

NATIONAL PATTERNS OF VULNERABLE DECISION POINTS IN SCHOOL
DISCIPLINE

by

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DISSERTATION ABSTRACT

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This study identified the discipline decision situations that contribute most to racial discipline disparities from a sample of 992 schools across the U.S. Next, latent profile analysis was used to identify distinct patterns of VDPs across schools, and then membership of schools in these profiles was predicted by school characteristics. Additionally, the strongest VDP in each school was directly compared to situations with the highest rates of ODRs to identify the extent of agreement with overall school discipline patterns. Subjective behaviors (e.g., defiance, disruption) in classrooms throughout the day were found to be the decision situations comprising the most common VDPs within school, with ODRs for physical aggression contributing notably to disparities among the top ten VDPs. Eleven distinct latent profiles of VDPs were identified among schools in the sample, with school characteristics having limited predictive effects. Last, there was moderate agreement between situations with the most referrals and those with the strongest racial disparities, with 63% of schools in the sample having VDPs identical to their situations with most referrals. In the absence of prescriptive analysis of their own school data, the results of this study provide school leaders and intervention researchers with more precise, promising targets for intervention to increase educational equity.

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INTRODUCTION

The use of exclusionary discipline as a remedy for unwanted behavior is a common practice in schools across the United States (U. S.). Examples of exclusionary discipline include office discipline referrals (ODRs), suspension (in or out of school), and expulsion. ODRs are ubiquitous in school data collection and are used to document both student behavior that warranted a student being sent from the classroom to the office and staff responses to that behavior (Irvin et al., 2006). In a typical ODR, a student is sent to the office, where the administrator decides additional consequences. An ODR, prior to any further action, removes a student from the classroom for an estimated average of 45 minutes (Scott & Barrett, 2004). This interaction in the office, depending on circumstances, can lead to further, more severe exclusion from school. Suspensions are typically considered a harsher consequence than ODRs, wherein students are disallowed from their assigned classroom (in-school suspension) or from the school as a whole (out-of-school suspension) for at least half of one school day. Expulsion is the harshest consequence speaking strictly to its exclusive nature, barring a student from returning to school for the remainder of a term, school year, calendar year, or more.

Approximately 2.5 million students were suspended in the 2018-19 school year, and another 100,000 students were expelled (Ryberg et al., 2021). For a student, this means whole days, weeks, or months barred from school, with less instruction for them compared to their peers. These extraordinarily high counts per annum suggest that exclusion remains a regular part of the school discipline routine across the U. S. Generally, these are delivered as a punitive consequence for a serious behavioral error in

school and are intended to diminish the likelihood that a student engages in similar behavior again in the future; however, it largely fails to actually serve that purpose.

Suspending a student does not prevent unwanted behavior in schools (American Academy of Pediatrics Council on School Health, 2013). To the contrary, there is evidence that students who are suspended early in the school year are much more likely to receive another suspension later in the year (Massar et al., 2015), and implementing strict policies of exclusion leads to increased frequency and intensity of unwanted behavior (Sugai & Horner, 2002). There is also evidence that suspension does not benefit the school, as higher use of suspension is correlated with more negative perceptions of school climate (Huang & Cornell, 2018; Skiba et al., 2006). Despite its ineffectiveness and the recommendations of professional organizations to change practice to more inclusive, instructional alternatives, exclusion is exceedingly common in school district policies (Green et al., 2020).

Beyond its ineffectiveness, exclusionary discipline practices have tangible deleterious consequences for students. Longitudinal studies find that students who receive suspension in school are more likely to have lower academic outcomes, drop out of high school, and become involved in the juvenile justice system (Cholewa et al., 2018; Schollenberger, 2015; Skiba, Arredondo, et al., 2014). Recent research demonstrates that there are effects lasting beyond high school as well. In an analysis of post-secondary outcomes, Davison and colleagues (2021) examined how students who were suspended in high school fared compared to those who were not suspended. They found that students who were suspended were more than twice as likely to be charged with and convicted of

a crime, were less likely to attend or graduate from college by age 23, and earned less in wages at age 27.

One method of problem-solving to reduce the use of exclusions by focusing on specific contexts that account for many ODRs. Often, teams focus on identification of the specific situations (e.g., location, behavior, time of day) that have the highest rates of ODRs in the building, sometimes described as Precise Problem Statements (PPSs; Horner et al., 2018). PPSs are usually produced by examining ODR data and drilling down on the specific contexts in which ODRs are occurring. First, a team might identify the location with the most ODRs, then identify the behaviors in that location that account for the most ODRs, and from there identify the time period that accounts for the most ODRs for that behavior in that location. A team might follow this progression to additional contexts (e.g., grade level, days of the week) until a team decides they have sufficient detail to develop a meaningful, targeted plan to reduce ODRs. For example, by analyzing their data, a team might identify that ODRs are most common for defiance (what) in in the cafeteria (where), at noon (what time), among 4th grade boys (who) on Thursdays and Fridays (what days). With a precise context in mind, school teams can action plan tailored responses for those narrow circumstances. Compared to more general statements about discipline patterns (e.g., there are many more referrals this month), this level of detail can expeditiously inform additional points of inquiry and result in a more refined and matched strategy to address the concerns and reduce the number of ODRs in that context and overall.

Racial Disparities in Exclusion

Disproportionate use of exclusionary school discipline for students of color represents one of the most important challenges facing educators in the U.S. In a trend that dates back decades, students of historically marginalized communities have been disproportionately removed from classrooms and schools compared to their peers. The most prominent of these disparities occurs with Black or African American (hereafter referred to as Black) students, who are referred to the office and suspended at rates 2 to 3 times higher than expected based on their enrollment (U.S. Department of Education Office for Civil Rights, 2021; Welch et al., 2022). These disparities are also evident in ODRs (Girvan et al., 2017; Girvan et al., 2021), the most common form of exclusion in schools. As the precursor to more widely-reported and severe consequences like suspension, ODRs present as an important, and likely more sensitive measure of exclusion.

Disparities for Black students are consistent and robust, holding across gender and grade levels, as early as preschool (Girvan et al., 2021). Disparities have frequently been found to be most disparate in secondary setting (Welsh & Little, 2018), but there is evidence that preschool students who are Black have been excluded at notably higher rates than older students (Steinberg & Lacoë, 2017), making up 18% of the preschool student enrollment but 48% of students experiencing suspension, compared to 16% and 34% respectively for older grades. Other racial/ethnic groups experience disproportionate discipline in school as well. American Indian or Alaska Native (hereafter referred to as Indigenous) students are similarly excluded at a rate twice what would be expected based on population, but fewer studies have examined these disparities, with one finding nonsignificant differences overall in schools implementing positive behavioral

interventions and supports (PBIS; Greflund et al., 2014) and another finding of disproportionality in high schools, but not in elementary and middle schools (Gion et al., 2018). Exclusion of Hispanic or Latino/a/e students is less consistent, with these students being overrepresented in secondary grades, but underrepresented in younger grades (Losen et al., 2015).

Exclusion is More Harmful for Black Students

Compounding the effects of disproportionate referral and suspension, research indicates that suspension has worse consequences for Black students than other groups. Black young adults who received a suspension in high school experienced the largest disparities in criminal justice involvement, incarceration rate, income, and poverty outcomes compared to other students from other racial/ethnic groups who had received a suspension (Davison et al., 2021). Previous research has suggested a notable proportion of the gap in incarceration rates between Black and White adults can be accounted for by the gap in exclusionary discipline (Barnes & Motz, 2018; Davison et al., 2021; Welch et al., 2022). Davison et al. (2021) found that 30% of the disparities observed between Black and White criminal justice outcomes could be accounted for by observed disparities in suspensions. The serious impact of exclusionary discipline, in particular on students identified as Black, demonstrates the urgent need to reduce its use.

Disparities are Robust and Complex

A factor likely contributing to the difficulty of eliminating racial disparities is the complexity surrounding them. For instance, a common misunderstanding is that although racial disparities are present, the disparities themselves can be attributed to other factors, such as higher rates of poverty or differences in base rates of behavior. The

available literature does not support this postulation. The research has been consistent in illustrating that these disparities persist regardless of student or event-specific variables. For instance, multiple studies have shown Black students receive disproportionate exclusionary discipline even after controlling for factors such as student behavior, prior unwanted behavior, socioeconomic status, gender, caregiver status (single vs. multiple caregivers), and using different methods of measurement (Fadus et al., 2021; Girvan et al., 2017; Huang, 2020; Huang & Cornell, 2017; Skiba, Chung, et al., 2014; Skiba et al., 2002; Welch et al., 2022; Welsh & Little, 2018). More recent research has identified these disparities persist within incidents. Even after controlling for number of discipline incidents each student received previous to an incident, students who are identified as Black were more likely to be suspended and to be suspended for longer compared to White students engaged in the same discipline incident (Shi & Zhu, 2022). What can be said of the complexity of racial disparities is that schools are systems with multiple levels of decision-making that influence student outcomes. Decisions made by parents, teachers, principals, district leaders and boards, and state leadership all shape education in the classroom to varying degrees. Along those same lines, discipline disparities are associated with variables at the student, classroom, school, and community levels (Girvan et al., 2021; Welsh & Little, 2018). This complexity, combined with its political thorniness, has made the problem challenging to remedy.

Racial Bias as a Potential Cause of Disparities

Living in this society means being exposed to a legacy of negative, harmful racial stereotypes, and schools are far from the only institution observed to be affected. A common understanding of the issue of broader disproportionality in the U. S. is that racial

bias is to blame. The racial bias thought to be affecting school discipline is specifically anti-Black bias, wherein students identified as Black are perceived more negatively, and thus as more culpable in behavioral errors, than other students (Okonofua, Walton, et al., 2016). Bias has been conceptualized to be present in both explicit and implicit forms (McIntosh et al., 2014). Explicit biases are composed of conscious beliefs and attitudes that a person communicates to others, whereas implicit biases are tendencies or beliefs that are below conscious awareness but may influence observable behaviors (Greenwald & Pettigrew, 2014).

Research shows that teachers are not immune to these biases; implicit bias manifests itself in teachers of all backgrounds (Okonofua & Eberhardt, 2015) and at levels similar to those of the general population (Starck et al., 2020). Implicit bias among decision-makers is thought to be a relevant predictor of disparities (McIntosh et al., 2014; Skiba et al., 2002), and is theorized to initiate and perpetuate a coercive cycle of negative interactions that ultimately shape teacher-student relationships (Okonofua, Walton, et al., 2016). In one study, the strength of community-level implicit racial bias was significantly associated with racial disparities ODRs and suspensions in local schools (Girvan et al., 2021). Further, the relation between community-level bias and inequities in out-of-school suspension was no longer significant when accounting for the relation between bias and ODRs. In other words, implicit bias was most influential at the ODR level, and teacher decisions to issue an ODR were more tied to bias than the subsequent decision to suspend. These findings point to the promise of identifying how, when, and where implicit bias affects decision-making to increase the precision and effectiveness of equity-focused intervention.

Both explicit and implicit bias are harmful, if not outright dangerous to those affected, but their effects on students can be mitigated in different ways. McIntosh and colleagues (2014) theorized that explicit racial bias can be mitigated through policy changes that include accountability, such as a one that requires evaluation of educators based on observed racial discipline disparities. In contrast, the authors posited that school practices are the most promising means of countering implicit bias. An example of a practice that may reduce disparities could be teachers redefining and designing additional instruction to more clearly communicate behavioral expectations around subjective behaviors such as defiance.

