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School Resource Officers, Exclusionary Discipline, and the Role of Context

By

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CHAPTER I

INTRODUCTION

High schools across the United States administer exclusionary discipline such as suspensions and expulsions at high rates, causing students to miss days of school and critical instructional time. For example, in the 2009-10 school year, 83 percent of U.S. public high schools administered at least one serious disciplinary action (i.e., expulsion, suspension for at least five days, or transfer to a specialized school) for the following offenses: (a) physical attacks or fighting, (b) distribution, possession, and use of illegal drugs or alcohol, and (c) use or possession of a weapon (Roberts, Zhang, Morgan, & Musu-Gillette, 2015). However, this estimate likely only captures a small proportion of the total amount of exclusionary discipline in schools; a large proportion of suspensions are for relatively minor, highly subjective, non-violent offenses such as disrespect or tardiness (Skiba, 2000). In the 2007-08 school year, for example, 42% of the serious disciplinary actions taken across all school levels nationwide were for noncriminal, nonviolent offenses categorized as “insubordination” (Roberts et al., 2015). This suggests that students are frequently excluded from school not because they have engaged in violent or criminal behavior, but because of relatively minor offenses that are frequently left up to the discretion of school personnel. It is also clear from prior research that the burden of exclusionary discipline is not borne equally by all students. There are stark racial disparities in exclusionary discipline, with Black students in particular receiving higher rates of exclusionary discipline—and therefore the associated negative consequences—than their peers (U.S. Department of Education Office for Civil Rights, 2014).

Although proponents of the use of exclusionary discipline may suggest that it has a deterrent effect that leads to improved behavior for offending students, or that removing a few troublesome students leads to better learning conditions for other students, evidence suggests otherwise. Students who have received exclusionary discipline tend to have lower academic achievement (Arcia, 2006; Kupchik, 2010; Raffaele Mendez, 2003; Suh & Suh, 2007), more behavioral problems (Tobin, Sugai, & Colvin, 1996), and increased contact with the juvenile justice system (Christle, Jolivette, & Nelson, 2005; Fabelo et al., 2011). Moreover, schools with higher rates of exclusionary discipline tend to have poorer school-level academic outcomes including higher rates of dropout and lower graduation rates (Christle, Jolivette, & Nelson, 2007) as well as poorer overall performance on standardized tests (Raffaele Mendez, Knoff, & Ferron, 2002; Rausch & Skiba, n.d.). These “collateral consequences” of exclusionary discipline are consistent across many types of schools, but are particularly salient in schools with higher rates of exclusionary discipline and low levels of violence (Perry & Morris, 2014). Although these studies have not established causal relations between exclusionary discipline and student- or school-level outcomes, an abundance of evidence points to the limited effectiveness—and probable harmfulness—of exclusionary discipline. Therefore, having such high rates of exclusionary discipline presents a problem for both students and schools, and identifying determinants of such high rates of exclusionary discipline has become a critical undertaking.

One possible explanation for why students are excluded from school at such high rates is that they engage in high levels of criminal or violent behaviors that pose a threat to their peers or even to school personnel. However, this explanation is lacking. Since the mid-1990’s, crime rates in school have markedly dropped while rates of exclusionary discipline have remained fairly constant (Robers et al., 2015). If the high rates of exclusionary discipline are not readily

explained by student-level criminal behavior, there may be other school-level factors that have maintained the exclusionary discipline rate. The purpose of this dissertation is to examine the relation of two school-level factors to schools' rates of exclusionary discipline, including both the impact of implementing school resource officers (SROs) and the extent to which schools take a zero-tolerance approach to discipline. Additionally, the studies presented here examine the variability of these relations across school contexts, with a particular emphasis on school size, racial composition, academic performance, and socioeconomic status.

Prior theoretical and empirical work is in tension regarding the expected impact of implementing SROs on exclusionary discipline; some approaches indicate that SRO implementation will reduce discipline rates by deterring students' problem behaviors while others suggest SROs will increase them by increasing detection and administering more severe punishment. Study 1 addresses this tension by examining the impact of SRO implementation on the suspension rates in high schools as well as variability in these impacts across school contexts. This study uses 14 years of suspension data from 55 high schools in Tennessee that implemented SROs at some point during those 14 years and 55 high schools that did not. Using a latent growth modeling approach, this study models the impact of implementing SROs on four different outcomes: overall suspension rates, White students' suspension rates, Black students' suspension rates, and a ratio of racial disparities in suspension rates. Although there was some inconsistency across models, the findings indicated that SROs contributed to lower rates of overall exclusionary discipline and for Black students in particular, but increased within-school racial disparities in suspension rates.

One of the major confounding variables that was not included in Study 1 is schools' overall orientation toward discipline in their policies and enforcement of them. Study 2

addressed this shortcoming by examining the relation between schools' rates of exclusionary discipline and the combination of schools' zero-tolerance approach to discipline and SRO presence. This study also examined whether these relations vary across measures of school context. A cross-sectional sample of 890 public high schools was used to estimate a series of ordinary least squares regression models predicting schools' rates of exclusionary discipline using three-way interaction terms that measured the combination of SROs, zero-tolerance approaches to discipline, and school context. The findings indicated that although there was no overall relation between the combined impact of schools' zero-tolerance approach to discipline and SRO presence, there were significant relations when also incorporating measures of school context. In particular, schools characterized by larger proportions of racial minority students and higher levels of disadvantage had higher rates of exclusionary discipline when they had both a high zero-tolerance approach to discipline and SROs present in the school. The opposite was true for schools characterized by low levels of disadvantage. These findings suggest that context matters when investigating mechanisms that may affect schools' rates of exclusionary discipline.

Together, these two studies add to a growing literature on school safety and discipline, and in particular contribute new information about how SROs relate to schools' rates of exclusionary discipline and racial differences in discipline. Both studies highlight the important role of context in examining these constructs, and find that the impacts of SROs do not appear to be the same for all types of students in all types of schools. Recommendations for research, policy, and practice are provided, with a particular emphasis on examining the potential heterogeneity in the impacts of SROs both within and between schools, and the need to think creatively about reducing exclusionary discipline rates rather than using a one-size-fits-all approach to school improvement.

CHAPTER II

STUDY I: SCHOOL RESOURCE OFFICERS, DISCIPLINE, AND RACE: A LATENT GROWTH CURVE MODELING APPROACH

A major trend in public education over the past few decades has been the importation of law enforcement into schools. This movement was fueled largely by public concerns about school crime and violence in the 1990's, punctuated by the rampage shooting at Columbine High School in 1999 (Addington, 2009; Beger, 2002; Lindle, 2008). Federal legislation attempted to address these concerns by providing funding for a variety of initiatives, including placing police in schools. For example, the Safe and Drug-Free Schools and Communities Program provided funding geared toward improving school safety as part of No Child Left Behind (2002), including the ability to hire security personnel including police officers¹. Partly as a result of such funding initiatives, the presence of law enforcement and other types of security personnel in schools has risen markedly since the 1990's. For example, in the 1996-97 school year, approximately 46% of public high schools nationwide employed some sort of security personnel (Kaufman et al., 2000); by the 2009-10 school year, this had increased to approximately 76% (Robers et al., 2015). However, this trend has not been met without skepticism, with some scholars suggesting that the presence of law enforcement in school may lead to higher rates of exclusionary discipline and increased student contact with the juvenile justice system. (Hirschfield, 2008; Kupchik & Monahan, 2006). Additionally, these negative impacts may be disproportionately borne by racial/ethnic minority students.

¹ For further discussion of the funding history related to school safety, see Casella (2003).

Nationwide, there has been increasing concern that students of color are disproportionate recipients of exclusionary discipline at school relative to their White peers. According to a report from the U.S. Department of Education Office for Civil Rights (2014), in the 2011-12 school year, Black students—who comprised 16 percent of the total student population in the United States—received between 33 and 42 percent of the total amount of exclusionary discipline. White students, on the other hand, comprised 51 percent of the total student population and received 31 to 36 percent of the total exclusionary discipline. Hispanic/Latino students also received disproportionately high rates of exclusionary discipline relative to their population size. These patterns of racial disparities have been found consistently across a variety of locations and contexts, suggesting that racial and ethnic minority students are excluded from school at higher rates than would be expected based on population alone (e.g., Costenbader & Markson, 1998; Fabelo et al., 2011; Gregory & Weinstein, 2008; Skiba et al., 2014).

Although a proliferation of research in recent years has pointed to the nationwide problem with high rates of exclusionary discipline as well as concomitant racial disparities in discipline, it is largely unknown what school-level mechanisms contribute to such high rates of exclusionary discipline. One hypothesis that has generated some theoretical support is that the involvement of police in school discipline processes has led to higher rates of discipline as well as racial disparities in discipline (Hirschfield, 2008; Kupchik, 2010). However, the current body of evidence examining the relation between police presence and exclusionary discipline is lacking, and there is no consensus on the expected direction or magnitude of any impact that police in schools might have on discipline rates (Fisher & Hennessey, 2015; Petrosino, Guckenburg, & Fronius, 2012). Moreover, extant studies have seldom considered the role of

school context when examining these relations, thereby limiting their ability to detect any differences in these relations across different school settings.

School resource officers (SROs) are one common model of school security personnel that have garnered much attention and praise in recent years. SROs are sworn police officers assigned to a particular school or school district who are responsible for maintaining school safety (Canady, James, & Nease, 2012). The National Association of School Resource Officers—the largest professional organization of SROs—subscribes to a “triad model” where SROs’ responsibilities fall into three domains: teaching, counseling, and law enforcement (Canady, et al., 2012). The actual tasks of SROs in a given school are typically explicated via memoranda of understanding between local law enforcement agencies and schools, leading to considerable heterogeneity in the daily roles and responsibilities of SROs across schools and districts (Covert, 2007; Finn, Shively, McDevitt, Lassiter, & Rich, 2005). The way in which SROs interact with students in regard to their problem behaviors is largely determined by issues of legality. SROs are typically responsible for preventing and detecting illegal behaviors, but are not supposed to be involved with punishing relatively minor infractions of school rules. Although SROs are not intended to be involved with day-to-day student discipline, there is evidence from qualitative research suggesting that SROs may nonetheless function as disciplinarians in some schools nonetheless (Finn, et al., 2005; Kupchik, 2010). Additionally, one large-scale quantitative study found that over 70% of school administrators nationwide reported that the SROs in their schools were involved in maintaining discipline in the school (Na & Gottfredson, 2013). The purpose of the current study is to examine the impact of implementing SROs on patterns of exclusionary discipline, as well as differences across racial groups and school contexts.

School Resource Officers and Exclusionary Discipline: Contrasting Theoretical Perspectives

There are contrasting theoretical frameworks that suggest that SROs might either increase or decrease the amount of exclusionary discipline in schools. On one hand, routine activity theory posits that crime occurs when there is a confluence in time and space of three factors: a suitable target, a motivated offender, and a lack of capable guardianship (Cohen & Felson, 1979). In schools, SROs may provide guardianship in spaces where students may have otherwise engaged in problem behaviors, such as hallways or cafeterias. This would suggest that schools that have implemented SROs should have lower levels of crime and victimization and therefore lower rates of exclusionary discipline due to an added sense of spatial guardianship provided by SROs. The routine activity framework is consistent with other crime control and deterrence approaches that argue that the more surveillance and guardianship there are in a school, the more likely it is that criminal behaviors will be either prevented because of the increased threat of being caught and punished, or detected and dealt with appropriately (e.g., Hirschi, 2002; Hirschi & Gottfredson, 2003).

In contrast, theories of criminalization suggest that having SROs in schools leads to increased rates of exclusionary discipline. For example, Hirschfield (2008) argues that broad structural forces such as poverty and mass incarceration are reflected in schools—especially in urban schools—and have led to discipline becoming increasingly formalized. This has resulted in students' misbehavior leading to more severe punishment than would have occurred in the absence of SROs. For example, the presence of SROs may lead to offending students interacting with the juvenile justice system rather than having their behavior problems handled within the school setting. Similarly, Kupchik and Monahan (2006) suggest that an increase in the presence

of school security measures—particularly police officers such as SROs—has led to an outsourcing of discipline where students’ behavior problems are addressed by police and the justice system rather than schools, leading to increased exclusion from school and contributing to mass incarceration. These trends are expected to be most prevalent among racial minority students and in schools comprised of larger proportions of racial minorities.

Literature Review

SROs and Exclusionary Discipline

There have been a handful of quasi-experimental studies that have examined the relation between SRO presence and exclusionary discipline outcomes. Generally, these studies can be grouped into three categories: (a) longitudinal studies without a comparison group; (b) cross-sectional studies with a comparison group; and (c) longitudinal studies with a comparison group. A recent meta-analysis of related studies found that there was a significant positive overall association between SRO presence and rates of exclusionary discipline in the longitudinal studies equivalent to approximately 21% higher rates of exclusionary discipline in schools with SROs (Fisher & Hennessey, 2015). However, there was no significant mean effect in the set of cross-sectional studies with comparison schools. The following sections provide a review of the extant research using each of these three designs, including several studies that were eligible for inclusion in the meta-analysis and several that were not.

Longitudinal studies without comparison group. There are four case studies that used longitudinal data without a comparison group from a single technical report funded by the Department of Justice and the Office of Community Oriented Policing (Finn et al., 2005). This report was a product of a national evaluation of SRO programs that included in-depth case studies of 19 sites around the country. The 19 sites were categorized as either “new” or

“established” and either “large” or “small.” Although not all of the 19 case studies included information about rates of exclusionary discipline, some did. For example, the report on a site called *Large Established Site 3* that implemented SROs in the 1995-96 school year provided seven years of data from one high school on suspensions for fighting, ranging from 1994-95 to 2000-01. In the year before SRO implementation, there were 72 suspensions for fighting; this number decreased to 48 in the year of implementation, and then to 32, 29, 28, 24, and 27 in subsequent years. The report on *Large New Site 2* provided three complete years of data (and one additional year through October 15) on reports to the sheriff’s office from all schools in the district, including one year before SRO implementation. Although reports to the sheriff’s office are not a form of exclusionary discipline, the sorts of offenses that were reported would have almost certainly warranted exclusionary discipline as well (e.g., violent crime, property crime, drug/alcohol offenses). There were 283 reports filed in the year before SRO implementation, and 374 and 397 in the two subsequent years. The report on *Large New Site 3* included six years of arrest data from one high school, including two years before SRO implementation. The number of arrests were 17 and 28 in each year before SRO implementation, peaked at 35 in the year of implementation, and then declined to 31, 12, and 18 arrests in the following years. Finally, the report on *Large New Site 4* included four years of data on suspensions from ten high schools, including one year before SRO implementation. There were 2,445 suspensions in the year before SRO implementation, 2,249 in the year of implementation, and then 2,763 and 3,230 in the following two years. A study by Wilkerson (2001) investigated the impact of SRO implementation on suspensions for violence, gang activity, and substance use in a single high school using data for 9th and 10th graders before SRO implementation and a new set of 9th and 10 graders after SRO implementation. There was no significant difference in suspension rates

between the two groups. Finally, a study by Johnson (1999) used two complete years of data (and one additional year through November) on suspensions from nine high schools, including one wave before SRO implementation. There were 4,049 suspensions in the year before implementation, 3,760 in the year of implementation, and 2,154 through November of the following year.

Although these studies were diverse in terms of sample size and outcome variables, a strong and consistent effect of SROs would provide compelling evidence regarding their relation with exclusionary discipline. Instead, however, the findings were mixed, with some results indicating that implementing SROs was associated with an increase in exclusionary discipline and others a decrease. Moreover, there were methodological limitations across all of these studies that prevent causal inferences. One of the strengths of longitudinal designs in intervention research is that post-intervention trends can be compared to counterfactual pre-intervention trends. However, none of these studies included enough pre-implementation data to estimate trends in rates of exclusionary discipline, thereby limiting the strength of the counterfactual. Four studies only used one wave of pre-implementation data, and the fourth only used two. Therefore, it is unclear what the trends in exclusionary discipline were before SRO implementation.

Although the studies generally did provide more waves of data after SRO implementation (although still not always enough to estimate a trend), the lack of pre-implementation data does not permit comparisons of trends before and after SROs were implemented. Because there were no comparison schools in these studies, the pre-intervention measures are the only counterfactuals available. Therefore, interpretation of the impact of SROs on exclusionary discipline from these four studies should be done cautiously, as their designs do not permit causal inference.

Cross-sectional studies with comparison group. Another set of studies made use of cross-sectional data to compare rates of exclusionary discipline in schools with SROs to rates in schools without SROs. For example, Link (2010) compared the differences in the number of suspensions for 10 days or more between a group of 20 school districts with SROs and 2,000 or fewer students to another group of 20 similarly sized school districts without SROs. There was no significant difference in suspensions between the two groups of schools. In a study of one large school district, arrest rate data from 13 middle and high schools with SROs were compared to those from 15 middle and high schools without SROs (Theriot, 2009). In unadjusted models, the schools with SROs had significantly higher arrest rates ($M = 11.5$, $SD = 25.1$) than schools without SROs ($M = 3.9$, $SD = 6.9$). However, when controlling for economic disadvantage, the difference was attenuated to nonsignificance. This study also examined arrest rates for a variety of specific offenses, and found that there were only significant differences for disorderly conduct in the adjusted models, with schools with SROs having higher arrest rates for disorderly conduct. Finally, a related study by Mowen (2013) examined the relation between a series of school security measures and suspension rates controlling for a variety of potentially confounding variables. Using data from 750 schools across ten states in the Educational Longitudinal Study (2002), this study found that the presence of a security officer (not necessarily an SRO) predicted higher rates of in-school suspensions, but not out-of-school suspensions.

Again, the findings from this set of studies are mixed, with some studies finding no significant relation between SRO presence and exclusionary discipline and others finding that SRO presence was associated with higher rates of exclusionary discipline. These studies' inclusion of control variables provided additional insight, although again there was no clear or consistent finding across this set of studies. Cross-sectional studies with comparison groups are a

strong design in the absence of longitudinal data, particularly when the observations in the treatment and comparison groups are as equivalent as possible, because this most closely reproduces random assignment. The studies summarized here varied in the extent to which the schools with SROs were well matched to schools without SROs. For example, the Mowen (2013) study used no matching techniques, but simply compared schools from the sample with and without security officers while controlling for a variety of potential confounders. On the other hand, Theriot (2009) tried to minimize differences by using schools from a single district, and Link (2010) only considered school districts of similar sizes from a single state. However, the studies provided little evidence that the treatment and comparison schools were well matched on theoretically relevant baseline characteristics. Regardless of how well the SRO schools were matched to non-SRO schools, this set of studies was limited by the lack of longitudinal data necessary for causal inferences. For instance, a cross-sectional, matched group study that found that SROs were associated with higher rates of exclusionary discipline would not be able to detect any changes from prior years. It is possible, for example, that the schools with SROs had even higher rates of discipline in previous years, and implementing SROs actually led to lower rates, even though there were still higher than those in the schools without SROs. Therefore, even studies using sophisticated matching strategies with cross-sectional data are limited.

Longitudinal studies with comparison group. In an effort to capitalize on the strengths of both longitudinal data and comparison group designs, a handful of studies have examined the relation between SROs and exclusionary discipline rates using longitudinal data from schools with and without SROs. For example, Barnes (2008) used five years of data on schools' rates of reported crimes (for assault, possession of a controlled substance, robbery, and weapon possession) from two groups of middle and high schools across North Carolina: those that

implemented SROs during the time of the study, and a nonequivalent group of schools that did not have SROs at any point in the study. The five years of data included one year of data before SRO implementation. Again, although the outcome variables here were not measures of exclusionary discipline, the offenses very likely would have resulted in exclusionary discipline. SRO implementation was found to have no impact on the rates of any of the reported crimes in either middle or high schools. A study by Rich-Shea (2010) used a similar design to compare six years of suspension rates in 14 public high schools with SROs and 11 without SROs, selected via a stratified random sampling procedure with schools stratified on size (i.e., the number of students enrolled). All schools in the SRO group had SROs for the entirety of the six-year timeframe of the study. The analyses associated with these six years of data were only descriptive, and included no formal testing of differences between schools with and without SROs. Nevertheless, the point estimates and overall trends indicated that the presence of SROs was associated with higher rates of in-school, out-of-school, and total suspensions. In another study using multiple waves of the nationally representative School Survey on Crime and Safety, Na and Gottfredson (2013) created a longitudinal sample of schools that had each been sampled twice across survey waves. The treatment group implemented police officers (including, but not limited to SROs) between the two measurements, and the nonequivalent comparison group did not. The outcome variables in this study included the rate of crimes recorded by the school, the percent that were reported to law enforcement, and the percent for which students were expelled, transferred, or suspended for at least five days. Findings indicated that adding police was associated with more recorded weapon and drug crime and more non-serious violence (e.g., fighting without a weapon, threat of attack without a weapon) reported to police, while none of the other results were statistically significant, including any of the traditional measures of

exclusionary discipline. Finally, in an evaluation of New York City's Impact School's Initiative that implemented school-police partnerships (not the SRO triad model), another study used two waves of data (one before program implementation) and a comparison group to study the impact of the initiative on a variety of outcomes including suspensions and criminal incidents (Brady, Balmer, & Phenix, 2007). The comparison group schools were selected because of their similarity in racial composition and student body size to the intervention schools. Analyses were descriptive, and indicated that suspension rates in both the intervention and comparison schools increased between the two waves, with the rate of increase higher in the intervention schools.

The findings across these study designs are again inconsistent. In fact, two of the studies did not include any formal hypothesis testing, but drew conclusions from descriptive statistics of percent changes over time and across conditions (Brady et al., 2007; Rich-Shea, 2010). Both of these studies indicated that schools with SROs had higher rates of exclusionary discipline than schools without SROs. Of the other two studies, Barnes (2008) found null results, and Na & Gottfredson (2013) found mostly null results, but also found that adding police was associated with increased recording of weapon and drug crime and increased reporting of non-serious violence to police. Across these four studies, a lack of consistency in the treatment, measures, and findings limits the ability to draw strong conclusions. Because this set of studies used both longitudinal data and comparison groups, they would be expected to be more methodologically rigorous and permit stronger causal inferences. However, these studies had methodological shortcomings as well. For example, none of the studies included more than one year of pre-intervention data, and only one used the pre-intervention data as a statistical control (Na & Gottfredson, 2013). Although this issue is partially mitigated by the inclusion of comparison groups, there was still not enough data to calculate rates of discipline before implementing

SROs. Additionally, there is little evidence that the comparison schools in these four studies were particularly well matched. Only two studies used any matching criteria; one matched on school size only (Rich-Shea, 2010), and the other matched on school size and racial composition (Brady et al., 2007). Therefore, across all four studies it is unclear that the differences between schools with and without SROs were minimized, limiting causal inference. Therefore, the current body of evidence regarding the impact of SROs on exclusionary discipline is limited by methodological shortcomings and provides little guidance as to an overall direction or magnitude of any impact.

The Role of School Context

School context is a theoretically relevant factor that has received limited attention in the empirical literature to date. As mentioned, the racial threat hypothesis suggests that schools with a larger proportion of racial minority students are more likely to have social control mechanisms such as SROs. Additionally, prior research shows that the roles of SROs vary greatly from school to school (Finn et al., 2005; Kupchik, 2010), and the racial threat hypothesis would suggest that their roles are likely increasingly punitive in schools with higher proportions of minority students. Indeed, policing research indicates that police tend to disproportionately stop and arrest racial minorities as compared to Whites (Alexander, 2010; Gelman, Fagan, & Kiss, 2005; Russell-Brown, 1998), suggesting that SROs may be more likely to lead to more exclusionary discipline in schools with larger proportions of racial minority students.

There are other school-level contextual variables that would also be expected to moderate the relations between schools' rates of exclusionary discipline and SRO presence and schools' zero-tolerance approach to discipline, perhaps largely because of their correlation with schools' racial composition. In particular, schools' socioeconomic status, levels of academic achievement,

and total number of students may act as moderators in similar ways as racial composition. Schools with higher proportions of minority students tend to have lower socioeconomic status (NAEP, 2015) and lower rates of academic achievement (Hanushek, Kain, & Rivkin, 2009). Additionally, prior research indicates that measures of socioeconomic status are predictive of police presence in schools, even when controlling for racial composition (Kupchik & Ward, 2014; Steinka-Fry, Fisher, & Tanner-Smith, under review). Findings from qualitative research indicated that the roles of SROs may be more oriented toward exclusionary discipline in larger and low academically performing schools (Finn et al., 2005; Kupchik, 2010). Therefore, school context is expected to play an important role in understanding how SRO presence and schools' zero-tolerance approaches to discipline might affect overall rates of exclusionary discipline as well as any racial disparities in exclusionary discipline.

