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**SCHOOL-LEVEL PREDICTORS OF
STUDENT OFFICE DISCIPLINARY REFERRALS**

Thesis

Presented to

The Department of Psychology

DePaul University

BY

ANDREW MARTINEZ

March 7th, 2013

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VITA

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CHAPTER I

INTRODUCTION

Student misbehavior has become a problem gaining national attention. In 1998, the United States Secretary of Education issued a document to schools across the nation entitled *Early Warning, Timely Response: A Guide to Safe Schools*. This document called for schools' attention to disruptive and violent behavior. Specifically, this document listed student disciplinary problems as a warning sign for future antisocial behavior warranting further analysis by school staff to determine an appropriate intervention (Dwyer, Osher, ~~and~~ Warger, 1998). More recently, the United States 2001 No Child Left Behind (NCLB) Act has called upon schools to create safe and orderly learning environments, as well as develop codes of conduct and discipline policies.

This increased national attention to student disciplinary problems is warranted. According to the annual *School Crime and Safety Report* (National Center for Education Statistics), 11% of public school principals report that students engage in acts of disrespect on a daily or weekly basis, and 6% report that students engage in verbal abuse against their teachers (Robers, Zhang, & Truman, 2010). Nationally representative surveys of teachers and students present more sobering accounts of student misbehavior with 49% of high school students reporting that teachers spend more time on discipline than teaching

(Johnson, Duffet, Vine & Moye, 2003), and 66% of teachers reporting disruptive students as the most stressful part of their occupation (Kuzsman & Schnall, 1987).

Student misbehavior can also pose direct challenges to teachers and students. For example, teachers report spending too much time on handling student misbehavior (Houghton, Wheldall, & Merrett, 1988), and feeling overwhelmed as a result of student misbehavior (Gardil, DuPaul, & Kyle, 1996). Research also shows that students with school discipline problems are at risk for school drop-out (Altenbaugh, Engel, & Martin, 1995), school failure (Morrison & Skiba, 2001; Skiba & Peterson, 2000), affiliating with deviant peers (Morrison & Skiba, 2001; Skiba & Peterson, 2000), delinquency (Gottfredson & Gottfredson, 1985; Walker, Colvin, & Ramsey, 1995), antisocial behavior in adulthood (Heller & Ehrlich, 1984; Henggeler, Melton, & Smith, 1992), and contact with the juvenile justice system (Walker, Steiber, et al. 1993). Despite the risks associated with student problem behavior, schools function as a normative context that can help prevent the development of student behavior problems (O'Connor, Dearing, & Collins, 2011); improving the mechanisms to monitor these behaviors can assist school-based preventive efforts.

Office Disciplinary Referral Data

To monitor the frequency of student behavior problems, school districts are increasingly relying on student office discipline referral (ODRs) data as student behavioral indicators and as indices of school climate. Office discipline referrals (sometimes referred to as disciplinary referrals or administrative

contacts) are defined as events in which a school staff member observes a student violating a school rule and submits documentation of the event to the school's administrative leadership, who then delivers a consequence to the student (Irvin et al., 2006). Office disciplinary referrals include a wide spectrum of school violations, which can range from minor school violations such as dress code infractions, cheating, disrupting class, to more serious offenses such as fighting, inciting fights, and weapon violations (see Appendix A for exhaustive list of office referrals included in this current study).

On a more practical level, the collection and utilization of ODR data by schools is an efficient and cost effective data source (McIntosh, Frank, & Spaulding, 2010). For example, in order to collect these data, schools often use internal databases that allow school personnel to log and then monitor such information (Wright & Dusek, 1998). This approach differs from a reliance on external data collection procedures and methodologies, such as those performed by external evaluators, which can be more time consuming and costly (Wright & Dusek, 1998). Despite some caution by researchers regarding the reliability and validity of ODR data (Nelson, Gonzalez, Epstein, & Benner, 2003), in practice, it is the ease with which ODR data can be collected by schools that some argue has contributed to its widespread use as a behavioral outcome measure (McIntosh, Frank, & Spaulding, 2010).

Given that ODR data can be easily collected by schools and are also used as behavioral indicators, they have become widely used to guide school-based

behavioral interventions. For example, these data are often used by school districts to guide primary, secondary, and tertiary interventions (Bradshaw, Koth, Thorton, & Leaf, 2009). Specifically, ODR data are often utilized as a screening device by school behavioral support staff to categorize students into intervention levels, and identify students who have reached a level of behavioral risk warranting additional support services (Nelson, Gonzalez, Epstein, & Benner, 2003; Sprague, Sugai, & Walker, 1998). For example, a well-known intervention utilizing such disciplinary data is Positive Behaviors and Supports (PBS), a behavioral based intervention implemented in over 7,000 schools nationwide (Horner, Sugai, et al., 2009). This intervention uses ODR information to guide its intervention design (Safran & Oswald, 2003) by classifying students with 0-1 ODRs into a universal intervention tier, those with 2-5 into a selective intervention level, and students with 6 or more ODRs into an indicated intervention level (Horner, Sugai, et al., 2009). Thus, schools can reduce behavioral problems by linking students with chronic disciplinary problems to necessary supports.

Individual-level Predictors of Office Disciplinary Referrals

Office disciplinary referrals have largely been examined as a function of individual-level attributes such as race/ethnicity and gender and have not been examined contextually. For example, research shows that boys are more likely to have office disciplinary referrals than girls. In fact, research conducted by

Kaufman et al., (2010) shows that males were 22% more likely than female students to receive an ODR for attendance related infractions, 78% more likely for infractions involving disrespect, 67% as likely for delinquency related ODRS, and 300% more likely for aggressive related incidents.

Racial/ethnic differences in receipt of ODRs are also well documented with African American students receiving a disproportionate number of disciplinary referrals as compared to their White counterparts (Skiba et al., 2008), and harsher consequences for such offenses (e.g., school suspension) (Raffaele, Mendez, & Knoff, 2003; Wald & Losen, 2003). Other research conducted by Kaufman et al. (2010) corroborates these findings showing that African American students were significantly more likely to receive delinquency, aggressive behavior, and referrals for disrespect as compared to Latino s and Other/White students. Other research shows that African American students are also more likely to receive office disciplinary contacts for subjective offenses (e.g., excessive noise, disrespect) (Monroe, 2005) suggesting that disciplinary contacts may be susceptible to external characteristics such as teacher perceptions.

