	(-1.85, -0.98)
Classroom Level	% Free Lunch	-6.86	(-8.15, -5.57)
	% Gifted	4.92	(4.05, 5.78)
	% Special Education	-5.34	(-6.34, -4.35)
School Level	Mean Prior Year Math	4.38	(3.45, 5.31)
	% Free Lunch	12.77	(10.71, 14.84)

Across all LR analyses, students identified as African American, male, and Emotionally Disturbed had the largest odds ratios and were predictive of all discipline categories (EDP, EDP with Provisions, EDP without Provisions, Suspension, and Expulsion). These three variables have the largest effect sizes across all LR analyses. The median effect size for classification as "male" ($\eta^2 = .22$) is considered a medium effect by Cohen's standard. The median effect size for classification as "African American" ($\eta^2 = .26$) is considered large. The median effect size for classification as "Emotionally Disturbed" ($\eta^2 = .53$) is considered very large.

Table 20: Effect Size Calculations for all Significant Logistic Regression Predictors

Variable	Effect Size Calculation (η^2) Outcome Variable: EDP Status	No Provision Status	Provision Status	Suspension Status	Expulsion Status
Prior Yr ELA	.01	.00	.00	.01	.01
Prior Yr Science	.00	.00	.00	.00	.01
Prior Yr Social Studies	.01	.01	.01	.01	.01
Gender (Male)	.22	.21	.17	.22	.26
African American	.26	.21	.20	.26	.30
Asian	.03	.12	.02	.03	--
Hispanic	.02	--	.03	.02	--
Free Lunch	.03	.07	.02	.03	.02
Reduced Lunch	.01	.01	.00	.01	--
Gifted	.06	.01	.06	.06	--
Emotionally Disturbed	.53	.67	.23	.53	--
SLD	.00	--	.00	.00	.11
Mild Mental Retardation	.12	.03	.21	.12	1.16
Other Heath Impaired	.04	.04	.02	.03	--
Speech and Language	.11	.11	.11	.11	1.14
Special Education Other	.34	.27	.30	.34	--
504 Accommodations	.00	.01	.02	.00	--
Limited English Proficiency	.04	.06	.04	.05	--
Student Absences	.00	.00	.00	.00	.00
Total Moves	--	.03	--	--	.40

DISCUSSION

Decades of research have shown long-term negative outcomes for students who repeatedly interact with the school discipline system (White, 1982; Constenbader & Markson, 1996; Walker & Sprague, 1999; Cameron, 2006; Martinez, 2009). Drug and alcohol abuse, depression, violence towards others, and lifelong dependence on social service system are some of the many negative outcomes of students who are disciplined in school (Kazdin, 1985; Cameron, 2006; Loeber et al., 2000). There is great need for research to guide practice in the school systems. The current study was conducted in order to determine the variables that significantly predict discipline status, as well as, the relationship that discipline status has to academic achievement. The data in the current study was analyzed with both achievement and disciplinary sanctions as outcomes to determine if there were differences in effects within the different types of discipline status' (e.g. EDP, EDP with Provisions, EDP without Provisions, Suspension, and Expulsion).

The five LRs that were analyzed consistently showed that students with higher prior year achievement and those students identified as Mild Mentally Retarded significantly *decreases* their odds of discipline. All five LR analyses also showed that "student absences," as well as, students identified as male or African American significantly *increased* their odds of any of the discipline status' (EDP, EDP with Provisions, EDP without Provisions, Suspension, and Expulsion). This finding is consistent with previous research examining the disproportionate gender and race representation in school discipline administration (McFadden & Marsh, 1992; Cameron, 2006; Shaw & Braden, 1990; Christle et al., 2004; Monroe, 2005). In four out of five LR analyses, students identified as Emotionally Disturbed significantly increased their odds in all discipline categories except expulsion. Also, consistent in four out of five analyses, students

identified as Asian, Gifted, or Special Education-Other had significantly decreased odds of disciplinary sanctions. It should additionally be noted that prior year achievement in Mathematics, as well as, Reading was not significant in any of the LR analyses.

The only analysis where student "moved" [schools] was significant in predicting the outcome was in the Expulsion LR analysis. This finding may be due to the reality that when a student is expelled from one school they are sometimes expelled to another school thus, they would have a greater number of "total schools." In other words, it may not be that students who move schools are expelled more, but perhaps those students who are expelled moved schools more.