Although school context has infrequently been examined in relation to the impact of SRO presence and schools' zero-tolerance approach to discipline on rates of exclusionary discipline, prior research does provide some initial insight. For instance, one study found that the relation between SRO presence and arrest rates for disorderly conduct depended on the percent of economic disadvantage in schools; implementing SROs in schools with low levels of economic disadvantage was associated with increased arrest rates, whereas the opposite was true for schools with high levels of economic disadvantage (Theriot, 2009). However, the percent of economic disadvantage was not a significant moderator when predicting arrests for assault, crimes related to weapon, drug, or alcohol use or possession, other crimes, or the total crime rate. Another study found that SRO presence was unrelated to crime rates regardless of school size (Barnes, 2008). A study using a national sampling frame found limited evidence that schools' racial composition moderated the relation between SRO presence and crimes recorded, reported

to police, or exclusionary discipline actions administered; the only significant effect was that schools with police reported more crimes to the police in schools with lower percentages of minorities (Na & Gottfredson, 2013). This effect was in the opposite direction of what would be predicted by theories of criminalization. However, the literature examining the role of school context in the relation between SRO presence and exclusionary discipline is still in its nascent stages.

Current Study

The current study builds on existing literature that has examined the relation between SRO presence and exclusionary discipline. This study extends the literature in at least three ways. First, it makes methodological advancements by using more waves of data than prior studies, allowing for the estimation of trends in exclusionary discipline both before and after the implementation of SROs, as well as using propensity score matching to minimize differences in baseline characteristics across groups of schools with and without SROs. Second, this study examines both overall rates of exclusionary discipline and also racially disaggregated rates of exclusionary discipline to specifically model whether the implementation of SROs has a different impact on White and Black students. Third, it examines the role of theoretically relevant measures of school context in the relation between SROs and exclusionary discipline, which few prior studies have done. This study is guided by the following research questions:

Research Question 1: What is the relation between implementing SROs in high schools and overall suspension rates?

Research Question 2: What is the relation between implementing SROs in high schools and suspension rates of White students?

Research Question 3: What is the relation between implementing SROs in high schools and suspension rates of Black students?

Research Question 4: What is the relation between implementing SROs in high schools and racial disparities between Black and White students in suspension rates?

Research Question 5: How are these relations associated with school contextual factors including racial composition, socioeconomic status, academic achievement, and school size?

Method

Sample and Data Collection

The sample for this study consisted of 162 public high schools in Tennessee, with 14 waves of data that came from the 2000-01 through 2013-14 school years. Schools were included in the sample if I was able to retrieve information about the presence and year of implementation of SROs in the school. This information came from multiple sources following a hierarchy of data acquisition. First, because police departments provide SROs to schools in Tennessee, I contacted police departments in the city or county in which the schools were situated. Importantly, police departments were also readily able to distinguish between SROs and other types of security personnel that are often assigned to high schools. If police departments were unable to provide this information, I then contacted school district offices to request this information. If district offices were unable to provide this information, I contacted individual schools.

The remaining data for the study—including information about suspension rates and a variety of predictors—were publicly accessible online via the Tennessee Department of Education, the U.S. Census Bureau, and the Common Core of Data (CCD) maintained by the National Center for Education Statistics. The 2000-01 school year was the earliest wave of data

collected because the Tennessee Department of Education began publishing publicly available school-level discipline data in the 2000-01 school year, and was current through the 2013-14 school year at the time of data collection.

Study Design

An ideal study testing the effects of SROs would compare outcomes for schools that were randomly assigned to an SRO condition (i.e., implemented or not). This approach was not feasible here because most high schools in Tennessee already had SROs and would likely not have agreed to random assignment where they might have to remove them. Therefore, I used a quasi-experimental design to estimate the effect of implementing SROs on suspension rates. Among the strongest designs for a longitudinal analysis of intervention effects when randomization is not possible is a comparative interrupted time series (CITS). In validation studies, CITS studies have been shown to replicate the findings of experiments when investigating school-level outcomes (Somers, Zhu, Jacob, & Bloom, 2013). In general, the CITS design is used to model outcome data measured over time in both an intervention group and a comparison group. Interventions can be included as an “interruption”—a point in time where the intervention was implemented and may begin to affect the outcome. CITS studies are not limited to using time series data (i.e., where the number of observations over time is much larger than the sample size), but can also readily accommodate panel data (i.e., where the sample size is much larger than the number of observations over time).

The CITS design is strengthened to the extent that the comparison group is equivalent to the intervention group at baseline. If the two groups are different, any detected differences in the outcomes could be due to variables that are systematically different between the two groups. One technique for minimizing the differences between treatment and comparison groups is to use

propensity score matching (Guo & Fraser, 2010). Here, the propensity scores were single numerical values assigned to each school that were derived from a probit regression model that used exogenous measures of school characteristics to predict treatment (i.e., whether schools implemented SROs). Each school's propensity score represented the likelihood that it implemented SROs given a set of characteristics. Schools from the treatment group were matched to schools in the comparison group with similar propensity scores in order to minimize baseline differences between the two treatment groups. Specifically, one-to-one nearest neighbor matching with replacement was used to identify a single school that did not implement SROs between 2000-01 and 2013-14 to function as a comparison school for each school that did implement SROs in the same timeframe. This resulted in an analytic sample consisting of 110 schools (55 in each condition).

Measures

Suspension rates. There were four dependent variables used in this study: (a) schools' overall suspension rates; (b) schools' suspension rates of White students; (c) schools' suspension rates of Black students; and (d) schools' disparities in their suspension rates of White and Black students. Suspension rates were measured as the total number of suspensions administered by a school in a given school year divided by the total number of students in the school. Therefore, a rate of 0.105 indicates that there were 10.5 suspensions per 100 students in a given school year. Rates were used rather than counts because rates are scaled for school size and are therefore comparable across schools. That is, 20 suspensions per year represents something qualitatively different in a school of 300 students compared to a school of 1500 students, but a rate of 12 suspensions per 100 students is the same in any school regardless of size. All of the data about suspensions came from the state report cards hosted on the Tennessee Department of Education's

website, which contained data collected from local education agencies. These report cards contained information about the number of students who were suspended and expelled in a given school year, disaggregated by race/ethnicity. Data about the total number of students in the school also primarily came from the state report cards; however, in a small number of years, this information was not provided in the state report cards and was instead acquired from the CCD. So, although the data on suspensions all came from the state report cards, school size data came from both state report cards, which reported net enrollment, and the CCD, which reported total enrollment. A comparison of these values in years where they were both reported indicated that they were very similar, but not identical values. For example, in the years 2009 and 2010, there was a correlation of .992 and .995, respectively, between the measures of school size from each data source.

As a measure of disciplinary disparities between Black and White students, I created a ratio of the rate of exclusionary discipline of Black students to the rate of exclusionary discipline of White students. A ratio greater than 1 indicated that Black students received exclusionary discipline at a higher rate than White students, and a ratio less than 1 indicated that White students received exclusionary discipline at a rate higher than Black students. Most prior research examining disciplinary disparities has measured it by using race (when using student-level data) or racial composition (when using school-level data) as predictors of the likelihood of receiving exclusionary discipline rather than constructing a ratio of disciplinary disparities (e.g., Na & Gottfredson, 2013; Raffaele Mendez, 2003). However, this ratio will allow for examining within-school racial disparities in suspension rates rather than only between-school differences in overall rates of suspensions.

Year of SRO implementation. The main independent variable in this study is the year in which SROs were implemented in schools. As mentioned, this information was collected from local police departments, school districts, and individual schools. Schools were part of the treatment group if they implemented SROs between 2000-01 and 2013-14 and were part of the comparison group if they did not. Therefore, the comparison group was comprised of schools both with ($n = 31$) and without ($n = 24$) SROs; this framework has been used in prior research on SROs (Na & Gottfredson, 2013).

Moderator variables. There were four variables used as moderators in this study. They included four administrator-reported variables from the Tennessee state report cards: school size (average daily count of students enrolled), academic performance (three-year composite ACT scores), racial/ethnic composition (percent White students), and socioeconomic status (percent of students receiving free or reduced price lunch). Because the values of each of these moderators differed from year to year, the mean of each variable across all 14 waves was used as a time-invariant covariate. A visual inspection of a graph of the values of each of the moderators across all waves of the study indicated that the vast majority of schools showed very little variability in the values of the moderators across the waves of the study. However, the values of the moderators in a small number of schools did vary meaningfully from year to year, particularly for school size and the proportion of students receiving free or reduced-price lunch. Therefore, modeling these four moderators as time-invariant covariates provides a close representation of the time-variant values for most schools, but only a snapshot for the few schools that had larger changes in these variables across time. Additionally, with a larger sample size, it would have been possible to explore time-varying effects of these moderators across waves, but there was not adequate power with this sample and study design. As a note, the three-year composite ACT

score measure was chosen over a single-year measure because the three-year composite includes students in multiple grades rather than a single grade. However, this may lead to higher stability in the academic performance measure across time than other measures, as each student's ACT score could be included in up to three consecutive measures of academic performance. Also, this measure likely only includes students interested in pursuing postsecondary education, as the ACT is not a required test for all students in Tennessee.

Control variables. Several control variables were used to estimate propensity scores. Because variables used in estimating propensity scores should be predictors of treatment (i.e., SRO implementation), the control variables included here were all measured in the year 2000 if they came from the Census or the 2000-01 school year if they came from state report cards or the CCD, ensuring that they could not have been affected by SRO implementation between the 2000-01 and 2013-14 school years. The set of control variables included all of the moderator variables listed above (i.e., school size, academic achievement, racial/ethnic composition, and socioeconomic status) as well as several additional variables that have been shown in prior research to be either theoretically or empirically associated with the likelihood of schools implementing SROs (see, for example, Shelton, Owens, & Song, 2009; Steinka-Fry et al., under review; Tanner-Smith & Fisher, 2015). Two additional variables from the state report cards were used as control variables: (a) graduation rate in 2000-01 (measured as the percent of new 9th graders who earned a high school diploma in 4 years, adjusting for transfers); and (b) dropout rate in 2000-01 (measured as the percent of students entering in 9th grade that had dropped out by 12th grade).

Additionally, the following two variables from the National Center for Education Statistics' CCD were used: pupil/teacher ratio, and urbanicity, which was operationalized as a set

of dummy variables including the following categories: (a) Rural: Remote; (b) Rural: Distant; (c) Rural: Fringe; (d) Town: Remote; (e) Town: Distant; (f) Town: Fringe; (g) Suburb: Small; (h) Suburb: Midsize; (i) Suburb: Large; (j) City: Small; (k) City: Midsize; (l) City: Large.

Finally, variables from ZIP code-level data from the 2000 U.S. Census were used, including: (a) median neighborhood income, and (b) the percent of White residents.

Because some of the variables used to create propensity scores could be framed as proxies for the dependent variable (i.e., suspension rates), it is possible that including them in the propensity score estimation could attenuate the observed relation between SRO implementation and subsequent suspension rates. To examine this possibility, I created new propensity scores excluding academic achievement, graduation rates, and dropout rates from the estimation model and examined the correlations between the two different propensity scores and each of the outcome variables. The correlation between the two propensity scores was high ($r = .73, p < .001$), indicating that the two methods of calculations yielded similar propensity scores. As shown in Appendix A, the association between each of the two propensity scores and each of the dependent variables was fairly consistent, suggesting that the differences between using the two methods of propensity score calculations were minimal. As such, I used the estimation model that included more variables.

Analytic Strategy

The analytic strategy used in this study was latent growth curve modeling (LGM), which is a flexible method for modeling longitudinal data using a structural equation modeling framework (Bollen & Curran, 2006). Within an LGM framework, I used multi-group modeling to simultaneously model the trends for both intervention and non-intervention schools. Additionally, I used piecewise models to estimate different intercepts and slopes pre- and post-

intervention. The multi-group and piecewise approaches allow for a single equation to estimate multiple growth factors (i.e., slopes and intercepts) that represent trends and means in rates of exclusionary discipline before and after the year when SROs were implemented for both intervention and comparison schools. This equation can be expressed as:

$$\mathbf{y}_i = \mathbf{A}\boldsymbol{\eta}_i + \boldsymbol{\varepsilon}_i$$

$$\boldsymbol{\eta}_i = \boldsymbol{\mu}_\eta + \boldsymbol{\zeta}_i$$

where the matrix \mathbf{y}_i is the repeated measure of exclusionary discipline that is allowed to vary across schools i , \mathbf{A} is a matrix of fixed time scores for each growth factor (i.e., intercepts and slopes for both pieces of the piecewise model across both groups), $\boldsymbol{\eta}_i$ is the matrix of person-specific weights for each growth factor, $\boldsymbol{\varepsilon}_i$ is the matrix of time-specific error terms, $\boldsymbol{\mu}_\eta$ is the matrix of fixed effects of each growth factor (i.e., the component that is common across all schools), and $\boldsymbol{\zeta}_i$ is the random component of each growth factor that varies across school i . To model the growth processes for multiple groups simultaneously, these equations are expanded as such:

$$\mathbf{y}_i^{(g)} = \mathbf{A}^{(g)}\boldsymbol{\eta}_i^{(g)} + \boldsymbol{\varepsilon}_i^{(g)}$$

$$\boldsymbol{\eta}_i^{(g)} = \boldsymbol{\mu}_\eta^{(g)} + \boldsymbol{\zeta}_i^{(g)}$$

where g represents the different values for each coefficient across groups, in this case intervention and comparison schools. The equality of each coefficient across groups was tested using chi-square difference tests of model fit. Chi-square difference tests are tests of model fit that compare two nested models using the difference in chi-square values of overall model fit and the difference in degrees of freedom between the two models. In this case, the models that were compared included a model with coefficients that were allowed to differ across groups and a nested model that constrained the values to be equal

The matrix notation shown above can be expanded to further examine how the piecewise model is specified, such as in this example with seven waves of data:

$$\begin{pmatrix} y_{i1} \\ y_{i2} \\ y_{i3} \\ y_{i4} \\ y_{i5} \\ y_{i6} \\ y_{i7} \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 & 0 \\ 1 & 1 & 0 & 0 \\ 1 & 2 & 0 & 0 \\ 1 & 3 & 1 & 0 \\ 1 & 3 & 1 & 1 \\ 1 & 3 & 1 & 2 \\ 1 & 3 & 1 & 3 \end{pmatrix} \begin{pmatrix} \alpha \\ \beta_{1i} \\ \alpha_{2i} \\ \beta_{2i} \end{pmatrix} + \begin{pmatrix} \varepsilon_{i1} \\ \varepsilon_{i2} \\ \varepsilon_{i3} \\ \varepsilon_{i4} \\ \varepsilon_{i5} \\ \varepsilon_{i6} \\ \varepsilon_{i7} \end{pmatrix}$$

where the column of y 's represents each school's rate of discipline at each time point, the first column of loadings represents the fixed loadings of the Piece 1 intercept, the second column of loadings represents the fixed loadings of the Piece 1 slope, the third column of loadings represents the fixed loadings of the adjustment to the Piece 2 intercept, the fourth column of loadings represents the fixed loadings of the Piece 2 slope, α_{1i} represents the mean Piece 1 intercept, β_{1i} represents the mean Piece 1 slope, α_{2i} represents the adjustment to the mean Piece 2 intercept, β_{2i} represents the mean Piece 2 slope, and the columns of ε 's represents the time-specific error for school i .

In addition to accommodating multiple groups and piecewise functions, LGM can also accommodate time-invariant covariates that predict any or all of the growth factors, expressed as:

$$\mathbf{y}_i = \mathbf{A}\boldsymbol{\eta}_i + \boldsymbol{\varepsilon}_i$$

$$\boldsymbol{\eta}_i = \boldsymbol{\mu}_\eta + \boldsymbol{\Gamma}\mathbf{w}_i + \boldsymbol{\zeta}_i$$

where $\boldsymbol{\Gamma}$ is the matrix of the effects of time-invariant covariates on each growth factor and \mathbf{w}_i is the matrix of values of the covariates that vary across school i . The effects of time-invariant covariates are interpreted as the cross-level interactions of a covariate and time.

Because there were multiple years in which SROs were implemented across the 14 waves, I scaled the data so that each school's first year with SROs was Time 6, which was the

midpoint of the available data (Time 0 through Time 6 were used to model pre-intervention trends whereas Time 6 through Time 13 were used to model post-intervention trends). Comparison schools that were matched with SRO schools were coded in the same way. For example, if a school implemented SROs in 2004-05, that school's data (and the data of the comparison school matched to it) would be scaled such that Time 6 represented data from 2004-05, Time 5 represented data from 2003-04, and so on. One advantage of combining years of implementation is that it negated any confounding effects that may have been associated with SRO implementation in any given year, thereby increasing internal validity. However, this approach resulted in missing data for schools at the beginning and end of the measurement window. For instance, in the prior example, there would be no data available at Time 0 or Time 1 because those waves would have occurred in the 1998-99 and 1999-2000 school years when data were not available. However, because the reason for missingness was systematic and could be predicted by including the year of SRO implementation in the model, observations with missing data could be included without introducing bias by using full information maximum likelihood (Bollen & Curran, 2006).

For each dependent variable, I used a model building process to construct a multiple-group piecewise LGM that best represented the data. I tested for the equality of error variance across treatment groups and across time, whether the growth factors should be fixed or random (i.e., whether there was variability across observations), whether the growth factors and their variances were equivalent across treatment groups, and whether higher order terms (e.g., quadratic, cubic) improved the model. Additionally, covariances between each random growth factor were included if they improved model fit. Each of these tests were performed using chi-square difference tests. If there was a statistically significant difference, the more constrained

model was retained; if there was not a significant difference, the more parsimonious model was retained. Additionally, for all LGM models, the RMSEA and its 95% confidence interval are reported. The RMSEA is a measure of overall model fit where values closer to zero indicate better fit (Steiger & Lind, 1980). Traditionally, cutoffs for the RMSEA have been used to indicate goodness of fit: .00 indicates perfect fit; less than .05 indicates good fit; between .05 and .08 indicates fair fit, and greater than .10 indicates poor fit.

Additionally, as shown in Table 1, all the analytic models were run according to different specifications to maximize model fit. First, I modeled the effect of SROs on suspension rates individually as well as in combination with expulsion rates. The models using suspensions only had consistently better model fit as measured by RMSEA. I also varied the number of waves of data used in the analytic models by removing the first and last waves of data, where the proportion of missing data was the highest and thus provided the least amount of data for model estimation. To accomplish this, I first ran all models with 14 waves of data, then removed data from Wave 0 and Wave 13 (i.e., the first and last waves), reran all models using 12 waves of data, and repeated the process using 10 waves of data. To assess which number of waves provided the most reliable results, I examined the pattern of RMSEA values to gauge overall model fit. Although I was unable to conduct formal comparisons, the pattern of RMSEA values indicated that the best fitting models were the ones that used 10 waves of data with exclusionary discipline rates that included only suspensions and not expulsions. One reason the models that included expulsions may not have fit as well is that student behaviors that warranted expulsions may have been so egregious that they would have resulted in the student being expelled regardless of the presence of SROs. Additionally, the final two years of data on school-level expulsion rates followed a completely different pattern from all of the prior years; in the sample

of schools included in this study, there were only expulsions reported in six school districts in 2012-13 and four school districts in 2013-14, whereas data from prior years indicated that there were expulsions in a majority of the school districts in the sample. Therefore, the results presented hereafter are from the models using 10 waves of suspension data. In social and educational research, it is recommended that CITS studies contain at least four waves of data—and preferably at least five or six—to establish reliable trends (Bloom, 2003; Somers, et al., 2013). The LGM with 10 waves of data satisfied this recommendation, with five waves of data contributing to Piece 1 and six waves contributing to Piece 2 (one wave contributed to both pieces).

To address the potential moderating effects of school size, academic achievement, socioeconomic status, and racial/ethnic composition on the relation between SRO implementation and the outcomes of interest, I used the means of these variables from 2000-01

Table 1.

RMSEA values across different outcomes and numbers of waves

| Outcome | 14 waves | 12 waves | 10 waves |
|----------------------------|----------|----------|----------|
| Suspensions only | | | |
| Total | 0.173 | 0.178 | 0.132 |
| White | 0.174 | 0.173 | 0.150 |
| Black | 0.149 | 0.156 | 0.134 |
| Racial disparities | 0.191 | 0.175 | 0.126 |
| Suspensions and expulsions | | | |
| Total | 0.199 | 0.207 | 0.178 |
| White | 0.182 | 0.190 | 0.168 |
| Black | 0.275 | 0.284 | 0.295 |
| Racial disparities | 0.285 | — | 0.325 |

Note. The model predicting racial disparities in suspensions and expulsions using 12 waves of data did not converge

to 2013-14 as time-invariant covariates predicting each mean and intercept. When adding a predictor for one of these growth factors did not improve model fit, it was not retained in the model. When a predictor of a given growth factor was added to the model in both the treatment and comparison groups, I tested the equality of these relationships using chi-square difference tests. Any difference in the estimate of the relation between a predictor and a growth factor that varies across treatment groups can be interpreted as a moderating effect. Additionally, after adding the set of predictors to each of the models, I retested the equality of each growth factor's mean and variance across treatment groups using chi-square difference tests, and changed any equality constraints that resulted in a better overall model fit.

Results

Descriptive Statistics

The mean suspension rates across all ten waves of the study are plotted in Figures 1-4. Figure 1 shows the trend in the mean overall suspension rate; schools in the treatment group began with higher overall suspension rates for the first five waves of the study, but had lower rates in the last five waves. As seen in Figure 2, the mean suspension rate for White students followed a somewhat different pattern. In all the waves except for two, the suspension rate for White students was higher in schools in the comparison group. Figure 3 displays the mean suspension rate for Black students. This pattern closely matches that of the overall suspension rates, where schools in the treatment group had higher rates of suspensions of Black students in the first five waves, but schools in the comparison group had higher rates in the last five waves. Finally, Figure 4 shows the within-school racial disparities in suspension rates, with values greater than one indicating that Black students were suspended more and values less than one indicating that White students were suspended more. Across all ten waves of the study, this ratio