Using Disciplinary Data to Predict Future Office Disciplinary Referrals

Research has shown ODR data as useful in predicting future disciplinary problems. For example, a study conducted by Tobin, Sugai, and Colvin (1996) examined if office referral patterns during the first three months of sixth grade could be used to predict future student behavioral problems. These authors examined whether certain frequencies of ODRs and specific types of ODR

referrals predicted future student behavior problems. Results ~~to~~of this study found that chronically referred middle school students during the first three months ~~of the first year~~ of middle school continued to receive chronic ODRs throughout middle school. Specifically, the authors found two ways of predicting future problem behaviors using disciplinary information. One was related to the frequency of ODRs received by a student. The second approach was categorical, and was related to the specific type of disciplinary infraction (e.g., fighting). Tobin, Sugai, & Colvin (1996) found that students receiving two ODRs during the fall (for any type of ODR), or one ODR for harassment during the fall predicted chronic disciplinary problems in middle school. Based on these findings Tobin and colleagues recommended that additional behavioral support should be provided to students if they are at increased risk for future problem behaviors.

Tobin ~~&~~and Sugai (1999) corroborated these findings by Tobin, Sugai, ~~&~~and Colvin (1996) using a larger archival sample of 526 sixth graders. Tobin ~~&~~and Sugai (1996) examined aspects of 6th grade discipline records that could identify at-risk students. Results illustrated certain types of office referrals as predictive of office referrals in later grades. Specifically, nonviolent misbehavior in 6th grade predicted harassment referrals in grade 8. In addition, students referred for fighting in sixth grade received this same referral in 8th grade as well as high school. Interestingly, this latter pattern was stronger for females, although both males and females reached statistical significance.

In addition, Tobin and Sugai (1999) combined ODR data with non-behavioral variables (in this case GPA) to strengthen the predictive model. The combination of ODRs in sixth grade for fighting and non-violent misbehaviors, in conjunction with GPA, strongly predicted (43% of the variance) chronic discipline problems (defined as the total number of months with at least one office referral) in grades 7 and 8; the frequency of ODRs for nonviolent behaviors in grade 6 served as the best predictor.

The studies by Tobin and colleagues support the use of ODR frequency and ODR type as predictors of future chronic disciplinary problems and, thus, as screening measures for additional behavioral supports (McIntosh, Frank, & Spaulding, 2010). Although Tobin and colleagues demonstrated the predictive strength of a specific frequency of ODRs, and specific types of ODRs, this study mainly consisted of low and middle income families in suburban schools. Regarding this limitation, Tobin and Sugai (1999) suggest that similar studies should be conducted using more diverse student populations.

Recently, research by McIntosh, Frank, and Spaulding (2010), using a large national sample of 990,908 students confirmed some of the previous findings by Tobin and colleagues (1996; 1999). McIntosh, Frank, and Spaulding (2010) examined student ODRs as predictors of future ODRs. Specifically, ODRs during the fall were used to predict office referrals later in the same academic school year. This approach differs from Tobin, Sugai, & Colvin (1996) and Tobin & Sugai (1999) who used baseline ODR data to predict future office

referrals as students moved on to subsequent school grade levels. McIntosh and colleagues contend that a better understanding of ODR data to predict behavior problems within the same academic school year is more practical as this information can guide interventions within the same year.

In addition to advancing the practical scope of ODR research, McIntosh and colleagues (2010) also included two main methodological advances. External validity was strengthened as this study consisted of a large sample of students drawn from 2,509 schools. Secondly, construct validity was improved as schools included in this sample used a standardized mechanism of recording and monitoring student behavior through the use of System-wide Information System (SWIS). SWIS is an online database interface used by over 7,500 schools nationwide (Bradshaw, Koth, Thorton, & Leaf, 2009) to gather and analyze ODRs. SWIS uses standardized methods of logging and entering ODR data and requires schools to demonstrate several readiness requirements to help ensure data accuracy and reliability. This study also expanded the scope of ODR research by focusing on elementary school students; whereas, Tobin and colleagues (1996; 1999) only examine middle school samples.

Overall, McIntosh et al., (2010) found that the most accurate prediction of chronic misbehavior (defined as having 6 or more ODRs by the end of the school year) stems from students who had either two or more ODRs for any behavior by the end of October or, at least one ODR for disrespect or physical aggression/fighting. McIntosh and colleagues also found that combining specific

types of ODRs with the frequency of ODRs improved prediction, although the increase was not substantial. Interestingly, whereas physical aggression/fighting (Tobin, Sugai, & Colvin, 1996) and harassment (Tobin & Sugai, 1999) have been found to be predictors of future ODRs among middle school students, McIntosh et al. (2010) found that physical aggression/fighting and *disrespect* were more powerful predictors among their elementary school student sample. These findings suggest that some ODRs (i.e., fighting) may signify risk regardless of grade-level; whereas other ODRs may be contingent upon students' developmental stage. This discrepancy echoes other research calling attention to ODRs from a developmental perspective (Kaufman, et al., 2010).

Social Disorganization Theory

Social Disorganization Theory (SDT) may serve as a helpful conceptual model to guide ODR research as it takes into account environmental variables that have implications for deviant behavior. SDT was originally applied to community and neighborhood-level research to study deviant behavior. This theory posits that individual risk for deviance is heightened when broader community factors disrupt formal and informal social control (Shaw and McKay, 1969; Elliot, Wilson, Huizinga, Sampson, Elliot, & Rankin, 1996). As just one example, neighborhood factors such as poverty may lead to high turnover and heterogeneity. As individuals enter and exit a neighborhood as a result of turnover, there is more fragmentation of neighborhood values and norms, and less likelihood for meaningful social interactions to take place between citizens.

Ultimately, informal social control, the informal ‘checks and balances’ that people exert upon one another, diminishes and there is limited capacity for informal social control and less formal institutional presence to promote conventional norms and behaviors (Elliot, et al., 1996). Ultimately, deviant behavior arises. Although Social Disorganization Theory originates from neighborhood-level research, it has also been applied to school related research examining student misbehavior (Bradshaw, Sawyer, O’Brennan, 2009). However, when applied to schools, social disorganization theory is often discussed in terms of school disorder. Despite a difference in nomenclature, the principles of SDT still apply to schools, except the unit of analysis differs (schools as compared to neighborhoods). For example, research (Bradshaw, Sawyer, O’Brennan, 2009) has used a school disorder framework in examining the association between contextual school predictors such as school size, student mobility, and poverty, to study student problem behavior. As school-level indicators (e.g., school size, high student-teacher ratio, high student mobility) of social control are challenged, a school’s capacity to maintain social control is limited and deviant student behavior is likely to rise.

Thus, given that ODRs are intended to be indicators of student problem behavior, an SDT framework may help guide such research, which has lacked a conceptual framework and has been mainly researched using individual-level models. Specifically, Social Disorganization Theory can guide ODR research as it draws upon specific environmental indicators (i.e., student mobility, student-

teacher-ratio, school climate, school policies) which, if challenged, disrupts the social fabric of the setting that is necessary to maintain the social control, and promote conventional behavior. When these environmental factors are disrupted, individual deviant behavior is more likely to increase. For purposes of the current study, the following school-level factors (Student Mobility, Student-teacher Ratio, Student-teacher Relations, and School Behavioral Expectations) will be examined, and are briefly discussed in the following subsections.