Across both ELA and Mathematics HLMs, there were several consistent findings. At the student level, student absences and students identified as Mild Mentally Retarded, Specific Learning Disability, or Emotionally Disturbed all were significant negative predictors of student achievement (for both ELA and Mathematics). This means that students who are identified as one (or more) of the aforementioned variables are predicted to have a lower score on both their ELA and Mathematics achievement test scores. This is consistent with previous research examining the connection between discipline and poor achievement (White, 1982; Wayne & Youngs, 2003; Nelson, 1996). Also significant at the student level, prior year achievement in the content analyzed (prior year mathematics when analyzing current year mathematics and prior year ELA w hen analyzing current year ELA) showed a consistent positive effect. Students identified as Gifted showed a consistent significant positive effect on achievement in both ELA and Mathematics; however, the positive effect was more pronounced on Mathematics scores (mean coefficient = 10.24) versus ELA scores (mean coefficient = 8.50). Those students identified as male had a consistent negative effect for all ELA analyses; however, male students

have a positive effect for all Mathematics analyses. This finding suggests that male students perform better on Mathematics achievement and worse on ELA achievement tests as compared to females when all other variables are retained. Future research may want to examine the biological versus environmental reasons that may account for these differences.

Among the discipline variables that were the focus of the study, there were several that were significant. At the student level, all discipline variables (EDP, EDP with Provisions, EDP without Provisions, Suspension, and Expulsion) had significant negative effects for both ELA and Mathematics achievement. EDP had a worse effect for ELA scores (coefficient = -4.52) versus Mathematics scores (coefficient = -2.89). Expulsion status (ELA coefficient = -9.89, MTH coefficient = -7.22) had a worse effect than Suspension status (ELA coefficient = -4.28; MTH coefficient = -2.73). This indicates that being expelled has a much worse effect on achievement than being suspended from school when all other variables are retained. Future research may want to investigate specifically why these differences exist. Also, educators and legislators may want to consider using discipline practices that have less severe effects on student achievement such as using suspension instead of expulsion when possible.

The next significant study variable at the student level was EDP with Provisions (ELA coefficient = -3.88, MTH coefficient = -2.61) and EDP without Provisions (ELA coefficient = -3.56, MTH coefficient = -2.14). While both variables have significant negative effects on student achievement for both ELA and Mathematics, the difference between whether educational provisions were provided versus not provided made little difference in student achievement outcomes. In fact, the results indicate that those students who received EDP *without* educational provisions actually had a slightly less severe effect than when educational provisions were provided. This finding is surprising, because it was originally hypothesized that achievement

scores would be better for those students who received EDP *with* educational provisions and worse for students who received EDP where educational *without* provisions provided. The similarity in effects for "provisions" versus "no provisions" may be due to a treatment integrity problem. In other words, when a student is issued EDP with provisions (e.g. in-school suspension or expulsion) there may not be someone assigned to the student or providing effective instructional support. Therefore, if no one is following through to ensure that a student who is suspended in-school is actually doing their work and providing instructions, it makes sense that there is no meaningful difference between those who are provided with educational provisions versus those who are not provided educational provisions. Future research may want to further investigate the differences between "provisions" versus "no provisions."

The last study specific variable which was significant occurred at the classroom level. For both ELA and Mathematics, students who are contained in a classroom with a higher percentage of students who have been suspended can expect to score lower (ELA = -4.59 points; MTH = -5.82 points) for every increase in 10 percentage points of peers who have been suspended when all other variables are retained. Some schools to group students with discipline challenges in the same classroom. This finding suggests that a student who is in a classroom with 10 percent students who have been suspended will score 4.59 points lower on ELA and 5.82 points lower in Mathematics tests. If a student is in a classroom with 100 percent students who have been suspended, they are predicted to score 45.9 points lower on ELA and 58.2 points lower in Mathematics when all other variables are retained. Schools that currently use the practice of grouping "problem" students in the same classroom and may need to consider redistributing these students to create several lower percent suspension classrooms instead of fewer higher percent suspension classrooms.

Limitations

While the current study utilized two advanced statistical techniques in order to best analyze the existing data, there are still a few limitations that warrant discussion.