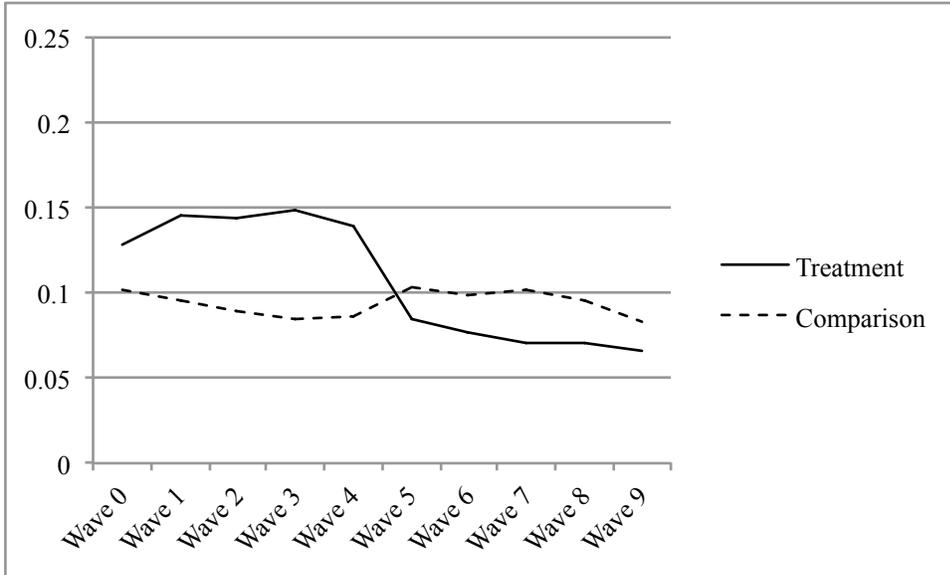


Figure 1. Mean overall suspension rates

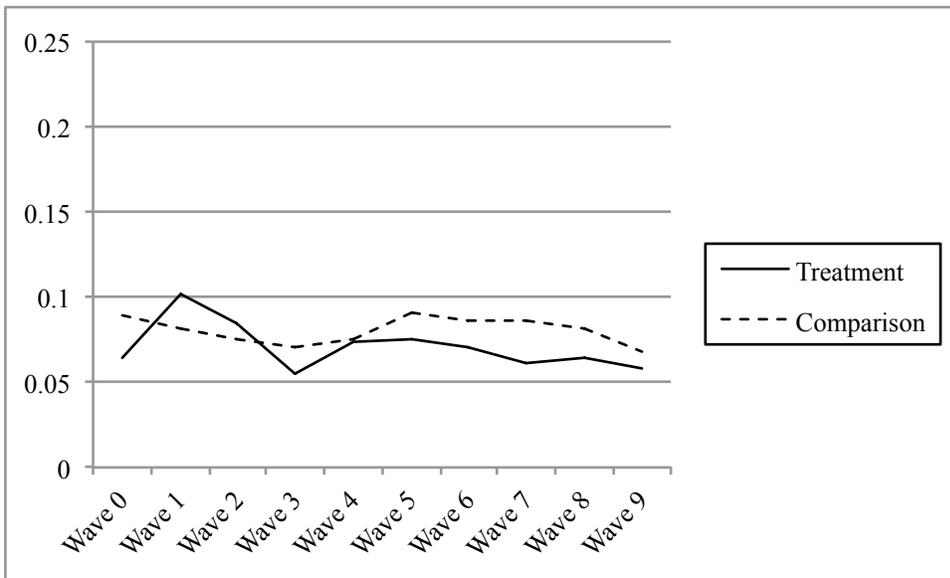


Figure 2. Mean suspension rates of White students

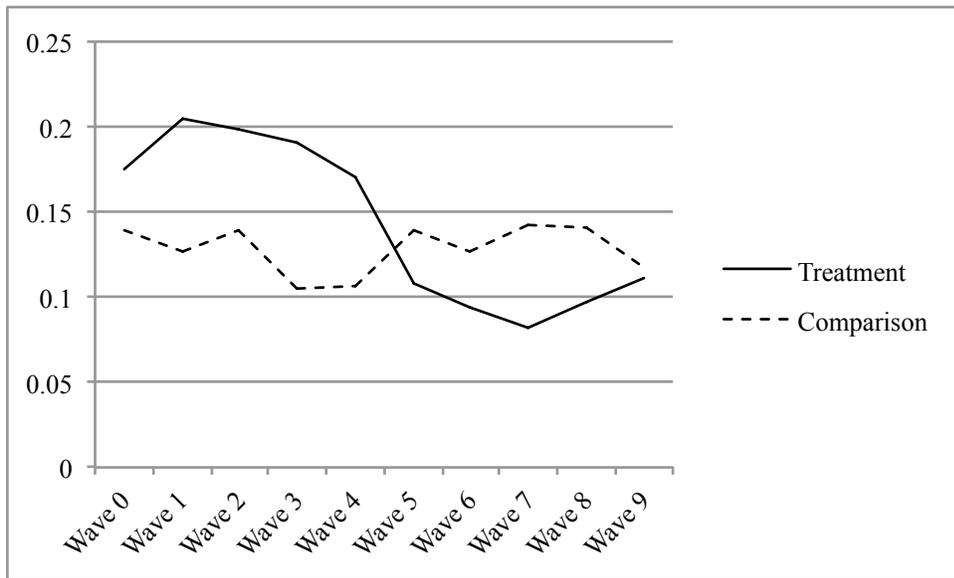


Figure 3. Mean suspension rates of Black students

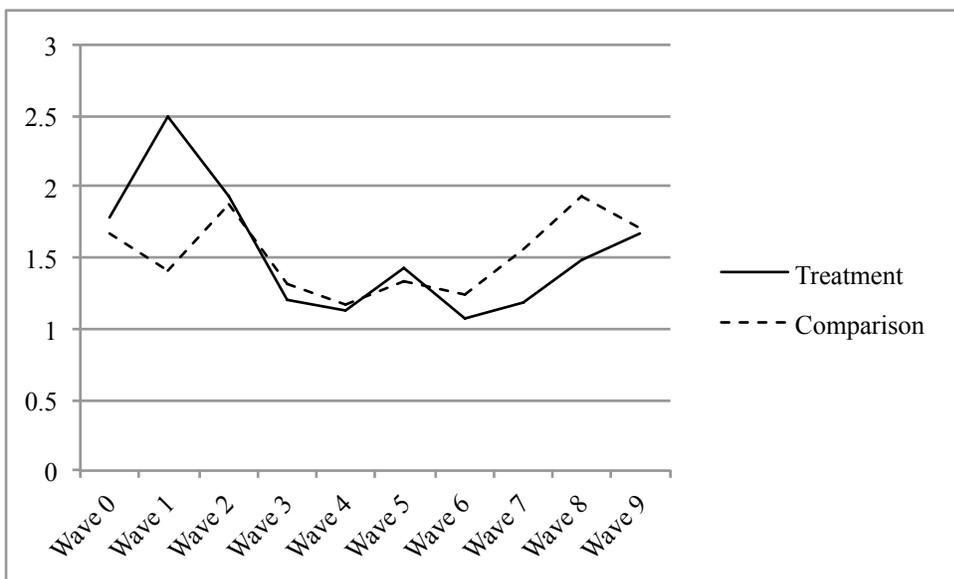


Figure 4. Mean racial disparities in suspension rates

Table 2

Correlations and Descriptive Statistics

| | Size | ACT | FRPL | % White | Treatment | | Comparison | | <i>t</i> -test | |
|---------|----------|----------|---------|---------|-----------|--------|------------|--------|----------------|----------|
| | | | | | Mean | SD | Mean | SD | <i>t</i> | <i>p</i> |
| Size | 1.00 | | | | 906.44 | 448.32 | 922.68 | 639.35 | 0.15 | .439 |
| ACT | 0.03 | 1.00 | | | 19.28 | 1.78 | 19.31 | 0.98 | 0.10 | .460 |
| FRPL | -0.29** | -0.74*** | 1.00 | | 0.51 | 0.14 | 0.51 | 0.10 | -0.11 | .542 |
| % White | -0.41*** | 0.64*** | -0.27** | 1.00 | 0.72 | 0.35 | 0.84 | 0.22 | 2.09 | .020 |

Note. ** $p < .01$; *** $p < .001$.

was greater than one, indicating that Black students were suspended more than White students across the duration of the study. The differences between the trends across treatment groups were not as evident in the graph of racial disparities in suspension rates as they were in the prior three graphs.

Descriptive statistics of the four moderators can be found in Table 2. As shown, the mean school size, 3-year composite ACT scores, and percent of students eligible for free or reduced-price lunch were not significantly different across groups. Schools in the comparison group had a significantly higher proportion of White students, ($t = 2.09, p = .020$). Table 2 also shows the correlations among the four moderators. Larger schools were associated with a lower proportion of students receiving free or reduced-price lunch ($r = -0.29, p = .003$) and a lower proportion of White students ($r = -0.41, p < .001$). Schools with a higher academic performance tended to have a lower proportion of students receiving free or reduced-price lunch ($r = -0.74, p < .001$) and a larger proportion of White students ($r = 0.64, p < .001$). Finally, schools with a larger proportion of students receiving free or reduced-price lunch tended to have a lower proportion of White students ($r = -0.27, p = .004$).

SRO Implementation and Overall Suspension Rates

Unadjusted models. The final unadjusted LGM model for the suspension rate for all students was a two-group piecewise model, RMSEA = .132, 95% CI [.105, .158]. The treatment group had unequal error variances over time, a random intercept in Piece 1, a random linear slope in Piece 1, a fixed intercept in Piece 2, and a random linear slope in Piece 2. The comparison group had equal error variances over time, a random intercept in Piece 1, a random linear slope in Piece 1, a random intercept in Piece 2, and a random linear slope in Piece 2. The means and variances of the Piece 1 intercepts and Piece 2 linear slopes were constrained to be

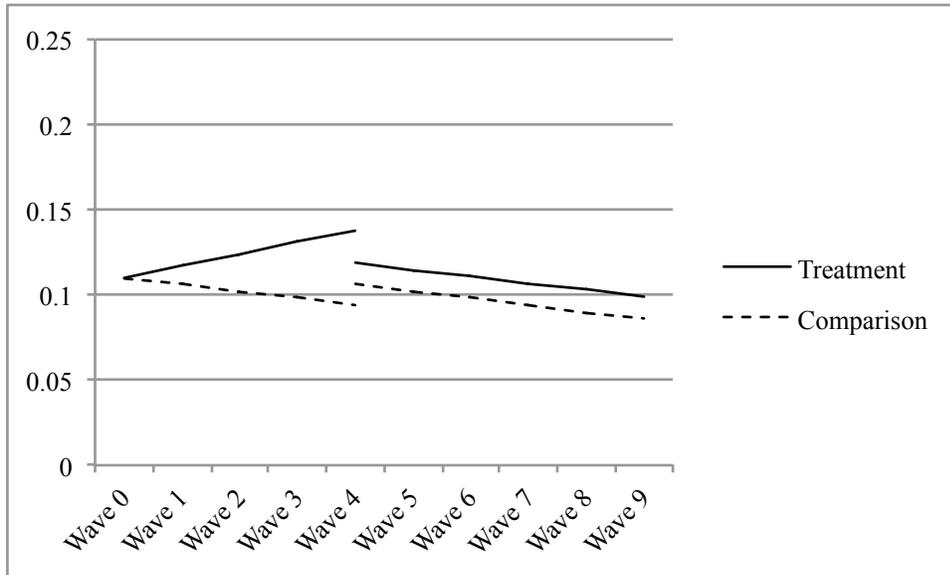


Figure 5. Model-implied overall suspension rates from unadjusted model

equal across groups. There were also covariances between the following pairs of growth factors: the Piece 1 linear slope and the Piece 2 linear slope in the treatment group; the Piece 1 linear slope and the Piece 2 intercept in the comparison group.

Table 3 provides the estimates of the means and variances of all growth factors in this model. Additionally, Figure 5 graphically displays the model-implied means of the growth factors from the unadjusted LGM model predicting overall suspension rates. In the treatment group, the mean of the Piece 1 random intercept was 0.110, $p < .001$, with a variance of 0.010, $p < .001$, indicating that the mean suspension rate at Time 0 was 11 suspensions per 100 students and that this mean differed significantly across schools. The mean Piece 1 random linear slope was 0.007, $p = .122$, with a variance of 0.000, $p < .001$, indicating that there was no significant overall change in in the suspension rate during the first five waves, but that there was significant variability in this change across schools. The mean Piece 2 fixed intercept was -0.019, $p = .040$, indicating that the overall suspension rate dropped by two suspensions per 100 students in the

Table 3.

Means and variances of growth factors from unadjusted models

| Growth Factor | Total | | | | White | | | | Black | | | | Racial Disparities | | | |
|------------------|-------------------|-------|----------|-------|-------------------|-------|----------|-------|-------------------|-------|----------|-------|--------------------|-------|----------|-------|
| | Mean | SE | Var. | SE | Mean | SE | Var. | SE | Mean | SE | Var. | SE | Mean | SE | Var. | SE |
| Treatment | | | | | | | | | | | | | | | | |
| Piece 1 | | | | | | | | | | | | | | | | |
| Intercept | 0.110*** | 0.010 | 0.010*** | 0.002 | 0.078*** | 0.006 | 0.001** | 0.000 | 0.140*** | 0.014 | 0.015*** | 0.002 | 1.778*** | 0.178 | 0.899*** | 0.223 |
| Piece 1 | | | | | | | | | | | | | | | | |
| Slope | 0.007 | 0.004 | 0.001*** | 0.000 | -0.005** | 0.002 | 0.000** | 0.000 | 0.011 | 0.007 | 0.001** | 0.000 | -0.156* | 0.071 | N/A | N/A |
| Piece 2 | | | | | | | | | | | | | | | | |
| Intercept | -0.019* | 0.009 | N/A | N/A | 0.013* | 0.005 | N/A | N/A | -0.053** | 0.020 | N/A | N/A | -0.064 | 0.218 | N/A | N/A |
| Piece 2 | | | | | | | | | | | | | | | | |
| Slope | -0.004* | 0.002 | 0.000** | 0.000 | -0.004* | 0.002 | 0.000*** | 0.000 | -0.008* | 0.004 | 0.000** | 0.000 | 0.018 | 0.055 | 0.067* | 0.026 |
| Comparison | | | | | | | | | | | | | | | | |
| Piece 1 | | | | | | | | | | | | | | | | |
| Intercept | 0.110*** | 0.010 | 0.010*** | 0.002 | 0.078*** | 0.006 | 0.006*** | 0.001 | 0.140*** | 0.014 | 0.015*** | 0.002 | 1.778*** | 0.178 | 0.899*** | 0.223 |
| Piece 1 | | | | | | | | | | | | | | | | |
| Slope | -0.004 | 0.002 | 0.000** | 0.000 | -0.005** | 0.002 | 0.000** | 0.000 | -0.008 | 0.005 | 0.000 | 0.000 | -0.156* | 0.071 | N/A | N/A |
| Piece 2 | | | | | | | | | | | | | | | | |
| Intercept | 0.012 | 0.007 | 0.001* | 0.001 | 0.013* | 0.005 | 0.001 | 0.000 | 0.010 | 0.017 | 0.003 | 0.001 | -0.064 | 0.218 | 0.819* | 0.395 |
| Piece 2 | | | | | | | | | | | | | | | | |
| Slope | -0.004* | 0.002 | 0.000** | 0.000 | -0.004* | 0.002 | 0.000*** | 0.000 | -0.008* | 0.004 | 0.000** | 0.000 | 0.018 | 0.055 | 0.067* | 0.026 |
| RMSEA and 95% CI | .132 [.105, .158] | | | | .150 [.124, .177] | | | | .134 [.107, .160] | | | | .126 [.098, .155] | | | |

Note. Variances of fixed growth factors are labeled "N/A"; "Var" refers to the variance of the growth factor; "Sig" refers to the statistical significance level; * $p < .05$; ** $p < .01$; *** $p < .001$.

year of SRO implementation and that this did not vary significantly across schools. The Piece 2 random linear slope had a mean of -0.004 , $p = .029$, with a variance of 0.000 , $p = .001$, indicating that after SRO implementation, the overall suspension rate dropped by 0.4 incidents per 100 students each year and that there was significant variability across schools.

In the comparison group, the mean of the Piece 1 random intercept was 0.110 , $p < .001$, with a variance of 0.010 , $p < .001$, indicating that the mean suspension rate at Time 0 was 11.0 suspensions per 100 students and that this mean differed significantly across schools. The mean Piece 1 random linear slope was -0.004 , $p = .074$, with a variance of 0.000 , $p < .008$, indicating that there was no significant overall change in in the suspension rate during the first five waves, but that there was significant variability in this change across schools. The mean Piece 2 random intercept was -0.012 , $p = .109$, with a variance of 0.000 , $p = 0.018$, indicating that there was no jump or drop in the suspension rate in the year of SRO implementation and that this varied significantly across schools. The Piece 2 random linear slope had a mean of -0.004 , $p = .029$, with a variance of 0.000 , $p = .001$, indicating that after SRO implementation, the overall suspension rate dropped by 0.4 incidents per 100 students each year and that there was significant variability in this trend across schools.

School context. As mentioned, the school context moderators were added to the model one at a time, and were retained if they resulted in a significant improvement in model fit according to a chi-square difference test. The model-implied means of the growth factors from the adjusted LGM predicting overall suspension rates are displayed graphically in Figure 6. In the model predicting overall rates of discipline, adding school size and academic performance both resulted in improved model fit. Specifically, in the treatment group the Piece 1 intercept was regressed on school size and academic performance, and both the Piece 1 linear slope and

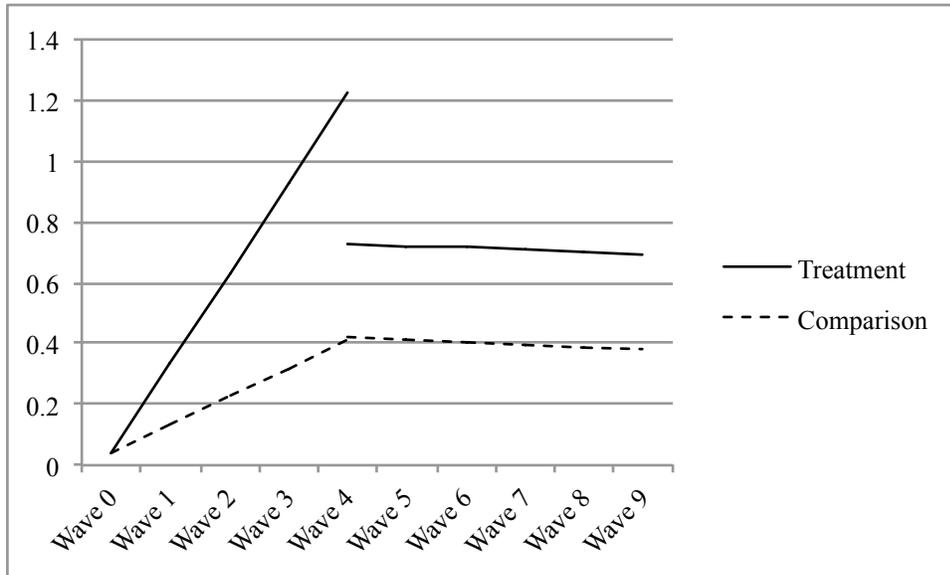


Figure 6. Model-implied overall suspension rates from adjusted model

Piece 2 intercept were regressed on academic performance. In the comparison group, the Piece 1 intercept and Piece 2 linear slope were regressed on school size and the Piece 1 linear slope was regressed on academic performance. Additionally, the variances of the Piece 1 linear slopes were constrained to be equal across treatment groups in the adjusted model. Table 4 shows the estimates of the growth factor means and variances after adding the predictors into the model. The addition of these predictors yielded a model with an RMSEA of 0.151, 95% CI [.131, .172], which was somewhat higher than the RMSEA for the unadjusted model.

Table 5 displays the estimated relations between each of the predictors and growth factors in the model. In the treatment group, school size was a significant predictor of the Piece 1 intercept ($b = 0.014, p < .001$), indicating that at Wave 0 increasing a school's size by 100 students was associated with an increase of 1.4 suspensions per 100 students. Academic performance was related to the Piece 1 linear slope ($b = -0.015, p < .001$) such that increasing the average school-wide ACT score by one point was associated with a decrease in the yearly

Table 4.

Means and variances of growth factors from adjusted models

| Growth Factor | Total | | | | White | | | | Black | | | | Racial Disparities | | | |
|---------------|-------------------|-------|----------|-------|-------------------|-------|----------|-------|-------------------|-------|----------|-------|--------------------|-------|----------|-------|
| | Mean | SE | Var. | SE | Mean | SE | Var. | SE | Mean | SE | Var. | SE | Mean | SE | Var. | SE |
| Treatment | | | | | | | | | | | | | | | | |
| Piece 1 | | | | | | | | | | | | | | | | |
| Intercept | 0.040* | 0.019 | 0.006*** | 0.001 | 0.074*** | 0.007 | 0.001* | 0.000 | 0.264*** | 0.043 | 0.006*** | 0.001 | 2.014*** | 0.248 | 0.568*** | 0.156 |
| Piece 1 | | | | | | | | | | | | | | | | |
| Slope | 0.297*** | 0.041 | 0.000* | 0.000 | -0.004** | 0.002 | 0.000** | 0.000 | 0.054 | 0.049 | 0.000 | 0.000 | -0.073 | 0.079 | N/A | N/A |
| Piece 2 | | | | | | | | | | | | | | | | |
| Intercept | -0.497*** | 0.100 | N/A | N/A | 0.013* | 0.005 | N/A | N/A | -0.034 | 0.021 | N/A | N/A | -0.060 | 0.223 | N/A | N/A |
| Piece 2 | | | | | | | | | | | | | | | | |
| Slope | -0.008** | 0.002 | 0.000*** | 0.000 | -0.004* | 0.002 | 0.000** | 0.000 | -0.010* | 0.004 | 0.000** | 0.000 | 0.042 | 0.051 | 0.037* | 0.018 |
| Comparison | | | | | | | | | | | | | | | | |
| Piece 1 | | | | | | | | | | | | | | | | |
| Intercept | 0.040* | 0.019 | 0.006*** | 0.001 | 0.074*** | 0.007 | 0.003*** | 0.001 | 0.264*** | 0.043 | 0.006*** | 0.001 | 2.014*** | 0.248 | 0.568*** | 0.156 |
| Piece 1 | | | | | | | | | | | | | | | | |
| Slope | 0.093** | 0.030 | 0.000* | 0.000 | -0.004** | 0.002 | 0.000 | 0.000 | -0.030 | 0.016 | 0.000 | 0.000 | -0.073 | N/A | N/A | N/A |
| Piece 2 | | | | | | | | | | | | | | | | |
| Intercept | 0.010 | 0.008 | 0.002* | 0.001 | 0.013* | 0.005 | 0.001* | 0.000 | 0.001 | 0.017 | 0.002 | 0.001 | -0.060 | 0.223 | 0.962* | 0.388 |
| Piece 2 | | | | | | | | | | | | | | | | |
| Slope | -0.008** | 0.002 | 0.000*** | 0.000 | -0.004* | 0.002 | 0.000** | 0.000 | -0.010* | 0.004 | 0.000** | 0.000 | 0.042 | 0.051 | 0.037* | 0.018 |
| RMSEA | .151 [.131, .172] | | | | .140 [.120, .161] | | | | .131 [.110, .151] | | | | .115 [.092, .138] | | | |

Note. Variances of fixed growth factors are labeled “N/A”; “Var” refers to the variance of the growth factor; “Sig” refers to the statistical significance level; * $p < .05$; ** $p < .01$; *** $p < .001$.

suspension rate change before SRO implementation by 1.5 suspensions per 100 students.

Academic performance was also a predictor of the Piece 2 intercept ($b = 0.025, p < .001$). This indicates that increasing the average school-wide ACT score by one point was associated with a jump in the overall suspension rate in the year of SRO implementation by 2.5 suspensions per 100 students.

In the comparison group, school size was again a significant predictor of the Piece 1 intercept ($b = 0.006, p < .001$); increasing a school's size by 100 students was associated with an additional 0.6 suspensions per 100 students at Wave 0. Academic performance was a predictor of the Piece 1 linear slope ($b = -0.005, p = .001$), indicating that a one point increase in the average school-wide ACT score was associated with a decrease in the overall suspension rate by 0.5 suspensions per 100 students in the years before SROs were implemented in the treatment group. School size was also a significant predictor of the Piece 2 linear slope ($b = 0.001, p < .001$) such that increasing a school's size by 100 students was associated with a slower annual decrease in suspension rates by 0.1 suspensions per 100 students after SROs were implemented in the treatment group. Overall, the relations between the predictors and the growth factors indicated that school size was predictive of higher suspension rates across both treatment groups and that academic performance had an inconsistent relation with overall suspension rates.

SRO Implementation and White Students' Suspension Rates

Unadjusted models. The final unadjusted LGM model for White students' suspension rate was a two-group piecewise model, RMSEA = .150, 95% CI [.124, .177]. The treatment group had unequal error variances over time, a random intercept in Piece 1, a random linear slope in Piece 1, a fixed intercept in Piece 2, and a random linear slope in Piece 2. The comparison group had equal error variances over time, a random intercept in Piece 1, a random

Table 5.

Unstandardized regression coefficients of school context predicting suspension rates

| <i>Variable</i> | Overall | | | | | | | | White | | | | | | | |
|--------------------|-------------------|-----------|---------------|-----------|-------------------|-----------|---------------|-----------|-------------------|-----------|---------------|-----------|-------------------|-----------|---------------|-----------|
| | Piece 1 Intercept | | Piece 1 Slope | | Piece 2 Intercept | | Piece 2 Slope | | Piece 1 Intercept | | Piece 1 Slope | | Piece 2 Intercept | | Piece 2 Slope | |
| | <i>b</i> | <i>SE</i> | <i>b</i> | <i>SE</i> |
| Treatment | | | | | | | | | | | | | | | | |
| School size | 0.014*** | 0.003 | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Acad. | -0.002 | 0.002 | -0.015*** | 0.002 | 0.025*** | 0.005 | — | — | — | — | — | — | — | — | — | — |
| SES | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| % White | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Comparison | | | | | | | | | | | | | | | | |
| School size | 0.006*** | 0.002 | — | — | — | — | 0.001** | 0.00 | 0.003 | 0.002 | — | — | — | — | — | — |
| Acad. | — | — | -0.005** | 0.002 | — | — | — | — | 0.003 | 0.004 | — | — | — | — | — | — |
| SES | — | — | — | — | — | — | — | — | 0.140* | 0.069 | — | — | — | — | — | — |
| % White | — | — | — | — | — | — | — | — | -0.169** | 0.049 | — | — | — | — | — | — |
| Black | | | | | | | | | | | | | | | | |
| Racial Disparities | | | | | | | | | | | | | | | | |
| <i>Variable</i> | Piece 1 Intercept | | Piece 1 Slope | | Piece 2 Intercept | | Piece 2 Slope | | Piece 1 Intercept | | Piece 1 Slope | | Piece 2 Intercept | | Piece 2 Slope | |
| | <i>b</i> | <i>SE</i> | <i>b</i> | <i>SE</i> |
| Treatment | | | | | | | | | | | | | | | | |
| School size | 0.006** | 0.002 | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Acad. | 0.001 | 0.001 | -0.001 | 0.003 | — | — | — | — | — | — | — | — | — | — | — | — |
| SES | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| % White | -0.228*** | 0.038 | -0.029 | 0.016 | — | — | — | — | — | — | -0.201* | 0.094 | — | — | — | — |
| Comparison | | | | | | | | | | | | | | | | |
| School size | 0.006** | 0.002 | — | — | — | — | 0.001* | 0.00 | -0.017 | 0.018 | — | — | — | — | — | — |
| Acad. | — | — | — | — | — | — | — | — | 0.220*** | 0.041 | — | — | — | — | — | — |
| SES | — | — | 0.047 | 0.03 | — | — | — | — | -4.938*** | 0.803 | — | — | — | — | — | — |
| % White | -0.228*** | 0.038 | — | — | — | — | — | — | -2.476*** | 0.548 | — | — | — | — | — | — |

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

linear slope in Piece 1, a random intercept in Piece 2, and a random linear slope in Piece 2. The means of all four growth factors (i.e., Piece 1 intercepts and linear slopes and Piece 2 intercepts and linear slopes) were constrained to be equal across both groups. The variances of the Piece 1 linear slopes and Piece 2 linear slopes were constrained to be equal across groups. There was also a covariance between the Piece 1 linear slope and the Piece 2 linear slope in the treatment group.