Student Mobility

Student mobility has been defined as “a measure of the number of times a student changes schools within a school year (excluding changes due to single grade-level promotions) (Katy, 2004) and has been linked to delinquency (Wilson, 2004; Engec, 2006). Social Disorganization Theory holds that heterogeneity of norms and values within a social setting leads to a lower likelihood that meaningful interaction will take place between individuals. As these meaningful interactions diminish, there is less ability to maintain formal and informal social control, which is necessary to maintain the social conventions of the setting.

Similarly, student mobility may result in heterogeneity of student norms and values at the school. As a result of this heterogeneity, the school has less capacity to formally and informally control student behavior. For example, new students may behave in ways that are deemed inappropriate in the school setting because they have not yet fully acclimated to the social norms, rules, and

behavioral expectations of the school. Moreover, from a more informal stance, there is greater heterogeneity within the school in terms of norms and values. As a result, there is less social cohesion between students as well as between students and teachers, which is necessary to promote the school's behavioral norms and for individuals to informally 'police' one another in a manner that promotes the social conventions of the school.

The association between student mobility and greater heterogeneity in student norms is not surprising as research has shown that new students are often less likely to be engaged socially within their school and are less likely to participate in extracurricular activities (Pribesh & Downey, 1999). Thus, with less social involvement there may be fewer opportunities for these students to learn and adapt to the school culture, or more specifically, the behavioral conventions of the school. Whereas low student mobility may not seriously challenge a school's social control, high student turnover such as that experienced in many urban settings may grossly challenge a school's ability to maintain conventional student behavior. Thus, the level of heterogeneity in student norms and the school's inability to maintain social control is magnified. In fact, the implications of such high student mobility for deviant behavior has led some urban school districts to shift from fragmented codes of conduct to district-wide plans, especially in many urban school districts where student mobility rates can range from as high as 45-80% (Brown & Beckett, 2006).

Moreover, quantitative research supports the association between student mobility and student problem behavior. For example, a study by Engec (2006) of 728,466 public school students in Louisiana found student mobility to be associated with student out of school and in school suspensions. Engec (2006) found that the rate of in-school suspension increased in tandem with the number of times students moved. For example, in-school-suspension rates increased as follows: 7.27 (changed schools once), 10.86 (changed schools twice), 13.24 (three times), 13.78 (four times), and 14.65 (moved more than four times). The rate of out-of-school-suspensions followed a similar pattern and increased as students increasingly changed schools as follows: 9.49 (changed schools once), 17.51 (changed schools twice), 21.70 (three times), 22.48 (four times), and 23.14 (five times).

Given the association between student school mobility and out of school suspensions there is reason to posit that such an association may hold in relation to student disciplinary referrals. To date, research has not examined the association between school-level student mobility as a predictor of future office disciplinary contacts. Despite this research gap, such a link is likely and would suggest an environmental contribution to the ODR process.

Student-teacher Ratio

As previously discussed, Social Disorganization Theory holds that meaningful social interactions between individuals are necessary to promote the social conventions of a setting, and thus, maintain social control of behavior. As

meaningful relationships are developed, individuals are more likely to formally and informally transmit conventional norms among each other. As a result, deviant behavior becomes less likely (Elliot, et al., 1996).

From this stance, a higher student-teacher ratio diminishes the opportunity for teachers to develop meaningful relationships with students (Walker & Gresham, 1997; Gottfredson & DiPietro, 2011) as well as monitor student behavior (Hellman & Beaton, 1986), which are instrumental to maintain social control. As a result, deviant behavior is likely to increase. For example, within a 15:1 student-teacher ratio as compared to 30:1, teachers may be more likely to develop meaningful interactions with students, which can help prevent student problem behavior.

Despite what seems to be an intuitive association between student-teacher ratio and student problem behavior, most research has focused on academic outcomes, and less has focused on student problem behavior (Gottfredson & DiPietro, 2011). However, qualitative research conducted among teachers following a state-wide initiative in Wisconsin suggests that student behavior problems are reduced when student-teacher ratios are reduced (Molhar et al., 1999). For example, teachers in this qualitative study reported that fewer discipline problems occurred due to having fewer students, and because of the 'family like' atmosphere created.

More recently, two multi-level studies conducted by Bradshaw et al. (2009) and Gottfredson and DiPietro (2011) provide further evidence. Bradshaw

and colleagues (2009) found a link between higher student-teacher ratio and an increased frequency of bullying victimizations among middle school students (How often have you been bullied in the past month?). Thus, congruent with social disorganization theory, bullying was more likely to occur within a high student-teacher ratio context. Similarly, Gottfredson and DiPietro (2011) found an association between increased student-teacher ratio and personal student victimization, which was defined more broadly to include student reports of physical offenses, threats, and robbery.

Although Bradshaw et al., (1999) and Gottfredson and DiPietro (2011) support the link between student-teacher ratio and victimization, two cautions are necessary prior to inferring that a similar association applies to ODRs. First, it is important to note that the studies by Bradshaw et al. (2009) and Gottfredson and DiPietro (2011) are limited to interpersonal victimizations (i.e., bullying, robbery) as opposed to the diverse spectrum of problem behaviors represented by ODRs. Secondly, these studies examine victimizations rather than problem behaviors. Nonetheless, related to this latter point, victimization represents the ‘opposite side of the coin’ of an offense. Viewed in this fashion, these studies provide some evidence that higher student-teacher ratio may be associated with more student misbehavior, at least in relation to interpersonal offenses. Given this link, there is reason to suspect that a higher student-teacher ratio would also predict higher student ODRs, as the latter is an indicator of student misbehavior. Nevertheless,

this association needs to be examined and doing so would advance the contextual understanding of ODRs.

Student-teacher Relations

Consistent with Social Disorganization Theory, a school climate characterized by positive student-teacher relations reflects a setting in which meaningful interactions are common between students and teachers. Students and teachers are more likely to share similar values, interact in meaningful ways, and students may be more receptive to teacher's explicit or implicit behavioral expectations (Haynes, Emmons, & Ben-Avie, 2001). Conversely, a school climate marked by unfavorable student-teacher relations reflects a more fragmented environment in which school conventions are not equally shared between students and teachers, which in the end makes it more difficult to control student behavior.