Vulnerable Decision Points Model

Dual-processing cognitive models are often used to explain decision-making at unconscious and conscious levels, articulating that decisions that must be made in the moment are more likely to be influenced by unconscious bias than ones in which a teacher can consider the circumstance and possible consequences to make a thoughtful decision (Girvan et al., 2021). In recent years, studies have found that racial disparities in ODRs for Black students are largely composed of ODRs for behaviors that tend to be more subjective (e.g., defiance, disruption; Girvan et al., 2017; Skiba et al., 2002). This pattern implicates the influence of racial bias in teacher discipline decision-making (McIntosh et al., 2014). Specific situations in which racial bias is most likely to influence discipline decisions are called vulnerable decision points (VDPs; McIntosh et al., 2014). VDPs are situations that involve a greater degree of uncertainty or discretion and could be linked to internal states of the decision-maker (e.g., fatigue, hunger) as well, but in all cases are theorized to rely on unconscious cognitive processing. For example, teachers

may be more likely to issue ODRs to Black students for defiance in the middle of a lesson in the classroom (when they are multitasking and need to respond quickly) or in the afternoons (when fatigue may affect decisions). In contrast, teachers may make more equitable decisions for attendance-related referrals (which are issued before or after a lesson and are less subjective).

The VDP model challenges common understandings of disproportionality that consider racial bias as the *sole* predictor of discipline disparities. Instead, the VDP model asserts that racial bias is more influential in specific decision situations, and that it can be mitigated through strategies that assist teachers in making more equitable discipline decisions. The primary innovation of the VDP framework is that even in schools with higher rates of overall racial discipline disparities, there will be situations in which disproportionality is not evident and others in which it is acute.

This understanding changes the focus of intervention from racial bias itself to creating awareness of these possible VDPs and planning to use more intentional strategies in those situations. The circumstances in which students are disciplined are collected from fixed-response fields in ODR forms. A discipline decision situation is an intersection of the possible responses, and in practice, it is not uncommon for school teams to use five or more fields to identify a context to target for intervention (e.g., Disruption (behavior) in the Classroom (location) during Afternoon Instruction (time of day) by 8th grade students (student grade level) on Mondays (day of week). Measuring and tracking racial discipline disparities in these specific contexts also provides school teams with situations for which it may be more efficient to develop, implement, and monitor results of strategies.

Although a relatively new concept, recent research has identified points of inequity that are consistent with the VDP model. In a study intended to identify VDPs in elementary schools, Black students were found to be more often referred for subjective infractions, in classrooms, in the beginning of the day, and for infractions classified as more severe (Smolkowski et al., 2016). The VDP characteristics identified in this study likely overlap with actual common VDPs in schools, but the authors aggregated referral data to the national level, which did not identify patterns specific to any particular school or set of schools and cannot be tied to any specific school characteristics.

Interventions to Reduce Disparities

Although well-established in the literature as a chronic issue in education, attempts to eliminate racial disparities in school discipline have largely fallen short. Researchers have tried addressing disparities through multiple theoretical frameworks and therefore with differing approaches. Some researchers have sought to intervene on implicit bias directly, intending to change attitudes and inhibit biased responses through specific training. Devine and colleagues (2012) have suggested that there must be some awareness and willingness to address a problem in order to see behavior change to be more equitable. However, other research suggests that waiting to intervene until educators are committed to equity does not yield the desired changes in staff behaviors (Ishimaru & Galloway, 2019).

Another type of intervention has focused on increasing teacher empathy for students through an empathic-mindset intervention (Okonofua et al., 2022; Okonofua, Paunesku, et al., 2016). To sidestep implicit bias in decision-making, this empathic-mindset intervention relied mostly on one session of an online professional development

module encouraging teachers to focus on building and maintaining healthy relationships with students, sharing research and anecdotes supporting an approach of addressing student behaviors with empathy. This brief intervention approach resulted in significant decreases in racial disparities in suspension from school over the course of a school year (Okonofua et al., 2022), but racial disparities were not entirely eliminated.

Some broader school-wide interventions are theorized to reduce inequities, but in a recent systematic review, Cruz and colleagues (2021) identified mixed effects of randomized controlled trials of school-wide PBIS and restorative justice on discipline disparities. Although there is evidence both approaches reduce overall rates of ODRs or suspensions (Bradshaw et al., 2010; Gregory et al., 2018), including for marginalized groups, neither approach demonstrated a significant reduction in the racial gap (Barclay et al., 2022; McIntosh, Gion, et al., 2018; Zakszeski et al., 2021). Some classroom-level studies have shown the promise of one-to-one teacher coaching to reduce disparities (Bradshaw et al., 2018; Gion et al., 2021; Gregory et al., 2016), but this approach requires intensive support for individual teachers at substantive cost to implement at scale and with the requirement that individual teachers elect to receive coaching for equity, a substantial barrier to intervention. It is evident that there is still a need for more efficient, effective interventions to reduce disparities on a large scale.

Evidence Supporting School-Level Intervention using the VDP Model

Problem-solving racial disparities in schools can leverage a similar data-based approach to routine problem-solving around reducing frequency of ODRs. Identifying VDPs is a similar process with similar gains in efficiency to that of the previously mentioned PSSs, except that teams seek the situations that have the greatest racial/ethnic

inequities in ODRs, not simply the most ODRs. Using an equity lens to inform data-based decision-making has been effective in reducing disparities in at least two studies.

First, in a case study evaluating the use of a four-step problem-solving model in one school, a school successfully reduced racial discipline disparities by identifying VDPs, analyzing them, implementing an action plan, and reviewing data to evaluate progress (McIntosh, Ellwood, et al., 2018). In a randomized controlled trial, a more comprehensive intervention focused on school-wide VDPs (ReACT) was shown to be effective in significantly reducing discipline disparities as well (McIntosh, Girvan, Falcon, et al., 2021; McIntosh, Girvan, McDaniel, et al., 2021). ReACT, which stands for Racial equity through Assessing data for vulnerable decision points, Culturally responsive behavior strategies, and Teaching about implicit bias and how to neutralize it, is an equity-focused, school-wide positive behavior support intervention approach that includes school-level professional development sessions focused on identifying and action planning based on VDPs using local (i.e., school) ODR data. School-specific, tailored intervention plans based directly on VDPs were designed and implemented, significantly reducing ODRs for Black students (McIntosh, Girvan, Falcon, et al., 2021). For example, one school team identified a school-wide VDP for Black students wherein 5th grade Black students received ODRs in classrooms, in the early afternoon for physically aggressive behavior. With this detailed information, the school team was able to tailor a specific set of strategies to reduce occurrence of ODRs for that VDP, including redesigning transition routines from lunch, increasing supervision in hallways at the same time, and implementing neutralizing routines when responding to student behavioral errors. Although this intervention was effective, it required the school to have a data

system allowing the generation of VDPs and a trainer with expertise in VDPs and monthly meetings to identify and support problem solving.

Research Gaps

There is an emerging empirical basis for the use of VDPs in equity-focused intervention, but there are a number of knowledge gaps around how they present within schools. First, although research on VDPs has informed on a set of general circumstances in which racial discipline disparities are likely to occur (Smolkowski et al., 2016), these data were aggregated across schools and may not have reflected the VDP of any one school or set of schools in particular. For example, it is unclear to what extent the most common national-level VDPs in previous research are consistent with the most common VDPs within individual schools.

Next, it is not expected that schools across diverse contexts demonstrate identical VDPs, but there is currently no research to indicate if or how VDP patterns might differ based on school characteristics. Additionally, the degree to which these broad strokes support problem solving by school teams is limited. Independent of expert consultation, research has not yet provided practitioners with context-specific parameters that can be translated readily into action plans to reduce discipline disparities. Identifying a set of the most common VDPs by school characteristics (e.g., for each school type [elementary, middle, high]) could allow teams to develop tailored intervention plans without the need to rely on trainers or sophisticated data systems. Lastly, many school teams may have the ability to identify contexts in which students are receiving the most referrals but not to disaggregate these patterns by race or ethnicity. The extent to which a school's strongest PPS overlaps with its strongest VDP has not been explored in previous research and

could inform the extent to which general school-level problem-solving around student behavior may have benefits for equity and vice-versa.

Current Study

In the absence of prescriptive analysis of their own school context, identifying the situations in which racial inequities in school discipline are most likely (VDPs) will provide school leaders and intervention researchers with promising targets for intervention based on more general knowledge of their own context. Although VDPs are likely present for multiple racial-ethnic groups, this study will focus on racial discipline disparities for Black students as compared to all other students. The purpose of this study is to identify a set of empirically-derived VDPs and patterns of VDPs for discipline disparities for Black students as compared to all other students to inform efficient and effective use of resources for reducing them. To do so, this study will answer the following research questions:

1. To what extent do racial discipline disparities in schools vary within individual ODR fields (e.g., location, time, behavior)?
2. To what extent are overall racial discipline disparities in schools explained by their strongest VDPs?
3. To what extent can schools be meaningfully classified by their strongest VDPs?
4. To what extent do schools vary by their most common VDP (i.e., locale, grade range, Tier 1 PBIS implementation fidelity, Title 1 status, and percentage of Black students enrolled)?
5. To what extent are schools' VDPs similar to their PPSs (i.e., the situations with the most overall ODRs)?

METHOD

Participants

The sample included 992 schools from a larger set of 5,651 schools using SWIS in the 2018-19 academic year. Schools in the larger sample have been shown to be representative of the general population of U.S. schools (Girvan et al., 2021). Schools without a full school year of ODR data or data entry errors, such as more students with ODRs than are enrolled, were already screened out. Due to this study's focus on racial disparities of ODRs for Black students, several inclusion criteria were used to select only the most relevant schools for the sample. First, to ensure that disproportionate discipline for Black students was present, a school was only retained for the sample if it had a Black-All Other school-level ODR risk ratio of 1.25 or more (a common regulatory standard for disproportionality from the U.S. Equal Employment Opportunity Commission). This reduced the sample by over half (2,722 schools). The sample was further restricted to include only schools with a sufficient number of Black students and all other students for measures to be stable (i.e., 10 or more students in each group; resulting in 2,204 remaining schools), and then restricted for similar reasons to include only schools with at least 10 ODRs for each group (1,269 schools). To ensure meaningful within school analysis, only schools with a positive Incident per Student Difference (IPSD; see Measures section) of 0.1 were included, resulting in a final sample of 992 schools from 425 districts in 37 states.

Within this sample, 56% were elementary schools, 26% were middle schools, 14% were high schools, and 4% were K8-12 schools. By locale, 14% of schools were in rural settings, 11% were in towns, 40% were in suburbs, and 31% were in cities. A

substantial portion of schools (77%) were identified as Title 1 eligible. The mean enrollment for schools in the sample was 701 students ($SD = 431$, $Min = 75$, $Max = 3,759$) with an average of 21% Black students. For discipline disparity metrics, the mean Black-All Other risk ratio of schools in the sample was 3.16 ($SD = 1.81$) and the mean IPSD was 0.55 ($SD = 0.66$). A small percentage of schools (8%) had majority enrollment of Black students (greater than 50%), and fewer than one percent had predominantly Black students (80% or greater). The majority of schools (60%) completed the Tiered Fidelity Inventory (TFI) to assess fidelity of implementation of PBIS at Tier 1, of which 80% were implementing Tier 1 supports at or above the designated 70% threshold for being considered adequate implementation (McIntosh et al., 2017).

Measures

Office Discipline Referrals (ODRs)

ODRs are standardized data forms used to collect information regarding incidents of problem behavior (Sugai et al., 2000). When the process and behaviors are operationally defined (as is required for the use of SWIS), ODRs are valid indicators of behavior (Irvin et al., 2004; McIntosh et al., 2009). ODRs capture multiple dimensions of student behavior, including a behavior category (e.g., defiance, tardy, disruption), location (e.g., classroom, hallway, bathroom), time of day, day of the week, and date. To make analysis more interpretable, time and date were aggregated into larger subsets of time. Time of day was aggregated into time periods (i.e., start of day [before 9am], morning instruction [9 to 11am], midday [11am to 1pm], afternoon instruction [1 to 3pm], end of day [later than 3pm]) and into hours (1 through 24), and date was aggregated into seasons (i.e., fall, winter, spring, summer).

