State-Level Analysis of School Punitive Discipline Practices in Florida

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Abstract

The purpose of this study was to identify statewide trends in school approaches to student discipline and examine the associations between punitive discipline practices and student, school, and local education agency (LEA) characteristics. In addition, we compared punitive disciplinary practices for schools and LEAs that do and do not allow corporal punishment. Publicly available data from the 2010–2011 Florida Department of Education and Common Core of Data were used to assess associations between (a) punitive discipline practices (i.e., suspensions, expulsions, restraints, corporal punishment, and changes of placement) and student characteristics (i.e., grade level, gender, and race), (b) punitive discipline practices (without corporal punishment) and school and LEA characteristics, and (c) school use of corporal punishment and school and LEA characteristics. Results of descriptive comparisons, tests of association, and multilevel regression analyses indicated that schools with higher ratios of (a) students receiving free and reduced lunch and (b) Black or African American students more frequently employed punitive discipline practices, and that punitive discipline practices were disproportionately used with males and Black or African American students. We provide additional results and implications for research, policy, and practice.

Keywords

More than 20 years have passed since the initiation of "zero tolerance" policies that followed passage of The Gun-Free Schools Act of 1994 (PL No. 103-882, Sec. 14601). Researchers and advocates have long voiced concerns that the Act has resulted in frequent use of negative, reactive, and harsh consequences in schools, including punitive and exclusionary discipline practices (e.g., Skiba et al., 2011; Smith & Harper, 2015). Specifically, suspension, expulsion, changes of placement, and restraint are commonly used to address a variety of youth behaviors. Furthermore, corporal punishment is still used in 19 states to address student misbehavior (The Center for Effective Discipline, 2013). Only recently has the broadening of "zero tolerance" policies received national repudiation (see U.S. Department of Education [USDOE], 2014b), and many state education agencies (SEAs) and local education agencies (LEAs) and schools have yet to alter their reliance on these approaches.

Evidence exists suggesting that the use of punitive and exclusionary discipline practices (i.e., suspensions, expulsions, restraints, corporal punishment, changes of placement) disproportionately affects certain youth, and national trends have indicated the disproportionate use of punitive discipline practices across gender, race, and disability (Bowman-Perrott et al., 2011; Skiba et al., 2011; USDOE, 2014a). For example, Black or African American (see Note 1) and Latino students are more likely to be suspended or expelled than Caucasian students (Skiba et al., 2011; USDOE, 2016; Wallace, Goodkind, Wallace, & Bachman,

2008). Although Black or African American students comprise 16% of the total student population, these students comprise 33% of out-of-school suspensions, 42% of multiple out-of-school suspensions, and 34% of expulsions (USDOE, 2014a).

The disproportionate use of punitive discipline practices for students with disabilities and for male students is also concerning. Students with disabilities are about 2 times more likely than their nondisabled peers to be suspended one or more times and account for 75% of restraints (USDOE, 2014a). Although the U.S. school populations of boys and girls are roughly equivalent, boys account for almost 75% of students receiving multiple out-of-school suspensions and expulsion (USDOE, 2014a).

Research analyzing state- and local-level data by race has consistently reported that minorities, and specifically Black or African American students, are disproportionally suspended (Balfanz, Byrnes, & Fox, 2012; Costenbader & Markson, 1998; Fabelo et al., 2011; Krezmien, Leone, &

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Achilles, 2006; Morris & Perry, 2016; Nichols, 2004; Rausch & Skiba, 2005; Skiba et al., 2014; Skiba, Michael, Nardo, & Peterson, 2002; Sullivan, Klingbeil, & Van Norman, 2013; Sullivan, Van Norman, & Klingbeil, 2014; Theriot, Craun, & Dupper, 2010) and expelled (Nichols, 2004; Skiba et al., 2014; Skiba et al., 2002). At the school level, the percentage of Black or African American students enrolled is a predictor of suspension and expulsion (Skiba et al., 2014). Similarly, researchers have reported links between suspension and gender (Costenbader & Markson, 1998; Morris & Perry, 2016; Skiba et al., 2014; Skiba et al., 2002; Sullivan et al., 2013; Sullivan et al., 2014) and between suspension and student disability (Balfanz et al., 2012; Krezmien et al., 2006; Morris & Perry, 2016; Sullivan et al., 2013). State and local research has also substantiated links between suspension and poverty (Balfanz et al., 2012; Christle, Nelson, & Jolivette, 2004; Morris & Perry, 2016; Nichols, 2004; Skiba et al., 2002; Sullivan et al., 2013; Sullivan et al., 2014; Theriot et al., 2010).

The scope of research on punitive discipline practices is limited, however, by several factors including the specific disciplinary practices of focus and the lack of inclusion of student variables in analyses. For example, many studies have focused only on suspension (Arcia, 2006, 2007; Balfanz et al., 2012; Christle et al., 2004; Costenbader & Markson, 1998; Krezmien et al., 2006; Mendez & Knoff, 2003; Morris & Perry, 2016; Sullivan et al., 2013; Sullivan et al., 2014) or only suspension and expulsion (Rausch & Skiba, 2005; Skiba et al., 2014; Skiba et al., 2002), with few including information on change of placement (Fabelo et al., 2011; Mendez, Knoff, & Ferron, 2002; Nichols, 2004). None of the studies we identified using state- or local-level data included a focus on instances of restraint or the use of corporal punishment. A majority of the state and local research also omits key student variables that are associated with increases in punitive discipline practices (i.e., race, gender, disability, poverty, grade level) in national data.

Studies of punitive discipline practices are also limited by the scope of the data collected. For example, statewide data have been reviewed for only four states (i.e., Kentucky, Maryland, Florida, Texas; see Balfanz et al., 2012; Christle et al., 2004; Fabelo et al., 2011; Krezmien et al., 2006), with other studies indicating that the data were from unidentified Midwest states (Rausch & Skiba, 2005; Skiba et al., 2014). Additional limitations to extant research hinder attempts to establish a clear picture of the use of punitive discipline practices. For example, few studies have disaggregated data by grade or school level (Arcia 2006, 2007; Mendez & Knoff, 2003; Mendez et al., 2002; Nichols, 2004; Rausch & Skiba, 2005). Although information is limited, there is evidence that students in middle school are suspended at higher rates than those in elementary or high school (Arcia, 2006, 2007; Mendez et al., 2002). Finally, almost no recent data exist regarding punitive discipline practices, with only four studies using data collected since 2010 (Losen & Martinez, 2013; Morris & Perry, 2016; Sullivan et al., 2013; Sullivan et al., 2014).

Punitive Discipline Practices in Florida

Florida is one state for which there is a critical need for a comprehensive analysis of punitive discipline practices in schools. As the state with the fourth largest student population, summary statistics from the Civil Rights Data Collection and National Center for Education Statistics (NCES) indicate that Florida suspends the highest percentage of students in the country at both the elementary and secondary levels (Losen, Hodson, Keith, Morrison, & Belway, 2015; Snyder & Dillow, 2015). Beyond this broad and rather disturbing statistic, however, there is little understanding of discipline in Florida schools.