A graphical display of the model-implied means of the growth factors from the unadjusted LGM model predicting White students' suspension rates is provided in Figure 7. In the treatment group, the mean Piece 1 random intercept was 0.078, $p < .001$, with a variance of 0.001, $p = .007$, indicating that at Time 0, the mean suspension rate for White students was 7.8 suspensions per 100 students and that this mean varied across schools. The mean Piece 1 random linear slope was -0.005, $p = .006$, with a variance of 0.000, $p = 0.001$, indicating that each year before SRO implementation, the suspension rate for White students dropped by 0.5 suspensions per 100 students each year and that this differed across schools. A significant mean Piece 2 fixed intercept of 0.013, $p = .012$ indicated that in the year of SRO implementation there was an increase in White students' suspension rate of 1.3 suspensions per 100 students. The mean Piece 2 random linear slope was -0.004, $p = .018$ with a variance of 0.000, $p < .001$. This indicates that after SRO implementation, the suspension rate of White students in schools in the treatment group dropped by 0.4 suspensions per 100 students each year and that there was significant variability across schools.

In the comparison group, the mean Piece 1 random intercept had a mean of 0.078, $p < .001$, and a variance of 0.006, $p < .001$. This indicates that White students' overall suspension rate at Time 0 was 7.8 suspensions per 100 students and that there was significant variability

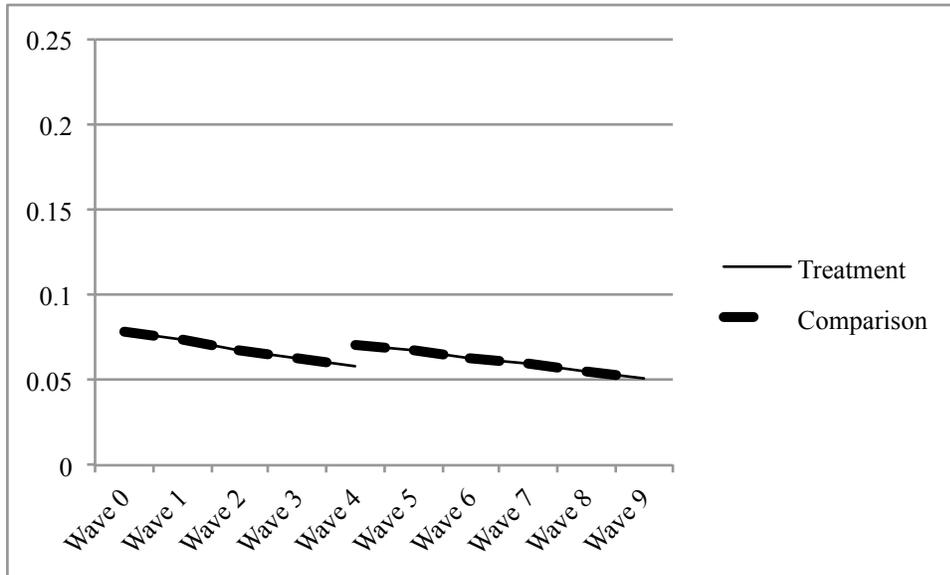


Figure 7. Model-implied suspension rates of White students from unadjusted model

across schools. The mean Piece 1 random linear slope was -0.005 , $p = .006$ and had a variance of 0.000 , $p = .001$. This indicates that in the first five waves, the suspension rate of White students decreased by 0.5 suspensions per 100 students each year, and that this amount differed across the schools in the sample. The mean Piece 2 random intercept had a mean of 0.013 , $p = .012$ and a variance of 0.001 , $p = .050$, indicating that in the year of SRO implementation, suspension rates of White students in schools in the comparison group increased by 1.3 suspensions per 100 students. Finally, the mean Piece 2 random linear slope had a mean of -0.004 , $p = .018$ and a variance of 0.000 , $p < .001$, suggesting that in the comparison group, the suspension rate of White students decreased by a mean of 0.4 suspensions per 100 students in each of the five waves after SROs were implemented in the treatment group.

School context. Figure 8 graphically displays the model-implied means of the growth factors from the LGM predicting White students' suspension rates after adding the four school context predictors. In the model predicting White students' rates of discipline, overall model fit improved when adding each of the four school context variables as a predictor of the Piece 1

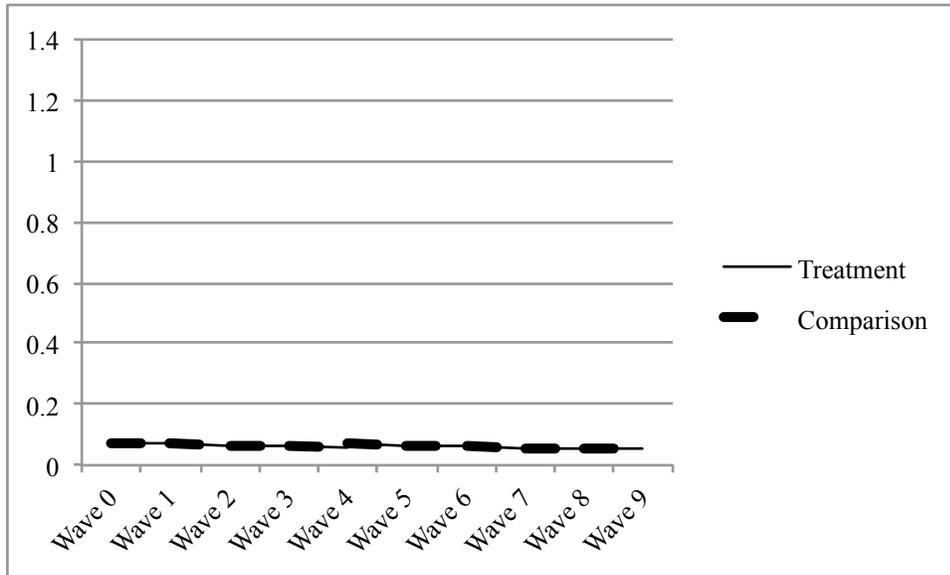


Figure 8. Model-implied suspension rates of White students from adjusted model

intercepts in the comparison group. Additionally, the cross-group equality constraint between the variances of the Piece 2 linear slopes was removed, resulting in a model with an RMSEA of .140, 95% CI [.120, .161]. Neither school size ($b = 0.003, p = .060$) nor academic performance ($b = 0.003, p = .478$) were statistically significant predictors of the Piece 1 intercept. However, the relation between school’s socioeconomic status and the Piece 1 intercept was statistically significant ($b = 0.140, p = .047$), indicating that increasing schools’ rate of students qualifying for free or reduced-price lunch by one percentage point was associated with an increase in White students’ suspension rate by 0.14 suspensions per 100 students at Time 0. Additionally, the racial composition of the school was a significant predictor of the Piece 1 intercept ($b = -0.169, p = .001$), indicating that increasing the percent of White students in a school by one percentage point was associated with a reduction in the Time 0 suspension rate of White students by 0.169 suspensions per 100 students. Together, these significant relations indicate that schools comprised of lower proportions of low-income students and higher proportions of White students tended to have lower rates of discipline at Time 0.

SRO Implementation and Black Students' Suspension Rates

Unadjusted models. The final unadjusted LGM model for Black students' suspension rate was a two-group piecewise model (RMSEA = .134, 95% CI [.107, .160]). The treatment group had unequal error variances over time, a random intercept in Piece 1, a random linear slope in Piece 1, a fixed intercept in Piece 2, and a random linear slope in Piece 2. The comparison group had equal error variances over time, a random intercept in Piece 1, a random linear slope in Piece 1, a random intercept in Piece 2, and a random linear slope in Piece 2. The means and variances of the Piece 1 intercepts and Piece 2 linear slopes were constrained to be equal across groups. There were also covariances between the following pairs of growth factors: the Piece 1 intercept and Piece 1 linear slope in the treatment group; the Piece 1 intercept and Piece 2 linear slope in the treatment group.

The model-implied means of the growth factors from the unadjusted LGM predicting Black students' suspension rates are displayed in Figure 9. In the treatment group, the mean Piece 1 random intercept was 0.140, $p < .001$ and the variance was 0.015, $p < .001$. This indicates that at Time 0 the mean suspension rate of Black students was 14 suspensions per 100 students and that this rate varied across schools. The mean Piece 1 random linear slope was 0.011, $p = .119$ with a variance of 0.001, $p = .006$, indicating that the overall suspension rate of Black students did not change significantly in the years leading up to SRO implementation, but that there was significant variability across schools. The Piece 2 fixed intercept had a mean of -0.053, $p = .007$ indicating that in the year of SRO implementation the suspension rate of Black students decreased by 5.3 suspensions per 100 students. Finally, the Piece 2 random linear slope had a mean of -0.008, $p = .028$, and a variance of 0.000, $p = .006$. This indicates that in the years following SRO implementation, suspension rates of Black students dropped by a mean of 0.8

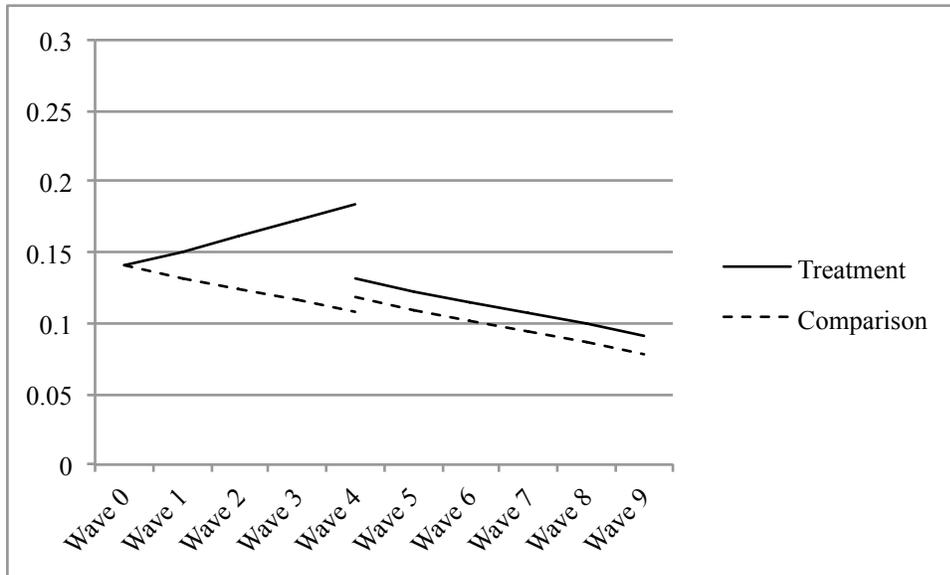


Figure 9. Model-implied suspension rates of Black students from unadjusted model

suspensions per 100 students per year, and this trend varied across schools.

In the comparison group, the Piece 1 random intercept had a mean of 0.140, $p < .001$, and a variance of 0.015, $p < .001$, indicating that the overall mean suspension rate of Black students at Time 0 was 14 suspensions per 100 students and there was significant variability in this mean. The mean of the Piece 1 random linear slope was -0.008, $p = .113$, and its variance was 0.000, $p = .651$. This indicates that in the comparison group, the suspension rate of Black students did not change significantly over the first five waves, and this was consistent across schools in the sample. The mean of the Piece 2 random intercept was 0.010, $p = .554$, and the variance was 0.003, $p = .078$, indicating that in the year of SRO implementation, the suspension rate in the comparison group did not shift in either direction. Finally, the Piece 2 random linear slope had a mean of -0.008, $p = .028$, and a variance of 0.000, $p = .006$, indicating that in each year following SRO implementation, schools in the comparison group experienced a decrease in the suspension rate of Black students by a mean of 0.8 suspensions per 100 students per year and that this trend varied significantly across schools.

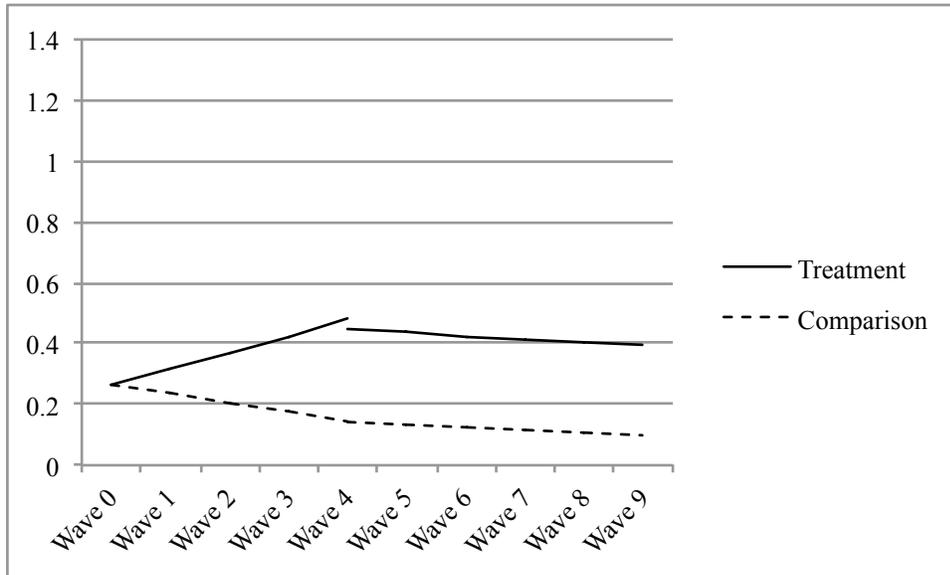


Figure 10. Model-implied suspension rates of Black students from adjusted model

School context. A graphical representation of the model-implied means from the adjusted model predicting Black students' suspension rates is provided in Figure 10. Adding all four school context variables improved model fit in the model predicting Black students' rates of suspension. Specifically, model fit improved by regressing the Piece 1 intercept on school size, academic performance, and racial composition as well as regressing the Piece 1 linear slope on academic performance and racial composition in the treatment group. In the comparison group, model fit was improved by regressing the Piece 1 intercept on school size and racial composition, regressing the Piece 1 linear slope on socioeconomic status, and regressing the Piece 2 linear slope on school size. No changes were made to the equality constraints across groups. Adding these predictors resulted in a model with an RMSEA of .131, 95% CI [.110, .151].

The impact of school size on the Piece 1 intercept was constrained to be equal across treatment groups and was a significant predictor in both groups ($b = 0.006, p = .001$), indicating that a 100 student increase in school size was associated with an additional 0.6 suspensions per

100 students at Wave 0. Similarly, the impact of racial composition on the Piece 1 intercept was held equal across groups, and was statistically significant in both groups ($b = -0.228, p = .001$); increasing the percent of White students in the school by one percentage point was associated with a decrease in the rate of Black students' suspensions by .228 suspensions per 100 students at Wave 0. In the comparison group, school size was related to the Piece 2 linear slope ($b = 0.006, p = .017$) such that an additional 100 students in a school was associated with a slower decrease in the annual change in suspension rates by 0.6 suspensions per 100 students. The remaining relations between the predictors and growth factors were not statistically significant. Together, the addition of these predictors indicated that Black students were suspended at higher rates in schools with more students and with lower proportions of White students.

SRO Implementation and Racial Disparities in Suspension Rates

Unadjusted models. Figure 11 provides a graphical representation of the model-implied means of the growth factors from the unadjusted model predicting the racial disparities in suspension rates between Black and White students. The final unadjusted LGM model for the ratio of Black to White students' suspension rates was a two-group piecewise model, RMSEA = .126, 95% CI [.098, .155]. The treatment group had unequal error variances over time, a random intercept in Piece 1, a fixed linear slope in Piece 1, a fixed intercept in Piece 2, and a random linear slope in Piece 2. The comparison group had unequal error variances over time, a random intercept in Piece 1, a fixed linear slope in Piece 1, a random intercept in Piece 2, and a random linear slope in Piece 2. The means of all four growth factors (i.e., Piece 1 intercepts and linear slopes and Piece 2 intercepts and linear slopes) were constrained to be equal across both groups. The variances of the Piece 1 intercept and Piece 2 linear slope were constrained to be equal across groups. There was also a covariance between the Piece 1 intercept and Piece 2 intercept in

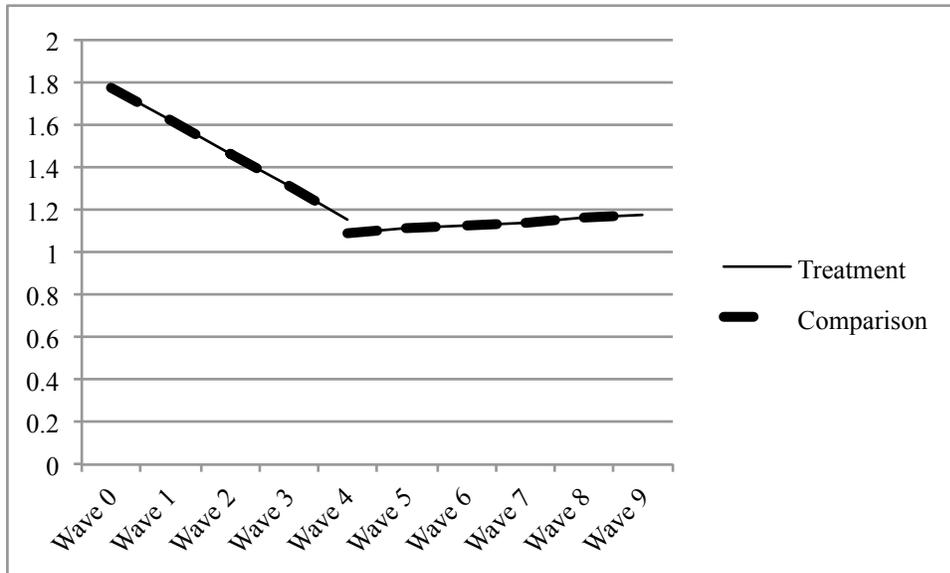


Figure 11. Model-implied racial disparities in suspension rates from unadjusted model

the comparison group.

In the treatment group, the mean of the Piece 1 random intercept was 1.778, $p < .001$, and the variance was 0.899, $p < .001$. This indicates that at Time 0, Black students were suspended at a rate 77.8% higher than White students and there was significant variability across schools. The mean of the Piece 1 fixed linear slope was -0.156, $p = .029$, indicating that this disparity decreased by an average of 15.6 percentage points in each of the waves before SRO implementation. The Piece 2 fixed intercept mean of -0.064, $p = .769$, indicates that there was no shift in racial disparities in suspensions in the year of SRO implementation. Finally, the Piece 2 random linear slope had a mean of 0.018, $p = .744$ and a variance of 0.067, $p = .010$, indicating that after SRO implementation, schools' mean racial disparities in suspension rates did not change over time, but there was significant variability across schools.

In the comparison group, the Piece 1 random intercept had a mean of 1.778, $p < .001$, and a variance of 0.899, $p < .001$, indicating that at Time 0, schools in the comparison group had higher suspension rates among Black students than White students by 77.8% and that this varied

significantly across schools. The mean of the Piece 1 fixed linear slope was $-0.156, p = .029$, indicating that the racial disparities in suspension rates decreased by 15.6 percentage points per year in the time before SROs were implemented in the treatment group. The mean of the Piece 2 random intercept was $-0.064, p = .769$, and its variance was $0.819, p = .038$. This indicates that in the year of SRO implementation, schools in the comparison group did not experience an overall mean change in their racial disparities in suspension rates, but there was significant variability in this effect across schools. The Piece 2 random linear slope had a mean of $0.018, p = .744$, and a variance of $0.067, p = .010$, indicating that schools in the comparison group saw no overall mean change in racial disparities in suspension rates in the years following SRO implementation in the treatment schools.

School context. The model-implied means of the growth factors from the adjusted LGM predicting racial disparities in suspension rates is provided in Figure 12. In the comparison group, model fit improved when the Piece 1 intercept was regressed on each of the four predictors. In the treatment group, overall model fit was improved by regressing the Piece 1 linear slope on the percent of White students. No changes were made to the equality constraints across groups. Adding predictors to the model resulted in an RMSEA of .115, 95% CI [.092, .138]. This relation between the Piece 1 linear slope and racial composition in the treatment group was statistically significant ($b = -0.201, p = .032$) indicating that increasing the percent of White students in a school by one percentage point was associated with an annual decrease in disciplinary disparities by 0.002 across each of the first five waves. Three of the predictors of the Piece 1 intercept in the comparison group were statistically significant. First, the relation between academic performance and the Piece 1 intercept was significant ($b = 0.220, p < .001$), indicating that a one point increase in a school's mean ACT score was associated with an

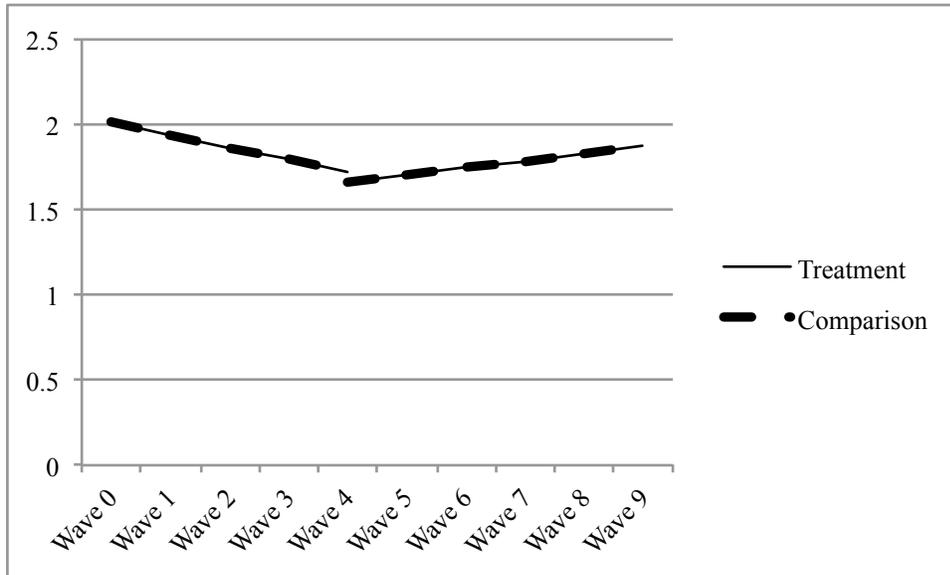


Figure 12. Model-implied racial disparities in suspension rates from adjusted model

increase of 0.220 in the measure of racial disparities in suspension rates at Wave 0. Second, the relation between socioeconomic status and the Piece 1 intercept was also statistically significant ($b = -4.938, p < .001$). This indicates that a one percentage point increase in the percent of students eligible for free or reduced-price lunch was associated with a reduction in racial disparities in suspension rates by 0.049 at Wave 0. Third, the relation between racial composition and the Piece 1 intercept was statistically significant ($b = -2.476, p < .001$), indicating that increasing the percent of White students in the school by one percentage point was associated with a reduction in racial disparities in suspension rates at Wave 0 by 0.025.

Discussion

Over the past two decades, rates of exclusionary discipline have remained high even as school crime rates have decreased (Roberts et al., 2015). The implementation of SROs has become increasingly widespread, but little research has examined the impact of SROs on exclusionary discipline. Even fewer studies have examined the role of school context. The current study made use of 14 waves of data from a statewide sample of Tennessee high schools

to model the impact of SRO implementation on schools' overall suspension rates, the differential impacts by race, and within-school racial disparities in suspension rates. Additionally, it incorporated data from multiple sources to create propensity scores that were used to match treatment schools to comparison schools, thereby reducing the impact of selection bias. The use of LGM allowed for modeling trends both before and after SRO implementation across treatment groups as well as testing differences across groups within a single model. Finally, the inclusion of four variables related to school context provided insight into whether and how the relation between SRO implementation and suspension rates may vary across different contexts.

Both the unadjusted and adjusted LGM models predicting overall suspension rates indicated that SRO implementation was associated with a decrease in the overall suspension rate as well as a decrease in suspensions in the year of implementation. Additionally, the overall suspension rate in the treatment schools was higher than that in the comparison schools for the duration of the study. However, the rate of decrease in suspension rates after SRO implementation was equivalent across the treatment and comparison groups, indicating that changes in the overall suspension rate in the treatment schools were very similar to those in the comparison schools across the final waves of the study. The models predicting Black students' suspension rates followed a similar pattern; although Black students were suspended at higher rates in the treatment group across the duration of the study, this gap narrowed after SRO implementation, at which point the rate of change in Black students' suspension rates was the same across the treatment and comparison groups. SRO implementation appeared to have very little impact on White students' suspension rates. All of the growth factor means were identical across the treatment and comparison groups, indicating that any changes in one group were paralleled in the other. A similar pattern was evident in the unadjusted model predicting racial

disparities in suspension rates; there was no evidence that SRO implementation was associated with changes in within-school rates of racial disparities in suspension rates.