Research supports the association between positive student-teacher relations and decreased student problem behavior. For example, research suggests that positive student-teacher relationships can help children learn and develop appropriate forms of coping, developmental regulation (Doll, 1996), and can serve as a significant contributor to children's social-emotional and behavioral development. Recently, a study by O'Connor, Dearing, and Collins (2011) consisting of 1,364 children found that high-quality student-teacher relationships predicted low levels of student externalizing behaviors. When considering that ODRs are largely characterized by student externalizing

behavior, there is evidence to suggest that a school setting characterized by positive student-teacher relationships would be associated with fewer student ODRs.

School Behavioral Expectations

Until this point the school-level indicators (student mobility, student-teacher ratio, student-teacher relationships) that have been discussed have implications for social interactions that are in turn instrumental to social control. In contrast, school behavioral expectations is a construct that is less related to social relationships, but more so related to the formal communication of conventional behavior within a social setting.

From this perspective there is reason to believe that even in settings where social relationships are strong (which is important to reduce deviant behavior), unclear formal rules to guide which specific behaviors are or are not appropriate may minimize the setting's capacity to manage problem behavior. Thus, from this angle, unclear school behavioral expectations (e.g., school rules, school policies regarding appropriate or inappropriate student behavior) concerning student misbehavior would be associated with student problem behaviors. For example, when rules and sanctions are unclear, behavioral norms become fragmented and students are likely to enact their own codes of conduct (Welsh, Greene, & Jenkins, 1999). Conversely, clearly communicated school rules minimize variability in student behavior by effectively promoting the social conventions of the setting.

Research supports the link between clear student behavioral expectations and student behavior. A benchmark study by the National Institute of Education (NIE) (1978) examining 642 public schools conducted, found lower rates among schools with systematic ways of handling student behavioral problems and less arbitrariness in enforcing schools rules. Findings by the National Institute of Education were corroborated seven years later by Gottfredson and Gottfredson (1985) using Safe Schools Study data. Gottfredson and Gottfredson (1985) examined various school environmental variables in relation to student victimization and found that schools with unclear, inconsistent, or indirect (i.e., lowering grades as response to misconduct) ways of enforcing rules experienced more discipline problems (Gottfredson & Gottfredson, 1985). Despite the link between unclear behavioral expectations and student misbehavior, it is important to note that the National Institute of Education (1978) and Gottfredson and Gottfredson (1985) studies examine *student victimization* rather than *student offenses*. Nonetheless, this link suggests that a similar pattern may exist between school behavioral expectations and student offenses. Further, these studies only provide evidence of association and do not provide evidence of causality.

However, quasi-experimental research using an interrupted time series design conducted by Metzler, Boglan, and Rusby (2001) further support the correlational findings by the National Institute of Education (1978) and Gottfredson and Gottfredson (1985). Metzler and colleagues examined the impact of a middle school comprehensive behavioral management program on

student office disciplinary referrals. This behavioral management intervention was designed to help schools improve the clarity of its rules and communicate behavioral expectations through teaching. Additionally, the intervention included positive reinforcement for appropriate behavior. Metzler et al. (2001) found a statistically significant reduction in disciplinary referrals among 7th grade students, as well as referrals for harassment among males. However, these findings were limited to within-group results because the comparison group's disciplinary referral data collection processes were deemed unsatisfactory to allow for between-group comparisons. Nonetheless, and taken together with previous correlational research by the National Institute of Education (1978) and Gottfredson and Gottfredson (1985), there is some evidence suggesting that students are less likely to misbehave in school settings in which school rules concerning behavior are clearly communicated. Although these studies suggest a link between unclear behavioral expectations and student misbehavior, research is needed to examine this association in relation to student ODRs.

Rationale

Taken together, there is supporting evidence regarding the use of student office disciplinary referrals to predict future ODRs, but these analyses have not been conducted using multi-level modeling strategies. Nevertheless, the studies by Tobin, Sugai, and Colvin (1996), Tobin and Sugai (1999) suggest four main patterns in which office disciplinary data can be used to predict future office referrals. First, the frequency of student office referrals (number of ODRs)

(Tobin, Sugai, & Colvin, 1996; McIntosh, Frank, & Spaulding, 2010) can be used to predict future discipline problems. Secondly, specific types of ODRs (i.e., fighting, harassment) (Tobin, Sugai, & Colvin, 1996; Tobin & Sugai, 1999; McIntosh, Frank, & Spaulding, 2010) can be examined. Third, a combination of frequency and types of ODRs can be used (Tobin & Sugai, 1999; McIntosh, Frank, & Spaulding, 2010). Last, disciplinary data can be combined with non-ODR variables such as G.P.A. (Tobin & Sugai, 1999).

Despite advancing our understanding of how ODR data can be used for predictive purposes, certain gaps remain. First, these studies (Tobin, Sugai, & Colvin, 1996; Tobin & Sugai, 1999; McIntosh, Frank, & Spaulding, 2010) employ individual-level models, which are not designed to account for the nested nature of the data (e.g., students within schools). An individual-level model using ordinary least squares regression assumes that the regression coefficients apply equally to all contexts, and the correlated errors between students within a given school violates the assumption of non-dependence in multiple regression analysis (Bradshaw, Sawyer, & O'Brennan, 2009). Multi-level modeling techniques may serve as an alternative to this limitation.

Secondly, the studies by Tobin, Sugai, and Colvin (1996), Tobin and Sugai (1999), and McIntosh, Frank, and Spaulding (2010) examine elementary or middle school students in their studies, and do not examine students across a broader range of grade levels within one study. Therefore, the ability to generalize findings beyond the developmental stages studied becomes equivocal.

As an alternative, research should seek to include a spectrum of student grade levels to determine the extent to which ODRs may vary by grade. Variation of ODRs by grade may allow for a developmentally tailored use of ODR data in guiding interventions (Kaufman et al., 2010).

Third, these three studies are primarily based on suburban samples. Less is known about the predictive nature of ODRs in school settings consisting of extremely high levels of students living in extreme poverty. Although, McIntosh, Frank, and Spaulding (2010) include a substantial number of low-income schools in their study (18% of the schools were more than 75% free or reduced-price lunch), findings were reported in aggregate, limiting the generalizability of their findings (i.e., ODR frequency and ODRs types) to high-poverty school districts. Research is needed to examine ODR data within homogenous high-poverty settings.