Conclusions from three existing studies examining disciplinary practices in Florida are hampered by many of the aforementioned issues. For example, there are serious limitations to the breadth of the student population studied, with two studies focusing only on a single LEA (Mendez & Knoff, 2003; Mendez et al., 2002), whereas a third addressed a statewide cohort of ninth-grade students (Balfanz et al., 2012). Although the studies address student characteristics, their scope provides an insufficient representation of associations between punitive discipline practices and youth characteristics or school-level variables. Concerns with the studies also exist in terms of the punitive discipline practices analyzed, with all three studies addressing suspension and excluding expulsions, restraints, corporal punishment, and changes of placement. There is particular concern with the lack of research on the use of corporal punishment. Of the five states with the largest student populations, Florida is one of only two that allows corporal punishment in schools. We are aware of no research that has evaluated potential associations between the use of corporal punishment and SEA and LEA characteristics in Florida. Given the significant gaps in research concerning punitive discipline practices for the state of Florida, statewide research that includes important student, school, and LEA variables within analyses is urgently needed.

Purpose

The purpose of this study was to provide a comprehensive statewide picture of the use of punitive discipline practices. We evaluated five common reactive approaches to student misbehavior: suspension, expulsion, change of placement, restraint, and corporal punishment. *Suspension* refers to the short-term exclusion of a student from the regular education setting because of a violation of school behavior policies (National Clearinghouse on Supportive School Discipline [NCSSD], 2015b). *Expulsion* refers to a more severe consequence of a behavioral infraction that results in the permanent exclusion of a student from the regular educational

setting (NCSSD, 2015a). A disciplinary *change of placement* involves removing a student from the educational environment for a period exceeding 10 days or a series of removals that constitute a pattern (Individuals with Disabilities Education Act [IDEA], 2006). *Restraint* can be either mechanical or physical, and these forms are combined within the current research. Mechanical restraints are defined as a device used to restrict student movement, whereas physical restraint relies on physically restricting a student's movement (USDOE, 2014a). *Corporal punishment* refers to a response to student misbehavior wherein an adult typically uses a wooden board to strike a child's buttocks and inflict pain (American Academy of Child & Adolescent Psychiatry, 1988; Farmer & Neier, 2009).

The following research questions guided our investigation:

Research Question 1: Do associations exist between the frequency and type of punitive discipline practice used (i.e., suspensions, expulsions, restraints, corporal punishment, changes of placement) and student characteristics (i.e., grade level, gender, and race)?

Research Question 2: Do associations exist between the use of punitive discipline practices (i.e., suspensions, expulsions, restraints, changes of placement) and (a) school-level variables (i.e., percentage of students receiving special education, school locale, school level, percentage of students who receive free or reduced price lunch [FRL], percentage of Black or African American students) and (b) LEA-level allowance of corporal punishment, after controlling for other school and LEA variables?

Research Question 3: Do associations exist between school-level variables (i.e., school-level grade ranges: prekindergarten [PK] to 5, 6–8, 9–12; percentage of students receiving special education; school locale; percentage of students receiving FRL; percentage of Black or African American) and the frequency of corporal punishment in schools in LEAs allowing corporal punishment?

Method

Data Collection

We used secondary survey data from the Florida Department of Education (DOE) 2010-2011 and Common Core of Data (CCD) *Public Elementary/Secondary School Universe Survey 2010-11* (v.2a; CCD, 2011) as the basis for analyses in this study. The CCD nonfiscal data are submitted annually to NCES by SEAs in the 50 states, the District of Columbia, Puerto Rico, the four U.S. Island Areas, the Department of Defense Education Activity, and the Bureau of Indian Education. Florida collects school and LEA data annually via a survey sent to each LEA. A summary of Florida data are publicly available and include (a) school (within each LEA) enrollment numbers by grade, including race and sex; (b) number of elementary, middle, and high schools by LEA; (c)

Title 1 schools by LEA; (d) FRL (ages 5–17) by LEA and school; (e) in-school suspensions, out-of-school suspensions, and expulsions by school and LEA; (f) corporal punishments and suspensions by race and grade; (g) schools by LEA and the total number of uses of corporal punishment; and (h) school locale. School data were collected via the Office of Education Information and Accountability Services Automated Student and Staff Databases.

We created three separate data sets to examine the research questions. One data set was obtained by aggregating the number of occurrences for punitive interventions in Florida by grade level, gender, and race. Analysis of this data set allowed us to understand general trends in the use of punitive discipline practices. A second data set included data for schools nested within LEAs and documented the number of occurrences for punitive discipline practices in each school, as well as school and LEA characteristics. Analysis of this set allowed us to investigate associations between school characteristics and differences in the use of punitive discipline practices for schools after controlling for LEA differences. A final data set was a subset of the second data set and contained data only from LEAs allowing corporal punishment. We used this data set to examine associations between the frequency of corporal punishment and school characteristics.

Data Analysis

Missing data. The first data set that documented punitive discipline practices at the state level did not include missing data. The second and third data sets included schools with missing data for various school characteristics. The second data set, for example, involved an initial sample size of 3,300 schools, from which four schools were omitted due to the lack of student information (i.e., only teacher/adult information was reported). Information was also not available for some school predictor variables, and a small number of LEAs reported data for only one school. We used a listwise deletion procedure to address these issues before proceeding with analyses, and omitted 543 schools (16.5%) that did not report data for students classified as special education and an additional 37 (1.1%) schools that did not report at least one of the independent variables in the model. Our final analytic sample included 2725 (82.6%) schools reporting punitive discipline practices.

The initial LEA sample size was 71 LEAs. After performing listwise deletions, we excluded LEAs in which only one school remained in the sample. A final sample of 61 LEAs (85.9%) was included at Level 2.

Our third data set, used for analyses of corporal punishment, was a subset of the initial sample of LEAs in which corporal punishment was allowed (*n* = 43 LEAs). Schools within LEAs that did not allow corporal punishment were deleted, leaving 965 total schools. For reasons related to the analyses performed, it was necessary to use listwise deletion

Table 1. Descriptive Statistics of the Variables That Are Involved in Models for the Two-Part Analyses.

| Characteristic | Suspension, expulsion, change of placement, restraint | | | Corporal punishment | | |
| | Initial sample | Analytic sample | | Initial sample | Analytic sample | |
Level 1 (school level)	n = 3,300 schools	n = 2,725 schools	Cohen's d	n = 965 schools	n = 899 schools	Cohen's d
Number of students at the school	783.74 (545.79)	783.92 (545.55)	0.00	718.65 (438.76)	721.04 (439.47)	−0.01
% of ESE students	20.33 (14.04)	20.28 (13.92)	0.00	19.19 (14.18)	19.18 (14.22)	0.00
Suspension	138.43 (210.78)	137.97 (206.43)	0.00			
Expulsion	0.41 (1.82)	0.46 (1.94)	−0.03			
Corporal punishment				3.26 (13.69)	2.75 (12.81)	0.04
Change of placement	2.48 (7.58)	2.73 (8.16)	−0.03			
Restraint	2.98 (20.87)	3.57 (22.91)	−0.03			
School locale						
Rural	0.20 (0.39)	0.20 (0.40)	−0.03	0.34 (0.47)	0.34 (0.47)	0.00
City	0.27 (0.44)	0.27 (0.44)	0.01	0.26 (0.44)	0.28 (0.45)	−0.03
Suburban	0.48 (0.50)	0.46 (0.50)	0.02	0.24 (0.43)	0.23 (0.42)	0.02
Town	0.07 (0.25)	0.07 (0.25)	−0.01	0.16 (0.37)	0.16 (0.37)	0.01
School type						
Combined	0.11 (0.31)	0.10 (0.30)	0.02	0.09 (0.09)	0.08 (0.07)	0.04
Elementary	0.52 (0.50)	0.52 (0.50)	0.00	0.52 (0.50)	0.54 (0.50)	−0.03
Middle/junior high	0.17 (0.38)	0.17 (0.38)	0.00	0.17 (0.38)	0.17 (0.38)	0.00
Senior high	0.20 (0.40)	0.20 (0.40)	−0.01	0.21 (0.41)	0.21 (0.41)	0.00
% of students receive FRL	60.65 (23.50)	60.94 (23.07)	−0.01	60.67 (21.03)	61.04 (21.08)	−0.02
% of Black or African American students	26.63 (25.44)	26.53 (25.63)	0.00	23.32 (21.48)	24.22 (21.67)	−0.04
Level 2 (LEA level)	n = 71 LEAs	n = 61 LEAs		n = 43 LEAs	n = 40 LEAs	
Allow corporal punishment	0.61 (0.49)	0.66 (0.48)	−0.10			