LR is typically used in situations in which a researcher wants to be able to predict a discrete outcome such as group membership from a set of variables that may be continuous, discrete, dichotomous, or a mixture of these types of variables. While LR may be similar to discriminant analysis in what information it offers, LR is more flexible in that there are no requirements about the distribution of the predictor variables. For example, in LR the predictors do not have to be normally distributed, linearly related, or of equal variance within each group. Additionally, the predictors can be any combination of continuous, discrete and/or dichotomous (Tabachnick and Fidell, 2007, p.437). While LR may be the best method for analyzing the data under investigation, there were still limitations. While many of the predictors were statistically significant, there was still very poor fit to the model as indicated by a large χ^2 values. Examining the χ^2 change after the addition of each block of predictors allowed us to examine improvement in χ^2 and therefore fit. While there was improvement in χ^2 after each additional block of predictors and the model(s) included many statistically significant predictors, the χ^2 still indicated poor fit. Effect size calculations were run on individual predictors in order to examine potential sources of poor fit.

Tabachnick and Fidell (2007) claim that in LR, the simplest (and worst-fitting) model includes only the constant and none of the predictors. The most complex (and best-fitting) model includes the constant, all predictors, and interactions among predictors; however, not all predictors are always related to the outcome (p. 439). It is up to the researcher to choose the model that does the best job of prediction with the fewest predictors.

In the current investigation there were many interesting and significant findings and many more questions were raised. Knowing that expulsion has a far greater negative impact than suspension, educational administrators may want to consider discontinuing the use of this disciplinary practice or consider using it sparingly. Furthermore, educators may want to consider using preventive measures of discipline (i.e. social skills training, system-wide behavioral interventions such as Positive Behavioral Support, and academic curricula modifications) that have been shown to be both efficacious and effective at reducing problem behaviors and increasing pro-social behavior (Henggler et al., 1997; Wilson et al., 2003; Wilson & Lipsey, 2007; Luiselli et al., 2005; Reid et al., 1999; Luiselli et al., 2001; Hahn et al., 2007).

The current study was one of the first to examine school discipline practices on a large scale (N = 244,893) using advanced statistical techniques like HLM. Similar to previous research, this study demonstrated that several student level predictors are significantly and consistently related to exclusionary discipline practices (e.g. male, African American, and Emotionally Disturbed). Findings also showed the specific adverse effects that these discipline variables have on student academic achievement. These findings can help school personnel become more aware of the higher likelihood of students with certain characteristics (unrelated to discrete negative behavioral events) receiving exclusionary discipline measures and of the negative academic effects of these practices on these students. The findings also highlight the need to use early identification and prevention with these students in place of conventional and potentially detrimental corrective approaches.

REFERENCES

American Academy of Pediatrics. (2000, August). Corporal punishment in schools [Electronic version]. *Pediatrics,* 106, 343. Retrieved July 13, 2009, from http://aappolicy.aappublications.org/cgi/reprint/pediatrics;106/2/343.pdf

American Psychological Association Zero Tolerance Task Force. (2008, December). Are zero tolerance policies effective in the schools? An evidentiary review and recommendations. *American Psychologist,* 63, 852-862.

Atkins, M.S., Frazier, S.L., Jakobsons, L.J., Arvanitis, D., Cunningham, T., Brown, C., & Lambrecht, L. (2002). Suspensions and detentions in an urban, low-income school: Punishment or reward? *Journal of Abnormal Child Psychology,* 30, 361-371.

Azrin, N. H., Hake, D. G., Holz, W. C., & Hutchinson, R. R. (1965). Motivational aspects of escape from punishment. *Journal of Experimental Analysis of Behavior,* 8, 31-34.

Berkowitz, L. (1983). Aversively stimulated aggression: Some parallels and difference in research with animals and humans. *American Psychologist,* 38, 1135-1144.

Brooks, Schiraldi, & Zeidenberg, (1999) in Cameron, M. (2006). Managing school discipline and implications for school social workers: A review of the literature. *Children & Schools,* 28, 219-227.

Bucher, K. T., & Manning, M. L. (2003). Challenges and suggestions for safe schools. *The Clearing House,* 76, 160-164.