Fourth, these studies (Tobin, Sugai, & Colvin, 1996; Tobin & Sugai, 1999; McIntosh, Frank, & Spaulding, 2010) do not examine environmental variables. Indeed, in a literature review on school discipline, Morrison and Skiba (2001) indicate that most research on school discipline has focused on individual-level predictors of school discipline referrals, and few studies examine environmental predictors. Such a dearth is surprising considering that ODRs typically originate within the classroom, and the ODR process consists of [multiple points in which contextual factors may play a role in the disciplinary referral process](#). Foremost, the majority of ODRs originate within the classroom (47% for elementary school

grades; 63% for middle school grades) (Spaulding, Irvin, Horner, May et al., 2010). The disproportionate origination of ODRs within a specific context should serve as impetus for exploring the contextual precursors to such phenomena. Thus, a single ODR may potentially reflect student behaviors, but can also reflect student-teacher dynamics, or more broadly, school dynamics. Secondly, the office referral process, by definition, suggests that it is a multivariate process (Morrison & Skiba, 2001; Irvin et al. 2006). That is, a student engages in a specific behavior which may be deemed appropriate or inappropriate depending on the teachers' subjective standards (Nelson, Gonzalez, Epstein, & Benner et. al, 2003) and school rules and norms. If the behavior is deemed unacceptable by the teacher, the problem may be handled internally within the classroom or the student may be referred to the school office. The school office becomes a second point in which the student 'offense' is further filtered. School administration can choose to dismiss the referral or can culminate the process by disciplining the student and logging the event into a school database. Given the various components of the referral process, a multilevel model may be more appropriate to account for as much variance as possible. It is necessary to note that the limited research examining environmental factors in ODR research is perhaps due to the lack of a conceptual model guiding this work (Nelson et al., 2003). Indeed, in a review of administrative discipline contacts, Nelson, Gonzalez, Epstein, and Benner et al. (2003) caution the use of the "shot gun" approach, which has guided research on administrative discipline contacts. Instead, Nelson and colleagues

(2003) advocate the use of a conceptual framework to guide correlational and experimental research examining ODRs. They recommend the inclusion of classroom-level variables that predict and moderate administrative discipline contacts. To build upon these ideas, we also need to examine school-level variables, as they represent more systemic contextual influences on student disciplinary referrals.

Statement of Hypotheses

The proposed study examines school-level predictors of student office disciplinary referrals in a large high-poverty urban school district. The overarching objective of this study is to examine if school-level variables explain greater likelihood in predicting chronic office disciplinary referrals when taking in account the individual-level model. In accordance with Social Disorganization Theory it is hypothesized that as mechanisms of social control in the school setting are disrupted (as defined by higher student mobility, higher student-teacher ratio, less favorable student-teacher relations, and less clearly communicated behavioral expectations) there will be greater likelihood of predicting student chronic behavior at wave 2.

Hypothesis I: a. It is hypothesized that the school-level model, consisting of Student Mobility, Student-teacher Ratio, Student-teacher Relations, and Communication of Student Behavioral Expectations will significantly predict Chronic ODRs at wave two, when taking into account student grade, gender, race/ethnicity, and Chronic ODRs at wave one. The four

components of the school-level model are operationalized as follows: 1) Student Mobility is defined as the percent of students at the school who did not attend the same school during the preceding school year. 2) Student-teacher Ratio is operationalized as the proportion of students to instructional staff. 3) Student-teacher Relations is operationalized as the level of caring, respect, and trust that exists between students and teachers in the school setting as perceived by students (Haynes, Emmons, & Ben-Avie, 2001). 4) Communication of Student Behavioral Expectations is operationalized as the extent to which the school effectively communicates student behavioral expectations. Chronic ODRs is operationalized as students with six office referrals or more at wave two (i.e., within the 2nd, 3rd, and 4th academic quarters).

Hypothesis I: b. It is hypothesized that the addition of school-level variables ~~(four variables) will contribute to significantly more likelihood in predicting will predict~~ chronic office disciplinary referrals at wave two, above and beyond the individual-level ~~variables model~~ (grade, gender, race/ethnicity, frequency of ODRs at wave 1).

Hypothesis II: It is hypothesized that the school-level model, as described above, will be more likely to predict chronic office discipline referrals at wave two among middle school students as compared to elementary school students.

This study makes several advances concerning the body of research examining student office discipline referrals. Foremost, and in line with the overarching objective, this study examines environmental predictors of student disciplinary referrals using multi-level modeling whereas most studies have primarily used individual-level models. Secondly, this study applies a theoretical approach to an area of research that has been argued as being devoid of a conceptual framework. Specifically, this study applies Social Disorganization Theory, which is essentially a macro theory of deviance, to guide this research concerning student discipline referrals. Third, the current study includes both elementary and middle school students whereas other studies examining ODR data to predict future office referrals have examined these groups separately. Fourth, this study includes a large sample of students from a high poverty/low-income school district (95% of students eligible for free/reduce priced lunch) whereas previous studies have often focused on primarily White or suburban samples (Tobin, Sugai, & Colvin, 1996; Tobin & Sugai, 1999).

CHAPTER II

METHOD

Research Participants

The current study uses archival disciplinary records of public school students in grades three through eight during the 2008-09 academic school year in a large Northeastern city of 140,000 people (U.S. Census Bureau, 2000). The school district from which these data are gathered consists of a little over 20,000 students and is characterized by extreme poverty, with over 95% of students eligible for free or reduced lunch. Office disciplinary information was received for all 35 schools within the school district. However, the total number of schools included in this sample was reduced to 13 schools as a result of excluding secondary schools, alternative schools, schools that only entered state mandated ODRs, as well as schools for which some of the school-level variables were not available (e.g., schools that did not administer a school-wide climate survey during the 2008-09 school year).

Participants in the final sample consisted of 1,501 students ranging from grades three to eight, all of whom had one or more office disciplinary referrals. Sixty-six percent of the participants in the final sample were male. Students in the final sample consisted of African American (56.3%) and Latino (43.7%) students. Individual students who were identified as White, Asian, Hawaiian Pacific Islander, and Native American were omitted from this study because in most schools they accounted for a low percent of disciplinary contacts - in some

cases as low as zero ODRs. Such low sample sizes for these racial/ethnic groups would not allow for appropriate between-group comparisons. Two factors accounted for the low representation of students from these ethnic categories. Foremost, the school district from which these data are drawn is homogenous, as the vast majority of students district-wide are students of color. Secondly, this sample only consists of students with one or more office disciplinary referrals, which are disproportionately accounted for by students of non-White backgrounds (Skiba, ~~Homer, Chung, Rausch, May, & Tobin, et al.~~, 2011). Further, regarding grade, the majority of students were in middle school (63%) as compared to elementary school (37%). The percentage breakdown of students by grade is as follows: 8th grade (24.5%), 7th grade (23.9%), 6th (14.7%), 5th (13.4%), 4th (10.5%), and 3rd (13.1%). Overall, students in higher school grades are more likely to receive a disciplinary referral, which is why middle school grades (grades 6-8) are disproportionately represented. The disproportionate number of disciplinary referrals among students in the higher middle school grades is consistent with previous research (Spaulding et al., 2010).