Note. Standard deviation values are in parentheses; ESE = exceptional student education; FRL = free or reduced price lunch; LEA = local education agency.

for schools with at least one missing data point among the predictors, as well as to exclude LEAs with only one school. The final analytic sample for analyses of corporal punishment use included 899 schools (93.2%) from 40 LEAs (93.0%).

The descriptive statistics provided in Table 1 reveal comparable means and standard deviations for all variables in the initial sample and in the analytic sample. In addition, we have estimated standardized mean differences among initial and analytic samples (i.e., Cohen's d; Cohen, 1988) for every categorical and continuous variable that are involved in the two-part analysis. According to What Works Clearinghouse standards (USDOE, Institute of Education Sciences, What Works Clearinghouse, 2013), an effect size that is smaller than .05 in absolute value indicates that the compared groups are equivalent in terms of the comparison characteristic. However, effect sizes greater than .25 do not satisfy the baseline equivalence condition. Only the Corporal Punishment Allowance variable did not meet the .05 criteria (Cohen's d = −0.10), indicating that the listwise deletion mechanism and Corporal Punishment Allowance variable have 0.26% variance in common, which is less than 1% and quite low. The effect size for all covariates was still below

the .25 standard for the equivalence. Although we do not justify the use of listwise deletion by comparing the consistency of means and standard deviations for data sets, these similarities suggest that additional bias was not introduced by using this method.

Analysis for Research Question 1. Research Question 1 has three facets and each aims to investigate the relation between punitive discipline practice and (a) grade level, (b) race, and (c) gender. We describe the overall statistical procedures that allow us to answer the research question and also provide details for each particular facet.

First, we calculated statewide frequency of enforcement for each punitive discipline practice by student grade, race, and gender. To examine associations, we used *loglinear models* for contingency tables (i.e., array of counts of two or more dimensions; Birch, 1963). Nelder and Wedderburn (1972) clarified that Poisson regression can be used to fit loglinear models. We selected Poisson regression because the outcome (i.e., frequency of the punitive discipline practice) is count data, which may have only nonnegative integer values. Poisson distribution is the simplest distribution matching the nature of the count data; therefore, Poisson

regression was used to investigate dependence (Agresti, 2007). We used the following models:

$$\log(\mu) = \alpha + \beta_1 X_1 + \beta_2 X_2, \tag{1}$$

$$\log(\mu) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \gamma_{12} + X_1 X_2, \tag{2}$$

where μ is the count of punitive intervention enforcement, α is the intercept, X_1 and X_2 are independent variables, β_1 and β_2 are main effects, and γ_{12} is the interaction effect. Because the two models are nested, they can be compared using the residual deviance (i.e., a statistic that measures the severity of the lack of fit) of the model without the interaction term for the chi-square distribution. Insofar as the omitted interaction term is equal to the difference between the second and first models, the residual deviance statistic from the first model reflects the severity of model misspecification due to the ignored interaction term. In other words, a statistically significant residual deviance statistic indicates the interaction term is significant; hence, we are able to conclude a dependence between X_1 and X_2.

Two limitations to this method should be noted. First, results obtained via the chi-square tests of independence do not imply directionality for the found associations (Agresti, 2007; Fox & Weisberg, 2011). In addition to the directional limitation, differing group sizes used when directly comparing totals can result in false assumptions. To account for group size differences, we used a weighting approach where the total occurrence of a disciplinary practice received by a student group was multiplied by the overall population size and divided by the number of groups and the population size. The population sizes reflected the actual number of students in Florida in 2010-2011. Upon weighting the totals, we rounded to the closest integer. Thus, we projected the frequencies for each punitive discipline practice per group to the condition in which there were hypothetically equivalent numbers of students per group. The following formula was developed to obtain the weighted frequencies:

$$y_i^* = y_i \left(\frac{1}{number\ of\ groups} \right)$$
$$\times \left(\frac{total\ population\ size}{population\ size\ in\ a\ particular\ group} \right),$$

where y_i is the actual frequency for a punitive discipline practice in a population and y_i^* is the weighted frequency for the same punitive discipline practice for the hypothetical student population.

Grade level. We analyzed associations by grade level and weighted total of punitive discipline practices, where the first level in the model included PK through fifth grade, the second level included sixth grade through eighth grade, and the third level included ninth grade through 12th grade. We

fit a Poisson regression model where the disciplinary practice and grade level predicted the weighted total number of disciplinary practices in each cell, assuming the cell counts are independent Poisson random variables. The residual deviance was the difference between deviance of this model of independence and deviance of a saturated model in which the association term (i.e., the interaction between total number of disciplinary actions and grade level) was added. If the residual deviance for the first model was statistically different than zero, an interaction term was used to explain the relation properly and, thus, an association existed between grade levels and different types of the punitive discipline practices.

Race. Using a similar procedure, we evaluated the relation between race and weighted total number of different punitive discipline practices where race is categorized as Caucasian, Black or African American, Hispanic, and Other. Again, we fit a linear Poisson regression model where the disciplinary practice and gender predicted the weighted total number of disciplinary practices in each cell, assuming the cell counts are independent Poisson random variables. Again, the residual deviance statistic is evaluated to see whether an association existed between race and different types of punitive discipline practices.

Gender. Using a similar procedure, we evaluated the relation between gender and weighted total number of different punitive practices where gender is categorized as male and female. We fit a linear Poisson regression model where the disciplinary practice and gender predicted the weighted total number of disciplinary practices in each cell assuming the cell counts are independent Poisson random variables. Again, the residual deviance statistic is evaluated to see whether an association existed between gender and different types of punitive discipline practices.

Analysis for Research Question 2. We addressed Research Question 2 by investigating the association between school-level characteristics, percentage of students who receive FRL, percentage of Black or African American students, LEA-level characteristics (i.e., whether or not an LEA allows corporal punishment), and number of punitive discipline practices for a given school after controlling for other school and LEA variables. In this section, we describe and justify the statistical analysis procedure for each outcome of interest.