Incidents per Student

For the proposed project, overall discipline rates will be calculated at the school level and account for overall student enrollment in each building. As such, the number of ODRs for a building will be divided by the number of students enrolled to yield the number of Incidents per Student (IPS). For example, a school with an enrollment of 1000 students and a total of 100 ODRs would have 0.1 IPS. IPS has been used in multiple studies for comparing use of ODRs across schools (Carrell & Carrell, 2006; McDaniel & Bloomfield, 2020; Nishioka et al., 2020) and are used in this study as a measure of ODR rate in buildings as a whole and across various discipline decision situations. The discipline decision situation with the highest overall IPS within a given building are referred to as the strongest PPS.

Incidents per Student Difference

Discipline disparities were measured at the school level using Incidents-per-Student Difference (IPSD). IPSDs are akin to Risk Differences but are focused on incidents rather than students (Girvan et al., 2019). For this metric, disparity is defined as the rate of ODRs for students from the target group (e.g., Black students) minus the rate for students in a reference group (e.g., all other [i.e., non-Black] students). For example, if school with 200 Black students and 400 other students had 100 ODRs received by Black students and 100 ODRs received by other students, the resulting IPS for Black students would be $100/200 = 0.5$ and for other students would be $100/400 = 0.25$. The IPSD for this school would then be $0.5 - 0.25 = 0.25$. IPSDs were calculated for entire schools and across various discipline decision situations. In addition, the percent of IPSD accounted for by individual discipline decisions situation were used to identify the

relative impact of a given situation of the school's overall racial discipline disparities.

The discipline decision situation within a school with the highest IPSD is referred to as the strongest VDP.

$$IPSD = \left(\frac{\# \text{ of Discipline Incidents for Black Students}}{\text{Total \# of Black Students}} \right) - \left(\frac{\# \text{ of Discipline Incidents for All Other Students}}{\text{Total \# of All Other Students}} \right)$$

School Characteristics

School characteristics were accessed from the National Center for Educational Statistics (NCES) Common Core of Data, which was already linked to the SWIS ODR data. The school characteristics included in analysis this study were grade levels served (i.e., elementary, middle, high), percentage of Black students (i.e., schools with 50% or greater Black students enroll compared with those with fewer than 50%), Title 1 eligibility, and locale (i.e., city, suburb, town, rural). In addition, self-reported PBIS Tier 1 fidelity of implementation data from PBIS Assessment (www.pbisapps.org) as measured by the TFI was included as a binary variable (implementing at fidelity [at or above 70%] or below fidelity [below 70%]). School location was included in analysis by use of geographic region of the country as established by the U. S. Census Bureau, allocating schools to one of four regions: Northeast, South, West, and Midwest.

Analytic Plan

To conduct analysis for Research Questions 1 and 2, IPSDs were calculated across discipline decision situations to identify the VDPs that contribute most to racial discipline disparities in the sample schools. The first step consists of applying the disparity calculations, described above, to each school in the sample in the 2018-19 academic year. Code in was used to calculate each school's IPS for Black students and All Other students, and the IPSD a) for the school (IPSD_s), b) across individual ODR

fields within the school, and c) across all possible three-field ODR discipline decision situations. In addition, the percent of each school’s IPSD (%IPSD_s) accounted for by the one ODR field or three-field discipline decision situation was calculated. Although five-field VDPs and PPSs are more commonly used in the field, for the purpose of generalizability, the situations considered in calculation of IPSDs for this study will be limited to three fields: location, time of day, and student behavior. An example of a three-field VDP or PPS would be Disruption (behavior) in the Classroom (location) during Afternoon (time of day). To illustrate how the top VDP was derived, Table 1 displays the top three VDPs for three schools as an example.

Table 1

Top 3 Three-field VDPs for Two Schools

| School ID | IPSD _s | Vulnerable Decision Points (VDPs) | | | IPSD | %IPSD _s |
|-----------|-------------------|-----------------------------------|------------|-----------|------|--------------------|
| | | Behavior | Location | Time | | |
| A | 1.60 | Classroom | Tardy | Start | 0.69 | 43.24 |
| A | 1.60 | Classroom | Disruption | Morning | 0.13 | 8.31 |
| A | 1.60 | Unknown | Truancy | Start | 0.11 | 6.73 |
| B | 0.17 | Classroom | Defiance | Afternoon | 0.03 | 17.71 |
| B | 0.17 | Classroom | Language | Afternoon | 0.02 | 11.31 |
| B | 0.17 | Classroom | Disruption | Morning | 0.02 | 9.17 |
| C | 0.41 | Classroom | Defiance | Midday | 0.06 | 14.83 |
| C | 0.41 | Classroom | Defiance | Morning | 0.04 | 10.95 |
| C | 0.41 | Classroom | Defiance | Afternoon | 0.04 | 9.86 |

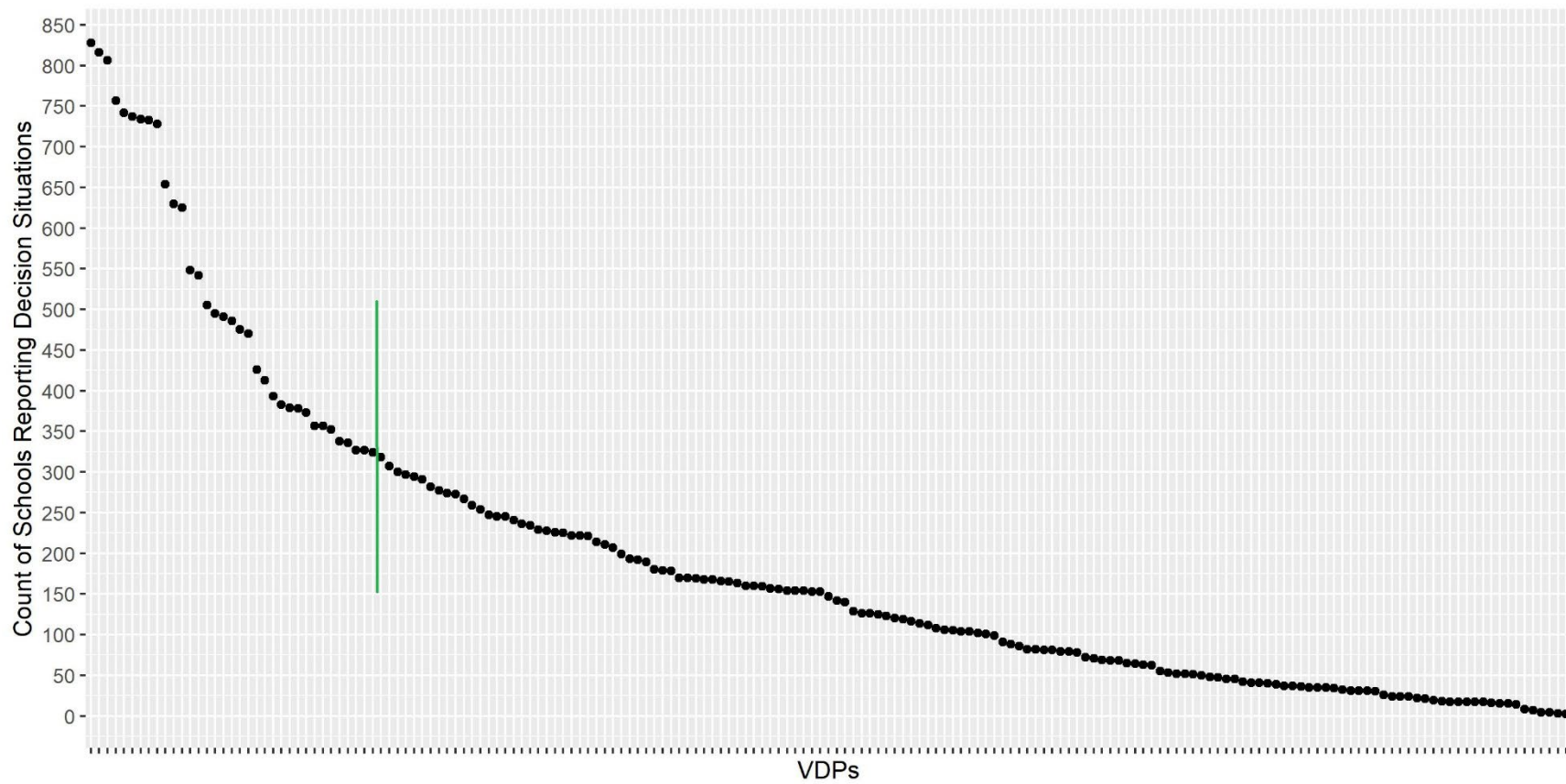
After IPSDs were calculated for the single-field and three-field decision situations, the top VDP from each school (i.e., the decision situation accounting for the greatest percentage of racial discipline disparities) was compiled into a list and sorted based on frequency, placing the most common top VDPs at the top of each list. The %IPSD, of percent of school-level disparities accounted for by the VDP was listed for each one. For the single-field analysis, similar lists were compiled for each ODR field in isolation including, behavior, location, time period, perceived motivation, season, hour,

and student grade. Analysis for student grade was completed separately by school grade levels served (i.e., elementary, middle, high), yielding five lists. The school building grade compositions that contained more than 40 schools were analyzed, resulting in three elementary school types (Kindergarten through Grade 5 [K-5], Kindergarten through Grade 6 [K-6], Pre-Kindergarten through Grade 5 [PK-5]), one middle school type (Grades 6 through 8), and one high school type (Grades 9 through 12).

For Research Questions 3 and 4 were completed with the three-step approach recommended by Asparouhov and Muthén (2014) to conduct a latent profile analysis (LPA). In this approach, the first step is conducting a latent profile analysis (Howard & Hoffman, 2018; McIntosh et al., 2016; Oberski, 2016; Pas et al., 2015) to identify a discrete set of latent subgroups of schools that share VDPs for racial discipline disparities using *tidyLPA* (Rosenberg et al., 2018) and *mclust* (Scrucca et al., 2016) packages for *R* software (R Core Team, 2021). This first step addressed Research Question 3, defining latent profiles of schools based on VDP patterns. For LPA, decision situations were restricted to the three-field VDPs identified in Research Question 2. LPA was attempted with the inclusion of all 179 strongest VDPs, but models were unable to converge, likely due in part to a large count of zeroes across many VDPs for many schools. To enable models to converge, the strongest VDPs used to compose profiles in the LPA were reduced from 179 to 35; the VDPs retained for the model were the most commonly reported among the schools in the sample (see Figure 1 for histogram of VDP frequencies). Iterative attempts were made to run models with greater numbers of VDPs, with less common VDPs being removed after unsuccessful attempts. After restricting to 35 VDPs, models converged, and all 992 schools were retained in the sample.

Figure 1

Histogram of VDP Frequency



Note: Green line drawn between 35th and 36th most common VDPs. More common VDPs to the left of the green line were used to compose profiles.

The decision on which model to retain was made based on Akaike's Information Criterion (AIC), Bayesian Information Criterion (BIC), and Sample-Adjusted BIC (SABIC). The model with the lowest fit indices is generally selected after comparing multiple models (Ferguson et al., 2020). To further support these decisions, a bootstrap likelihood ratio test was used to confirm statistically significant differences between models. Entropy was used to measure the degree of distinction among latent profiles. In the second step, each school was assigned the most likely profile and measurement error for membership in the most likely profile was estimated.