Participating Schools

A total of thirteen schools were included in this study. The majority of schools ranged from grades kindergarten through eighth grade and one school ranged from kindergarten through sixth grade. School size across all schools averaged 623 students ($SD = 229.2$), and ranged from a minimum of 343 students to a maximum of 1,093 students. Because the schools in this sample were

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implementing the Positive Behaviors and Supports Program (PBS) during the 2008-09 school year, this variable the total number years of years of implementation of the PBS program was taken into account as a school-level variable as it is possible that a higher number of years of program implementation could be associated with the frequency of office referrals. The average number of years of PBS program implementation was 3.1 ($SD = 1.4$) and ranged from a minimum of one year to a maximum of five years of implementation. Most schools were implementing this program for three years (six schools). Descriptive statistics for all school-level variables are presented in Table 1.

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Table 1: Descriptive Statistics for School-level Variables

	N	\bar{x}	SD	Range
School Size	13	623	229.2	750.0
Implementation Year	13	3.1	1.4	4.0
Percent Students of Color	13	95.3	3.2	10.2
Student Mobility	13	43.8	18.9	60.8
Student Teacher Ratio	13	14.2	2.4	7.3
Behavioral Expectations	13	81.5	30.5	90.0
Total ODRS (Quarters 2, 3,4)	13	418.2	341.1	1018.0

Procedure

Archival disciplinary data used in this study were collected internally by schools across the school district. Per district requirement, all schools used a standard incident report form to record student disciplinary infractions. This form allows schools to record the specific student's disciplinary infraction along with demographic information (i.e., race/ethnicity, gender, and grade), school information (i.e., school name, student's homeroom cohort), and information

pertinent to the disciplinary infraction (i.e., date, location of incident, and the resulting disciplinary consequence of the infraction). Such demographic, school, and disciplinary information was recorded on the incident report form using a series of checkboxes that help ensure standardization of procedures across schools.

Once the incident report form is completed, a school staff member(s) responsible for logging this information enters the data into the school district's internal database. The person responsible for entering disciplinary data is designated at each school and undergoes data entry training.

Measures

Individual-level predictor variables.

The individual-level demographic variables include student grade, gender, and race/ethnicity. Student grade was dichotomized by collapsing students in grades three through five into the elementary school category and students in grades six through eight into a middle school category. Student race/ethnicity consisted of African and Latino students. Female, elementary, and Latino all served as the reference group. The individual-level demographic predictors were dummy coded as follows: Gender (1 = female, reference group; 0 = Male), Ethnicity, (1 = Latino, reference group, 0 = African American,) and Grade (1 = Elementary School, reference group; 0 = Middle school).

Frequency of office disciplinary referrals served as an individual-level continuous predictor variable. This variable reflects the total number of student

office discipline referrals during the student's first academic quarter (i.e., marking period) during the 2008-09 school year. This variable was created by totaling the number of office disciplinary referrals occurring during the student's first academic quarter.

School-level Predictor Variables.

Demographic predictor variables: The school-level demographic variables include implementation year, school size, and percent of students of color at the school (i.e., non-White students). *Implementation year* refers to the number of years the school had been implementing the Positive Behaviors and Supports Program (PBS), a school-wide program aimed at improving student behavior and school climate. This program had been phased into the school district over the course of several years and was therefore included to control for any variability in ODRs accounted for by differences in duration of program implementation. School size is defined as the total number of students enrolled at the school. Finally, the percent of students of color refers to the percent of non-White students at the school. In this study, students of color (i.e., African American, Latino, Asian, Native American) were aggregated to allow for a more parsimonious model as opposed to a model including all respective racial/ethnic groups.

Hypothesized School-level Predictors.

Student-teacher Ratio is a school-level variable and was obtained for each school using the Connecticut State Department of Education website (Connecticut

Department of Education, 2008), which provides profiles for each school across the state. These profiles list the total number of students enrolled at the school as of October 1st and the number of general and special education instructors. This information was then used to calculate the number of students per teacher/instructor. School personnel listed within the school profile that were not included into the student-teacher ratio calculation include the following: 1) paraprofessional instructional assistants, 2) library/Media specialists and/or assistants, 3) administrators, coordinators, and department chairs, 4) subject area specialists, 5) counseling staff (includes counselors, social workers, and school psychologists, 6) school nurses, and 7) other staff providing non instructional support.

Student Mobility is a school-level variable, and was also obtained for each school using the Connecticut State Department of Education website (Connecticut Department of Education, 2008). Each school profile lists the percentage of students in the current school year who attended the same school during the previous school year. This percentage is listed under “Students in Grades Above School’s Entry Grade Who Attended Same School the Previous Year²².” For purposes of this study, we were interested in obtaining the percent of students in the current school year who *did not* attend the school during the preceding academic year. Therefore, the student mobility percentages were obtained by subtracting the percent of students who attended the school during the previous school year from 100%.

Student-teacher Relations was assessed using the Student-teacher Relations subscale of the Elementary and Middle School Climate Scale (SCS) (student version) (Haynes, Emmons, & Ben-Avie, 1994). This subscale measures the level of caring, respect, and trust that exists between students and teachers in the school setting and consists of ten items, each of which is scored using a 3-point scale (1 = Disagree, 2 = Not sure, 3 = Agree). The Student-teacher Relations subscale has strong internal consistency ($\alpha = .90$), and high scores reflect favorable perceptions of student-teacher relations within the school setting.

Communication of School Behavioral Expectations is the fourth school-level variable and is a subscale of the School-wide Evaluation Tool (SET), a direct observation measure used to assess schools' implementation of seven core components of the Positive Behaviors and Supports Program (PBS) (Horner, Todd, Lewis-Palmer, Irvin, Sugai, & Boland, 2004). This five-item subscale has demonstrated strong internal consistency ($\alpha = .92$), and captures the extent to which school staff teach desired student behavioral expectations (Horner, Todd, Lewis-Palmer, Irvin, Sugai, Boland, 2004). This subscale is assessed using a three point scale (0 = Not Implemented, 1 = Partial Implementation, and 2 = Full Implementation).

Outcome Variable.

Chronic Office Disciplinary Referrals is a logistic outcome variable. This variable was created by dichotomizing the sum of student office referrals (during their 2nd, 3rd, and 4th marking periods) into two categories. Students with fewer

than six office discipline referrals were categorized into one group (did not have chronic ODRs), and students with six or more office discipline referrals were categorized into the second group (chronic ODRs). The dichotomization of the outcome variable in this fashion (i.e., less than 6 ODRs; more than 6 ODRs) is consistent with how others have defined chronic levels of disciplinary problems (McIntosh, Frank, & Spaulding, 2010). Additionally, this cut-off has been shown to be associated with clinical levels of externalizing behaviors (McIntosh, Campbell, Carter, & Zumbo, 2009), and represents the level at which some school interventions designate students as needing tertiary-level interventions (Horner, Sugai, et al., 2009).