Cameron, M. (2006). Managing school discipline and implications for school social workers: A review of the literature. *Children & Schools,* 28, 219-227.

Cassidy, W., & Jackson, M. (2005). The need for equality in education: An intersectionality examination of labeling and zero tolerance practices. *McGill Journal of Education,* 40, 435-456.

Chinn, S. (2000). A simple method for converting an odds ratio to effect size for use in meta-analysis. *Statistics in Medicine,* 19(22), 3127-3131.

Christle, C., Nelson, C.M., & Jolivette, K. (2004). School characteristics related to the use of suspension. *Education & Treatment of Children,* 27, 509-526.

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Mahwah, NJ: Lawerence Erlbaum Associates.

Costenbader, V., & Markson, S. (1998). School suspension: A study with secondary school students. *Journal of School Psychology,* 36, 59-82.

DuPaul, G. J., Ervin, R. A., Hook, C. L., & McGoey, K. E. (1998). Peer tutoring for children with attention deficit hyperactivity disorder: Effects on classroom behavior and academic performance, *Journal of Applied Behavior Analysis*, 31, 579-592.

Debaryshe, B. D., Patterson, G. R., & Capaldi, D. M. (1993). A performance model for academic achievement in early adolescent boys. *Developmental Psychology*, 29, 795-804.

Ervin, R. A., Schaughency, E., Matthews, A., Goodman, S. D., and McGlenchey, M. T. (2007). Primary and secondary prevention of behavior difficulties: developing a data-informed problem solving model to guide decision making at school-wide level. *Psychology in the Schools*, 44, 7-18.

Field, A. P. (2005). *Discovering statistics using SPSS: and sex and drugs and rock 'n' roll* (second edition). London: Sage publications.

Fine, M. (1991). *Framing dropouts: Notes on the politics of an urban public high school.* Albany: State University of New York Press.

Gabel, S., & Shindledecker, R. (1991). Aggressive behavior in youth: Characteristics, outcome, and psychiatric diagnoses. *Journal of the American Academy of Child and Adolescent Psychiatry*, 30, 982-988.

Gottfredson, D. C. (1997). School-based crime prevention. In L. Sherman, D. Gottfredson, D. Mackenzie, J. Eck, P, Reuter, & S. Bushway (Eds.), *Preventing Crime: What works and what doesn't, what's promising.* College Park, MD. Department of Criminology and Criminal Justice, University of Maryland. 120-142.

Gold, M., & Mann, D. W. (1982). Alternative schools for troublesome secondary students. *Urban Review*, 14, 305-316.

Greenburg, B. (1974). School vandalism: Its effects and paradoxical solutions. *Crime Prevention Review*, 1, 105.

Hahn, R., Fuqua-Whitley, D., Wethington, H., Lowy, J., Liberman, A., Crosby, A., Fullilove, M., Johnson, R., Moscicki, E., Price, L., Snyder, S. R., Tuma, F., Cory, S., Stone, G., Mukhopadhaya, K., Chattopadayay, S., & Dahlberg, L. (2007). The effectiveness of universal school-based programs for the prevention of violent and aggressive behaviors: A report on recommendations of the task force on community preventive services. *Morbidity and Mortality Weekly Report*, 56, 1-16.

Henggeler, S. W., Melton, G. B., & Smith, L. A., (1992). Family preservation using multisystemic therapy: An effective alternate to incarcerating serious juvenile offenders. *Journal of Consulting and Clinical Psychology*, 60, 953-961.

Heal, K.H. (1978). Misbehavior among school children: The role of the school in strategies for prevention. *Policy & Politics*, 6, 321-333.

Harris, D. N., & Sass, T. R. (2007). The effects of NBPTS-certified teachers on student achievement. *National Center for Analysis of Longitudinal Data in Education Research,*

Hyman, I.A., & Perone, D.C. (1998). The other side of school violence: Educator policies and practices that may contribute to student misbehavior. *Journal of School Psychology,* 36, 7-27.

Hyman, I.A. (1995). Corporal punishment, psychological maltreatment, violence, and punitiveness in America: Research, advocacy, and public policy. *Applied & Preventative Psychology,* 4, 113-130.

Loeber, R., Green, S. M., Lahey, B. B., Frick, P. J., & McBurnett, K. (2000). Findings on disruptive behavior disorders from the first decade of the developmental trends study, *Clinical Child and Family Psychology Review*, 3, 37-60.