Suspension. We used a hierarchical random intercepts Poisson model to explain the association between the total count of suspensions and predictors. We used a Poisson model because the outcome variable was count data. It was not possible to model a more complex association due to the aforementioned limitations inherent to the data set. In addition to the modeling complications, the number of students differed by school.

Rather than using only the suspension counts, we modified the models to account for the number of unique suspensions per student in each school. The term $Y_{ijSUSPENSION}$ was the total count of suspensions enforced in school i in LEA j. To offset the effect of the number of students nested within a school, it was necessary to divide $Y_{ijSUSPENSION}$ by n_{ij}, or the total number of students in school i in LEA j. Inherently, the outcome of interest was the count of suspensions per student in each school. This offsetting approach was appropriate, given the nature of the data set. Each student was counted only once for each type of punitive discipline practice, although a student could receive more than one type of punitive discipline practice, such that n_{ij} was not a perfect offset variable. Due to the lack of a better predictor, we chose to use n_{ij}. Assuming this problem did not occur extensively, we considered this to be a good approximation of the number of suspensions enforced per student at a school, offsetting n_{ij}. The unit-specific school-level (Level 1) model used was as follows:

$$\log\left(\frac{Y_{ij\,SUSPENSION}}{n_{ij}}\right) = \beta_{0j} + \beta_{1j}ESE + \beta_{2j}CITY$$
$$+ \beta_{3j}SUBURBAN + \beta_{4j}TOWN$$
$$+ \beta_{5j}ELEMENTARY$$
$$+ \beta_{6j}MIDDLE\ JUNIOR$$
$$+ \beta_{7j}SENIOR\ HIGH$$
$$+ \beta_{8j}FREE\ or\ REDUCED\ LUNCH$$
$$+ \beta_{9j}BLACK\ or\ AFRICAN\ AMERICAN,$$

where *ESE* (i.e., exceptional student education or students classified as special education) refers to the percentage of students receiving special education services in a school. City, suburban, and town were dummy coded school locale variables where rural area was the reference category. Elementary, middle/junior high, and senior high were dummy coded school-level variables where combined schools was the reference category. FRL was the percentage of students who received free and reduced price lunch in a school. Black or African American was the percentage of Black or African American students in a school. The LEA-level (Level 2) model is as follows:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}\,CORPORAL\ PUNISHMENT + u_{0j}$$
$$\beta_{1j} = \gamma_{10}$$
$$\beta_{2j} = \gamma_{20}$$
$$\beta_{3j} = \gamma_{30}$$
$$\beta_{4j} = \gamma_{40}$$
$$\beta_{5j} = \gamma_{50}$$
$$\beta_{6j} = \gamma_{60}$$
$$\beta_{7j} = \gamma_{70}$$
$$\beta_{8j} = \gamma_{80}$$
$$\beta_{9j} = \gamma_{90},$$

where the *CORPORAL PUNISHMENT* variable was a binary indicator identifying whether or not an LEA allowed corporal punishment, γ_{00} was an overall intercept, γ_{01} was the main effect of allowing corporal punishment in the LEA, u_{0j} was a variance component due to difference in LEAs, and γ_{10} through γ_{90} were corresponding main effects of predictors listed in the previous section.

The combined model is as follows:

$$\log\left(\frac{Y_{ij\,SUSPENSION}}{n_{ij}}\right) = \gamma_{00}$$
$$+ \gamma_{01}CORPORAL\ PUNISHMENT$$
$$+ u_{0j} + \gamma_{10}ESE + \gamma_{20}CITY + \gamma_{30}SUBURBAN$$
$$+ \gamma_{40}TOWN + \gamma_{50}ELEMENTARY$$
$$+ \gamma_{60}MIDDLE\ JUNIOR + \gamma_{70}SENIOR\ HIGH$$
$$+ \gamma_{80}FREE\ or\ REDUCED\ LUNCH$$
$$+ \gamma_{90}BLACK\ or\ AFRICAN\ AMERICAN.$$

The model was executed by setting the regression coefficient for the log of number of students to 1.

$$\log\left(Y_{ij\,SUSPENSION}\right) = \gamma_{00}$$
$$+ \gamma_{01}CORPORAL\ PUNISHMENT$$
$$+ u_{0j} + \gamma_{10}ESE + \gamma_{20}CITY + \gamma_{30}SUBURBAN$$
$$+ \gamma_{40}TOWN + \gamma_{50}ELEMENTARY$$
$$+ \gamma_{60}MIDDLE\ JUNIOR + \gamma_{70}SENIOR\ HIGH$$
$$+ \gamma_{80}FREE\ or\ REDUCED\ LUNCH$$
$$+ \gamma_{90}BLACK\ or\ AFRICAN\ AMERICAN$$
$$+ \log\left(n_{ij}\right).$$

Expulsion. Although our intention was to use the same model for expulsion, change of placement, and restraint variables, the number of schools that did not enforce those punitive discipline practices necessitated alternative approaches. Specifically, in 2010-2011, 86.6% of the 2,725 schools did not enforce expulsion, 70.2% of the 2,725 schools did not enforce change of placement, and 84.3% of the 2,725 schools did not enforce restraint. In addition, 86.2% of 899 schools in LEAs allowing corporal punishment did not enforce this disciplinary practice. To deal with extreme zero inflation problems, we employed a two-part multilevel model. Duan, Manning, Morris, and Newhouse (1983) concluded that, without assuming an underlying normal distribution, this type of relation could be modeled in two stages. In the first stage, we predicted the logit of using a particular punitive intervention at least once in a school. In the second stage, we predicted the log of the number of instances per student of particular punitive practices among the schools that enforced the practice at least once. Using $B_{ijEXPULSION}$ and $C_{ijEXPULSION}$ as outcomes, two multilevel models were established where the first model was a multilevel logistic random intercepts model and the second

model was a multilevel log normal random intercepts model that was conditioned on positive outcome value, respectively. The likelihood was maximized once for both binary and continuous models under a single run to guarantee that both the models were fit to the same population. The first part of the two-part model was as follows:

$$\log it\left[p\left(B_{ij\ EXPULSION}=1\right)\right]=\gamma_{00}$$
$$+\gamma_{01}CORPORAL\ PUNISHMENT$$
$$+u_{0j}+\gamma_{10}ESE+\gamma_{20}CITY$$
$$+\gamma_{30}SUBURBAN+\gamma_{40}TOWN$$
$$+\gamma_{50}ELEMENTARY$$
$$+\gamma_{60}MIDDLE\ JUNIOR$$
$$+\gamma_{70}SENIOR\ HIGH$$
$$+\gamma_{80}FREE\ or\ REDUCED\ LUNCH$$
$$+\gamma_{90}BLACK\ or\ AFRICAN\ AMERICAN,$$

where $Y_{ijEXPULSION}$ was the count of expulsions enforced in school i in LEA j in Florida in 2010-2011. The binary outcome $B_{ijEXPULSION}$ is 0 if $Y_{ijEXPULSION}$ is 0, or 1 if expulsion was used.