CHAPTER III

RESULTS

Prior to testing our hypotheses, descriptive statistics for all individual and school-level demographic and hypothesized variables were examined. Zero-order correlations between school-level variables were also conducted. Regarding the individual-level variables (Table 2), the mean number of office disciplinary referrals was higher among male students as compared to female students, African American students as compared to Latino students, and middle school students as compared to their elementary school counterparts. In addition, the zero-order correlation between students' disciplinary referrals during the first academic quarter was significantly associated with the total number of office discipline referrals during the remainder of the school year ($r = .53; p = .000 < .001$).

Descriptive statistics for school-level variables are also presented in Table 2.

Table 2: Descriptive Statistics

	N	\bar{x} ODRs	SD	Range
Individual-level Variables				
African American	812	5.1	6.0	56.0
Latino	631	4.2	5.4	42.0
Male	998	5.3	6.4	56.0
Female	503	3.3	3.7	28.0
Grades 3-5	555	4.1	5.2	29.0
Grades 6-8	946	4.9	6.0	56.0
School-level Variables				
School Size	13	623.0	229.2	750.0
Implementation Year	13	3.1	1.4	4.0
Percent Students of Color	13	92.9	4.4	12.3
Student Mobility	13	43.8	18.9	60.8
Student Teacher Ratio	13	14.2	2.4	7.3
Behavioral Expectations	13	81.5	30.5	90.0
Total ODRS (Quarters 2, 3,4)	13	418.2	341.1	1018.0

Furthermore, as displayed in Table 3, bivariate correlations among school-level variables did not reveal statistically significant correlations with the exception of the negative correlation between the year in which schools implemented the Positive Behavior Supports (PBS) intervention and Student-teacher Ratio. This negative correlation is likely to be attributable to the way in which the Positive Behavioral Supports program was phased into the school district. That is, the program was first introduced into smaller schools, and later introduced into the districts' larger schools. Thus, this correlation supports the inclusion of the Implementation Year variable as a school-level control variable as it is associated with one of the hypothesized predictor variables.

Table 3: Zero-order Correlations Among School-level Variables

	SS	IY	SM	STR	BE	TTL-O	Chr-O
Percent Students of Color (PSC)	-.02	.55	.08	-.44	-.08	.36	.44
School Size (SS)	-	-.28	.12	.43	.04	.40	.38
Implementation Year (IY)		-	.04	-.61*	-.42	.04	.11
Student Mobility (SM)			-	.14	-.22	-.10	-.08
Student Teacher Ratio (STR)				-	.07	-.10	-.10
Behavioral Expectations (BE)					-	.27	.18
Total ODRs (TTL-O)						-	.98**
Number of Students with Chronic ODRs (Chr-O)							-

*P < .05, ** P < .01

Hypothesis 1a: Primary Analysis

It was hypothesized that the school-level model, consisting of Student Mobility, Student-teacher Ratio, Student-teacher Relations, and Communication of Student Behavioral Expectations would significantly predict Chronic ODRs at wave two, when taking into account student grade, gender, race/ethnicity, and ODRs at wave one. To test this hypothesis, a series of four models were conducted with Chronic ODRs serving as the logistic outcome variable (students with 6 or more ODRs after the first academic quarter). In this sample, students within the Chronic ODRs classification accounted for 61% of all disciplinary referrals despite constituting only 20% of the student sample. This multi-level approach allows for the examination of individual and school-level effects in one model. The models included in this analysis consist of an individual and school-level model, which were then combined into a mixed model to examine Chronic ODRs. The individual (i.e., level-1), school-level (i.e., level-2), and mixed model,

which consists of the individual and school-level models, are displayed as follows.

Level-1 Model

$$E(\text{Chronic ODRs}_{OD_{ij}}|\beta_j) = \lambda_{ij}$$

$$\log[\lambda_{ij}] = \eta_{ij}$$

$$\eta_{ij} = \beta_{0j} + \beta_{1j}*(\text{Gender}_{ij}) + \beta_{2j}*(\text{Race/Ethnicity}_{ij}) + \beta_{3j}*(\text{Grade}_{ij}) + \beta_{4j}*(\text{Total ODRs during first academic quarter})$$

Level-2 Model

$$\beta_{0j} = \gamma_{00} + \gamma_{01}*(\text{School Size}_j) + \gamma_{02}*(\text{Implementation Year}_j) + \gamma_{03}*(\text{Percent Students of Color}_j) + \gamma_{04}*(\text{Student Mobility}) + \gamma_{05}*(\text{Student-teacher Ratio}) + \gamma_{06}*(\text{Communication of Behavioral Expectations}) + u_{0j}$$

Mixed Model

$$\eta_{ij} = \gamma_{00} + \gamma_{10}*\text{Gender}_{ij} + \gamma_{20}*\text{Ethnicity}_{ij} + \gamma_{30}*\text{Grade}_{ij} + \gamma_{40}*\text{Total ODRs during first academic quarter}_{ij} + \gamma_{01}*\text{School Size}_j + \gamma_{02}*\text{Implementation Year}_j + \gamma_{03}*\text{Percent Students of Color}_j + \gamma_{04}*\text{Student Mobility}_j + \gamma_{05}*\text{Student-teacher Ratio}_j + \gamma_{06}*\text{Communication of Behavioral Expectations} + u_{0j}$$

Prior to conducting these models, the null model, which does not include any predictor variables was examined to determine the intra-class correlation (ICC). The ICC refers to the proportion of the total variance in the outcome variable (Chronic ODRs) that is accounted for by differences in schools. Results for the null model revealed an ICC of .106, indicating ~~that 10~~that 10.6% of the variance in Chronic Office Disciplinary Referrals is accounted for by differences between schools. This suggests ~~that the data are nested (e.g., students within schools), and~~ that a multi-level modeling approach is appropriate to account for this dependence in the data (Snijder & Bosker, 1999). Next, the level-one model,

consisting of individual-level characteristics (i.e., gender, race, grade, and total number of office referrals during the first academic quarter) was

~~conducted~~examined. Results for this first model showed that the three individual-level predictors significantly predicted the logistic outcome variable (Table 4).

Specifically, male students were significantly more likely ($OR = 1.42$; 42% more likely) to have chronic ODRs than female students, middle school students were

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92% ($OR = 1.92$) more likely than elementary school students to have an ODR, and African American students were 28% (1.28) more likely than Latino students

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to have ~~an ODR~~chronic levels of ODRs. Also, ODRs during the first academic quarter (i.e., marking period) significantly predicted chronic ODRs at the end of the school year ($OR = 1.97$).