For Research Question 4, and as the third step of the latent profile analysis, profile membership was predicted while accounting for measurement error. Multinomial logistic regression was used to predict profile membership by school characteristics (e.g., grade levels served, locale) to produce a set of profiles with associated school-level characteristics and degree of certainty around those characteristics. Additionally, analysis was conducted within a multilevel modeling structure account for possible nesting effects of schools within districts. Analysis was completed using the *nnet* package (Venables & Ripley, 2002) for *R* software. To manage missing data around school characteristics, the *mice* package (van Buuren & Groothuis-Oudshoorn, 2011) was used to impute missing values into five datasets using Markov chained Monte Carlo techniques. Wald z-tests and likelihood ratio tests (Gudicha et al., 2017) were performed to identify significant differences in profiles by school characteristics using the *AER* (Kleiber & Zeileis, 2008) and *afex* (Singmann et al., 2022) packages for *R*.

For Research Question 5, the strongest three-field VDP and strongest three-field PPS for each school were compared to evaluate the extent of similarity in discipline

situations. Although these methods are typically employed with two observers comparing evaluation of the same event (Ledford & Gast, 2018), the extent of agreement was measured by calculating exact, point-by-point agreement of the defining features of both discipline decision situations (i.e., location, time period, behavior). The number of features that are an exact match were divided by the available number of features to compare to yield a percent exact agreement. For example, School A may have their strongest VDP identified as defiance, in the classroom, at midday, whereas their strongest PPS was defiance, in the cafeteria at midday. In this case, there is agreement between the VDP and PPS on two of three features, yielding an exact agreement of 67%. In addition, agreement across fields will be reported to support understanding of alignment across schools on behavior type, location, and time of day. For example, there may be higher percent agreement in some fields (e.g., location) than others (e.g., behavior). To provide an additional metric of agreement, Fleiss' kappa (Fleiss, 1971) was also calculated using the '*irr*' package (Gamer et al., 2012) in *R* across fields and overall.

RESULTS

Research Question 1

Table 2 displays the individual ODR fields sorted by the extent to which they accounted for racial disparities. The table displays both the percent of schools in which each context was the most racially disparate within that field, as well as the percent of a school’s IPSD accounted for by that context. For location, classrooms were the most disparate setting for 88% of schools. In those schools, classrooms accounted for a mean of 61% of the school’s IPSD. For behavior, defiance and physical aggression were the behavior categories with the greatest racial disparities, found to be the most disparate behavior in 35% and 32% of schools respectively. When defiance was the top behavior, it accounted for 43% of disparities by behavior, whereas physical aggression accounted for 48%. Although counterintuitive, physical aggression can represent a larger percent of IPSD than defiance and be less frequently the most disparate context because the percent of IPSD accounted for is measured within schools, rather than across them.

Table 2

Individual ODR Fields Ranked by Prevalence

| Rank | ODR Field | % with VDP | %IPSD _s |
|------|------------------------------|------------|--------------------|
| | Behavior | | |
| 1 | Defiance | 34.49 | 43.17 |
| 2 | Physical Aggression | 31.89 | 47.60 |
| 3 | Disruption | 14.75 | 39.36 |
| 4 | Disrespect | 4.66 | 35.08 |
| 5 | Language | 4.56 | 37.01 |
| 6 | Truancy | 4.56 | 47.34 |
| 7 | Fighting | 4.01 | 37.10 |
| 8 | Tardy | 3.47 | 40.28 |
| 9 | Other | 2.60 | 42.55 |
| 10 | Location | 0.98 | 78.36 |
| 11 | Forgery/Theft/ Plagiarism | 0.54 | 45.93 |
| 12 | Technology | 0.33 | 45.65 |
| 13 | Bullying | 0.33 | 41.79 |

Table 2 (continued)

| Rank | ODR Field | % with VDP | %IPSD _s |
|-------------|-------------------------|------------|--------------------|
| Behavior | | | |
| 14 | Harassment | 0.22 | 30.45 |
| 15 | Lying/Cheating | 0.11 | 35.43 |
| 16 | Vandalism | 0.11 | 0.19 |
| Location | | | |
| 1 | Classroom | 87.74 | 60.51 |
| 2 | Playground | 6.83 | 47.80 |
| 3 | Hall | 4.01 | 42.18 |
| 4 | Bus | 3.36 | 49.59 |
| 5 | Other | 1.41 | 53.57 |
| 6 | Cafeteria | 0.87 | 52.87 |
| 7 | Office | 0.76 | 48.72 |
| 8 | Gym | 0.65 | 55.21 |
| 9 | Bathroom | 0.43 | 30.09 |
| 10 | Music Room | 0.43 | 34.43 |
| 11 | Commons | 0.33 | 66.20 |
| 12 | Unknown | 0.33 | 77.62 |
| 13 | Library | 0.22 | 38.68 |
| 14 | Bus Loading Zone | 0.11 | 24.52 |
| 15 | Art Room | 0.11 | 43.25 |
| Hour | | | |
| 1 | 12 | 21.26 | 32.97 |
| 2 | 13 | 18.22 | 30.95 |
| 3 | 11 | 15.94 | 32.10 |
| 4 | 14 | 15.18 | 31.34 |
| 5 | 10 | 11.06 | 32.49 |
| 6 | 9 | 9.98 | 30.22 |
| 7 | 15 | 6.29 | 31.32 |
| 8 | 8 | 5.31 | 30.33 |
| 9 | 7 | 2.49 | 31.08 |
| 10 | 16 | 0.76 | 29.81 |
| 11 | 17 | 0.54 | 45.01 |
| 12 | 0 | 0.33 | 68.33 |
| 13 | 6 | 0.11 | 13.65 |
| 14 | 22 | 0.11 | 28.55 |
| Motivation* | | | |
| 1 | Obtain Peer Attention | 66.11 | 59.59 |
| 2 | Avoid Tasks/Activities | 21.81 | 53.18 |
| 3 | Other Motivation | 5.87 | 57.19 |
| 4 | Obtain Items Activities | 2.18 | 44.49 |
| 5 | Obtain Adult Attention | 1.68 | 42.74 |
| 6 | Avoid Adults | 1.51 | 48.93 |
| 7 | Avoid Peers | 0.83 | 44.67 |
| Day of Week | | | |
| 1 | Tuesday | 25.16 | 35.03 |
| 2 | Thursday | 24.95 | 35.50 |
| 3 | Wednesday | 24.62 | 34.42 |

Table 2 (continued)

| Rank | ODR Field | % with VDP | %IPSD _s |
|------------------------|--------------|------------|--------------------|
| Day of Week | | | |
| 4 | Friday | 16.62 | 35.91 |
| 5 | Monday | 16.27 | 34.61 |
| Season | | | |
| 1 | Spring | 45.01 | 55.59 |
| 2 | Fall | 35.36 | 53.16 |
| 3 | Winter | 26.36 | 48.54 |
| 4 | Summer | 0.87 | 53.89 |
| Time Period | | | |
| 1 | Midday | 37.85 | 44.92 |
| 2 | Afternoon | 37.20 | 42.64 |
| 3 | Morning | 20.82 | 43.28 |
| 4 | Start | 6.07 | 40.40 |
| 5 | End | 5.53 | 42.00 |
| 6 | Other | 0.11 | 35.32 |
| Grade (6-8 Buildings) | | | |
| 1 | 7th | 39.82 | 67.26 |
| 2 | 6th | 31.22 | 65.96 |
| 3 | 8th | 28.96 | 70.33 |
| Grade (9-12 Buildings) | | | |
| 1 | 9th | 43.80 | 60.52 |
| 2 | 10th | 25.55 | 56.26 |
| 3 | 11th | 17.52 | 68.83 |
| 4 | 12th | 13.14 | 51.73 |
| Grade (K-5 Buildings) | | | |
| 1 | 5th | 22.40 | 74.84 |
| 2 | 2nd | 19.79 | 74.60 |
| 3 | 4th | 16.15 | 65.43 |
| 4 | 1st | 15.10 | 75.60 |
| 5 | 3rd | 13.54 | 70.29 |
| 6 | Kindergarten | 13.02 | 91.12 |
| Grade (K-6 Buildings) | | | |
| 1 | 3rd | 20.73 | 64.18 |
| 2 | 6th | 20.73 | 68.91 |
| 3 | 4th | 14.63 | 63.91 |
| 4 | 5th | 14.63 | 63.13 |
| 5 | Kindergarten | 12.20 | 78.37 |
| 6 | 1st | 8.54 | 45.96 |
| 7 | 2nd | 8.54 | 82.23 |
| Grade (PK-5 Building) | | | |
| 1 | 5th | 23.81 | 76.07 |
| 2 | 3rd | 20.41 | 74.79 |
| 3 | 2nd | 17.01 | 62.55 |
| 4 | 4th | 15.65 | 69.16 |
| 5 | 1st | 13.61 | 64.52 |
| 6 | Kindergarten | 8.84 | 75.50 |
| 7 | Pre-K | 0.68 | 106.91 |

Table 2 *(continued)*

Note: “% with VDP” means the percentage of schools in the sample with the context in that row as the top VDP. “%IPSD_s” means the percentage of the schools IPSD accounted for by the VDP in that row.

*Only a subset of schools recorded responses in motivation field

To illustrate, if we have five schools for which we were trying to assess the disparities by behavior category, if we have three schools with defiance as the behavior with greatest rate of disparity and two with physical aggression as the greatest rate, defiance would be most the top context by frequency among those schools. When examining the proportion of disparities accounted for by the top behavior in each school, the three schools with defiance at the top might have defiance account for 30%, 35%, and 40% of the schools’ respective disparities, whereas the schools with physical aggression at the top might have physical aggression account 40% and 50% of their school’s disparities. Even though defiance was more frequent, the mean proportion of 35% is less than the 45% accounted for by physical aggression in the schools with that top behavior.

For time period, midday and afternoon were the most disparate settings in 38% and 37% of schools in the sample, respectively. This pattern was reflected when time was broken down into smaller segments by hour as well, with 12pm, 1pm, 11am, and 2pm being the top ranked hours. By season, spring was the time during which more disparities were present compared to other seasons. For perceived motivation, attention from peers was the motivation identified most often in schools that accounted for the most disparities.

To identify the grade levels most commonly receiving the most disparities in ODRs, schools were analyzed by grade levels served in the building. In the two most common elementary school types (K-5 and PK-5), 5th grade students were most frequently identified in schools as the grade level with the greatest disparities in ODRs. In K-6 buildings, 6th grade students and 3rd grade students were tied for most frequently having the most disparate rates ODRs between Black students and all other students. Across all elementary building types, the oldest grade in the building was referred most disproportionately.

In middle schools, 7th grade students had the most disparate rates of referral, whereas in high schools, 9th grade students were most often disproportionately referred. Across ODR fields (e.g., behavior, location), differences in grade level represented the strongest disparities. For example, the most disproportionately-referred grade levels accounted for over 60% of their school's disparities, but in the case of Motivation or Day of the Week, which have similar count of possible contexts with their ODR fields, the majority of percentages were below 40%.

Research Question 2

Table 3 presents the three-field VDP accounting for the greatest proportion of racial disparities within each school (i.e., each school's overall ISPD). Similar to the tables for Research Question 1, the mean percent of IPSD (a within school calculation) may reflect higher rates of disparities for VDPs lower on the list.

The most common VDP in the sample, defiance in classrooms in the afternoon, was the strongest VDP in 9% of schools. The second-most common VDP was defiance in the classroom in the morning and was strongest in 8.8% of schools. In third, defiance in

the classroom at midday was the strongest VDP in 6.4% of schools. Out of the top 10 most common VDPs, six were for subjective behavior (i.e., defiance or disruption) and four were for physical aggression. The classroom was the location in nine of the 10 most common VDPs. The most common time periods for VDPs were relatively evenly split, with midday comprising four of the top ten VDPs, and afternoon and morning each comprising three.