The second part of the two-part multilevel model was as follows:

$$\log\left(C_{ij\ EXPULSION}\right)=\gamma_{00}$$
$$+\gamma_{01}CORPORAL\ PUNISHMENT$$
$$+r_{ij}+u_{0j}+\gamma_{10}ESE+\gamma_{20}CITY$$
$$+\gamma_{30}SUBURBAN+\gamma_{40}TOWN$$
$$+\gamma_{50}ELEMENTARY$$
$$+\gamma_{60}MIDDLE\ JUNIOR$$
$$+\gamma_{70}SENIOR\ HIGH$$
$$+\gamma_{80}FREE\ or\ REDUCED\ LUNCH$$
$$+\gamma_{90}BLACK\ or\ AFRICAN\ AMERICAN$$
$$+\log\left(n_{ij}\right).$$

The continuous outcome $C_{ijEXPULSION}$ was missing if $Y_{ijEXPULSION}$ was 0. Of those schools that used expulsion at least once, $C_{ijEXPULSION}$ was the log transformation of the number of expulsions in school i in LEA j.

Change of placement and restraint. For each of the change of placement and restraint outcomes separately, we used the same procedures that we employed with the expulsion outcome.

Analysis for Research Question 3. To answer Research Question 3, we slightly modified the model as necessitated by the analysis focusing only on LEAs that allowed corporal punishment. The models were established using the third data set that included 899 schools in 40 LEAs that did not have missing data for any of the predictors. We excluded school locale variables because none of the city schools used corporal

punishment. The corporal punishment indicator was excluded from Level 2 because analyses included only schools in LEAs allowing corporal punishment. We focused specifically on the relation between the number of instances of corporal punishment in a school that was located in an LEA that allowed corporal punishment and predictors.

The combined model for the first part of the two-part model that expressed whether corporal punishment was enforced at least once during the school year for a particular school was

$$\log it\left[p\left(B_{ij\ CORPORAL\ PUNISHMENT}=1\right)\right]=\gamma_{00}+u_{0j}+\gamma_{10}ESE$$
$$+\gamma_{50}ELEMENTARY$$
$$+\gamma_{60}MIDDLE\ JUNIOR$$
$$+\gamma_{70}SENIOR\ HIGH$$
$$+\gamma_{80}FREE\ or\ REDUCED\ LUNCH$$
$$+\gamma_{90}BLACK\ or\ AFRICAN\ AMERICAN.$$

The combined model for the second part of the two-part model that expresses the factors that affect the number of corporal punishment enforcements among schools enforcing the practice at least once during the school year was

$$\log it\left(C_{ij\ CORPORAL\ PUNISHMENT}\right)=\gamma_{00}+r_{ij}+u_{0j}+\gamma_{10}ESE$$
$$+\gamma_{50}ELEMENTARY$$
$$+\gamma_{60}MIDDLE\ JUNIOR$$
$$+\gamma_{70}SENIOR\ HIGH$$
$$+\gamma_{80}FREE\ or\ REDUCED\ LUNCH$$
$$+\gamma_{90}BLACK\ or\ AFRICAN\ AMERICAN$$
$$+\log\left(n_{ij}\right).$$

The hierarchical Poisson and logistic regression models do not have an additional error term at Level 1 because the link functions have their own expected value and variance (Raudenbush & Bryk, 2002). Only Level 2 intercept models have a residual term. Lognormal models have an error term at Level 1 because it is assumed that, after log transformation, outcomes have a log normal distribution. This assumes variation in LEA-specific intercepts across LEAs. It was also assumed that the effects of independent variables were constant across LEAs. We fit each of the multilevel models using Mplus version 7 (Muthén & Muthén, 2012) and used maximum likelihood estimation with robust standard error using a numerical integration algorithm.

Interpretations of the regression coefficients are in terms of event rate ratios or odds ratios (depending on the outcome type) for every model analyzed for Research Question 3. We performed odds ratio interpretation of every significant multilevel logistic regression coefficient. Odds ratio is defined as the ratio of success odds in two groups that are one point apart in a particular independent variable included in the

Table 2. Numbers of Disciplinary Actions by Grade Level, Race, and Gender.

	Disciplinary action									
	Corporal punishment		Expulsion		Change of placement		Restraint		Suspension	
Variable	Raw	Diff	Raw	Diff	Raw	Diff	Raw	Diff	Raw	Diff
Grade level										
PK–5th grade	1,420	742	41	−225	549	−382	3,055	1,270	59,912	−1,405
6th–8th grade	878	−284	965	−146	3,489	395	3,820	222	182,073	−187
9th–12th grade	848	−458	1,577	371	3,759	−12	2,968	−1,492	214,848	1,592
Race										
Caucasian	1,965	589	855	−20	2,784	75	4,311	560	152,891	−1,205
Black or African American	861	−252	934	−94	3,127	84	4,020	192	178,086	70
Hispanic	193	−409	679	63	1,562	−229	1,037	−1,120	108,050	1,695
Other	127	71	115	51	324	70	475	368	17,806	−561
Gender										
Female	557	−500	653	−212	1,998	−614	3,155	−137	154,168	1,463
Male	2,589	500	1,930	212	5,799	614	6,688	137	302,665	−1,463

Note. Students are counted only once for each type of action for the raw counts. Diff = difference between observed weighted and expected weighted numbers of disciplinary actions under independence; PK = prekindergarten.

multilevel logistic regression model. Event rate ratios have a very similar interpretation but are designed for use in Poisson regression. Both odds ratio and event ratio can only be positive. Odds and event rate ratios that are smaller than 1 are associated with a decrease in the likelihood of success (number of occurrence) in the outcome variable. Odds and event ratios that are greater than 1 are associated with an increase in the likelihood of success (number of occurrences) in the outcome variable. A significant threshold is also interpreted as the mean where every independent variable is zero. A threshold is the intercept for the logistic regression and is interpreted accordingly.

Results

We first report specific state student population characteristics, LEA characteristics, and school characteristics based on data from the Florida DOE. Among the 2,644,218 registered students, 48.59% (n = 1,284,750) of the students were female and 51.41% (n = 1,359,468) were male. Students were primarily Caucasian (43.05%, n = 1,138,439), Hispanic (28.02%, n = 741,001), and Black or African American (22.96%, n = 607,242). Also, 2.46% (n = 64,981) were Asian, 0.11% (n = 2,980) were Native Hawaiian or Pacific Islander, 0.39% (n = 10,356) were American Indian or Alaska Native, and 3.00% (n = 79,219) were two or more races. In addition, 47.45% (n = 1,254,687) of the students were registered in PK through fifth grade, 22.86% (n = 604,489) in sixth through eighth grade, and 29.69% (n = 785,042) in ninth through 12th grade. LEA and school characteristics, as well as overall frequency of punitive discipline practices are reported in Table 1. In terms of punitive discipline practices, the most

frequent practice was suspension with 548,790 incidences, followed by restraint with 11,048 incidences.

Research Question 1

To investigate Research Question 1, we used the initial school sample as opposed to a reduced sample with deletions (see Table 1). As previously noted, the analysis of association between the frequency of punitive discipline practices and student characteristics relied on weighted frequencies. The difference between the observed and expected weighted frequency for each punitive discipline practice, which identifies exactly which punitive discipline practices are more and less commonly applied to students with various characteristics, is reported in Table 2.