Louisiana Department of Education, Student Information System (SIS) User Guide. (2009). Retrieved from July 4, 2009, from http://www.doe.state.la.us/lde/saa/2273.html

Louisiana Department of Education. (2006a). Louisiana Education Assessment Program: LEAP 2006 Technical Summary. Retrieved July 5, 2009, from http://www.doe.state.la.us/lde/saa/2273.html.

Louisiana Department of Education. (2006b). Louisiana Education Assessment Program: *i*LEAP 2006 Technical Summary. Retrieved July 5, 2009, from http://www.doe.state.la.us/lde/saa/2273.html.

Manlove, D. C., & Elliott, P. (1979). Absent teachers. Another handicap for students? *The Practitioner,* 5, 2-3.

Martinez, S. (2009). A System Gone Berserk: How Are Zero-Tolerance Policies Really Affecting Schools? *Preventing School Failure,* 53, 153-157.

Mayer, G. R. (1995). Preventing antisocial behavior in the schools, *Journal of Applied Behavior Analysis,* 28, 467-478.

Mayer, G. R., Butterworth, T., Komoto, T., & Benoit, R. (1983). The influence of the school principal on the consultant's effectiveness. *Elementary School Guidance & Counseling,* 17, 274-279.

Moffitt, T. E. (1993). Adolescence-limited and life-course persistent antisocial behavior: A developmental taxonomy, *Psychological Review,* 100, 674-701.

Monroe, C. R. (2005) Why are "bad boys" always black? Causes of disproportionality in school discipline and recommendations for change, *The Clearing House,* 79, 45-50.

National Association of School Psychologists (NASP). (2001). *Zero-tolerance and alternative strategies: A face sheet for educators and policymakers.* Retrieved July 12, 2009 from http://www.naspcenter.org/factsheets/zt_fs.html

Nelson, J. (1996). Designing schools to meet the needs of students who exhibit disruptive behavior. *Journal of Emotional and Behavioral Disorders, 4*, 147-161.

No Child Left Behind Act of 2001, Pub. L. No. 107-110, 20 U.S.C. § 6301 *et seq.*

Noell, G. H. (2006). *Annual report of: Value-added assessment of teacher preparation*. Retrieved, July 12, 2009 from, http://asa.regents.state.la.us /TE/value_added_model.

Noell, G. H. & Burns, J. L. (2006). Value-added assessment of teacher preparation: An illustration of emerging technology. *Journal of Teacher Education*, 57, 37-50.

Noell, G. H., Porter, B. A., & Patt, R. M. (2007). *Value-added assessment of teacher preparation in Louisiana: 2004-2006*. Retrieved July 12, 2009, from http://asa.regents.state.la.us/TE/value_added_model.

Patterson. G. R., Reid, J. B., & Dishion, T. J. (1992). Antisocial boys: A social interactional approach. Vol. 4. Eugene, OR: Castalia Publishing.

Psunder, M. (2005). Identification of discipline violations and its role in planning corrective and preventive discipline in school. *Educational Studies*, 31, 335-345.

Raudenbush, S., Bryk, A., Cheong, Y.F., Congdon, R., and du Toit, M. (2004). *HLM6: Hierarchical Linear & Nonlinear Modeling.* Lincolnwood, IL: Scientific Software International, Inc.

Reid, J., Eddy, J.M., Fetrow, R.A., and Stoolmiller, M. (1999). Description and immediate impacts of preventive intervention for conduct problems. *American Journal of Community Psychology*, 27, 483-517.

Rusby, J.C., Taylor, T.J., and Foster, E.M. (2007). A descriptive study of school discipline referrals in first grade. *Psychology in the Schools,* 44, 333-350.

Sanders, W. L., & Horn, S. P. (1998). Research findings from the Tennessee value-added assessment system (TVAA) database: implications for educational evaluation and research, *Journal of Personnel Evaluation in Education,* 12, 247-256.

Schwartz. B. (1989). *Psychology of learning and behavior* (3rd ed.) New York: W. W. Norton.

Shaw, S. R., & Braden, J. P. (1990). Race and gender bias in the administration of corporal punishment. *School Psychology Review,* 19, 378-383.