Table 3

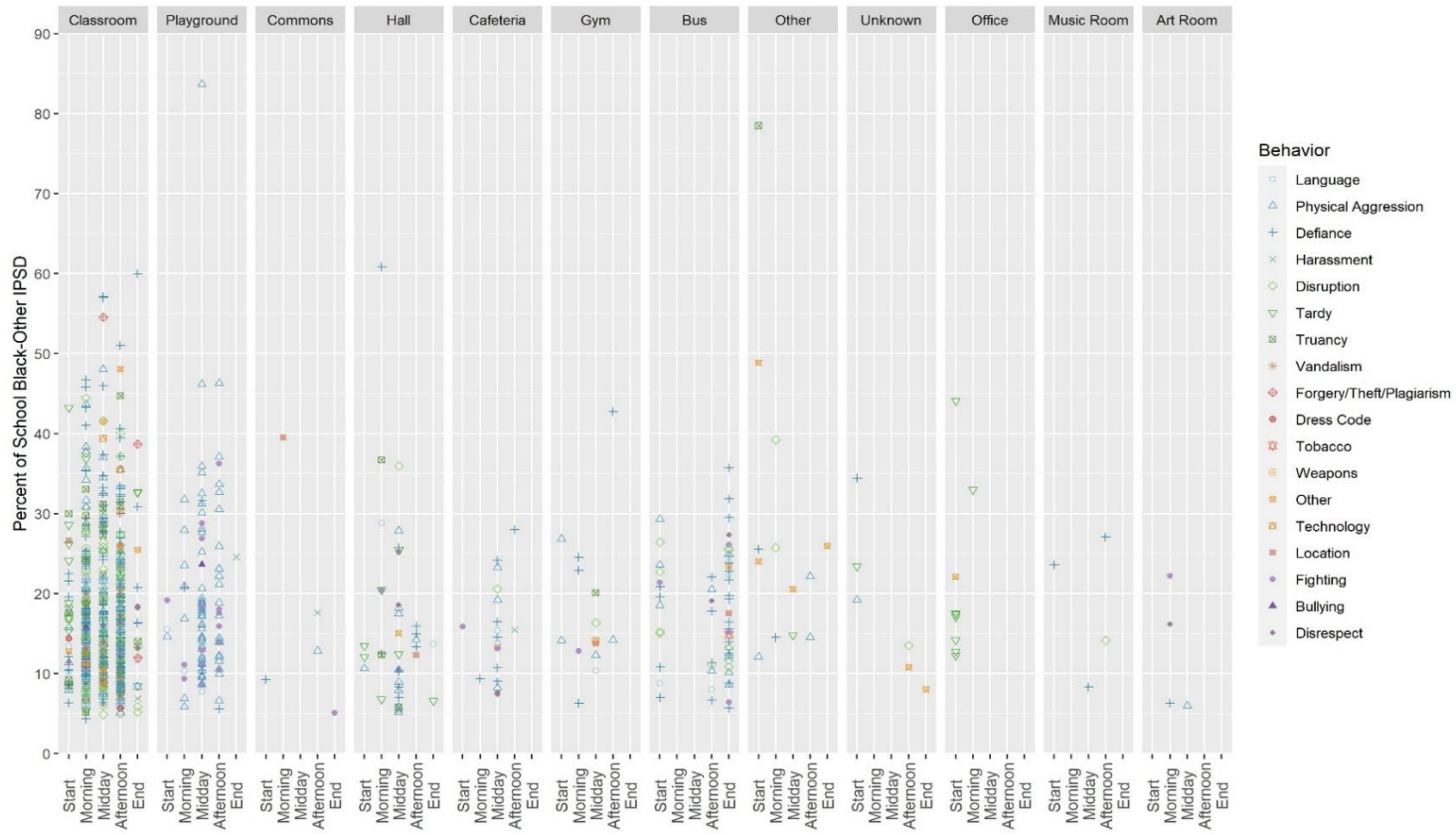
Most Common Top School-Level VDPs

| Rank | Behavior | Location | Time | % with VDP | %IPSD _s |
|------|---------------------|------------|-----------|------------|--------------------|
| 1 | Defiance | Classroom | Afternoon | 8.97 | 17.86 |
| 2 | Defiance | Classroom | Morning | 8.77 | 16.53 |
| 3 | Defiance | Classroom | Midday | 6.35 | 19.05 |
| 4 | Physical Aggression | Classroom | Morning | 5.34 | 17.28 |
| 5 | Disruption | Classroom | Morning | 4.33 | 16.59 |
| 6 | Physical Aggression | Classroom | Afternoon | 4.33 | 13.88 |
| 7 | Disruption | Classroom | Midday | 4.23 | 15.51 |
| 8 | Physical Aggression | Playground | Midday | 4.13 | 20.22 |
| 9 | Disruption | Classroom | Afternoon | 3.93 | 17.24 |
| 10 | Physical Aggression | Classroom | Midday | 3.43 | 18.97 |
| 11 | Physical Aggression | Playground | Afternoon | 2.22 | 20.53 |
| 12 | Defiance | Bus | End | 1.61 | 19.64 |
| 13 | Truancy | Classroom | Midday | 1.61 | 18.30 |
| 14 | Disrespect | Classroom | Afternoon | 1.51 | 14.77 |
| 15 | Truancy | Classroom | Afternoon | 1.51 | 17.56 |
| 16 | Language | Classroom | Midday | 1.41 | 15.11 |
| 17 | Defiance | Classroom | Start | 1.11 | 12.47 |
| 18 | Language | Classroom | Afternoon | 1.01 | 13.57 |
| 19 | Tardy | Classroom | Afternoon | 0.91 | 16.27 |
| 20 | Tardy | Classroom | Start | 0.91 | 22.25 |

The mean percent of school IPSD accounted for by the strongest VDP was 17.5% ($SD = 11.1$, $Min = 4.4\%$, $Max = 206.7\%$), meaning that the three-field discipline decision situation with the greatest disparities in a school comprised an average of almost one fifth of the disparities for the whole school. In total, the 992 schools in the sample contained 179 unique VDPs. In 163 of 992 schools (16%), the strongest VDP accounted for 25% or

Figure 2

Plot of Percent IPSD in Black-Other by Time, Location, Behavior



Note: One outlier (Location Classroom Morning, %IPSD = 206) was excluded from the figure to allow for reasonable scale.

Additionally, settings with only one VDP were excluded from the figure.

more of a school's IPSD, and for 6% of schools, the strongest VDP accounted for greater than 33%. On average, the strongest three VDPs within a school accounted for 39.3% of a school's IPSD ($SD = 20.6\%$, $Min = 12.2\%$, $Max = 361.7\%$). In 199 of 992 schools, the top 3 VDPs accounted for 50% or more of the school's IPSD, and for 1.8% of schools, the top 3 VDPs accounted for greater than 90%. Figure 2 displays the percent of IPSD accounted for by the strongest three-field VDP for every school with classroom VDPs according to behavior, time period, and location.

Research Question 3

To complete the first of three steps in the LPA and identify the appropriate number of profiles to include, LPA was used to estimate profiles. SABIC, BIC, AIC were used to select the model with the best fit to the data. Table 4 displays the model fit indices for models for each number of profiles. In total, 11 profiles were fit and successfully converged without warnings. Model fit improved with the addition of each model, and 12-, 13-, and 14-profile models were attempted but did not converge. The 11-profile model had with the lowest SABIC and AIC of any converged model. Although BIC was slightly higher for the 11-profile model compared to the previous model, the BLRT value ($p < .01$) confirmed a significant improvement in model fit with the 11-profile model. With Entropy of 0.95, the model demonstrated sufficient contrast between profiles. Based on these multiple indices, the 11-profile model was retained as the final model. For step two of the LPA process, the probability of membership was estimated for each school for each profile. Across all profiles, the mean probability of accurate membership was 87% or higher, with most groups over 94%.

Figure 3 uses a line graph to illustrate profiles composition with the x-axis arranged alphabetically by VDP behavior category. The profiles were labeled based on VDP patterns present within each profile, which were primarily defined by behavior categories within the classroom, with only two profiles composed of schools with strong VDPs outside of the classroom (Defiance Hall & Classroom, Physical Aggression Playground Midday). A majority of schools ($n = 632$) fit into the Moderate Defiance Classroom profile, with the other 10 profiles consisting of 28 to 54 schools each. This large profile was the only profile that did not contain a VDP accounting for above 5% of the mean school IPSD in the profile. As reflected in Figure 3, most profiles registered some racial discipline disparities for Defiance in the Classroom, particularly at Morning, Midday, and Afternoon. Table 5 displays the descriptive statistics of schools fitted within each latent profile.

Table 4

Model Fit Indices for ODR Latent Profiles

| No. of Latent Profiles | AIC | BIC | SABIC | Entropy | BLRT Value | BLRT p -value |
|------------------------|----------|----------|----------|---------|------------|-----------------|
| 1 | 184726.9 | 185069.8 | 184847.5 | 1.00 | NA | NA |
| 2 | 184326.4 | 184845.8 | 184509.1 | 0.87 | 472.47 | < 0.01 |
| 3 | 183955.9 | 184651.7 | 184200.7 | 0.90 | 442.46 | < 0.01 |
| 4 | 182744.3 | 183616.4 | 183051.1 | 0.97 | 1283.65 | < 0.01 |
| 5 | 182686.7 | 183735.3 | 183055.6 | 0.97 | 129.56 | < 0.01 |
| 6 | 182206.4 | 183431.3 | 182637.3 | 0.95 | 552.34 | < 0.01 |
| 7 | 182090.2 | 183491.6 | 182583.2 | 0.93 | 188.14 | < 0.01 |
| 8 | 181901.1 | 183478.8 | 182456.1 | 0.94 | 261.17 | < 0.01 |
| 9 | 181594.6 | 183348.7 | 182211.7 | 0.95 | 378.46 | < 0.01 |

Table 4 (continued)

| No. of Latent Profiles | AIC | BIC | SABIC | Entropy | BLRT Value | BLRT <i>p</i> -value |
|------------------------|----------|----------|----------|---------|------------|----------------------|
| 10 | 181213.9 | 183144.3 | 181893 | 0.95 | 452.75 | < 0.01 |
| 11 | 181059.7 | 183166.6 | 181800.9 | 0.95 | 226.13 | < 0.01 |

Note: AIC= Aikeke Information Criterion, BIC = Bayesian Information Criterion, SABIC = Sample-Adjusted Bayesian Information Criterion, BLRT= Bootstrap Likelihood Ratio Test. Models with greater numbers of profiles (12, 13, 14) were attempted and yielded lower SABICs, but were excluded because the models failed to converge without warnings.