Grade level. Results indicated a significant association between disciplinary practices and grade level (χ^2 = 103,600, df = 14, p ≤ .001). Among punitive discipline practices, suspension was used more frequently than other punitive discipline practices after controlling for group size differences. The total number of punitive discipline practices after controlling for group size difference was greatest for the sixth grade through eighth grade, followed by ninth grade through 12th grade, and least for PK through fifth grade. Corporal punishment was used much more frequently in the PK through fifth grade level compared with its expected frequency. Expulsion was used more frequently in ninth grade through 12th grade than expected. Restraint was used more frequently in the PK through fifth grade, and less frequently in the sixth grade through eighth grade when compared with the expected frequency of each grade range.

Table 3. Hierarchical Random Intercept Poisson Model Output for Suspension.

Parameter	Estimate
Intercept	−3.256 (0.039)***
Level 1 (school level)	
ESE students	0.007 (1.007)**
City	0.055 (1.057)
Suburban	−0.066 (0.936)
Town	0.042 (1.043)
Elementary	−0.962 (0.382)***
Middle/junior high	0.878 (2.406)***
Senior high	0.948 (2.581)***
FRL	0.014 (1.014)***
% of African American	0.004 (1.004)*
Log of number of students in the school	1.000 (—)
Level 2 (school district level)	
Corporal punishment	0.297 (1.346)**
BIC	148,407.888

Note. Event ratio rates are in parentheses. Rural area was the reference category for dummy coded school locale variables. Combined schools was the reference category for dummy coded school-level variables (i.e., elementary, middle/junior high, senior high). ESE = exceptional student education; FRL = free or reduced price lunch; BIC = Bayesian information criterion.
*$p < .05$. **$p < .01$. ***$p < .001$.

Race. There was also a significant association between the type of disciplinary practice and race ($\chi^2 = 2,068$, $df = 19$, $p \leq .001$). As reported in Table 2, the total weighted number of disciplinary practices in which Black or African American students were involved was greater than for all other races. Similar weighted numbers of punitive discipline practices were used for Caucasian students and Hispanic and Latino students. Students in the combined "Other" race category were less frequently the recipients of punitive discipline practices. Caucasian students received more corporal punishment compared with the expected weighted frequency, whereas Hispanic and Latino students received less corporal punishment. Hispanic and Latino students were also restrained less frequently, and students of "Other" races were restrained more frequently than expected.

Gender. A significant association also existed between the type of disciplinary action and gender, such that males received corporal punishment and expulsion more frequently ($\chi^2 = 732.2$, $df = 9$, and $p \leq .001$). Considering that the number of females and males were similar, use of the weighting procedure did not provide dramatically different results than the raw data.

Research Question 2

Research Question 2 focused on the relation between school-level characteristics, percentage of students receiving FRL, percentage of Black or African American students, whether or not an LEA allowed corporal punishment, and the number of punitive discipline practices documented for a school after controlling for other school and LEA variables.

Suspension. Compared with combined schools, elementary school students received significantly fewer suspensions within the same LEA, with an event ratio rate of 0.0382 ($p < .001$; see Table 3). Both middle/junior high students and senior high school students received significantly more suspensions within the same LEA, with event ratios of 2.406 ($p < .001$) and 2.581 ($p < .001$), respectively. Moreover, a 1% increase in students who received FRL and percentage of Black or African American students was associated with an increase in the number of suspensions per student, with event ratio rates of 1.014 ($p < .001$) and 1.004 ($p = .018$), respectively. In addition, schools located in LEAs allowing corporal punishment used more suspensions compared with schools located in LEAs that did not allow corporal punishment, with an event ratio rate of 1.346 ($p = .002$).

Restraint. As noted in Table 4, the use of restraint was very unlikely due to the threshold of 4.340 ($p < .001$). Within the same LEA, a 1% increase in students classified as special education or who received FRL was associated with increased probability for the use of restraint, with odds ratios of 1.014 ($p = .037$) and 1.013 ($p = .020$), respectively.

Compared with rural area schools, city and suburban schools relied more on the use of restraint with event ratio rates of 1.388 ($p = .038$) and 1.360 ($p = .011$), respectively. Elementary schools used restraint less than middle/junior and senior high schools, with an event ratio rate of 0.424 ($p = .028$). Among schools within the same LEA that used restraint, a 1% increase in percentage of (a) students who received FRL and (b) Black or African American students was associated with an increase in the number of restraints per student at a school, with event ratio rates of 1.011 ($p = .010$) and 1.007 ($p = .023$), respectively.

Expulsion. As indicated in Table 4, the use of expulsion was very unlikely due to the threshold of 3.994 ($p < .001$). Compared with rural schools, suburban schools within the same LEA were more likely to use expulsion, with an odds ratio of 1.866 ($p = .006$). Elementary schools were less likely, and middle/junior high and senior high schools were more likely to use expulsion, with odds ratios of 0.075 ($p < .001$), 3.591 ($p < .001$), and 8.155 ($p < .001$), respectively. Holding every other variable constant, a 1% difference in the percentage of students receiving FRL was associated with an increase in probability of expulsion, with an odds ratio of 1.019 ($p = .001$). Finally, schools within an LEA that allowed corporal punishment were more likely to use expulsion, with an odds ratio of 3.086 ($p = .021$). Among schools within the same LEA that used expulsion, a 1% increase in percentage of students classified as special education or who received FRL was associated with an increase in number of expulsions per

Table 4. Two-Part Model Results for Restraint, Expulsion, and Change of Placement Models.

Parameter	Restraint		Expulsion		Change of placement	
	Logistic	Continuous	Logistic	Continuous	Logistic	Continuous
Threshold—intercept	4.340***	−6.630 (0.001)***	3.994***	−7.765 (0.000)***	2.881***	−6.876 (0.001)***
Level 1 (school)						
ESE	0.014 (1.014)*	0.023 (1.023)	−0.015 (0.985)	0.027 (1.027)**	−0.015 (0.985)*	0.020 (1.020)***
City	−0.186 (0.831)	0.291 (1.338)*	−0.008 (0.992)	−0.261 (0.770)	0.174 (1.191)	0.172 (1.188)
Suburban	−0.229 (0.796)	0.307 (1.360)*	0.624 (1.866)**	−0.160 (0.852)	−0.027 (0.973)	−0.014 (0.986)
Town	−0.316 (0.729)	−0.062 (0.830)	0.284 (1.328)	−0.186 (0.830)	−0.577 (0.562)*	0.327 (1.387)*
Elementary	0.793 (2.211)	−0.857 (0.424)*	−2.587 (0.075)***	−0.748 (0.473)*	−1.129 (0.323)	−0.681 (0.506)**
Middle/junior	0.668 (1.950)	−0.794 (0.452)	1.279 (3.591)***	−0.440 (0.644)	2.764 (15.857)***	0.114 (1.121)
Senior high	0.108 (1.114)	−0.918 (0.399)	2.099 (8.155)***	0.058 (1.060)	2.262 (9.604)***	0.336 (1.399)
FRL	0.013 (1.013)*	0.011 (1.011)*	0.019 (1.019)***	0.023 (1.023)***	0.020 (1.020)***	0.017 (1.017)***
% of Black or African American	0.003 (1.003)	0.007 (1.007)*	−0.002 (0.998)	0.008 (1.008)	−0.009 (0.991)***	0.005 (1.005)**
Log of number of students in the school		1.000 (—)		1.000 (—)		1.000 (—)
Level 2 (LEA)						
Corporal punishment	−0.066 (0.936)	0.589 (1.802)	1.127 (3.086) *	0.374 (1.454)	−0.189 (0.828)	−0.152 (0.859)
Level 1 residual variance		1.324***		1.198***		0.762***
Level 2 residual variance	4.894**	0.858*	2.029***	0.358***	4.679**	0.334***
BIC	3,210.459		2,734.308		4,322.937	

Note. Rural area was the reference category for dummy coded school locale variables. Combined schools was the reference category for dummy coded school-level variables. Odds ratio are in the parentheses for logistic model. Event ratio rates are in parentheses for continuous model. ESE = exceptional student education; FRL = free or reduced price lunch; LEA = local education agency; BIC = Bayesian information criterion.
*p < .05. **p < .01. ***p < .001.