Shores, R. E., & Jack, S. L. (1993). Classroom interactions of children with behavior disorders. *Journal of Emotional & Behavioral Disorders*, 1, 27-40.

Skiba, R. J., Peterson, R. L., & Williams, T. (1997). Office referrals and suspension: Disciplinary intervention in middle schools. *Education and Treatment of Children*, 20, 295-315.

Skiba, R. J. (2001). When is disproportionality discrimination? In W. Ayers, B. Dohrn, & R. Ayers (Eds.) *Zero tolerance: Resisting the drive for punishment in our schools: A handbook for parents, students, educators, and citizens* (pp. 176-187). New York: New York Press.

Skiba, R. J., & Peterson, R. L. (2000). School discipline at a crossroads: From zero tolerance to early response. *Exceptional Children*, 66, 335-346.

Spuck, D. W. (1974). Reward structure in the public school. *Educational Administration Quarterly*, 1, 18-34.

Tabachnick, B.G., & Fidell, L.S. (2007). *Using Multivariate Statistics* (5th ed.) Boston: Pearson Education, Inc.

Tolen, P. H., Cromwell, R. E., & Brasswell, M. (1986). Family therapy with delinquents: A critical review of the literature. *Family Process*, 25, 619-650.

Tidwell, A., Flannery, K. B., and Lewis-Palmer, T. (2003). A description of elementary classroom discipline referral patterns. *Preventing School Failure*, 48, 18-26.

Tremblay, R. E., Masse, B., Perron, D., Leblanc, M., Schwartzman, A. E., & Ledingham, J. E. (1992). Early disruptive behavior, poor school achievement, delinquent behavior, and delinquent personality: Longitudinal analyses. *Journal of Consulting and Clinical Psychology*, 60, 64-72.

Vuchinich, S., Bank, L., & Patterson, G. R. (1992). Parenting, peers, and the stability of antisocial behavior in preadolescent boys. *Developmental Psychology*, 28, 510-521.

Walker, H., & Horner, R. (1996, October). Integrated approaches to preventing antisocial behavior patterns among school-age children and... *Journal of Emotional & Behavioral Disorders*, *4*(4), 194. Retrieved July 9, 2009, from Academic Search Complete database.

Walker, H. M., Horner, R. H., Sugai, G., Bullis, M., Sprague, J. R. Bricker, D., & Kaufman, M. J. (1996). Integrated approaches to preventing antisocial behavior patterns among school-age children and youth. *Journal of Behavioral and Emotional Disorders*, 4, 193-256.

Wayne, A. J., & Youngs, P. (2003). Teacher characteristics and student achievement gains: A review. *Review of Educational Research*, 73, 89-122.

White, K. R. (1982). The relation between socioeconomic status and academic achievement. *Psychological Bulletin*, 91, 461-481.

Wilson, S., Lipsey, M., & Derzon, J. (2003, February). The effects of school-based intervention programs on aggressive behavior: A meta-analysis. *Journal of Consulting and Clinical Psychology*, 71(1), 136-149. Retrieved August 7, 2009, doi:10.1037/0022-006X.71.136

Wilson, S., & Lipsey, M. (2007, August). School-based interventions for aggressive and disruptive behavior: Update of a meta-analysis. *American Journal of Preventive Medicine*, 33(2), S130-SS143. Retrieved August 7, 2009, doi:10.1016/j.amepre.2007.04.011

Winbinger, B., Katsiyannis, A., and Archwamety, T. (2000). Disciplinary practices in Nebraska's public schools. *Journal of Child and Family Studies*, 9, 389-399.

VITA

Amanda Dahir grew up in New Port Richey, Florida. She obtained her Bachelor of Science degree in psychology from the University of Florida in May 2003. She received her Master of Arts degree in school psychology from Louisiana State University in December 2007. She is currently a candidate for the degree of Doctor of Philosophy in school psychology at Louisiana State University where she works under the direction of Dr. George Noell. She completed her internship year at Special Education Consulting in Shanghai, China, under the supervision of Dr. Rodney Aho and Dr. Lusa Hung in December 2009. She is currently conducting her postdoctoral work at Special Education Consulting in Shanghai, China. After receiving her doctorate, she hopes to continue to work with children with academic and behavior problems internationally.