Research Question 4

For Research Question 4, one multinomial logistic regression model was used to predict profiles based on school characteristics. Reference groups for the analysis were profile 4 (Moderate Defiance Classroom), suburb, elementary schools, Title 1 ineligible, implementing PBIS Tier 1 supports below 70% fidelity, and non-majority of Black students enrolled. Wald z-tests and likelihood ratio chi square tests were conducted to identify significant differences. Table 6 displays the regression coefficients, standard errors, and odds ratios from the model, comparing the Moderate Defiance Classroom profile to every other profile. Because of the small number of K-12 schools in the sample, K-12 schools were omitted from this analysis. A likelihood ratio chi square test found that grade level served ($\chi^2 = 105.62, df = 20, p < .001$) predicted significant differences in profiles. Majority Black enrollment ($\chi^2 = 16.50, df = 10, p = .08$), PBIS Tier 1 implementation ($\chi^2 = 17.00, df = 10, p = .08$), Title 1 eligibility ($\chi^2 = 7.65, df = 10, p =$

Table 5*Mean/Mean Proportion and Standard Deviation of School Characteristics by VDP Profile*

| | 1. High Defiance Classroom | | 2. Disruption Classroom Early | | 3. Disruption Classroom Late | | 4. Moderate Defiance Classroom | | 5. Physical Aggression Classroom | | 6. Defiance Classroom Early | |
|---------------------------------------|----------------------------|-----------|-------------------------------|-----------|------------------------------|-----------|--------------------------------|-----------|----------------------------------|-----------|-----------------------------|-----------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| Total Enrollment | 722 | 527 | 692 | 299 | 650 | 282 | 744 | 469 | 493 | 189 | 723 | 510 |
| % Black Enrollment | 0.21 | .22 | 0.24 | 0.18 | 0.20 | 0.19 | 0.22 | 0.17 | 0.20 | 0.18 | 0.14 | 0.11 |
| % Elementary Schools | 0.48 | 0.51 | 0.32 | 0.47 | 0.52 | 0.50 | 0.53 | 0.50 | 0.91 | 0.29 | 0.43 | 0.50 |
| % Middle Schools | 0.30 | 0.47 | 0.50 | 0.51 | 0.37 | 0.49 | 0.27 | 0.44 | 0.06 | 0.24 | 0.27 | 0.45 |
| % High Schools | 0.18 | 0.39 | 0.09 | 0.29 | 0.07 | 0.26 | 0.17 | 0.38 | 0.00 | 0.00 | 0.23 | 0.43 |
| % City | 0.37 | 0.49 | 0.28 | 0.46 | 0.34 | 0.48 | 0.33 | 0.47 | 0.45 | 0.51 | 0.24 | 0.44 |
| % Suburb | 0.23 | 0.43 | 0.34 | 0.48 | 0.42 | 0.50 | 0.40 | 0.49 | 0.45 | 0.51 | 0.34 | 0.48 |
| % Town | 0.17 | 0.38 | 0.25 | 0.44 | 0.11 | 0.32 | 0.12 | 0.33 | 0.06 | 0.24 | 0.10 | 0.31 |
| % Rural | 0.23 | 0.43 | 0.13 | 0.34 | 0.13 | 0.34 | 0.15 | 0.35 | 0.03 | 0.17 | 0.31 | 0.47 |
| % Title 1 Eligible | 0.80 | 0.41 | 0.75 | 0.44 | 0.74 | 0.45 | 0.80 | 0.40 | 0.85 | 0.36 | 0.76 | 0.44 |
| Black-other IPSD | 0.54 | 0.65 | 0.55 | 0.67 | 0.51 | 0.69 | 0.60 | 0.71 | 0.33 | 0.23 | 0.38 | 0.35 |
| Black-other Risk Ratio | 2.57 | 0.84 | 2.88 | 1.61 | 2.97 | 1.76 | 3.21 | 1.84 | 3.06 | 1.41 | 3.16 | 1.68 |
| SWPBIS Tier 1 Implemented at Fidelity | 0.81 | 0.40 | 0.79 | 0.42 | 0.76 | 0.44 | 0.80 | 0.40 | 0.83 | 0.38 | 0.80 | 0.41 |

Table 5 (continued)*Mean/Mean Proportion and Standard Deviation of School Characteristics by VDP Profile*

| | 7. Physical Aggression Classroom End | | 8. Disrespect Classroom Midday | | 9. Disrespect Classroom Afternoon | | 10. Defiance Hall & Classroom | | 11. Physical Aggression Playground Midday | |
|--|---|-----------|-----------------------------------|-----------|--------------------------------------|-----------|----------------------------------|-----------|--|-----------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| Total Enrollment | 560 | 236 | 676 | 448 | 649 | 268 | 662 | 268 | 459 | 209 |
| % Black Enrollment | 0.18 | 0.18 | 0.16 | 0.13 | 0.13 | 0.11 | 0.19 | 0.18 | 0.12 | 0.07 |
| % Elementary Schools | 0.93 | 0.25 | 0.54 | 0.51 | 0.46 | 0.51 | 0.50 | 0.51 | 1.00 | 0.00 |
| % Middle Schools | 0.04 | 0.21 | 0.34 | 0.48 | 0.32 | 0.48 | 0.35 | 0.49 | 0.00 | 0.00 |
| % High Schools | 0.02 | 0.15 | 0.06 | 0.24 | 0.07 | 0.26 | 0.12 | 0.33 | 0.00 | 0.00 |
| % City | 0.21 | 0.41 | 0.18 | 0.39 | 0.32 | 0.48 | 0.31 | 0.47 | 0.38 | 0.49 |
| % Suburb | 0.60 | 0.49 | 0.48 | 0.51 | 0.39 | 0.50 | 0.56 | 0.50 | 0.47 | 0.51 |
| % Town | 0.07 | 0.26 | 0.18 | 0.39 | 0.04 | 0.19 | 0.06 | 0.25 | 0.13 | 0.34 |
| % Rural | 0.12 | 0.32 | 0.15 | 0.36 | 0.25 | 0.44 | 0.06 | 0.25 | 0.03 | 0.18 |
| % Title 1 Eligible | 0.84 | 0.37 | 0.82 | 0.39 | 0.81 | 0.40 | 0.72 | 0.46 | 0.97 | 0.18 |
| Black-other IPSD | 0.48 | 0.56 | 0.43 | 0.46 | 0.47 | 0.44 | 0.37 | 0.26 | 0.64 | 0.81 |
| Black-other Risk Ratio | 3.46 | 2.12 | 2.74 | 1.29 | 3.05 | 1.57 | 2.86 | 1.69 | 3.88 | 2.60 |
| SWPBIS Tier 1 Implemented at Fidelity | 0.78 | 0.42 | 0.79 | 0.42 | 0.76 | 0.44 | 0.83 | 0.38 | 0.89 | 0.32 |

.66), locale ($\chi^2 = 38.19$, $df = 30$, $p = .15$), and region ($\chi^2 = 40.81$, $df = 30$, $p = .09$) were not significant predictors based on this test.

Wald z-tests were used to identify specific relationships between predictors and profiles with p -values calculated for each regression coefficient. Some p -values from the Wald z-test conflict with those from the likelihood ratio test; although this complicates interpretation, the likelihood ratio test did find several predictors were nearly significant. The school characteristic found to demonstrate the most frequent significant differences among the profiles was school grade levels served. Middle schools were significantly more likely to have a VDP pattern of Disruption Classroom Early (profile 2) than Moderate Defiance Classroom (profile 4) compared to elementary schools, $b = .97$, $p < .05$. Additionally, middle schools were significantly less likely to demonstrate VDP patterns of Physical Aggression Classroom (profile 5), $b = -2.01$, $p < .05$, and Physical Aggression Classroom End (profile 7) than elementary schools, $b = -2.57$, $p < .05$. High schools were also less likely than elementary schools to have Physical Aggression Classroom End (profile 7) as a VDP pattern, $b = -2.89$, $p < .05$. A school's enrollment of majority Black students was found to predict lower likelihood of possessing two profiles compared to the reference profile: Defiance Classroom Early (profile 6), $b = -2.01$, $p < .05$, and Disrespect Classroom Afternoon (profile 9), $b = -2.01$, $p < .05$. These results should be interpreted with caution because of the small percentage of schools in the sample that had a majority enrollment of Black students (8%) and the small number of schools in the other profiles.

School locale was found to have some associations with VDP profiles. Rural schools, $b = 1.61$, $p < .05$, and town schools, $b = 1.26$, $p < .05$, were more likely than

suburban schools to have High Defiance Classroom (profile 1) as a pattern. City schools were found be less likely than suburban schools to have a VDP pattern of Physical Aggression Classroom End (profile 7), $b = -1.01, p < .05$. One significant difference was detected based on PBIS Tier 1 implementation fidelity, wherein schools implementing with fidelity were significantly less likely to have a profile of Disrespect Classroom Midday (profile 8), $b = -1.09, p < .05$. Approximately 40% of schools had TFI scores imputed due to missingness, so results for this variable should be interpreted with caution. Title 1 eligibility status and geographical region did not predict any statistically significant differences in profile allocation for either the z-test or likelihood ratio test.

Research Question 5

For Research Question 5, percent of exact agreement and Fleiss' kappa were calculated to identify consistency in fields of the strongest VDP and PPS within each school. Table 7 displays the extent of agreement and Fleiss' kappa between these decision situations. The rate of overall exact agreement between VDPs and PPSs was 63%. Stated differently, for 63% of schools, the strongest VDP perfectly matched the time, location, and behavior of the strongest PPS. Comparing the ODR fields separately, location was found to be an exact match in 76% of schools, behavior was a match for 64%, and time period was an exact match for 52%. The Fleiss' kappa for overall agreement was .361 ($p < .001$). Although disputed, Fleiss' kappa thresholds have been proposed that characterize values of 0.21 to 0.40 as fair agreement, 0.41 to 0.60 as moderate agreement, .61 to .80 as substantial agreement, and 0.81 to 1.00 as almost perfect agreement (Landis & Koch, 1977). The Fleiss' kappa for location was .481 ($p < .001$), for behavior was .51 ($p < .001$), and for time period was .355 ($p < .001$).

Table 6
Regression Model Predictions of Latent ODR VDP Profile Membership

| | 4. Moderate Defiance Classroom | | | 4. Moderate Defiance Classroom | | | 4. Moderate Defiance Classroom | | | 4. Moderate Defiance Classroom | | |
|----------------|--------------------------------|------|------|--------------------------------|------|------|--------------------------------|------|------|----------------------------------|-------|------|
| | vs. | | | vs. | | | vs. | | | vs. | | |
| | 1. High Defiance Classroom | | | 2. Disruption Classroom Early | | | 3. Disruption Classroom Late | | | 5. Physical Aggression Classroom | | |
| | <i>b</i> | SE | OR | <i>b</i> | SE | OR | <i>b</i> | SE | OR | <i>b</i> | SE | OR |
| High School | -0.06 | 0.55 | 0.94 | -0.55 | 0.70 | 0.57 | -1.13 | 0.58 | 0.32 | -10.57 | 63.89 | 0.00 |
| Middle School | 0.13 | 0.43 | 1.14 | 0.97* | 0.42 | 2.64 | 0.25 | 0.33 | 1.29 | -2.01* | 0.75 | 0.13 |
| City | 0.70 | 0.52 | 2.01 | 0.26 | 0.48 | 1.30 | 0.12 | 0.34 | 1.13 | 0.09 | 0.40 | 1.10 |
| Rural | 1.61* | 0.60 | 4.99 | -0.21 | 0.65 | 0.81 | -0.05 | 0.51 | 0.95 | -1.14 | 1.11 | 0.32 |
| Town | 1.26* | 0.62 | 3.52 | 0.91 | 0.52 | 2.48 | -0.05 | 0.53 | 0.95 | -0.35 | 0.80 | 0.70 |
| Title 1 | -0.04 | 0.52 | 0.96 | -0.29 | 0.46 | 0.75 | -0.60 | 0.36 | 0.55 | -0.60 | 0.54 | 0.55 |
| Majority Black | 0.52 | 0.60 | 1.68 | 0.11 | 0.60 | 1.12 | -0.03 | 0.57 | 0.97 | 0.12 | 0.80 | 1.13 |
| TFI Tier 1 | -0.29 | 0.44 | 0.75 | -0.19 | 0.46 | 0.83 | -0.47 | 0.33 | 0.63 | 0.20 | 0.48 | 1.22 |
| Northeast | -1.22 | 1.06 | 0.30 | 0.19 | 0.70 | 1.21 | 0.59 | 0.46 | 1.80 | 0.70 | 0.51 | 2.01 |
| South | -0.46 | 0.51 | 0.63 | 0.62 | 0.49 | 1.85 | 0.28 | 0.41 | 1.33 | -0.14 | 0.61 | 0.87 |
| West | 0.22 | 0.49 | 1.24 | -0.21 | 0.63 | 0.81 | 0.20 | 0.42 | 1.23 | 0.39 | 0.48 | 1.48 |