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Table 5. Two-Part Model Results for Corporal Punishment.

Parameter	Two-part model	
	Logistic	Continuous
Threshold—intercept	1.109	−4.246 (0.014)***
Level 1 (school level)		
ESE students	−0.078 (0.925)*	0.001 (1.001)
Elementary	−0.510 (0.600)	−0.625 (0.535)*
Middle/junior high	−0.345 (0.708)	−0.328 (0.720)
Senior high	−0.186 (0.830)	−0.790 (0.454)*
Free or reduced lunch	0.031 (1.031)*	0.007 (1.007)
% of Black or African American	−0.038 (0.962)***	0.010 (1.010)
Log of number of students in the school		1.000 (—)
Level 2 (LEA level)		
Level 1 residual variance		1.155***
Level 2 residual variance	19.430*	0.722*
BIC	872.694	

Note. Event ratio rates are in parentheses for continuous model. Combined schools was the reference category for dummy coded school-level variables. Odds ratio are in the parentheses for logistic. ESE = exceptional student education; LEA = local education agency; BIC = Bayesian information criterion.
*$p < .05$. **$p < .01$. ***$p < .001$.

student, with event ratio rates of 1.027 ($p = .003$) and 1.023 ($p < .001$), respectively.

Change of placement. Change of placement was unlikely, as reflected in the threshold of 2.881 ($p < .001$; see Table 4). Within the same LEA, a 1% increase in students classified as special education or who were Black or African American was associated with a decreased probability of change of placement, with odds ratios of 0.985 ($p = .038$) and 0.991 ($p < .001$), respectively. A 1% increase in percentage of students who received FRL was associated with an increased probability of change of placement, with an odds ratio of 1.020 ($p < .001$). Holding every other variable constant, town schools were less likely to change student's placement, with an odds ratio of 0.562 ($p = .032$). Both middle/junior high and senior high schools were more likely to change a student's placement, with the odds ratios of 15.857 ($p < .001$) and 9.604 ($p < .001$), respectively.

Among schools within the same LEA that changed students' placements, a 1% increase in percentage of students classified as special education, who received FRL, or were Black or African American was associated with an increase in number of changes of placement per student, with event ratio rates of 1.020 ($p < .001$), 1.017 ($p < .001$), and 1.005 ($p = .006$), respectively. Among schools within the same LEA that changed students' placements, town schools enforced more changes of placement, with the event ratio rate of 1.387 ($p = .045$). Similarly, among schools within the same LEA that changed students' placements, elementary schools changed placement less often, with an event ratio rate of 0.506 ($p = .002$).

Research Question 3

Among schools located in the same LEA that allow corporal punishment, the probability of using corporal punishment versus not using the practice was not statistically different than zero, with a threshold value of 1.109 ($p = .349$; see Table 5). Within the same LEA, a 1% increase in students classified as special education or who were Black or African American was associated with a decreased probability of corporal punishment, with odds ratios of 0.925 ($p = .046$) and 0.962 ($p < .001$), respectively. Also, among the schools located in LEAs that allow corporal punishment, compared with combined schools, elementary schools and senior high schools enforced less corporal punishment, with event ratio rates of 0.535 ($p = .020$) and 0.454 ($p = .043$), respectively.

Discussion

Collection, analysis, and reporting of disciplinary data are critical for addressing the disproportionate use of school disciplinary practices (Gershoff & Bitensky, 2007; Krezmien et al., 2006; Townsend, 2000). The current study provides a comprehensive statewide analysis of punitive discipline practices in Florida. Concerning the characteristics of students in the current sample, data align with national reports revealing that the Florida student population differs from national averages in three important ways. First, the mean percent of students in special education was about 20% in Florida compared with a national average of approximately 9% (USDOE, 2012). Second, the mean percent of students receiving FRL was near 60%, compared with 48% nationally (NCES, 2013). Third, about 23% of students are Black or African American, compared with 17% of students across the United States (NCES, 2011). Student characteristics are important to consider when discussing trends in punitive discipline practices, given the historically disproportionate use with these students observed in smaller scale Florida studies (Balfanz et al., 2012; Mendez & Knoff, 2003; Mendez et al., 2002).

Overwhelmingly, suspension was the most commonly used punitive practice. At 548,790 incidences, the total weighted number of suspensions was almost 50 times more than the next most common practice (i.e., 11,048 restraints). The high number of suspensions is disconcerting, given that its use has been associated with lower achievement, increased likelihood of dropping out of school, antisocial behavior, and involvement with the juvenile justice system (Arcia, 2006; Christle et al., 2004; Hemphill, Toumbourou, Herrenkohl, McMorris, & Catalano, 2006; USDOE, 2014b). The current study does not address the reasons for, or possible necessity of, suspension in Florida schools. However, the frequent use of suspension could be an indication that suspension is used in lieu of more proactive and positive approaches to student behavior, particularly because Florida continues to suspend the highest percentage of students in the country (Losen et al., 2015).

Punitive Discipline Practices and Grade Level, Gender, and Race

With regard to Research Question 1 and the associations between the frequency and type of punitive discipline practice used and student characteristics, results are mostly consistent with previous research. Other results paint a more nuanced picture, however, of Florida punitive discipline practices. For example, a significant association existed between type of punitive discipline practice and student gender, race, and grade level. As in previous research, males and Black or African American students received punitive discipline more often (Losen & Martinez, 2013; Skiba et al., 2002; USDOE, 2014a). However, Black or African American students received corporal punishment less frequently. Also consistent with previous research, overall use of punitive discipline practices was most frequent in Grades 6 to 8 (Arcia, 2006, 2007; Mendez et al., 2002). Yet, certain punitive practices, such as corporal punishment and restraint, were used more frequently in the early grades, whereas high school students were more frequently expelled.

Several implications are evident from the use of punitive discipline practices with particular subgroups of students. First, as in other studies, the disproportionate punishment of Black or African American, male, and middle school students is clear. The disproportionate use of punitive discipline practices is disturbing, especially given that the percentage of Black or African American youth in Florida is much higher than the national average (NCES, 2011). Moreover, a recent study (Morris & Perry, 2016) noted that the overrepresentation of Black or African American students who are suspended is linked to racial inequalities in academic achievement. Reasons for the reduced use of corporal punishment with Black or African American students are unclear. Research is needed to better understand the relationship between these practices and school policies and procedures, as well as administrator and teacher perceptions and practices (Sullivan et al., 2014).