There was evidence that school context did matter, although there were few strong and consistent patterns in how school context was associated with SROs' relation to each of the outcomes. Increases in school size predicted higher initial rates of overall suspensions and Black students' suspensions, indicating that larger schools tended to have higher suspension rates at Time 0. Academic performance was predictive of the overall suspension rates, but in an inconsistent direction; better academic performance was associated with a decrease in the suspension rate in both groups before SRO implementation, but was associated with a jump in suspension rates in the treatment schools in the year of SRO implementation. Schools' socioeconomic status was only predictive of White students' initial rates of suspension such that in the comparison group, schools with a larger proportion of students receiving free or reduced-price lunch tended to have higher suspension rates of White students. Finally, the racial composition of the schools was predictive of both White and Black students' suspension rates as well as the disciplinary disparities. Schools with more White students had lower initial suspension rates of White students in the comparison schools, Black students in both treatment groups, as well as lower within-school racial disparities in the comparison group. Additionally, a higher proportion of White students was associated with a greater reduction in disparities in the treatment school before SRO implementation. Altogether, although there was some inconsistency, it appeared that schools tended to have higher suspension rates when they were larger, had more low-performing students, and had lower proportions of White students. There was little evidence of a consistent moderating effect of any of these school context variables on the relation between SRO implementation and the outcomes of interest.

However, it is worth noting that after incorporating all four of the predictors into the models, there were changes to the model parameters that were not necessarily associated with one single predictor. Note, however, that the following changes are only descriptive, and no formal difference tests were possible across models. First, the Time 0 overall suspension rate was lower after incorporating the four predictors; the unadjusted model estimated that there were 11 suspensions per 100 students at Time 0, whereas the adjusted model estimated that there were only four. However, the adjusted model also indicated that the overall suspension rate increased at a higher rate in Piece 1 of the model across both groups, resulting in a higher overall suspension rate in the adjusted model across the remaining waves. The addition of the four predictors did not result in meaningful changes in the pattern of White student's suspension rates, but did yield higher estimates of Black students' suspension rates. The unadjusted model estimated the initial suspension rate of Black students as 14 suspensions per 100 students, whereas the adjusted model estimated it was 26.4 suspensions per 100 students, nearly doubling the original estimate. In fact, the estimated suspension rate for Black students was higher in the adjusted model at every wave across both treatment groups than it was in the unadjusted model. Perhaps unsurprisingly, the ratio of racial disparities was also larger in the adjusted models, with higher point estimates at every wave across both treatment groups as compared to the unadjusted model. These findings indicate that after controlling for school size, academic performance, socioeconomic status, and racial composition, the estimate of the overall suspension rate, the suspension rate of Black students, and racial disparities in suspension rates were all higher.

The findings from this study offer some support to theories such as routine activity theory that suggest that the presence of SROs is expected to decrease suspension rates. This is particularly true for overall suspension rates and the suspension rates of Black students, where

the rates in the treatment group were increasing relative to the comparison group before SRO implementation, but then dropped in the year of implementation and subsequently mirrored the rates in the comparison group. The observed decrease in Black students' suspension rates is not congruent with theories of criminalization that suggest that implementing SROs would lead to increased exclusion of Black students. Similarly, the lack of observed impact on racial disparities in suspension rates was inconsistent with such theories. However, this study did not include other types of exclusionary punishments such as expulsions, arrests, or transfers to alternative schools that tend to occur more frequently in schools with higher proportions of Black students. For instance, it is possible that whereas Black students would have received suspensions in schools without SROs, the introduction of SROs resulted in even more severe forms of punishment. In fact, when testing the model fit among models using the combination of suspensions and expulsions as outcome variables, there was poorer model fit (see Table 1). This indicates that the implementation of SROs alone may not be an adequate explanation for changes in exclusionary discipline. To investigate the possibility that the reduction in suspensions was accompanied by an increase in more severe forms of discipline, I calculated the mean overall expulsion rate and the mean expulsion rate of Black students for all schools in the treatment group both before and after SRO implementation. The mean overall expulsion rates ranged from 2.6 to 3.9 expulsions per 100 students in the waves prior to SRO implementation and ranged from 0.3 to 1.8 expulsions per 100 students after SRO implementation, indicating that the mean expulsion rate in each wave after SRO implementation was lower than the mean expulsion rate in each wave before SRO implementation. A similar trend was present for Black students' expulsion rates. Before SRO implementation, the mean expulsion rate of Black students ranged from 2.4 to 4.2 expulsions per 100 students, whereas it ranged from 0.2 to 0.9 expulsions per 100 students after

SRO implementation. These trends suggest that the decrease in the suspension rates detected in the LGM models was not likely to be explained by an attendant increase in expulsion rates.

Future research should continue to examine the impact of SROs on a variety of student outcomes, including various types of exclusionary discipline. However, it is necessary to improve on the methods used in prior research in order to afford stronger conclusions about the causal impacts of SROs. This includes examining trends over time and establishing a strong counterfactual against which schools with SROs can be compared. The current study provides a step toward this, but more research is imperative. Additionally, researchers should continue to examine reasons for the variability in SROs' impacts across schools. This study found that changes in suspension rates after SRO implementation varied significantly across schools; although the predictors included here did not provide evidence of being systematically related to the impacts of SROs, there is heterogeneity that is potentially explainable by school-level characteristics. In addition to examining the variability in overall impacts, research should continue to examine racial differences in the impacts of SROs both within and between schools. Although racial disparities in discipline seem to be driven largely by between-school differences, there is also evidence that within-school disciplinary disparities are of concern, particularly between Black and White students (Sartain et al., 2015). Further understanding the dynamics leading to these disparities so is a critical task for researchers, and studying the day-to-day roles and responsibilities of SROs may be one promising direction.

Limitations

Although the reason for implementing SROs is often to improve school safety or to prevent crime in school, this study is unable to address whether SROs make schools safer or reduce crime in schools. Although suspensions are sometimes used as a proxy for school crime

in related research, prior studies have shown that most suspensions are administered for relatively minor, nonviolent, noncriminal offenses (Skiba, 2000). Additionally, implementing SROs provides schools with an additional person available to detect student misbehavior. Therefore, any difference in behaviors might be masked by a change in detection. This study's findings on suspension rates cannot be extrapolated to conclusions about overall student behavior or school safety. Additionally, this study is unable to make claims about the differences between schools with and without SROs. The comparison group was comprised of schools that did not implement SROs during the 14 waves included in the study, and 31 of the 55 comparison schools had already implemented SROs.

One limitation of this study is that several of the 95% confidence intervals of the RMSEA values for the LGM models only included values greater than .10, indicating poor overall model fit. Models with poor overall fit are limited in their interpretability, as the models are not good matches to the data that generated them. However, it should be noted that traditional RMSEA cutoff values have been met with some criticism, with some studies indicating that the RMSEA is largely dependent on sample size, degrees of freedom, and model specification, indicating that universal cutoff values may not be appropriate (Chen, Curran, Bollen, Kirby, & Paxton, 2008). Therefore, although the LGM models in this study likely do not have close overall fit to the generating data, it may not be appropriate to dismiss them as uninterpretable, particularly given how close the lower bounds of the RMSEA confidence intervals were to .10.

Another limitation of this study is that it was unable to disentangle any impact of SROs from other changes to schools that occurred in the same year. For example, it is possible that in the years that SROs were implemented in schools, there was a more widespread change in how student discipline was handled among all school personnel. Similarly, schools may have

implemented other school security measures in the same year as implementing SROs. In these circumstances, any impact of SROs would be confounded with the other changes in school discipline. SROs are part of a larger disciplinary regime that includes policies and procedures for addressing student behavior that go beyond the mere presence or absence of an SRO.

Additionally, the roles of SROs varies considerably across schools, and these roles are associated with different outcomes regarding student discipline. Therefore, any subsequent analyses should consider the variability in the assigned duties and daily functions of SROs.

Although the propensity score matching was able to match treatment and comparison schools on their suspension rates at Wave 0, they were not matched on pre-implementation trends; the suspension rates for schools in the treatment group increased, whereas suspension rates for those in the comparison group decreased. This was an unexpected finding, as the propensity score matching should have equated both groups on their suspension rates at all time points before SRO implementation. However, this difference also points to the possibility that the reduction in suspension rates in the treatment group could also be explained by regression to the mean. For instance, it is possible that schools in the treatment group implemented SROs because they observed increasing discipline problems within the school, and believed that an SRO would help reduce those problems. However, regression to the mean would suggest that those problems would have normalized and the suspension rates of schools in the treatment group would have decreased regardless of the presence of SROs. The schools in the comparison group, however, saw fairly consistent rates of decrease across all waves of the study. This may be because this group of schools was relatively stable in regard to discipline; schools that already had SROs may have stabilized trends that occurred before the timeframe of this study, and schools without SROs may not have experienced rapid increases in student discipline, and

therefore may not have seen a need for SROs. As such, more data on schools' history, needs, and cultures would have been useful for improving the matching of treatment schools to comparison schools and reducing the plausibility of competing explanations for the changes in suspension rates over time.

The analyses that included the four moderator variables were limited because they were modeled as time-invariant covariates rather than time-varying covariates. Although the analytic models in this study did not have the degrees of freedom to support the inclusion of time-varying covariates with different slopes and intercepts at each wave, there is likely some degree of year-to-year change in the impact of school size, academic achievement, socioeconomic status and racial composition on suspension rates. However, because most schools showed very little variability in the values of these four moderators across time, it is likely that modeling them as time-invariant covariates was appropriate for many schools in the sample. Future research should examine how drastic changes in school contextual characteristics (e.g., dividing a single school into two schools) affect disciplinary outcomes and the impact of SROs. One moderator variable that was particularly problematic was academic performance, which was measured as the three-year average of students' composite scores on the ACT. Because all students are not required to take the ACT, this measure could be representative of the academic performance of only the highest achieving students in a school. There was no information available about the number or proportion of students that took the ACT, so I was unable to assess the extent to which this three-year average was representative of the student body.

This study was also limited by the sample; rather than having a census of high schools from across the state, the sample was limited to those with personnel from police departments and school districts that were willing and able to provide information about when SROs were

implemented. Although there is little reason to believe that the impact of SROs would systematically differ across schools that were or were not able to provide this information, the extent to which these findings generalize is unclear. Additionally, the fact that all the schools came from Tennessee limits the generalizability to Tennessee, particularly because of the possible state-to-state differences in political tendencies, disciplinary policies and practices, and how SROs are used in schools.

Conclusion

This study contributes to a growing research base examining the impacts of SROs and offers some methodological advances including the use of more waves of data for estimating trends and examining the role of school context. SROs continue to be an expensive intervention, and their impacts are not well understood. Researchers should continue to examine their impacts on a variety of outcomes in diverse contexts with multiple stakeholders in mind. Schools should critically examine their own needs in terms of school safety to determine whether SROs are necessary, and if so, to clearly limit the ways in which SROs interact with school disciplinary processes, with some means of accountability for maintaining this separation. Policymakers should think creatively about efforts to make schools safer, and explore evidence-based options that ensure positive outcomes for schools and students alike.

CHAPTER III

STUDY 2: RACIAL THREAT, ZERO-TOLERANCE, AND SCHOOL RESOURCE OFFICERS: THE IMPORTANCE OF CONTEXT IN UNDERSTANDING SCHOOL DISCIPLINE

Concurrent with the increasing prevalence of SROs has been the expansion of zero-tolerance policies. Zero-tolerance policies may be defined as policies that “[mandate] the application of predetermined consequences, most often severe and punitive in nature, that are intended to be applied regardless of the gravity of behavior, mitigating circumstances, or situational context” (American Psychological Association Zero Tolerance Task Force, 2008; U.S. Department of Education, 2014). One of the first widespread uses of zero-tolerance policies arrived with the Gun Free Schools act in 1994, which mandated that schools expel students who bring weapons to school. Since then, many schools and districts have expanded this policy to include offenses such as fighting and drug or alcohol possession or use (Hoffman, 2014; Skiba & Rausch, 2006). Schools might not have formal zero-tolerance policies on the books, but still might have a zero-tolerance approach to discipline if they administer severe exclusionary punishments to students for certain offenses with minimal regard to context or circumstances.

As schools have increased their use of both security personnel and zero-tolerance approaches to discipline, national rates of juvenile crime in general—and school crime in particular—have been on the decline. For example, data from the National Crime Victimization Survey from 1992 through 2013 indicate that the overall rate of nonfatal victimization at school of students ages 12-18 dropped by over two-thirds between 1992 and 2013 (Robers et al., 2015).

However, rates of exclusionary discipline have remained high. Rates of disciplinary actions (including suspensions for five or more days, expulsions, and transfers to specialized schools) remained fairly consistent from the 1999-2000 through 2009-10 school years for offenses including physical attacks or fights, insubordination, drug and alcohol use or possession, and weapon use or possession (Roberts et al., 2015). The difference between the trends in school crime and exclusionary discipline is striking; one might expect that as crime rates declined, the exclusionary discipline administered in schools would have declined as well. However, even as school crime has markedly declined, exclusionary discipline has followed a different pattern entirely. If crime rates do not appear to explain the high rates of exclusionary discipline, it is likely that other school-level factors may offer an explanation.

Zero-tolerance Approaches to Discipline: Theoretical Frameworks

In addition to the presence of SROs (as discussed in Study 1), another school-level factor that may be related to rates of exclusionary discipline is school's discipline policies. In particular, the extent to which schools take a zero-tolerance approach to discipline may relate to the overall rates of exclusionary discipline. On one hand, the underlying logic of zero-tolerance—consistent with crime deterrence theories—suggests that taking a higher zero-tolerance approach to discipline should be expected to reduce overall rates of discipline. The American Psychological Association Zero Tolerance Task Force (2008) identified two key assumptions of zero-tolerance approaches to discipline. First, consistent with crime deterrence theory, such a discipline structure will have a deterrent effect on student misbehavior (Ewing, 2000). In other words, if students know that the punishment for certain offenses is severe, or observe their peers receiving exclusionary discipline for certain offenses, they will be less likely to commit those offenses. Second, the removal of offending students will improve the school

climate for the rest of the students as well as teachers and administrators (Public Agenda, 2004). This improved school climate should in turn improve student- and school-level behavioral and academic outcomes.

However, procedural justice theory (Lind & Tyler, 1988; Tyler, 2006) provides contrasting expectations. In particular, this theory suggests that students' perceptions of the fairness of the school discipline process is paramount in whether the policies will lead to behavior change. Rules that are perceived as unfair are unlikely to be followed, whereas fair rules are expected to foster behaviors more in line with the school's expectations. Because zero-tolerance policies by definition do not provide a way for school personnel to exercise discretion or consider mitigating circumstances, it is likely that students perceive these policies as unfair. Therefore, procedural justice theory would suggest that schools that take a higher zero-tolerance approach to discipline may have higher overall rates of exclusionary discipline because students perceive the rules as unfair and therefore are less willing to follow them.

Racial Threat and the Role of School Context

School context is a theoretically important factor that has received limited attention in relevant empirical literature to date. In particular, the racial threat hypothesis suggests that as the proportion of racial minorities grows, there will be more forms of social control that serve to maintain the status quo and preserve racial power dynamics (Blalock, 1967; Blumer, 1958; Crawford, Chiricos, & Kleck, 1998; Liska, 1992). Underlying this hypothesis is the notion that there are a limited amount of power or resources available, and those in power (i.e., Whites) work harder to maintain that power via social control mechanisms as perceived threats to that power (i.e., the proportion of racial minorities) grows. As more social control mechanisms are introduced in schools, there is an increased opportunity to detect and punish student misbehavior.

Because these social control mechanisms are expected to be disproportionately implemented in schools with larger proportions of racial minority students, any effects of these social control mechanisms will be disproportionately felt in such schools.

In the racial threat perspective, one method of social control is the use of school security measures (including SROs) to monitor students' behavior. Prior research indicates that schools with larger proportions of racial minority students are more likely to use forms of school security such as metal detectors or drug sniffing police dogs (Kupchik & Ward, 2014) as well as heavier overall patterns of visible school security and surveillance mechanisms (Steinka-Fry et al., under review). This same pattern applies to security personnel in particular. In the 2009-10 school year, 30% of schools with less than five percent racial/ethnic minority students had security personnel, compared to 53% of schools comprised of a majority of racial/ethnic minority students (Robers et al., 2015). Consistent with the racial threat hypothesis, these patterns of school security measure usage provide support for the contention that social control mechanisms are more prevalent in schools characterized by larger proportions of racial minority students. Although the racial threat hypothesis provides insight into between-school dynamics relative to social control mechanisms and student discipline, it does not address within-school differences, which contribute substantially to the high rates of racial disparities in exclusionary discipline, particularly between Black and White students (Sartain et al., 2015).

A second form of social control in schools is school disciplinary policies, particularly zero-tolerance approaches to discipline. Again, there is evidence in support of the racial threat hypothesis in regard to school discipline. Schools with higher proportions of Black and Hispanic students are more likely to (a) have harsher disciplinary policies available to use against students, and (b) use harsher discipline—particularly exclusionary discipline such as suspensions and

expulsions—regardless of what disciplinary options are available to them (Payne & Welch, 2010; Welch & Payne, 2010; Welch & Payne, 2012). These findings indicate that the written policies as well as the way that they are administered by school personnel are more exclusionary in schools with larger proportions of racial minority students. This is further evidence of the increased use of social control mechanisms (i.e., school discipline policies) in schools with larger proportions of racial minorities.

Beyond racial composition, there are other school-level contextual variables that would also be expected to relate to schools' rates of exclusionary discipline, SRO presence and schools zero-tolerance approach to discipline, largely because of their correlation with schools' racial composition. In particular, schools' socioeconomic status, levels of academic achievement, and total number of students may act as moderators in similar ways as racial composition. Schools with higher proportions of minority students tend to have lower socioeconomic status (NAEP, 2015) and rates of academic achievement (Hanushek et al., 2009). Therefore, these variables can be seen as proxies for racial composition. Additionally, prior research indicates that measures of socioeconomic status are predictive of police presence in schools, even when controlling for racial composition (Kupchik & Ward, 2014; Steinka-Fry et al., under review). Findings from qualitative research indicate that the roles of SROs may be more oriented toward exclusionary discipline in larger and low academically performing schools (Finn et al., 2005; Kupchik, 2010). Therefore, school context is expected to play an important role in understanding how SRO presence and schools' zero-tolerance approaches to discipline might affect overall rates of exclusionary discipline as well as any racial disparities in exclusionary discipline. However, these dynamics are largely unexplored in the current body of literature. The purpose of this study, therefore, is to examine the role that context may play in the relation between schools'

rates of exclusionary discipline and two school-level factors: their zero-tolerance approach to discipline and the presence of SROs.

Literature Review

Zero-Tolerance and Exclusionary Discipline

There is little research that has examined the impact of specific zero-tolerance policies on student- or school-level outcomes of any sort. Indeed, the American Psychological Association Zero Tolerance Task Force's (2008) review on extant research found little empirical evidence beyond correlational research that could speak directly to the impact of zero-tolerance policies. This lack of research limits what we know about whether zero-tolerance policies and approaches to discipline ultimately increase or decrease the amount of exclusionary discipline in schools. Perhaps the most rigorous study to examine the impact of zero-tolerance policies was a natural experiment by Hoffman (2014), in which exclusionary discipline rates in a school district that implemented zero-tolerance policies were compared to exclusionary discipline rates in a neighboring school district that did not. The findings from this study showed that instituting zero-tolerance policies in one district led to an increase from 2.2% to 4.5% of Black students recommended for expulsion. As a comparison, the percent of White students recommended for expulsion only increased from 0.3% to 0.5%. Additionally, the length of Black students' average suspensions increased after implementing zero-tolerance policies. Recent federal guidelines addressing schools' disciplinary policies seem to acknowledge this potential danger of zero-tolerance policies, urging schools to drop their strict zero-tolerance approaches to discipline in favor of more supportive discipline that considers situational factors (U.S. Department of Education, 2014).

Although few studies have addressed the impact of particular disciplinary policies, there is correlational evidence that stronger zero-tolerance approaches to discipline are associated with negative consequences for both students and schools. For example, at the classroom level, students who have teachers with a zero-tolerance approach to discipline are more likely to perceive their school as lacking in order and discipline in comparison to students from schools with disciplinary practices oriented toward rewarding positive behaviors (Mitchell & Bradshaw, 2013). At the school level, schools with higher rates of exclusionary discipline have poorer school climate as rated by students, teachers, and administrators (Bickel & Qualls, 1980). Additionally, schools that have a stronger zero-tolerance approach and use more exclusionary discipline have lower academic achievement overall (Davis & Jordan, 1994; Raffaele Mendez, 2003; Skiba & Rausch, 2006).

Because of the lack of research that specifically examines the effects or correlates of zero-tolerance policies or approaches to discipline, little is known about these approaches relative to SROs. For example, it is possible that schools' disciplinary policies and tendencies vary little based on whether or not SROs are present in the school. On the other hand, it is possible that SROs increase the amount of exclusionary discipline in schools above and beyond what schools' overall approach to discipline is, or even dampen the impact of zero-tolerance approaches to discipline on rates of exclusionary discipline. Therefore, although theories and extant empirical research suggest that both SROs and zero-tolerance approaches to discipline may contribute to schools' overall rates of and racial disparities in exclusionary discipline, their contributions relative to each other are unclear.

School Context as a Moderator

The inconsistent findings in prior research may be due in part to the variability in school

contexts across studies and samples. It is unlikely that the relations between schools' zero-tolerance approach to discipline, SRO presence, and rates of exclusionary discipline are the same across all schools. Instead, variables related to school context may moderate the relations among these variables. A meta-analysis of the relation between SRO presence and exclusionary discipline found very high levels of heterogeneity in this relation that was attributable to true variability (i.e., not random noise) and was potentially explainable by other variables such as those relating to school context (Fisher & Hennessey, 2015). The racial threat hypothesis suggests that these relations are likely to depend on schools' racial composition. Other variables that are associated with racial composition may also be meaningful moderators, including schools' socioeconomic status, levels of academic performance, and school size. Prior research indicates that the roles of SROs differ across these different school contexts, suggesting that SROs' relation to rates of exclusionary discipline may differ as well (Finn et al., 2005; Kupchik, 2010). Additionally, schools' disciplinary policies and rates of exclusionary discipline tend to differ across school contexts, suggesting that schools' zero-tolerance approaches to discipline may function differently across contexts (Payne & Welch, 2010; Welch & Payne, 2012).

Current Study

Although prior research has examined the impact of racial threat on the sorts of discipline policies that schools adopt as well as the types of school security measures they implement, less is known about how these factors relate to exclusionary discipline. Building on prior research, the current study examines the relation between two different social control mechanisms (i.e., a zero-tolerance approach to discipline and SRO presence) and the rates of exclusionary discipline in public high schools in the United States. In particular, it examines these relations across diverse school contexts, thereby extending the empirical work on the racial threat hypothesis to

include the relation between schools' social control mechanisms and school-level exclusionary discipline outcomes. This study is guided by the following research questions:

Research Question 1: What is the relation between the extent to which schools utilize a zero-tolerance approach to discipline and their overall rates of exclusionary discipline?

Research Question 2: Does the relation between a school's zero-tolerance approach to discipline and rates of exclusionary discipline depend on SRO presence in schools?

Research Question 3: Is this relation moderated by racial composition, socioeconomic status, academic achievement, or school size?

Method

Sample and Data Collection

The data for Study 2 came from the 2009-10 version of the School Survey on Crime and Safety (SSOCS), a nationally representative cross-sectional survey of principals from 2,650 elementary, middle, and high schools. Schools were selected for this survey using a stratified sampling technique where schools listed in the Common Core of Data (CCD) were stratified based on school level, size, and location (Neiman, et al., 2015). For the purposes of this study, only responses from principals and administrators of public high schools were eligible for analysis. Public and private schools have been shown to have different patterns of both discipline and police presence (Robers et al., 2015), and therefore will not be combined in this study. Similarly, high schools are more likely than elementary or middle schools to have SROs, and also have different discipline patterns and systems (Robers et al., 2015). Additionally, the choice to exclude non-public schools as well as elementary and middle schools will allow the sample in this study to more closely match the sample in Study 1. A final restriction on the data was that schools that did not report any student infractions were excluded from the sample because this

precluded calculating schools' zero-tolerance approach to discipline. These restrictions yielded a final sample size of 890 schools. The schools in the SSOCS were matched with data from the National Center for Education Statistics' Common Core of Data (CCD) from the 2009-10 school year to provide additional data about the schools in the sample.

Measures

Rate of exclusionary discipline. The dependent variable in this study, rate of exclusionary discipline, was calculated from responses to the following question: "During the 2009–10 school year, how many students were involved in committing the following offenses, and how many of the following disciplinary actions were taken in response?" with the following offenses listed: (a) *Use/possession of a firearm/explosive device*; (b) *Use/possession of a weapon other than a firearm/explosive device*; (c) *Distribution, possession, or use of illegal drugs*; (d) *Distribution, possession, or use of alcohol*; (e) *Physical attacks or fights*. The possible disciplinary actions that were taken were: (a) *Removals with no continuing school services for at least the remainder of the school year*; (b) *Transfers to specialized schools*; (c) *Out-of-school suspensions lasting 5 or more days, but less than the remainder of the school year*; and (d) *Other disciplinary action (e.g., suspension for less than 5 days, detention, etc.)*. Each school's overall rate of exclusionary discipline therefore was calculated as the total number of exclusionary discipline actions (i.e., removals, transfers, or out-of-school suspensions lasting 5 or more days) divided by the total number of students in the school and multiplied by 100. Therefore, a rate of 10.1 would indicate that there were 10.1 exclusionary discipline actions administered for every 100 students in the school. This variable was positively skewed in the data, and so was transformed by taking the natural log to normalize the distribution. Hereafter, all descriptive and

inferential statistics that include rates of exclusionary discipline used the logged version of this variable unless otherwise specified.