* Denotes statistically significant ($p < .05$) based on Wald z-test

Table 6 (continued)

| | 4. Moderate Defiance Classroom vs. 6. Defiance Classroom Early | | | 4. Moderate Defiance Classroom vs. 7. Physical Aggression Classroom End | | | 4. Moderate Defiance Classroom vs. 8. Disrespect Classroom Midday | | | 4. Moderate Defiance Classroom vs. 9. Disrespect Classroom Afternoon | | |
|----------------|--|------|------|--|--------|------|---|--------|------|---|-------|------|
| | <i>b</i> | SE | OR | <i>b</i> | SE | OR | <i>b</i> | SE | OR | <i>b</i> | SE | OR |
| | High School | 0.66 | 0.54 | 1.93 | -2.89* | 1.05 | 0.06 | -1.42 | 0.78 | 0.24 | -0.85 | 0.81 |
| Middle School | 0.18 | 0.47 | 1.20 | -2.57* | 0.74 | 0.08 | 0.22 | 0.41 | 1.25 | 0.36 | 0.47 | 1.43 |
| City | -0.17 | 0.51 | 0.84 | -1.01* | 0.41 | 0.36 | -0.68 | 0.50 | 0.51 | -0.07 | 0.51 | 0.93 |
| Rural | 1.05 | 0.56 | 2.86 | 0.05 | 0.56 | 1.05 | 0.17 | 0.61 | 1.18 | 0.64 | 0.62 | 1.89 |
| Town | 0.03 | 0.69 | 1.03 | -0.34 | 0.59 | 0.71 | 0.60 | 0.53 | 1.82 | -0.94 | 1.07 | 0.39 |
| Title 1 | 0.14 | 0.54 | 1.15 | -0.66 | 0.45 | 0.52 | -0.19 | 0.51 | 0.82 | -0.14 | 0.57 | 0.87 |
| Majority Black | -15.41* | 0.00 | 0.00 | 0.31 | 0.67 | 1.36 | -13.69 | 548.46 | 0.00 | -14.69* | 0.00 | 0.00 |
| TFI Tier 1 | 0.54 | 0.57 | 1.72 | 0.21 | 0.42 | 1.24 | -1.09* | 0.39 | 0.34 | -0.66 | 0.48 | 0.52 |
| Northeast | -0.62 | 0.79 | 0.54 | -0.06 | 0.48 | 0.94 | -0.04 | 0.56 | 0.96 | -0.97 | 0.78 | 0.38 |
| South | -0.70 | 0.57 | 0.49 | -0.44 | 0.48 | 0.64 | -0.29 | 0.50 | 0.75 | -0.67 | 0.55 | 0.51 |
| West | 0.20 | 0.49 | 1.22 | 0.27 | 0.41 | 1.31 | -0.56 | 0.55 | 0.57 | -7.98 | 17.29 | 0.00 |

* Denotes statistically significant ($p < .05$) based on Wald z-test

Table 6 (continued)

| | 4. Moderate Defiance Classroom vs. 10. Defiance Hall & Classroom | | | 4. Moderate Defiance Classroom vs. 11. Physical Aggression Playground Midday | | |
|----------------|--|-------|------|---|--------|-------|
| | <i>b</i> | SE | OR | <i>b</i> | SE | OR |
| | High School | -0.20 | 0.61 | 0.82 | -10.50 | 75.38 |
| Middle School | 0.34 | 0.41 | 1.41 | -7.65 | 12.73 | 0.00 |
| City | -0.15 | 0.41 | 0.86 | -0.26 | 0.41 | 0.77 |
| Rural | -1.06 | 0.80 | 0.35 | -0.48 | 1.11 | 0.62 |
| Town | -0.90 | 0.77 | 0.41 | 0.29 | 0.61 | 1.33 |
| Title 1 | -0.44 | 0.45 | 0.64 | 0.95 | 1.05 | 2.57 |
| Majority Black | 0.01 | 0.78 | 1.01 | -13.01 | 584.14 | 0.00 |
| TFI Tier 1 | 0.78 | 0.55 | 2.19 | 0.50 | 0.51 | 1.65 |
| Northeast | 0.66 | 0.52 | 1.94 | 0.11 | 0.52 | 1.12 |
| South | -0.06 | 0.53 | 0.94 | -2.05 | 1.09 | 0.13 |
| West | 0.26 | 0.49 | 1.30 | 0.35 | 0.42 | 1.42 |

* Denotes statistically significant ($p < .05$) based on Wald z-test

Table 7*Exact Agreement and Fleiss' Kappa of VDP and PPS*

| ODR Field | Exact Agreement | Fleiss' Kappa | <i>p</i> -value |
|---|-----------------|---------------|-----------------|
| Location | 76.41% | 0.481 | < .001 |
| Behavior | 61.09% | 0.51 | < .001 |
| Period | 52.12% | 0.355 | < .001 |
| Overall: Location, Behavior, and Time Period | 63.21% | 0.361 | < .001 |

DISCUSSION

The persistence of racial disparities despite well-intended intervention is a testament to the need for more precision in our understanding of both the mechanisms and the circumstances by which it presents. This study sought to more precisely identify the latter by relying on a national sample of ODRs to describe patterns and define profiles of schools based on those patterns. Taking a unique approach of investigating disparities within schools across a national sample, this study found patterns of discipline disparities both consistent with and deviating from previous research. This study found that single discipline decision situations can and often do contribute substantially to overall racial discipline disparities within a school, with the top VDP accounting for an average of 18% of overall disparities. This study also defined school profiles based on the patterns of VDPs, providing insight into which patterns are most likely present in schools based on school characteristics such as grades served and student body composition. Last, this study uncovered substantial agreement between VDPs and PPSs, holding implications for how schools may best carry out problem-solving for situations with the highest rates of ODRs.

Patterns of Disparities both Familiar and New

The single field analyses largely corroborated findings from previous studies. With schools as the unit of analysis in this study, classrooms were the dominant location for racial disparities, similar to findings of previous studies of VDPs (Girvan et al., 2021; Smolkowski et al., 2016) and bolstering the case for classrooms as an important context for equity intervention. Additionally, subjective behaviors (e.g., defiance, disruption) were among the top behavior categories for disparities, echoing findings from several

studies on racial disparities in school discipline (Girvan et al., 2017; Skiba, Chung, et al., 2014; Skiba et al., 2002). The timing of racial discipline disparities has been explored only in one study, which, counter to the hypothesis, found that Black-White disparities in ODRs were more likely to occur between 8:45am and 1:45pm compared to after 2pm (Smolkowski et al., 2016). In this study, with the time segmented differently, midday (11am-1pm) and afternoon (1-3p) were found to be the times of day wherein schools were most likely to have the strongest disparities; morning and the start of the day accounted for far less.

Physical aggression was found to be an unexpectedly strong contributor to racial disparities within schools, ranked second among behavior categories and serving as the behavior component for four of the 10 most common three-field VDPs. In previous research, physical aggression has been included in the category of subjectively-defined behavior (e.g., Girvan et al., 2017) and has been identified as among the less subjective behaviors categories (Greflund et al., 2014), bucking the trend of research pointing to subjective behaviors as dominant contributors to racial disparities. This behavior category likely has similar ambiguities to some subjective behaviors; similar to those for defiance or disruption, the threshold at which horseplay or an aggravated shove becomes an ODR for physical aggression could be a decision based more on judgment than behavioral definition. This finding may point to a need to, in collaboration with families, students, and community members, better define physical aggression and update and reteach expectations around physical interaction.

The patterns present in this study are mostly consistent with the VDP model. Based in dual-processing cognitive theory (Girvan et al., 2021), the VDP models

postulates that implicit bias is more likely to influence decisions when staff are more prone to vulnerable internal states (e.g., fatigue, hunger) and/or when the guidelines for a decision are ambiguous (McIntosh et al., 2014). The results for time period found midday and afternoon to be much more common times for disparities compared to other times. midday and afternoon present as the most likely period during which hunger and fatigue, respectively, would be most salient for staff. Similarly, supportive of the VDP model, defiance and disruption, subjective behaviors prone to unclear behavior definitions were among the most common behavior categories and accounted for six of the top ten three-field VDPs. Conversely, physical aggression was a prominently disparate behavior category, but has traditionally not been considered a more subjective behavior in previous research. On first glance, this result appears inconsistent with the VDP model, but as discussed, there may be a need to explore how physical aggression is defined, monitored, and referred before this can be definitely stated.

Disparities by Grade Level

Analyzing disparities within schools first and then aggregating results, rather than aggregating ODRs across schools first, provided a unique opportunity to explore disparities by student grade level. Previous research has mixed findings with regard to which grades or grade ranges are most at risk for racial disparities in school discipline, with some data pointing to early childhood (Steinberg & Lacoé, 2017) and others pointing to secondary settings (Welsh & Little, 2018). Although standalone preschools were not included in the sample, elementary schools with preschool and Kindergarten classrooms more commonly had the greatest disparities in their older grades (Grades 5 and 6). This finding is within elementary schools is consistent with research that has

found older Black children to be perceived as relatively less innocent compared to younger Black children. Specifically, Goff et al. (2014) found that for children age 0 to 9, children were perceived as the same level of innocent regardless of identified race. At age 10, Black children were perceived by participants to be less innocent overall, and comparably innocent to non-Black children of the next oldest age group. In comparing to previous findings on preschool, this study focused on ODRs and not suspension, and there may be differences in expectations for preschool classrooms for what behaviors are reported and when. It is entirely possible that fewer ODRs (and smaller ODR racial disparities) are present for preschool students while maintaining higher suspension rates than other grades. In middle schools, 7th grade students were most prone to disparities, and 9th grade students were most likely to account for the greatest disparities in high schools. These patterns do not compare directly disparities between building types, meaning no contribution is being made to which to the discussion in terms of students. Nonetheless, these findings give a clearer indication of which grades within buildings tend to account for the greatest proportion of disparities.

Another interesting finding was the high percentage of a school's IPSD that was accounted for by grade level. For example, the most referred grade in K-5 buildings was 5th, which for the schools in that situation, 5th grade accounted for an average of 75% of racial discipline disparities. This means that the other 25% of racial disparities would be spread over the remaining five grades in the building. This information alone is insufficient to effectively problem-solve disparities, but a consistent dynamic of one grade level in each building accounting for the vast majority of referrals suggests that efforts to reduce disparities may benefit drilling down on a specific grade-level in

collaboration with the corresponding grade-level team would be worthwhile. Grade-level team collaboration is a common practice in many elementary and middle schools, and grade-level teams have been successfully included as a mechanism for implementing more equitable classroom practices (McIntosh, Girvan, Falcon, et al., 2021).

Identifying VDPs within School Buildings

Although not explicitly a research question, this study provided an opportunity to identify the most common VDPs in schools. A notable finding in this regard is the proportion of schools with a small number of discipline decision situations as their strongest VDP. To illustrate this point, of the more than 1,900 unique discipline decision situations found in the sample, the ten most common three-field VDPs accounted for 50% of the top VDPs. This restricted range of behavior and location adds to previous knowledge from studies of aggregated ODR data (Girvan et al., 2017; Smolkowski et al., 2016) that attributed the bulk of racial disparities to referrals for subjective behavior. The prominent placement of defiance in the classroom composing the three most common VDPs points to a more concentrated attribution among the subjective referral category within the classroom. Because the previously mentioned studies combined multiple subjective behaviors (i.e., defiance/disruption, disrespect) into one aggregated variable, it is unknown if this is a shift in the conceptualization of unwanted behavior from Black students or a simply a continuation.