Punitive Discipline Practices and School and LEA Characteristics

A complex picture is evident with regard to punitive discipline practices and characteristics of schools and LEAs. Patterns in the data existed with school and LEA characteristics and the use of restraint, expulsion, and change of placement. Conclusions would be highly tenuous, however, given the limited frequency of each of these practices. A few salient points are nonetheless noteworthy, especially with regard to suspension. Schools in LEAs allowing corporal punishment enforced more suspensions, compared with schools located in LEAs that do not allow the use of this practice. No previous research has identified or considered the reasons for this association. It could be hypothesized that LEAs that allow corporal punishment are overall more inclined to rely on reactive and negative approaches to student misbehavior, rather than approaches that promote student understanding of needed behavioral change (Human Rights Watch, 2008). However, substantiation of such an assertion requires additional research.

Two additional findings related to suspension are noteworthy. First, within the same LEA and as compared with combined schools, elementary school students received significantly less suspensions, whereas middle junior high and high school students received significantly more. To more fully understand these differences, research is needed to better understand the reasons for the suspensions, the existing alternatives available to principals, and the extent to which schools within a given LEA implement proactive approaches to youth behavior (Losen & Gillespie, 2012). The second finding worthy of note in terms of school characteristics and suspension is that the proportion of students who receive FRL and who are Black or African American is associated with per student increases in suspension. The reasons that schools with particular student populations use more suspensions are undoubtedly complex. Schools that serve poor and minority students are faced with a host of challenges, including (a) unqualified general and special education teachers, as well as teacher shortages and attrition (Goldhaber, Lavery, & Theobald, 2014; Mason-Williams, 2015; McLeskey, Tyler, & Flippin, 2004); (b) a lack of resources that result in less rigorous curricula (Farkas & Duffett, 2008); and (c) higher incidence of student problem behavior and classroom aggression (Thomas, Bierman, & The Conduct Problems Prevention Research Group, 2006). Future research should explore these issues in terms of their relationship to the use of suspension.

Corporal Punishment and School and LEA Characteristics

It is encouraging that the use of corporal punishment, although legal in Florida, is a relatively rarely used punitive discipline practice. The low occurrence of corporal punishment inhibits further evaluation, in terms of school and LEA

characteristics. However, it is unequivocal that the use of corporal punishment in schools, however rare, is a harmful practice that should be immediately discontinued (Gagnon, Kennedy-Lewis, & Gurel, 2014).

Limitations

Limitations to the current study are related to the completeness of the data set used, as well as to our analytical approach. First, it is important to note that the data used were from the 2010–2011 school year. Since that time, the Florida PBS Project has continued their statewide initiative to provide training and technical assistance in an effort to promote a more proactive and positive approach to student behavior. However, the most recent suspension data indicate a continuing problem, with Florida suspending the highest percentage of students of any U.S. state (Losen et al., 2015; Snyder & Dillow, 2015). Concerning the nature of the data set, students receiving the same punitive discipline practice multiple times were counted only once at the school level. A student could be counted more than once, however, if he or she received two or more different punitive discipline consequences. This data recording system may decrease the total frequency of punitive discipline practices that are actually reported. If members of any particular group of students receive any particular punitive discipline practices frequently, this issue becomes more serious. To address this issue, schools, LEAs, and states should collect and make publicly available de-identified data on the actual number of occurrences of punitive discipline practices by student. In addition, both Florida DOE data as well as CCD data are based on school and LEA personnel self-reports. Future research should address the potential errors in reporting, through common databases of student disciplinary data across schools and LEAs.

A few limitations concerning our approach to data analyses are worthy of note. The two-part analysis procedure that we have employed regarding punitive discipline outcomes was initially built for zero inflated, semicontinuous outcomes. However, the actual outcome in these analyses was the number of punitive discipline practices linked to the predictors when using a log transformation. Consequently, outcomes in the second stage of analyses were count rather than continuous in nature. Using log transformations for the outcomes may create concerns with statistical conclusion validity regarding both standard errors and parameter estimates. To address this issue, we used maximum likelihood estimation with robust standard error using a numerical integration algorithm (MLR). MLR is recommended when an outcome is censored, unordered, or categorical because the MLR estimator provides standard errors that are robust to nonnormality, which is the case for the censored log-transformed outcome variables (Muthén & Muthén, 2012).

Another issue was the high number of schools in the sample. Using a continuous model, rather than a Poisson model, is preferred because it does not change the validity of the population parameter estimates, and the assumption of restrictive population variance required for a Poisson model is avoided. Similar to common Poisson model interpretations, we created exponential transformations for population parameter estimates and interpreted them similar to event rate ratios. Although Poisson distribution involves an error term at the school level, the procedure estimates another error term at the student or practice level (Level 1) because the outcome is assumed to be continuous. Due to this Level 1 error term difference, the exponential transformed population parameter estimates may not be the precise event ratio rates. Therefore, the interpretation may not be precise. Considering, however, that we used only a direct transformation, the direction and the size of the relation between predictors and outcomes should hold regardless of the error term defined in the model and ensure that the interpretations are within reasonable limits. Finally, we assumed that LEAs are sampled from an infinitely large number of LEAs, and schools are sampled from an infinitely large number of schools within LEAs for all the models. This assumption increases the standard errors, but allows for the generalizability of the results to all LEAs within the Florida school population.

Recommendations

Important recommendations for policy and practice can be garnered from the current study. Consistent with the recommendations of Sullivan et al. (2013), there is a need for the state to collect and analyze punitive discipline data, with a concerted emphasis on inclusion of data across student, school, and LEA variables. Given the frequent and disproportionate use of suspension and other punitive discipline practices with particular student groups, information should be disaggregated and publicly reported by race, gender, FRL, and disability. Moreover, schools and LEAs must be held accountable for their decision to use punitive discipline practices, particularly when it is evident that these practices are disproportionally used with certain youth and in high poverty and/or high minority schools.

The current study did not address the reasons for the disproportionate use of punitive discipline practices, or identify the current positive and proactive approaches implemented in schools. Although researchers need to evaluate current proactive approaches to student behavior in Florida schools, statewide efforts to reduce reliance on punitive discipline practices through effective prevention and intervention can occur immediately. Statewide efforts, such as comprehensive professional development, are needed to ensure implementation of multitiered levels of behavioral support and to emphasize social emotional learning programs, cognitive-behavioral interventions, and restorative justice approaches (Bridgeland, Bruce, & Hariharan, 2013; Gagnon & Barber, 2015; Losen & Martinez, 2013). The state, as well as individual LEAs and

schools, should also move forward with a comprehensive evaluation of the infractions that result in suspension. In the age of zero tolerance, there has been an increase in the use of suspension for relatively minor incidences (Kang-Brown, Trone, Fratello, & Daftary-Kapur, 2013), and it is critical to understand the nature of misbehavior that is leading to the use of this and other punitive disciplinary practices.

Conclusion

This study provides a comprehensive analysis of the use of punitive discipline practices in Florida schools. The results paint a troubling picture wherein certain youth are disproportionally affected by negative and exclusionary approaches to student misbehavior. Although additional research is certainly needed, state-, LEA-, and school-wide initiatives are imperative to promote fair and appropriate responses to student behavior, and provide students with educational opportunities to which they are entitled.

Declaration of Conflicting Interests

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Note

1. "Black or African American" is used throughout the article to align with the term used by the Florida Department of Education.

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