Zero-tolerance approach. The main predictor in this study—schools’ zero-tolerance approach to discipline—was created from the same question as the dependent variable (see above). Specifically, I calculated the proportion of the total number of disciplinary actions that were exclusionary (i.e., removals, transfers, or out-of-school suspensions lasting 5 or more days). For example, if none of a school’s disciplinary responses to these offenses were exclusionary, their value on the *Zero-Tolerance Approach* variable would be 0; they had no evidence of a zero-tolerance approach to discipline. If half of another school’s disciplinary responses to these offenses were exclusionary, their score would be 0.5; overall, they were just as likely to use exclusionary discipline as they were to use non-exclusionary discipline. This variable was also positively skewed, and so was also transformed by taking the natural log; the logged version of this variable was used in all descriptive and inferential statistics in the study unless otherwise specified.

SRO presence. The focal moderator in this study—the presence of SROs—was measured by the following question: “How many of the following were present in your school at least once a week?” One of the response options was *School Resource Officers (Include all career law enforcement officers with arrest authority, who have specialized training and are assigned to work in collaboration with school organizations)*. Although respondents also indicated the number of SROs in their school, this variable was dichotomized for the purposes of this study (*0 = no SROs, 1 = at least one SRO*). Additionally, the presence of full-time and part-time SROs was treated similarly here; a school with one part time SRO and another school with two full-time SROs were coded the same way (i.e., *1 = at least one SRO*).

School context. Five measures of school context were also included as moderators: the percent of White students, the percent of Black students, the percent of low-income students, the percent of low academically performing students, and school size. Measures of the percent of White students and the percent of Black students in the school came from data reported in the CCD. The percent of low-income students was measured by the question “What percentage of your current students...[are] eligible for free or reduced-price lunch?” The percent of low academically performing students was measured by the question “What is your best estimate of the percentage of your current students who [are] below the 15th percentile on standardized tests?” Finally, school size was measured by the question “As of October 1, 2009, what was your school’s total enrollment?”

Variables used in propensity score estimation. A series of variables theoretically or empirically predictive of SRO implementation was used to estimate propensity scores (Kupchik & Ward, 2014; Shelton et al., 2009; Steinka-Fry et al., under review; Tanner-Smith, Fisher, & Gardella, under review; Tanner-Smith & Fisher, 2015). These variables included the presence of other school security measures, violence prevention programming, factors that limited schools’ ability to prevent crime, the size and composition of the student body, the level of crime in the community, and the number of students who transferred into and out of the school. Appendix B provides a complete list of these variables.

Data Analysis

To estimate the relation between the predictors (i.e., *Zero-Tolerance Approach*, SRO presence, and school context variables) and the outcome (i.e., rates of exclusionary discipline), a series of ordinary least squares (OLS) regression models was run. Each model used inverse probability of treatment weights to adjust for baseline differences between schools with and

without SROs (discussed more below). Research Question 1 stated, “What is the relation between the extent to which schools utilize a zero-tolerance approach to discipline and their overall rates of exclusionary discipline?” To address this question, a weighted OLS regression model was used with rates of exclusionary discipline regressed on *Zero-Tolerance Approach* alone. Research Question 2 stated, “Does the relation between *Zero-Tolerance Approach* and rates of exclusionary discipline depend on SRO presence in schools?” To address this question, a weighted OLS regression model was used with rates of exclusionary discipline regressed on *Zero-Tolerance Approach* and SRO presence as well as a multiplicative interaction of these two variables. Research Question 3 stated, “Is this effect moderated by racial composition, socioeconomic status, academic achievement, or school size?” To address this question, a series of weighted OLS regression models predicting rates of exclusionary discipline were used that included *Zero-Tolerance Approach*, SRO presence, and each of the school context variables as predictors, as well as all of the possible two- and three-way multiplicative interaction terms. The school context predictors were introduced one at a time so that each model only included one of the school context variables.

Propensity score estimation. Because SROs were not randomly assigned to schools, there were systematic differences in the baseline characteristics of schools with and without SROs. In an effort to balance the schools with and without SROs, I estimated propensity scores that were used as inverse probability of treatment weights. Propensity score methods are a useful technique for balancing treatment groups in observational study designs and reducing any potential impact of selection bias (Guo & Fraser, 2010; Tanner-Smith & Lipsey, 2014). To estimate the propensity scores, I used a wide range of theoretically and empirically relevant covariates (see Appendix B) to predict SRO presence using a probit model using the **pscore**

command in Stata 14. The predicted probability of treatment (i.e., SRO presence) for each school was then used to create inverse probability of treatment weights. The weights for schools that had SROs were calculated as:

$$1/Propensity\ Score$$

The weights for schools that did not have SROs were calculated as:

$$1/(1 - Propensity\ Score)$$

These weights were subsequently stabilized to reduce the variability of the weights that may have arisen due to some very large weights resulting from very small propensity scores (Harder, Stuart, & Anthony, 2010; Robins, Hernan, & Brumback, 2000). As noted above, all of the OLS regression models included these inverse probability of treatment weights to balance the baseline differences between schools with and without SROs.

As part of its propensity score estimation process, the **pscore** command automatically checks the balance of covariates across treatment conditions. The balance property was satisfied for all covariates except for school size, indicating that there were still large differences in school size across the two treatment conditions (i.e., SRO schools and non-SRO schools). Although removing school size from the propensity score estimation model would have satisfied the balance property for all variables, prior research indicates that school size is a substantively important variable and it was therefore retained in the propensity score estimation model and all models controlled for school size.

To examine the impact of three variables used in the estimation of propensity scores that could theoretically be considered proxies for schools' rates of exclusionary discipline (i.e., percent of students below the 15th percentile, percent of students likely to go to college after high school, and percent of students who consider academic achievement to be very important), I

estimated new propensity scores without these three variables used as predictors in the estimation model. The two sets of propensity scores had very high correlations with each other ($r = .99, p < .001$), and they were each correlated similarly with schools' rates of exclusionary discipline ($r = .10, p = .002$ and $r = .10, p = .003$, respectively). These correlations provide little evidence to suspect that the inclusion of the three variables had any undue impact on the propensity score estimation model that may have resulted in attenuating the relationships of interest. Therefore, I retained the full set of variables in the estimation of propensity scores.

Results

Descriptive Statistics

Descriptive statistics for the variables of interest can be found below the correlation matrix in Table 6. As shown, the logged rate of exclusionary discipline had a weighted mean of 0.05 ($SE = 0.16$), equal to a non-logged rate of 1.05, indicating that on average, the schools in this sample administered about one incident of exclusionary discipline per 100 students in a school. However, the range of the non-logged version of this variable was quite large, from 0.04 to 73.70 incidents of exclusionary discipline per 100 students.² The logged measure of *Zero-Tolerance Approach* had a mean of -0.55 ($SE = .03$), which is equivalent to 54.34% of the total number of listed infractions resulting in exclusionary discipline. The range of the non-logged version of *Zero-Tolerance Approach* was from 0.00 to 2.09, indicating that there was a minimum of less than one percent of the infractions that led to exclusionary discipline and a maximum of around two incidents of exclusionary discipline per infraction. Schools were comprised of a mean of 64.95% ($SE = 1.63$) White students, 15.50% ($SE = 1.27$) Black students, 39.01% (SE

² It should be noted that only two of the schools had rates of exclusionary discipline greater than 0.4. Sensitivity tests indicated that removing these extreme data points had no substantive impact on the findings and were therefore retained in all analyses.

Table 6.

Correlation matrix and descriptive statistics

| | Rate of Exclusionary Discipline | Zero- Tolerance Approach | SRO Presence | Percent White | Percent Black | Percent Low- Income | Percent Low academically performing | School Size |
|--|---------------------------------------|--------------------------------|-----------------|------------------|------------------|---------------------------|---|----------------|
| Rate of Exclusionary Discipline | 1.00 | | | | | | | |
| Zero-Tolerance Approach | .71*** | 1.00 | | | | | | |
| SRO Presence | .09** | .09** | 1.00 | | | | | |
| Percent White | -.25* | -.05 | -.11*** | 1.00 | | | | |
| Percent Black | .26** | .13 | .12*** | -.63*** | 1.00 | | | |
| Percent Low-Income | .34* | .08 | -.01 | -.66*** | .50*** | 1.00 | | |
| Percent Low academically performing | .27** | .11 | .04 | -.40*** | .33*** | .41*** | 1.00 | |
| School Size | -.15 | -.09 | .33*** | -.06 | -.11 | -.35*** | -.09 | 1.00 |
| Mean | 0.05 | -0.55 | 0.71 | 64.95 | 15.50 | 39.01 | 12.76 | 1406.99 |
| Standard Error | 0.16 | 0.03 | 0.02 | 1.63 | 1.27 | 1.89 | 0.85 | 102.48 |
| Minimum | -3.23 | -4.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 12.00 |
| Maximum | 4.30 | 2.45 | 1.00 | 100.00 | 100.00 | 100.00 | 100.00 | 4348.00 |

Note. All correlations with SRO presence were calculated as point-biserial correlations.

=1.89) low-income students, and 12.76% ($SE = 0.85$) low academically performing students. The mean school size was 1,406.99 ($SE = 102.48$) students, but schools ranged in size from 10 to 4,350 students.

There was at least one SRO present in 70.8 percent of the schools, and these SROs were involved in a variety of roles. Around 80 percent of respondents reported that the SROs were involved with security enforcement and patrol (83.09%), coordinating with local police (81.40%), and identifying problems and seeking solutions (79.82%). Nearly three-quarters of schools had SROs that were responsible for maintaining school discipline (72.27%), and about two-thirds had SROs that mentored students (65.84%). A smaller proportion of SROs were engaged in training teachers in school safety (55.81%) and teaching or training students (34.61%).

As shown in the correlation matrix in Table 6, the outcome variable (i.e., rate of exclusionary discipline) was highly correlated with *Zero-Tolerance Approach* ($r = .71, p < .001$), indicating that schools with a higher *Zero-Tolerance Approach* also had higher overall rates of discipline. These variables were constructed from a similar set of variables, so it is perhaps unsurprising that they were highly correlated. However, one of the assumptions of zero-tolerance policies is that they should have deterrent effects; this finding did not provide evidence of such an effect. Schools with a larger percent of Black ($r = .26, p = .002$), low-income ($r = .34, p = .010$), and low academically performing ($r = .27, p = .008$) students were also associated with higher rates of exclusionary discipline. Schools with a larger percent of White students were associated with lower overall rates of exclusionary discipline ($r = -.25, p = .012$). In addition to its correlation with rates of exclusionary discipline mentioned above, *Zero-Tolerance Approach* was significantly correlated with SRO presence ($r_{pb} = .09, p = .006$). Note that the correlations

that include SRO presence were calculated as point-biserial correlations because SRO presence is a dichotomous variable whereas the others are continuous.

Weighted Regression Results

Research Question 1 addressed the following question: What is the relation between the extent to which schools utilize a zero-tolerance approach to discipline and their overall rates of exclusionary discipline? Using OLS regression, *Zero-Tolerance Approach* was used to predict rates of exclusionary discipline, with each school weighted by its inverse probability of having an SRO using the estimated propensity scores. This model yielded a significant relation ($b = 98.43, p < .001$), indicating that schools with a higher *Zero-Tolerance Approach* to discipline also had higher overall rates of discipline.

Research Question 2 examined whether this relation between *Zero-Tolerance Approach* and rates of exclusionary discipline varied depending on the presence of SROs. To investigate this question, another weighted OLS regression model was used with schools' rates of exclusionary discipline predicted by *Zero-Tolerance Approach*, SRO presence, and a multiplicative interaction term between these two variables. As shown in the leftmost columns of Table 7, this model did not yield a significant interaction term ($b = -23.14, p = .223$), suggesting that in this sample, the presence of SROs did not change the relationship between schools' zero-tolerance approach to discipline and rates of exclusionary discipline.

Research Question 3 addressed the possibility that the interaction between *Zero-Tolerance Approach* and SRO presence depended on school context. A series of weighted OLS regression models predicting rates of exclusionary discipline was conducted, incorporating three-way interaction terms between *Zero-Tolerance Approach*, SRO presence, and each of five measures of school context: percent of White students, percent of Black students, percent

Table 7.

Predicting rates of exclusionary discipline with Zero-Tolerance Approach (ZTA), SRO presence, and school context

| | Two-way Interaction | | | Three-way Interaction with Percent White | | | Three-way Interaction with Percent Black | | | Three-way Interaction with Percent Low-Income | | | Three-way Interaction with Percent Low Academically Performing | | | Three-way Interaction with School Size | |
|-------------------|---------------------|--------|--------|--|--------|--------|--|--------|--------|---|--------|--------|--|--------|--------|--|--------|
| | <i>b</i> | LB | UB | <i>b</i> | LB | UB | <i>b</i> | LB | UB | <i>b</i> | LB | UB | <i>b</i> | LB | UB | <i>b</i> | LB |
| ZTA ^a | 109.39*** | 72.80 | 145.98 | 83.17*** | 59.94 | 106.40 | 113.29*** | 74.97 | 151.60 | 134.78*** | 100.08 | 169.48 | 111.72*** | 73.23 | 150.20 | 33.07* | 5.21 |
| SRO ^b | -14.02 | -42.63 | 14.59 | -42.50 | -99.25 | 14.24 | -9.36 | -41.88 | 23.16 | -9.19 | -59.83 | 40.46 | -0.98 | -33.77 | 31.82 | 41.02 | -10.24 |
| ZTA*SRO | -23.14 | -60.40 | 14.13 | 17.98 | -10.56 | 46.52 | -33.27 | -72.67 | 6.14 | -57.41** | -95.24 | -19.58 | -32.67 | -72.80 | 7.46 | 56.82** | 21.08 |
| WH ^c | | | | -1.01* | -1.80 | -0.23 | | | | | | | | | | | |
| ZTA*WH | | | | 0.41 | -0.12 | 0.93 | | | | | | | | | | | |
| SRO*WH | | | | 0.39 | -0.42 | 1.20 | | | | | | | | | | | |
| ZTA*SRO*WH | | | | -0.66* | -1.25 | -0.08 | | | | | | | | | | | |
| BL ^d | | | | | | | 0.90 | -0.20 | 2.00 | | | | | | | | |
| ZTA*BL | | | | | | | -0.47 | -1.02 | 0.09 | | | | | | | | |
| SRO*BL | | | | | | | -0.24 | -1.39 | 0.91 | | | | | | | | |
| ZTA*SRO*BL | | | | | | | 0.69* | 0.07 | 1.31 | | | | | | | | |
| INC ^e | | | | | | | | | | 1.30* | 0.22 | 2.39 | | | | | |
| ZTA*INC | | | | | | | | | | -0.67* | -1.22 | -0.12 | | | | | |
| SRO*INC | | | | | | | | | | -0.19 | -1.31 | 0.94 | | | | | |
| ZTA*SRO*INC | | | | | | | | | | 0.83* | 0.20 | 1.46 | | | | | |
| ACAD ^f | | | | | | | | | | | | | 2.07** | 0.82 | 3.31 | | |
| ZTA*ACAD | | | | | | | | | | | | | -0.93 | -2.19 | 0.34 | | |
| SRO*ACAD | | | | | | | | | | | | | -0.71 | -2.06 | 0.63 | | |
| ZTA*SRO*ACAD | | | | | | | | | | | | | 1.46* | 0.09 | 2.83 | | |
| SIZE ^g | | | | | | | | | | | | | | | | 0.02 | -0.01 |
| ZTA*SIZE | | | | | | | | | | | | | | | | -0.04*** | 0.02 |
| SRO*SIZE | | | | | | | | | | | | | | | | -0.03* | -0.06 |
| ZTA*SRO*SIZE | | | | | | | | | | | | | | | | -0.04*** | -0.07 |

Note. All models control for school size and are weighted using inverse propensity of treatment weights; * $p < .05$; ** $p < .01$; *** $p < .001$; ^a Zero-Tolerance Approach; ^b SRO presence; ^c Percent White; ^d Percent Black; ^e Percent low-income; ^f Percent low academically performing; ^g School size.

low-income students, percent low academically performing students, and school size. These measures of school context can be understood as moderators of the interaction between *Zero-Tolerance Approach* and SRO presence. Each model included the main effect of each predictor (i.e., *Zero-Tolerance Approach*, SRO presence, and one school context variable), the three possible two-way interactions, and the three-way interaction. The results of these models can be found in Table 7. As can be seen, the statistically significant three-way interactions between *Zero-Tolerance Approach*, SRO presence, and each of the five measures of school context (i.e., percent White, percent Black, percent low-income, percent low academics, and school size) indicated that the interaction between *Zero-Tolerance Approach* and SRO presence depended on school context. Each of these three-way interactions is displayed graphically to assist interpretation (Preacher, Curran, & Bauer, 2006).

As seen in Table 7, there was a significant three-way interaction between *Zero-Tolerance Approach*, SRO presence, and the percent of White students ($b = -0.66, p = .027$). Figure 13 graphically displays the interaction between *Zero-Tolerance Approach* and SRO presence across two values of the percent of White students (i.e., 0% White students and 100% White students). In schools with no White students, the presence of SROs had no relationship with schools' rates of exclusionary discipline when *Zero-Tolerance Approach* was low, but the presence of SROs predicted higher rates of discipline when *Zero-Tolerance Approach* was high. In schools that had no White students and a high zero-tolerance approach to discipline, the presence of SROs was associated with increase in rates of exclusionary discipline by 1.19 incidents per 100 students. On the other hand, in schools with all White students, the presence of SROs had no relationship with schools' rates of exclusionary discipline when *Zero-Tolerance Approach* was low, but the presence of SROs predicted lower rates of discipline when *Zero-Tolerance Approach* was high.

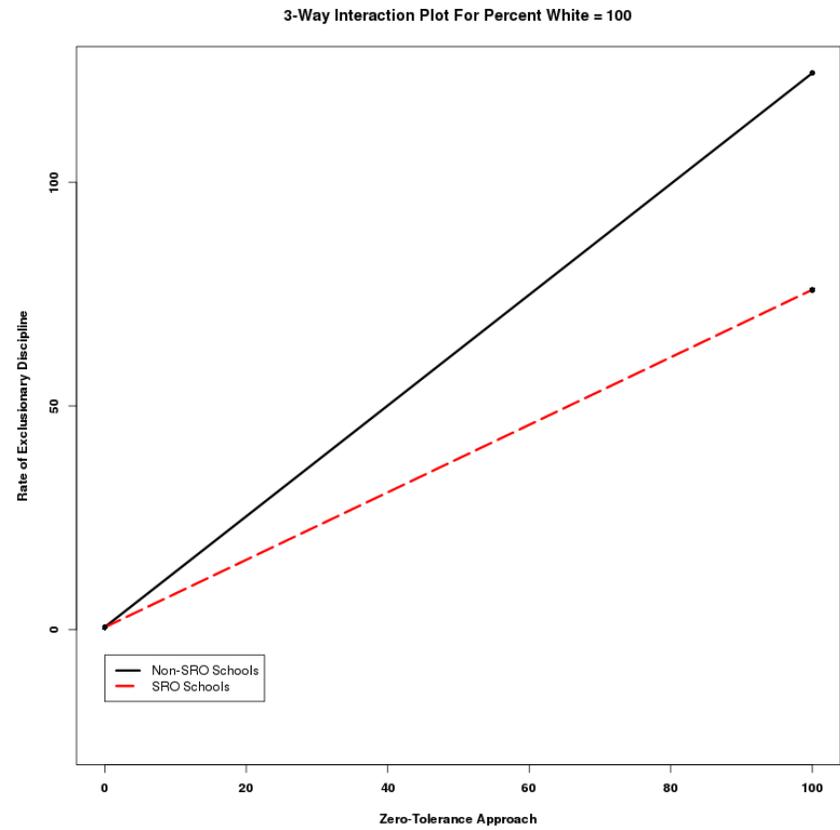
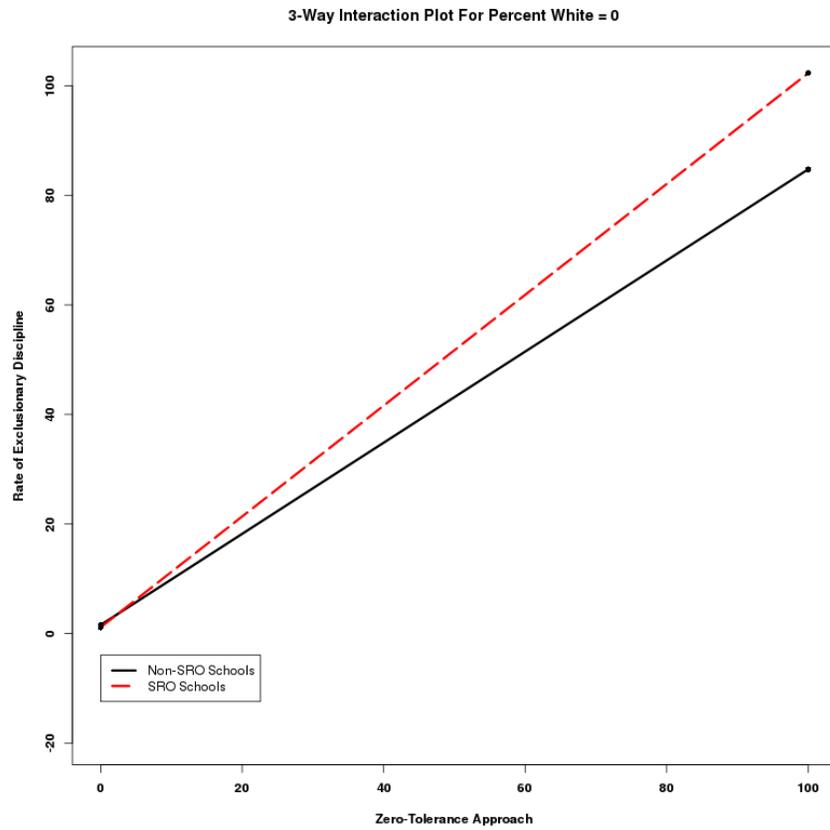


Figure 13. Three-way interaction between Zero-Tolerance Approach, SRO Presence, and Percent White

In schools that had all White students and a high zero-tolerance approach to discipline, the presence of SROs was associated with a decrease in the rate of exclusionary discipline by 1.62 incidents per 100 students. This indicates that the combination of a high zero-tolerance approach to discipline and the presence of SROs was associated with an additional 2.81 incidents per 100 students when changing the percent of White students in the school from 100 to zero.

The three-way interaction between schools' *Zero-Tolerance Approach*, SRO presence, and the proportion of Black students yielded substantively similar results ($b = 0.69, p = .029$). As seen in Figure 14, in schools with no Black students, the presence of SROs had no relationship with schools' rates of exclusionary discipline when *Zero-Tolerance Approach* was low, but the presence of SROs predicted lower rates of discipline when *Zero-Tolerance Approach* was high. A high zero-tolerance approach combined with the presence of SROs was associated with 1.40 fewer incidents of exclusionary discipline per 100 students. On the other hand, in schools with all Black students, the presence of SROs had no relationship with schools' rates of exclusionary discipline when *Zero-Tolerance Approach* was low, but the presence of SROs predicted higher rates of discipline when *Zero-Tolerance Approach* was high. In this case, the presence of SROs in a school with a high zero-tolerance approach to discipline was associated with an additional 1.43 incidents per 100 students. Therefore, when considering schools with the combination of a high zero-tolerance approach to discipline and the presence of SROs, changing the school's racial composition from zero percent Black to 100% Black was associated with an increase of 2.83 incidents of exclusionary discipline per 100 students. This again provides evidence of the mutually reinforcing effect of schools' zero-tolerance approach to discipline and SRO presence in schools with a larger proportion of racial/ethnic minority students, and a lack of such an effect in schools with fewer such students.