VDPs as Efficient Targets

The practice of identifying and using school-level VDPs for intervention has only been empirically tested as one component of a multi-component intervention in a randomized controlled trial and as a standalone strategy in a case study (McIntosh,

Ellwood, et al., 2018; McIntosh, Girvan, Falcon, et al., 2021). , with the strongest VDP accounting for an average of almost 18% of racial disparities within school buildings, and the top three VDPs accounting for 39% of total racial disparities, the findings of this study support the potential for significantly reducing discipline disparities by addressing a few key discipline decision situations. The data rarely indicated that all disparities could be addressed solely by addressing a few situations, but cutting down ODRs and disparities significantly could serve to have a reverberation effect due to an acute disruption of a coercive cycle of negative interactions between school staff and students (Okonofua, Walton, et al., 2016).

Well-Defined VDP Profiles Differing by Grades Served

Although the vast majority of schools fell into a less distinct profile, there was clear distinction in the VDP patterns among the other profiles. Eleven latent profiles were identified through this study, most characterized by high racial discipline disparities in one to three discipline decision situations. The dominant profile was the exception, characterized as having moderate disparities across VDPs Overall, most schools had VDP patterns consisting of defiance in the classroom spread diffusely over the school day. Given this profile's size, the distribution of strongest VDPs by percentage of school disparities, and the low average percentages of disparities accounted for within the profile, it seems that additional latent patterns might be detectable if an LPA can successfully converge with greater numbers of VDPs included as indicators. On their own, these profiles are telling about patterns that emerge in subsets of schools, but the covariate analysis of these profiles provides insight about which schools are more or less likely to see these patterns.

The emergence of physical aggression as one of the most disparate behavior categories is one that was given additional depth through covariate analysis. Elementary schools were more likely to have VDPs consisting of physical aggression, whereas these patterns were less likely to be present in secondary buildings. Although this does not discount physical aggression as a potentially serious concern in secondary buildings, it provides impetus for elementary school teams to more closely investigate equity related to definitions and decision making regarding physical aggression.

Middle schools were significantly more likely than elementary schools to have a VDP pattern that included disruption in classrooms early in the day. This pattern is unique when evaluating the list of most common VDPs, as it did not register in the top 20, yet it emerged as a distinct profile for middle schools. Previous research has documented that middle school students are more prone to ODRs involving teacher-student interactions, compared to student-student, and also found that more ODRs were issued in the morning in middle school and high school compared to elementary school (Spaulding et al., 2010). This unique early-in-the-day VDP pattern coincides with a time that has been documented as acutely difficult for adolescents due to a developmental shift in sleep patterns to later sleep and wake times during middle school years (Koscec et al., 2014). Adolescent students have been documented to lose up to two hours of sleep on schools days compared to weekends and summer days and report weariness particularly in the early part of the school day (Hansen et al., 2005). This pattern has resulted in calls for schools to push school start times later (Alfonsi et al., 2020).

Agreement between VDPs and PPSs

The method of calculating agreement in observations generally assumes two observers of the same event (Ledford & Gast, 2018). In the case of the comparison of VDPs and PPSs, the same method was used to evaluate the extent to which two independent statements of different problems within the same school aligned. The strongest VDPs and PPSs were found to agree more often than not among the schools in the sample; in 63% of schools, the strongest VDP and strongest PPS were identical. Adding to the findings from the LPA, this finding presents school leaders with additional perspective on the problem solving they conduct.

Although some data systems (e.g., SWIS) enable school teams and data analysts to disaggregate overall patterns into racial discipline disparities, this feature is a relatively recent innovation and is not guaranteed to be a universally available and accessible tool across schools. In the ReACT intervention using the VDP approach, the process of VDP identification in PBIS schools was scaffolded by the external coaches to ensure school staff had access to and referred to relevant data when making determinations and decisions (McIntosh, Girvan, Falcon, et al., 2021). A more common undertaking for school data analysts, particularly in PBIS schools, is identifying some approximation of a PPS in their schools. With the finding of significant agreement between PPSs and VDPs, school teams concerned about racial discipline disparities but without the technology and/or expertise to identify VDPs may benefit from scrutinizing the contexts of their PPSs with an equity lens.

Limitations

One limitation of this study is that the sample includes ODRs from the 2018-19 school year, which is before the pandemic and before a social reckoning in the U.S.

around racial justice. It is unknown how each of these monumental factors may have shifted how behavior is being managed or reported in schools since this sample was collected. Second, this study evaluated racial disparities for Black students compared to all other students and did not evaluate disparities between other groups that have historically been disproportionately excluded through school discipline (e.g., Indigenous students, Latino/a/e students, students with disabilities); VDP patterns for these groups may differ from those found in this study.

Third, the dataset used in this study came from SWIS, a repository commonly used in schools implementing PBIS. Although representative of the national school population, there may be systematic differences between schools using SWIS and those that do not. Fourth, the sample for this study was necessarily reduced from the initial dataset to accommodate internal validity concerns related to school demographics and ODR rates; this stringency limits the ability to generalize findings to schools with lower enrollments or with Black-all other risk ratios below 1.25.

Fifth, this study focused only on the single strongest VDP from each school in the sample, restricting both the descriptive analysis and LPA. This narrowed range may have resulted in the omission of influential VDPs for profile construction. Sixth, VDPs and PPSs in this study were empirical, identified through use of coded algorithms, and could differ from what school teams may identify with the same data. The agreement between practitioner-identified VDPs and empirically-derived (i.e., identified through an algorithm with statistical software) has not been explored. As a result, the implications for the findings around VDP/PPS agreement may be somewhat weakened unless schools possess data systems or code to empirically identify their PPSs. Seventh, the IPSDs

calculated for season did not include number of school days within each time segment into the calculation. This is a possible confound and could make seasons with more days look more disproportionate than seasons with fewer school days. Eighth, the lopsided allocation of schools to one of eleven profiles in this study may have hampered the ability to detect important differences among the other groups. To the extent that a model could successfully converge, expanding the number of decision situations used to compose profiles in the LPA may have improved estimated profiles, a more even distribution of schools among profiles, and perhaps more distinction of profiles in the covariate analysis.

Implications for Research

To inform approaches intended to reduce disparities for other groups, it is important that future research evaluates patterns and profiles for other student groups, including examining the occasions on which they may be different by student group within a school. In addition, a replication of this study following the resumption of more traditional in-person education may be warranted to understand if and how a renewed social justice movement and global pandemic affect how educators differentially intervene on and report behavior by student group.

This study focused primarily on the top VDP from each school, but additional exploration of second-, third-, and lower-ranked VDPs may reveal patterns within schools that can, and perhaps should, be conceptually linked for the purpose of research and intervention. For instance, defiance and disruption are defined separately as behavior categories but may not necessarily hold significantly different meaning for the purpose of problem-solving or school-wide intervention development. Similarly, the differences between time periods or hours may not hold particular meaning without considering

particular schedules. For example, a first-ranked VDP of Defiance in the Classroom around 12:30pm and a second-ranked VDP of Defiance in the Classroom around 1:30pm might both revolve around similar activities, and therefore would warrant a singular action plan rather than two. Identifying situations for selective aggregation may then provide the best representation of VDP composition across schools, and therefore produce more informative research.

Although this study provides insight into the agreement between VDPs and PPSs, it remains to be explored in which schools this agreement is more likely. Although this is the first study to examine PPSs on a national scale, the focus of this study was on how they related to VDPs, and thus did not explore or profile schools based on PPSs. Future research that identifies the situations under which ODRs are most frequent and how patterns in PPSs may vary by school characteristics may be helpful in refining positive behavior support systems and frameworks.

Implications for Practice

School teams seeking to increase equity in school discipline can take note of several findings from this study to apply to their own schools. The broad results of this study boost the credibility for the VDP model and an approach that focuses on narrow contexts to measurably reduce racial discipline disparities. Single VDPs were found to contribute substantially to overall school discipline disparities and school teams can capitalize on this information by identifying their own school-wide VDPs. There are three specific results of this study that have direct implications for where schools target resources to increase equity in school discipline.

First, the classroom was the context for the vast majority of the strongest VDPs. This study strengthens the case for a focus on the classroom for intervention on racial disparities in school discipline. School leaders can take this as encouragement to focus on strategies that enhance equity in classroom management and focus on promoting engagement from all students in the classroom. Embedding culturally responsive practices in positive behavior support is a promising preventive approach for achieving both (Bradshaw et al., 2018; Gion et al., 2021; McIntosh, Girvan, Falcon, et al., 2021; Muldrew & Miller, 2021). Additionally, to support teachers in classrooms at the point of responding to unwanted behavior, school leaders may consider adopting school-wide use of neutralizing routines. To help staff slow down the decision-making process, neutralizing routines are a self-management strategy that prompt staff to pause, re-center on important details and effective behavior management strategies, and deliver less exclusionary and more supportive responses to students (McIntosh et al., 2014). Similarly, having staff focus on understanding student's perspectives and responding empathically demonstrates evidence of bypassing racially biased responding (Okonofua et al., 2022; Okonofua, Paunesku, et al., 2016). Supporting professional development on these practices with funding and technical assistance from the state-level would likely serve to bolster the uptake and maintenance of these practices.

Second, a school team with no disaggregated data but possessing expertise and data systems to develop PPSs as a part of problem-solving high rates of ODRs can lean on the finding of moderate agreement between PPSs and VDPs among schools with significant racial discipline disparities. The research done on the use of PPSs as a part of problem-solving (Horner et al., 2018) indicates that systematically problem-solving these

situations as a part of a structured teaming process results in significantly ODRs, and may have similar implications for these schools. For schools with a high rate of discipline disparities, if it was not already a consideration, the level of agreement between these situations is reasonable justification to employ an equity lens to routine problem-solving. For example, if a school identified their PPS as physical aggression around noon on the playground as their PPS, standard, reasonable responses to this PPS might include increasing supervision in the classroom or reteaching expectations around physical contact. Exploration of this PPS through an equity lens could include additional problem analysis, such as interviewing students from the minoritized group who have received ODRs to understand any additional context missed (e.g., dissonance between acceptable physical contact at home vs. at school). Based on the additional problem analysis, the action steps taken to reduce ODRs might require adapting classroom expectations and instruction on those expectations to both achieve school safety and honor student cultural background. Given these findings as well as promising research utilizing external coaches to support equity-focused decision making by teams (McIntosh, Girvan, Falcon, et al., 2021), technical assistance and coaching supports through regional or state education agencies may be an effective means of expanding such practices.

Third, the school profiles developed based on school-wide VDPs provide school teams informed estimates of their likely VDPs. This could be particularly helpful for schools without capable data systems, limited data expertise, or access to disaggregated discipline data. These profiles should not be interpreted as definitive, but some school teams may use the profiles from this study as a starting point to cross-reference with both their aggregated data and/or other information (e.g., anecdotal data). For example,

elementary school teams may benefit from closely scrutinizing and ODRs for defiance in the classroom, mirroring the dominant profile, as well as physical aggression in the classroom and on the playground, reflecting significant associations with elementary schools. Elementary teams aware of their general discipline disparities but without more definitive details from local data can take this information to support their problem analysis and action planning in contexts which are likely to have the greatest impact on racial discipline disparities.

Fourth, while the previous implications focus primarily on responding to VDPs, but many schools will be endeavoring to be more proactive, particularly in the beginning of the school year before VDPs are evident. In this case, where data for a new set of staff and students is not available, relying on strategies that ground teacher-student interactions in development of healthy, collaborative relationships is likely to be beneficial. For example, leaning on culturally responsive practices such as the Personal Matrix activity (Muldrew & Miller, 2021), teachers can learn more about what expectations students are bringing to the classroom and find ways to converse on, bridge, and come to consensus on shared expectations in that setting. Such a process, with periodic revisitation of the expectations, can convey a strong sense of compassion coming from teachers and support a mutual understanding that maintains clear boundaries and accountability for students and teachers. In spaces that are often dominated by the worldview of teachers, research increasingly demonstrates the value of using student perspectives to create more responsive and effective systems.

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