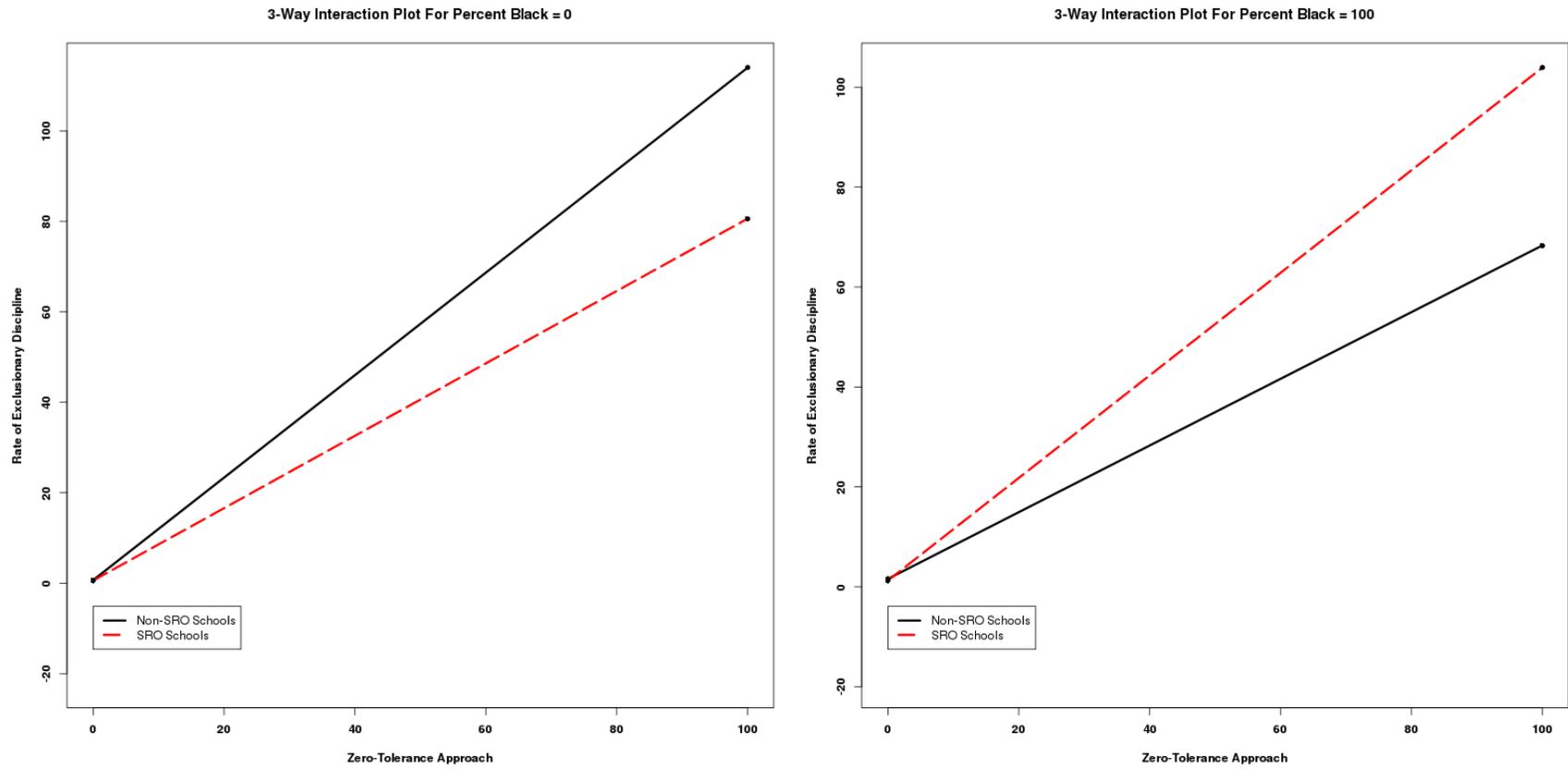


Figure 14. Three-way interaction between Zero-Tolerance Approach, SRO Presence, and Percent Black

Examining the percent of low-income students as a moderator yielded results consistent with those of the other moderators mentioned. The three-way interaction between *Zero-Tolerance Approach*, SRO presence, and percent low-income indicated that there were meaningful differences in schools with low versus high proportions of low-income students ($b = 0.83, p = .010$). As seen in Figure 15, in schools with no low-income students, the presence of SROs was unrelated to schools' rates of exclusionary discipline when there were low levels of *Zero-Tolerance Approach*, but when schools had high levels of *Zero-Tolerance Approach*, the presence of SROs predicted lower rates of exclusionary discipline by 1.78 incidents per 100 students. On the other hand, in schools with the entire student body classified as low-income, the presence of SROs was not related to rates of exclusionary discipline at low levels of *Zero-Tolerance Approach*, but predicted higher rates of exclusionary discipline in schools with a higher *Zero-Tolerance Approach*. Schools that had a high zero-tolerance approach and 100% low-income students had an additional 1.29 incidents of exclusionary discipline when SROs were present. Similar to the findings described above, this suggests that pairing SROs with school discipline policies that were oriented more toward a zero-tolerance approach were associated with higher rates of exclusionary discipline in low-income schools, and lower rates of exclusionary discipline in more affluent schools. The total difference when changing a school's poverty rate from zero to 100% was an additional 3.07 incidents of exclusionary discipline per 100 students.

A similar effect was found for the three-way interaction between *Zero-Tolerance Approach*, SRO presence, and the percent of low academically performing students ($b = 1.46, p = .037$). As seen in Figure 16, in schools with no low academically performing students, the presence of SROs had no relationship with schools' rates of exclusionary discipline when *Zero-*

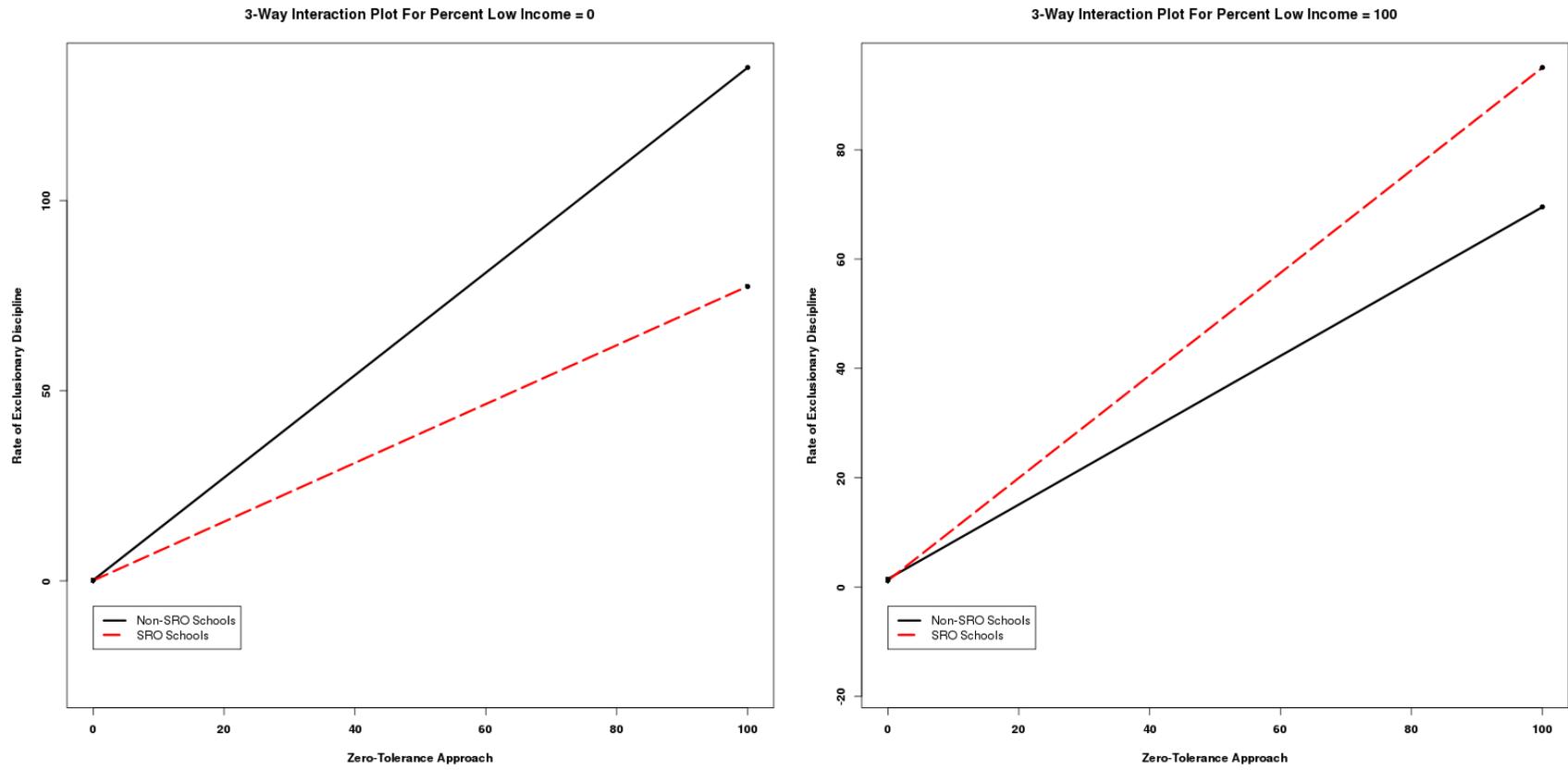


Figure 15. Three-way interaction between Zero-Tolerance Approach, SRO Presence, and Percent Low Income

Tolerance Approach was low, but the presence of SROs predicted lower rates of discipline when *Zero-Tolerance Approach* was high. The combination of a high zero-tolerance approach and SRO presence was associated with a decrease of 1.39 incidents of exclusionary discipline per 100 students in schools without any low academically performing students. However, in schools with all low academically performing students, the presence of SROs had no relationship with schools' rates of exclusionary discipline when *Zero-Tolerance Approach* was low, but the presence of SROs combined with a high *Zero-Tolerance Approach* was associated with an additional 3.09 incidents of exclusionary discipline per 100 students. This interaction therefore suggests that the combined impact of SRO presence and a high zero-tolerance approach to discipline differed by 4.48 incidents per 100 students between schools with no low academically performing students and schools with all low academically performing students.

There was also a significant three-way interaction between *Zero-Tolerance Approach*, SRO presence, and school size ($b = -0.04, p < .001$), although this interaction did not follow the same pattern as the other moderators. Rather than indicating a difference in direction, school size indicated a difference in magnitude. As shown in Figure 17, in schools with only 100 students, there was no relationship between the presence of SROs and rates of exclusionary discipline when schools had a low *Zero-Tolerance Approach*, but SROs predicted higher rates of exclusionary discipline when schools also had a high *Zero-Tolerance Approach* by a total of 1.70 incidents of exclusionary discipline per 100 students. In schools with 1000 students, the same overall pattern was present, but this effect was attenuated; the difference was 1.15 incidents of exclusionary discipline per 100 students. This indicates that across schools of all sizes, the presence of SROs in schools with a high *Zero-Tolerance Approach* had a mutually reinforcing effect resulting in higher rates of exclusionary discipline, but that this effect was somewhat more

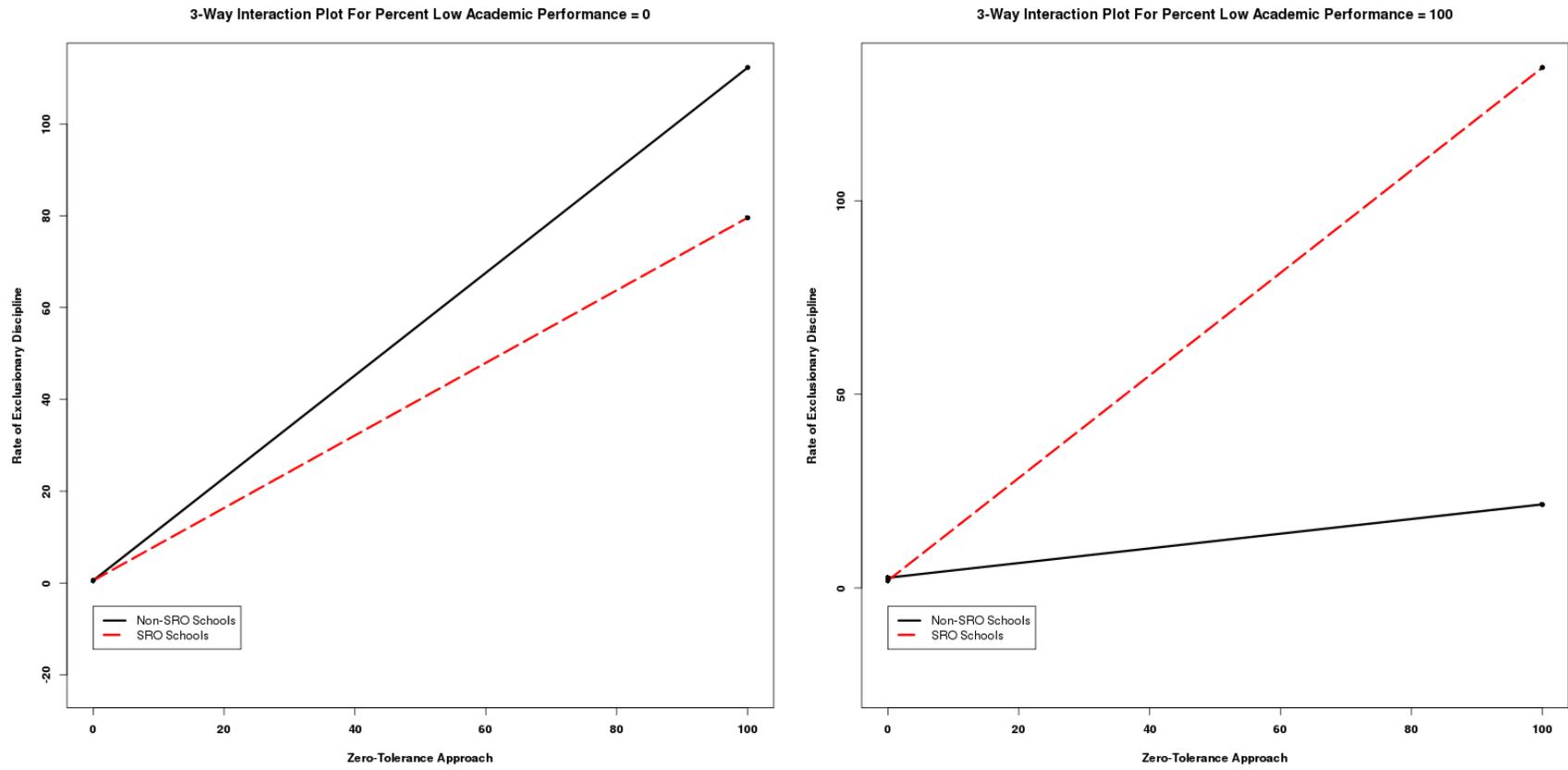


Figure 16. Three-way interaction between Zero-Tolerance Approach, SRO Presence, and Percent Low Academically Performing

pronounced in schools with fewer students, resulting in an additional 0.55 incidents of exclusionary discipline per 100 students when comparing schools of size 100 with those of size 1000.

To investigate possible mechanisms leading to the different findings among schools with low and high proportions of White, Black, low-income, and low academically performing students and different school sizes, I conducted an exploratory analysis examining the associations between these measures of school context and a series of measures related to SROs' roles in schools. Prior research has shown that SROs' roles are linked to school discipline rates and the processing of student misbehavior (Devlin & Gottfredson, under review; Kupchik, 2010; Swartz, Osborne, Dawson-Edwards, & Higgins, 2015). SROs' roles were measured as a set of dummy variables following the question: Did these security guards, security personnel, or sworn law enforcement officers participate in the following activities at your school? (a) *Security enforcement and patrol*; (b) *Maintaining school discipline*; (c) *Coordinating with local police and emergency team(s)*; (d) *Identifying problems in the school and proactively seeking solutions to these problems*; (e) *Training teachers and staff in school safety or crime prevention*; (f) *Mentoring students*; and (g) *Teaching a law-related education course or training students in drug-related education, criminal law, or crime prevention*. Because these were dummy variables (0 = *No*, 1 = *Yes*), I calculated point-biserial correlations between each of the SROs' roles and the measures of school context. Note that these analyses were only conducted for the treatment group, as the comparison group did not have SROs present in the school. As shown in Table 8, there were some patterns of association between measures of school context and the roles SROs performed in schools. Specifically, SROs were more likely to engage in security enforcement activities when there was a lower proportion of White students ($r_{pb} = -.09$, $p = 0.018$), a higher

proportion of Black students ($r_{pb} = .11, p = 0.006$), and in larger schools ($r_{pb} = .12, p = 0.002$). Additionally, SROs were more likely to engage in maintaining student discipline in schools with lower proportions of White students ($r_{pb} = -.09, p < .001$), higher proportions of Black ($r_{pb} = .12, p = 0.002$), low-income ($r_{pb} = .10, p = 0.012$), and low academically performing students ($r_{pb} = .11, p = 0.004$), and in larger schools ($r_{pb} = .08, p = 0.046$). SROs were also more likely to function as teachers in schools with larger proportions of White students ($r_{pb} = .12, p = 0.002$), and lower proportions of Black ($r_{pb} = -.10, p = 0.010$) and low-income students ($r_{pb} = -.09, p = 0.014$). These findings provide some initial evidence that the joint impact of SROs and a high zero-tolerance approach that varies across school contexts may be explained by systematic differences in SROs roles; SROs in more disadvantaged schools engaged in more security enforcement and patrol and maintaining school discipline, whereas SROs in less disadvantaged schools engaged in more teaching.

Discussion

Decades of research have demonstrated that students who receive exclusionary discipline such as suspensions and expulsions are at increased risk for a series of negative academic and behavioral outcomes (Arcia, 2006; Christle et al., 2005; Fabelo et al., 2011; Raffaele Mendez, 2003; Suh & Suh, 2007; Tobin et al., 1996). Although there has been ample concern about the high rate of exclusionary discipline administered in U.S. high schools, there has been much less investigation of school-level malleable factors that might lead to such high rates. Study 2 used nationally representative data from public high schools to provide an empirical examination of the relationship between rates of exclusionary discipline and two variables that have often been theoretically linked with higher rates of discipline: zero-tolerance approaches to discipline and the presence of SROs in schools. Additionally, it examined variability of these effects across

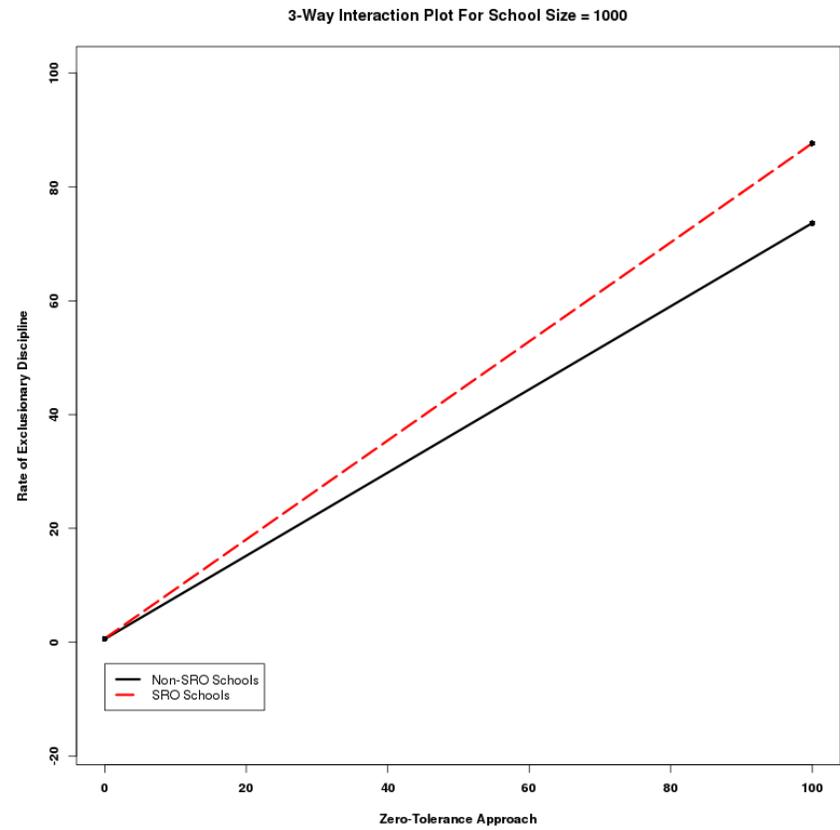
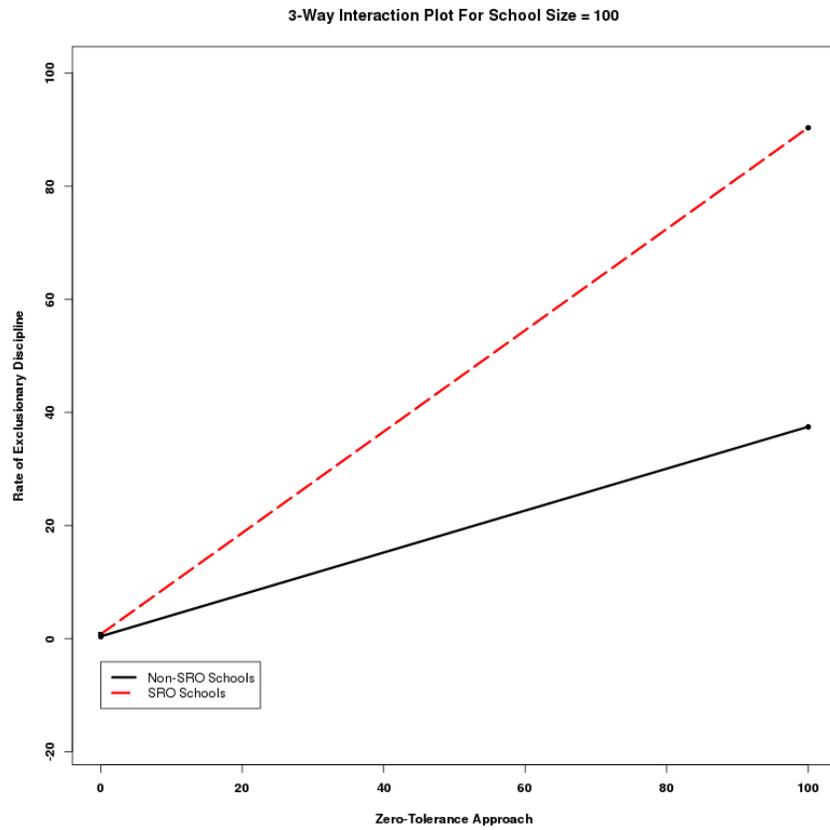


Figure 17. Three-way interaction between Zero-Tolerance Approach, SRO Presence, and School Size

school contexts. By using propensity score weights, the study sought to reduce the impact of selection bias, which is one of the chief threats to internal validity of cross-sectional research. Overall, this study provided evidence that context matters when examining school-level factors that relate to rates of exclusionary discipline.

First, these findings indicated that a high zero-tolerance approach to discipline was consistently related to higher overall rates of exclusionary discipline across all analytic models. If a high zero-tolerance approach acted as an effective deterrent for problem behaviors, one would expect to see a negative relation between zero-tolerance approach and rates of exclusionary discipline. In other words, schools oriented toward a more punitive approach to discipline would have lower overall rates of discipline because students would modify their behavior to avoid harsh sanctions. Although this study was unable to model any deterrent effect over time, thereby limiting causal inferences, the available evidence from this cross-sectional dataset did not provide support for a deterrence perspective. It is also worth noting that if students were unaware of the extent of the zero-tolerance approach to discipline—particularly if it was not clearly enumerated as an explicit zero-tolerance policy—there is little reason to believe that the approach would have a deterrent effect. The evidence from this study did, however, provide some tentative support for procedural justice theory which suggests that students’ perceptions of discipline policies as fair is critical to their willingness to follow them.

Although *Zero-Tolerance Approach* was a strong and significant predictor across all of the models in Study 2 such that a higher zero-tolerance approach consistently predicted higher overall rates of exclusionary discipline, the combination of a high zero-tolerance approach with the presence of SROs varied across school contexts. The overall interaction between *Zero-Tolerance Approach* and SRO presence was nonsignificant, but there were significant three-way

Table 8

Point-biserial correlations between SROs' roles and school context variables

| | Percent White | Percent Black | Percent Low Income | Percent Low Academically Performing | School Size |
|--|------------------|------------------|--------------------------|---|----------------|
| Security enforcement and patrol | -.09* | .11** | .06 | .07 | .12** |
| Maintaining school discipline | -.14*** | .12** | .10* | .11** | .08* |
| Coordinating with local police | -.03 | .05 | .03 | .00 | .08* |
| Identifying problems and seeking solutions | .04 | -.03 | -.06 | -.04 | .12** |
| Training in school safety/crime prevention | .06 | -.05 | -.09* | -.01 | .04 |
| Mentoring students | .00 | -.01 | -.01 | .02 | .06 |
| Teaching students | .12** | -.10** | -.09* | -.07 | .06 |

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

interactions for each of the school context variables included in this study. Across all of these three-way interactions, rates of exclusionary discipline did not differ depending on the presence of SROs when schools used a low zero-tolerance approach to discipline. This indicates that when schools used a low zero-tolerance approach, there were lower rates of exclusionary discipline regardless of the presence of SROs or school context. However, the three-way interactions indicated that school context mattered much more in schools with a high zero-tolerance approach to discipline. The combination of a high zero-tolerance approach and SRO presence was associated with higher rates of exclusionary discipline in schools characterized by larger proportions of racial/ethnic minority, low-income, and low academically performing students, and a smaller overall student body. This stands in contrast to schools characterized by lower proportions of racial/ethnic minority, low-income, and low academically performing students, where the combination of a high zero-tolerance approach and SRO presence was associated with lower rates of exclusionary discipline. School size was also a significant moderator of the relationship between rates of exclusionary discipline and the interaction of *Zero-Tolerance Approach* and SRO presence, with smaller schools having higher rates of exclusionary discipline as compared to larger schools.

These findings support the contention that context plays an important role in understanding how school discipline policies and the presence of SROs are related to exclusionary discipline rates, particularly in schools with a higher zero-tolerance approach. Additionally, the level of consistency in the results indicates that not only does context matter, but that it matters in a specific and predictable way. Specifically, the greater proportion of the student body that is comprised of students from racial minorities or is characterized by features typically associated with schools with higher proportions of racial minorities, the more the presence of SROs is predictive of higher rates of exclusionary discipline in schools with a high zero-tolerance approach to discipline. These findings also provide support for the racial threat hypothesis. Given that prior research indicates that schools with higher proportions of racial/ethnic minority students tend to have more punitive discipline policies (Payne & Welch, 2010) and also tend to use exclusionary discipline more frequently (Kupchik, 2009; Welch & Payne, 2010), it appears that the presence of SROs reinforces this relationship. However, it is also important to note that SRO presence did not reinforce the impact of a high zero-tolerance approach in all schools; in schools with higher proportions of White, higher income, higher achieving students, the presence of SROs was predictive of lower rates of exclusionary discipline, even in the presence of a high zero-tolerance approach. Together, these findings indicate that the presence of SROs in schools with a high zero-tolerance approach to discipline may contribute to the racial gap in school discipline by simultaneously increasing exclusionary discipline in schools with larger proportions of racial/ethnic minority students and decreasing it in schools with smaller proportions.

Although the findings in regard to the percent of low-income and low academically performing students do not explicitly address race, they also lend support to the racial threat

hypothesis. Nationally, racial minority students are more likely to attend schools characterized by higher poverty rates and lower academic achievement levels (Hanushek et al., 2009; NAEP, 2015). That trend was also reflected in the sample of Study 2, where the proportion of White students was associated with lower proportions of low-income ($r = -.66, p < .001$) and low academically performing ($r = -.40, p < .001$) students and the proportion of Black students was associated with higher proportions of low-income ($r = .50, p < .001$) and low academically performing ($r = .33, p < .001$) students. The higher rates of exclusionary discipline associated with a high zero-tolerance approach combined with SRO presence in schools with large proportions of low-income and low academically performing students is likely to have a greater impact on racial minority students, whereas when SROs suppress the effect of a high zero-tolerance approach in schools with low proportions of low-income and low academically performing students, this effect is most likely to benefit White students. Therefore, the findings related these two school context characteristics provide support for the racial threat hypothesis and again suggest that the combination of SRO presence with a high zero-tolerance approach may contribute to racial disparities in school discipline.

The significant three-way interaction that included school size suggested that the mutually reinforcing effect of a high zero-tolerance approach and SRO presence was stronger in smaller schools, although present across schools of all sizes. The direction of this finding was unexpected given that prior qualitative research has found that SROs in larger schools tend to focus more on their roles as law enforcers, something typically associated with more exclusionary discipline (Finn et al., 2005; Kupchik, 2010). However, this unexpected finding could likely be a consequence of how the rates of discipline in schools were calculated. Specifically, increasing the total *number* of incidents of exclusionary discipline by a constant

number would have a larger impact on the *rate* of exclusionary discipline in schools with a smaller number of students. For example, changing from 10 to 15 incidents in a school of 100 students represents a 5.0% increase in the overall rate (i.e., from 10% to 15%). However, changing from 10 to 15 incidents in a school of 1,000 students represents a much smaller percent increase of 0.5% (i.e., from 0.1% to 0.15%). Therefore, the unexpected finding of three-way interaction may be an artifact of how the rate of discipline was calculated. Indeed, as shown in Figure 5, the interaction did not include a change in direction, but a difference in the magnitude of the combined effect of a high zero-tolerance approach and SRO presence across schools of different sizes.

In sum, the racial threat hypothesis offers a plausible explanation for the findings of Study 2. The racial threat hypothesis would predict that in schools with larger proportions of racial minority students, there will be more social control mechanisms including both a high zero-tolerance approach to discipline and SRO presence. Indeed, these two social control mechanisms had a mutually reinforcing effect in schools with larger proportions of racial minority students or characteristics associated with a higher minority presence. Conversely, there was a dampening effect in schools with larger proportions of White students or characteristics associated with a higher proportion of White students. Therefore, the combined impact of a high zero-tolerance approach to discipline with SRO presence was systematically different across school contexts, with schools comprised of higher proportions of racial minority students—and schools characterized by traits often associated with higher proportions of racial minority students—having higher rates of exclusionary discipline. It is also possible, however, that there was an underlying factor different from racial composition that was driving these findings, particularly given the high correlations among the school context variables. For instance, each

measure of school context may be an indicator of school or community disadvantage, of which racial composition is typically an integral part. Therefore, the findings of this study cannot necessarily confirm that racial composition is the driving force behind the differences, but leaves open the possibility that another underlying factor may contribute to cross-school differences in the combined impact of SROs and schools' zero-tolerance approach to discipline.

This study is among the first to simultaneously examine the combined impact of two different school-level mechanisms that have been theoretically connected with higher rates of exclusionary discipline. It is noteworthy that in addition to a mutually reinforcing effect of a high zero-tolerance approach and SRO presence in certain school contexts, there was a suppressive effect found in others, particularly those with more White students and those with fewer Black, low-income, and low academically performing students. This indicates that between-school racial disparities in school discipline may be attributable in part to the combined impact of a high zero-tolerance approach to discipline and the presence of SROs. However, this study was unable to address any within-school racial disparities in discipline, which may contribute to racial disciplinary disparities (e.g., Gregory & Weinstein, 2008; Skiba, Michael, Nardo, & Peterson, 2002). Future research should continue to examine both the role of schools' approaches to discipline and the impact of SROs both between and within schools.

Limitations

The findings from this study should be interpreted in light of its limitations. Perhaps the most serious limitation is the use of cross-sectional data. Although the SSOCS provides a large, nationally representative sample, its cross-sectional nature precludes causal inference. Related studies have been able to link data from schools in the SSOCS sampling frame over time (e.g., Devlin & Gottfredson, under review; Na & Gottfredson, 2013), but this has resulted in a limited

sample size and a non-representative sample comprised of an oversampling of large, urban schools. Replication of Study 2 with longitudinal data would be a useful next step for the field.

An additional limitation of Study 2 is that it did not explore differences among schools with varying numbers of SROs. It is possible that the effects of SROs found here may be particularly pronounced in schools with multiple SROs, or conversely, that spreading out duties among multiple SROs might lead to a different pattern of results. Future studies may examine the differences between the mere presence of SROs and the number of SROs per student or per school. Because it relied on secondary data, this study was also unable to include the race of SROs in any analyses; this may be an important variable to measure, particularly given that research on community crime more broadly indicates that when the race of a police officer does not match those of residents, there tends to be higher arrest rates, particularly for minor offenses (e.g., Donohue III & Levitt, 2001). Additionally, Black police officers tend to perceive Black communities as less hostile than White officers (Groves, & Rossi, 1970).

Another limitation of the SSOCS data was that the items about exclusionary discipline used to construct both the *Zero-Tolerance Approach* variable and schools' rates of exclusionary discipline were not as precise as would have been ideal. In regard to schools' zero-tolerance approach, the available measures were unable to capture schools' overall approach to enforcing school rules. For example, teachers in schools with stated zero-tolerance policies may be especially vigilant in their observation and punishment of those offenses. This variability in the extent to which school personnel monitor students' behavior may be associated with schools' zero-tolerance approach to discipline as well as the presence of SROs, but that was not captured by the measures used in this study. A better understanding of the disciplinary processes, foci, and enforcement patterns within schools would enhance this study. There was also a lack of precision

in the measure of rates of exclusionary discipline. For example, one of the potential disciplinary actions listed in the survey was *Other disciplinary action (e.g., suspension for less than 5 days, detention, etc.)*, which seems to conflate disciplinary actions that are traditionally understood as exclusionary (i.e., suspensions for less than 5 days), with those that are less so (i.e., detention). Similarly, the possible offenses were limited to a list of fairly serious ones, whereas prior research indicates that most exclusionary discipline is a result of less serious, non-violent, non-criminal offenses (Skiba et al., 2000). A more nuanced and comprehensive measure of exclusionary discipline would provide additional insight into the findings of Study 2, and qualitative research may be useful for understanding some of the variability that may be difficult to measure quantitatively.

Conclusion

At a time when national educational priorities are focused on reducing both overall rates of exclusionary discipline and racial disparities in exclusionary discipline, schools and policymakers have largely been left without evidence-based guidance for identifying the mechanisms by which such high rates of discipline have arisen and toward a clear path forward. Additionally, little attention has been given to the role of school context and how some school-level policies or interventions might have drastically different impacts across different types of schools. This study adds to a growing body of research by identifying two common school-level approaches (i.e., zero-tolerance approaches to discipline and the presence of SROs) that are expected to have an impact on exclusionary discipline rates and examining how they operate differently across school contexts. The findings indicate that schools made up of large proportions of racial minority, low-income, and low academically performing students should be wary of combining a high zero-tolerance approach with the presence of SROs, as this is

associated with particularly high rates of exclusionary discipline. Restorative approaches provide a promising alternative to discipline that keeps students in school while still providing accountability and a chance for healing and growth (Gonzalez, 2015; Macready, 2009; McCluskey et al., 2008; Morrison & Vaandering, 2012). Although such approaches are less common in schools with larger proportions of racial minority students (Payne & Welch, 2010), beginning to transform such schools' disciplinary processes would likely be a productive step toward lowering rates of exclusionary discipline and helping to close the racial gap in school discipline.

Researchers should continue to examine the mechanisms that lead to higher exclusionary discipline rates in schools. Although this study focused on school-level predictors, there are also important predictors at multiple ecological levels of analysis. At the individual level, for instance, research indicates that racial biases of school personnel play a role in school discipline processes (Bradshaw, Mitchell, O'Brennan, & Leaf, 2010; Skiba et al., 2002). At a broader level, federal legislation and funding initiatives should also be critically examined for their impacts on school discipline. The 1994 Gun Free Schools Act, for example, is often credited for ushering in zero-tolerance policies to school settings, leading to a widespread increase in exclusionary discipline and the attendant racial disparities. The current study also highlights the importance of examining variability in any of these effects; there is reason to expect that the effects of various factors on exclusionary are systematically different across different types of schools. Continuing to identify and understand these complex dynamics is critical for reducing the problems associated with exclusionary discipline and promoting healthy and productive futures for students and schools alike.

CHAPTER IV

CONCLUSION

To date, there is a robust body of literature indicating that exclusionary discipline is administered at high rates, that students of color—particularly Black and Hispanic students—receive exclusionary discipline at higher rates than their White peers, and that exclusionary discipline is associated with negative academic and behavioral outcomes for students. However, less is known about what school-level factors affect overall rates of exclusionary discipline and racial disparities in exclusionary discipline. SROs and zero-tolerance policies are frequently cited as mechanisms that may increase exclusionary discipline, but the findings from the few empirical studies that have been conducted are inconsistent, and often are lacking in methodological rigor. Moreover, few of these studies have examined the heterogeneity in effects across different school contexts. The racial threat hypothesis suggests that there should be expected differences across schools, particularly those characterized by higher rates of racial/ethnic minority students. The two studies presented here sought to build on the current literature by using rigorous methods to address the relation between schools' rates of exclusionary discipline and two different school-level social control mechanisms: the presence of SROs and schools' zero-tolerance approach to education. Additionally, these studies examined differences in outcomes by race, as well as across different school contexts.

Study 1 modeled the impact of implementing SROs on overall suspension rates, suspension rates of White students, suspension rates of Black students, and within-school racial disparities in suspension rates between White and Black students. This study incorporated 14

years of data, allowing for the estimation of pre- and post-intervention trends in both a treatment and comparison group that were constructed using propensity score matching. This study provided evidence that implementing SROs led to decreases in schools' overall suspension rates as well as those of Black students, but was not associated with changes to White students' suspension rate or within-school racial disparities in suspension rates. It also indicated that school context variables were predictive of school's suspension rates and racial disparities, but did not provide evidence that the impact of SROs was dependent upon measures of school context.

One of the major limitations of Study 1 was that it was unable to address schools' orientation to discipline and model differences among schools that were more or less likely to administer exclusionary discipline. Study 2 addressed this limitation by examining the relation between both SRO presence and schools' zero-tolerance approach to discipline and schools' rates of exclusionary discipline using a nationally representative sample of public high schools. Again, these relations were examined across various school contexts. The findings from this study indicated that schools with a higher zero-tolerance approach to discipline tended to have higher overall rates of exclusionary discipline, providing no evidence that this orientation toward discipline had a deterrent effect on students' problem behaviors (although this conclusion is only tentative in the absence of longitudinal data). Moreover, this relation did not depend on the presence of SROs, suggesting that across all schools in the sample, the impact of schools' zero-tolerance approach to discipline on overall rates of exclusionary discipline was consistent across schools with and without SROs. However, after incorporating measures of school context, the presence of SROs became significant. When schools were characterized by higher levels of racial/ethnic minority students or other measures of disadvantage, the combination of a high

zero-tolerance approach to discipline and SRO presence was predictive of higher overall rates of exclusionary discipline. However, when schools were characterized by lower levels of disadvantage, this combination was associated with lower rates of exclusionary discipline. This study found that school context is important to consider when examining the impact of school-level social control mechanisms on exclusionary discipline, and that indicators of race and disadvantage may be particularly relevant.

Both of these studies indicated that school context is important to consider when examining exclusionary discipline. This was most clear in Study 2, which showed a consistent pattern where schools characterized by greater levels of disadvantage had higher rates of exclusionary discipline when they had both a high zero-tolerance approach to discipline and SRO presence. Although Study 1 did not provide evidence that the impact of SROs depended on school context, it did indicate that school context was predictive of suspension rates. In particular, larger schools tended to have higher initial rates of overall suspensions and suspensions of Black students, and schools with a larger proportion of White students tended to have lower initial rates of White suspensions, Black suspensions, and racial disparities in suspensions. Therefore, these studies together suggest that any examination of the impact of SROs or school discipline policies should be done with particular attention given to school context.

There were also some important distinctions between the two studies. Perhaps the most theoretically meaningful difference was that the pattern of impacts of SROs was somewhat different across the studies. In Study 1, SRO implementation was related to lower overall suspension rates and lower suspension rates for Black students, whereas Study 2 showed that the impact of SROs in the relation between schools' zero-tolerance approach and schools' overall

rates of exclusionary discipline depended substantially on school context. However, this difference may be explained in part by the study designs. For example, Study 1 only included suspension rates, and did not include any other measures of exclusionary discipline (e.g., expulsions, transfers to specialized schools), whereas Study 2 included multiple types of exclusionary discipline. Additionally, Study 1 did not incorporate schools' zero-tolerance approach to discipline whereas Study 2 did. Another design difference was that the findings of Study 2 were based on single-year estimates from cross-sectional data, whereas Study 1 used several waves of data to estimate trends across multiple years. The different compositions of the study samples (i.e., public high schools in Tennessee in Study 1 and a nationally representative sample of public high schools in Study 2) may also explain the different findings across the two studies; there may be characteristics of schools or SROs unique to Tennessee that would not generalize to a broader population outside the state.

The racial threat hypothesis suggests that schools with larger proportions of racial/ethnic minority students are more likely to implement social control mechanisms such as SROs or zero-tolerance approaches to discipline. Prior research has found that implementation patterns of SROs and other school security measures as well as schools' disciplinary policies largely follow the pattern predicted by the racial threat perspective. The findings from these studies extend the racial threat hypothesis as it applies to school settings by finding that not only are schools with higher proportions of racial/ethnic minority students more likely to have social control mechanisms, but those mechanisms tend to result in racial/ethnic disparities in exclusionary discipline between schools, although perhaps not within schools. Study 2 found that combining two particular forms of social control (i.e., SRO presence and a high zero-tolerance approach to discipline) had a harmful compounding effect in schools with higher proportions of racial/ethnic

minority students, but had a protective effect in schools with higher proportions of White students. This pattern also held true for other measures of disadvantage such as academic performance, socioeconomic status, and school size. Therefore, the social control mechanisms that are disproportionately implemented in schools with more racial/ethnic minority students also tend to have a disproportionately negative impact on racial/ethnic minority students. As researchers continue to identify mechanisms contributing to racial disparities in exclusionary discipline, both SROs and zero-tolerance approaches to discipline should continue to be examined, but not without also considering the role of school context.

In addition to the measures of school context used across these two studies, additional contextual variables are likely also relevant. For instance, the extent and nature of the collaboration between schools and law enforcement agencies vary widely across schools and districts. These differences exist both in written agreements and in *de facto* operations within school buildings. It is likely that differences in the collaboration between these agencies are related to the work that SROs perform in schools as well as their association with student discipline. For instance, in a context where there is very close collaboration and frequent communication between the school and the law enforcement agency, school-based punishments such as suspensions may be more coordinated with law-based punishments such as arrests than in schools where there is a looser collaboration and less frequent communication. Similarly, schools have varying degrees of organizational capacity, and there may be systematic differences in the relation between SROs and exclusionary discipline along this dimension as well. In schools with a stronger organizational infrastructure, SROs might receive more guidance from school administration about what sorts of duties are most needed in the school. In contrast, SROs in schools with less organizational capacity may be left to rely on their own judgment and

assessment of the school's needs with less input from school administration. Related to this, a school's culture or climate is likely to be consequential for how SROs are associated with exclusionary discipline rates. Two schools can have identical structural contextual characteristics such as size and student body composition, but might have entirely different cultures and climates within them. For example, schools with a more authoritative school climate—that is, one that emphasizes both a high degree of structure around school rules and a high degree of student support from adults in the school—tend to have lower rates of bullying and victimization, indicating that differences in school climate are associated with students' problem behaviors that are potentially detectable by SROs, which are in turn associated with school-level discipline rates (Gerlinger & Wo, 2014; Gregory, Cornell, & Fan, 2012; Gregory et al., 2010). Such differences should be expected to have an effect on how SROs function in schools, even in regard to student discipline. Additionally, there is a small body of research that suggests that the implementation of SROs in some school environments leads to an erosion of the relationships between students and teachers because issues of behavioral control fall under the domain of SROs rather than teachers (Devine, 1996). When teachers no longer are the primary agents in charge of monitoring and shaping students' behavior, a critical element of the traditional student-teacher relationship is lost, and students' bonds to teachers weaken as a result. Schools that are able to maintain an authoritative school climate in spite of having an SRO may experience qualitative differences in how the SRO functions within the school.

Schools that are concerned about their high rates of exclusionary discipline or racial disparities in exclusionary discipline should strongly consider the role that SROs may play in producing those unwanted outcomes. The findings from the two studies presented here suggest that SROs are unlikely to have a universal impact that is the same from school to school. Instead,

the ways that they interact with school discipline are largely contingent on school context, including the composition of the student body and the school-level orientation toward discipline. Schools with SROs might reconfigure the ways that they are used within the school in order to limit their interaction with the school discipline process, particularly for non-criminal offenses. The minority of schools without SROs that may be considering implementing them should carefully weigh the costs and benefits of implementing SROs in light of the school's other issues, including discipline rates, racial composition, discipline policies, and other relevant factors. At a broader level, it may be worthwhile for policymakers to fund other school-based initiatives to promote school safety besides SRO implementation. The National Institute of Justice's Comprehensive School Safety Initiative is one promising mechanism for developing state of the art knowledge about what works to make schools and students safe. To date, the projects that have been funded through this initiative are broadening the picture of school safety; whereas school safety was once myopically focused on preventing crime and violence in schools, it has expanded to include important constructs such as mental health, school climate, and restorative justice. Continuing to fund these sorts of initiatives is critical for enhancing the safety of students and schools nationwide.

Although each of the studies presented here only examines a small part of the universe of mechanisms that could lead to increased rates of exclusionary discipline and the attendant racial disparities, they add to a growing body of literature that indicates that SROs, discipline policies, and school context all play meaningful roles. More work is needed to continue to identify malleable mechanisms that contribute to changes in school-level rates of exclusionary discipline and also to understand how these mechanisms might operate differently across contexts. Importantly, when experimentation is not possible, studies need to make use of strong quasi-

experimental designs with strong counterfactuals that increase internal validity and maximize causal inference. Replicating studies across various contexts is also a critical undertaking to better understand which results generalize to a broader population and which ones are more limited in their generalizability. As the field of school safety continues to grow larger, it would also do well to grow in its use of methodologically rigorous study designs that can translate into real-world impacts on schools and students.

While nationwide rates of school crime have decreased since the 1990's, rates of exclusionary discipline have remained persistently high, and Black students have continued to be excluded from school at much higher rates than their White peers. Few empirical studies have examined the mechanisms by which these outcomes have arisen, and the two studies here add to a growing literature base that places SROs and zero-tolerance at the center of the conversation. Perhaps the most consistent finding that these studies offer is that context matters, both in regard to which type of schools have the highest rates of exclusionary discipline and the impact of SROs on disciplinary outcomes. In particular, students' race and schools' racial composition seem to be two factors associated with variability in the impacts of SROs. As the relationship between police and communities of color continues to be negotiated in the public sphere, it is critical that schools remain part of that conversation.

APPENDIX A

CORRELATIONS BETWEEN TWO MODELS OF PROPENSITY SCORE ESTIMATION
AND SUSPENSION RATES

| | Overall Suspensions | | White Suspensions | | Black Suspensions | | Racial Disparities | |
|--------|---------------------|------------------|-------------------|------------------|-------------------|------------------|--------------------|------------------|
| | Full Model | Restricted Model | Full Model | Restricted Model | Full Model | Restricted Model | Full Model | Restricted Model |
| Wave 0 | .05 | .05 | -.32** | -.45*** | -.05 | .02 | -.33** | -.25* |
| Wave 1 | .10 | .05 | -.03 | -.13 | .04 | .02 | -.25* | -.18 |
| Wave 2 | .05 | .05 | -.18 | -.27** | -.06 | -.03 | -.28** | -.22* |
| Wave 3 | .15 | .15 | -.26** | -.38*** | .10 | .08 | -.28** | -.29** |
| Wave 4 | .14 | .16 | -.15 | -.20* | .17 | .19 | -.21* | -.20 |
| Wave 5 | -.09 | -.18 | -.10 | -.19 | .11 | .07 | .07 | .18 |
| Wave 6 | -.20 | .15 | -.20 | -.15 | -.16 | -.07 | -.20 | -.17 |
| Wave 7 | -.25* | -.27* | -.24 | -.25* | -.17 | -.26* | -.22 | -.21 |
| Wave 8 | -.06 | -.12 | -.04 | -.09 | -.03 | -.24 | -.23 | -.32 |
| Wave 9 | -.05 | -.18 | -.05 | -.17 | .02 | -.20 | -.10 | -.22 |

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

APPENDIX B

VARIABLES USED IN STUDY 2 PROPENSITY SCORE ESTIMATION

During the 2009–10 school year, was it a practice of your school to do the following (Yes/No):

- Require visitors to sign or check in;
- Require students to pass through metal detectors each day;
- Close the campus for most or all students during lunch;
- Require drug testing for athletes;
- Require drug testing for students in extra-curricular activities other than athletics;
- Require drug testing for any other students;
- Require students to wear uniforms;
- Enforce a strict dress code;
- Provide school lockers to students;
- Require clear book bags or ban book bags on school grounds;
- Provide an electronic notification system that automatically notifies parents in case of a school-wide emergency;
- Require students to wear badges or picture IDs
- Require faculty and staff to wear badges or picture IDs;
- Use one or more security cameras to monitor the school;
- Provide telephones in most classrooms;
- Provide two-way radios to any staff;

- Limit access to social networking websites (e.g., Facebook, MySpace, Twitter) from school computers;
- Prohibit use of cell phones and text messaging devices during school hours

During the 2009–10 school year, did your school have any formal programs intended to prevent or reduce violence that included the following components for students (Yes/No):

- Prevention curriculum, instruction, or training for students (e.g., social skills training);
- Behavioral or behavior modification intervention for students;
- Counseling, social work, psychological, or therapeutic activity for students;
- Individual attention/mentoring/tutoring/coaching of students by students;
- Individual attention/mentoring/tutoring/coaching of students by adults;
- Recreational, enrichment, or leisure activities for students;
- Programs to promote sense of community/social integration among students

To what extent do the following factors limit your school’s efforts to reduce or prevent crime (Limits in major way; Limits in minor way; Does not limit):

- Lack of or inadequate teacher training in classroom management;
- Lack of or inadequate alternative placement/programs for disruptive students;
- Likelihood of complaints from parents;
- Lack of teacher support for school policies;
- Lack of parental support for school policies;
- Teachers’ fear of student retaliation;
- Fear of litigation;
- Inadequate funds;
- Inconsistent application of school policies by faculty or staff;

- Fear of district or state reprisal;
- Federal, state, or district policies on disciplining special education students;
- Federal policies on discipline and safety other than those for special education students;
- State or district policies on discipline and safety other than those for special education students

As of October 1, 2009, what was your school's total enrolment?

What percentage of your current students fit the following criteria:

- Eligible for free or reduced-price lunch;
- Limited English Proficient (LEP);
- Special education students;
- Male

What is your best estimate of the percentage of your current students who meet the following criteria:

- Below the 15th percentile on standardized tests;
- Likely to go to college after high school;
- Consider academic achievement to be very important

How would you describe the crime level in the area(s) in which your students live? (High; Moderate; Low; Varies)

How would you describe the crime level in the area where your school is located? (High; Moderate; Low)

Number of students who transferred to the school during the 2009-10 school year.

Number of students who transferred from the school during the 2009-10 school year.

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