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Next, a third model was ~~conducted~~examined consisting of the individual-level model and a school-level model consisting of three school-level demographic variables (Implementation Year, School Size, and Percent of Students of Color). This model was included as a control model as studies have shown these demographic school-level variables, namely school size and percent of students of color, as associated with student misbehavior (Bradshaw et al., 2009). In addition, and as mentioned earlier, Implementation Year was included as it was significantly correlated with one of the hypothesized predictors (i.e., Student-teacher Ratio). As displayed in Table 4, none of the demographic control variables significantly predicted Chronic ODRs.

Finally, the full model was employed by adding the hypothesized school-level predictors (Student-teacher Ratio, Student Mobility, and Communication of Student Behavioral Expectations) to the previous model. In this analysis, only three of the four hypothesized predictors (i.e., Student-teacher Relations was not included into this specific analysis) were included into this model because the Student-teacher Relations variable was only available for nine schools and a minimum of ten schools is recommended when conducting multi-level modeling (Snijder & Bosker, 1999). As displayed in Table 4, none of the hypothesized predictors were statistically significant in predicting students with Chronic ODRs.

Table 4: Predicting Chronic Office Disciplinary Referrals^a

	Null b (SE)	Level 1 b (SE)	Level 2 Demos b (SE)	Full Model b (SE)	OR	OR
Intercept	-1.58(-.19)***	-3.03(-.28)	-8.86(4.67)*	-8.88(7.41)		
Gender (Male)		-.35(-.17)*	1.42	1.43	1.43	1.43
Grade (6-8)		-.65(-.16)***	1.92	1.90	1.92	1.92
Ethnicity (AA) ^b		-.25(-.16)	1.28	1.30	1.30	1.30
Quarter 1 ODRs		.68(.06)***	1.97	1.97	1.97	1.97
School Size			.00(.00)	1.00	1.00	1.00
Implementation Year			-.11(-.16)	1.12	1.12	1.13
% Students of Color			-.06(-.05)	1.06	1.06	1.06
Student Mobility				-.00(-.02)	1.00	1.00
Student-teacher Ratio				-.01(-.14)	1.01	1.01
Communi- cation of Behavior Expectations				-.00(-.01)	1.00	1.00

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Explained Variance	-11.6%	-2.6%	+15.7%
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included into this specific analysis) were included into this model because the Student-teacher Relations variable was only available for nine schools and a minimum of ten schools is recommended in multi-level modeling (Snijder & Bosker, 1999). As displayed in Table 4, none of the hypothesized predictors were statistically significant in predicting students with Chronic ODRs.

Table 4: Predicting Chronic Office Disciplinary Referrals ^a

	Null b (SE)	Level 1 b (SE)	OR	Level 2		Full Model b (SE)	OR
				Demos b (SE)	OR		
Intercept	-1.58(.19)***	-3.03 (.28)		-8.86 (4.67)*		-8.88 (7.41)	
-Gender (Male)		.35 (.17)*	1.42	.36 (.17)*	1.43	.36 (.17)*	1.43
-Grade (6-8)		.65(.16)***	1.92	.64(.17)***	1.90	.65 (.17)***	1.92
-Ethnicity (AA) ^b		.25 (.16)	1.28	.26 (.16)	1.30	.26 (.16)*	1.30
-Quarter 1 ODRs		.68(.06)***	1.97	.68 (.06)***	1.97	.68 (.06)***	1.97
School Size				.00 (.00)	1.00	.00 (.00)	1.00
-Implementation Year				.11 (.16)	1.12	.12 (.30)	1.13
-% Students of Color				.06 (.05)	1.06	.06 (.07)	1.06
-Student Mobility						.00 (.02)	1.00
-Student-teacher Ratio						.01 (.14)	1.01
-Communi- cation of Behavior Expectations						.00 (.01)	1.00

Finally, a series of cross-level interactions between the three hypothesized school-level predictors (Student-teacher Ratio, Student Mobility, and Communication of Behavioral Expectations), and the individual-level variables (gender and race/ethnicity) were conducted producing a total of six analyses. Whereas the hypothesized model was previously conducted to examine if the school-level variables directly predicted ODRs, these subsequent cross-level interactions were ~~conducted~~included to determine whether any of the school-level predictors were associated with ODRs as a result of a moderation effect. In ~~conducting~~ these analyses, cross-level interactions were only examined for gender and race/ethnicity, and not grade, as the latter is tested under the second hypothesis of this study. Results showed that none of the cross-level interactions significantly predicted students with Chronic ODRs.

Because these first analyses, in which ODRs were examined as a logistic outcome variable, did not reveal statistically significant findings for the full model, disciplinary referrals were also analyzed by examining student ODRs as a continuous variable. The models were developed in the same fashion as in the first analysis (i.e., null model, individual-level model, school-level demographic control model, and hypothesized school-level model). However, for this analysis, a negative binomial distribution was used rather than a Poisson distribution as the data were over-dispersed (i.e., variance exceeds the mean), and, thus, did not meet the necessary assumptions to use a Poisson distribution (Osgood, 2000). Whereas

the first three models (null, individual-level model, school-level demographic model) reached convergence, the full hypothesized model did not.

Although the hypothesized model was not statistically significant, the proportion of the total variance in the outcome variable that is accounted for by differences between schools, was examined for each of the four respective models to determine if the inclusion of school-level variables reduced between-group differences. As displayed in Table 5, the intra-class correlation for the null model revealed dependency in the data (ICC = 10.6%).

Table 5: Intra-class Correlations

	Null b (SE)	Level 1 b (SE)	Level 2 Demos b (SE)	Full Model b (SE)
ICC	10.6%	9.4%	7.8%	12.3%
Explained Variance		-11.6%	-.26%	+15.7
τ_0^2	.39 (.20)	.34 (.18)	.28 (.18)	.46 (.38)

The intra-class correlations for the subsequent models were then examined to determine if the intra-class correlation was reduced as explanatory individual and school-level predictors were added to the model. First, the individual-level model reduced the intra-class correlation slightly by 11.6% (ICC = 9.4%) when compared to the null model. The school-level demographic control model consisting of School Size, Implementation Year, and Percent Students of Color was added next, which reduced the intra-class correlation by 26% when compared to the null model, (ICC = 7.8%). Finally, the full hypothesized model was

Comment [X1]: This is the section that was cut from hypothesis 1B and inserted here per Nathan's suggestion

included, but did not appear to explain additional between-group variance beyond the school-level demographic model as the intra-class correlation actually increased (ICC = 15.7%) when compared to the null model. Thus, variance was mainly reduced by the third model, which includes both individual and school-level demographic variables. Thus, at a descriptive level, the school-level demographic control model appears to reduce the intra-class correlation whereas the hypothesized model did not explain additional variance

Hypothesis 1a: Supplemental Analyses

Because the hypothesized models did not produce statistically significant findings, office disciplinary referrals were disaggregated into five domains to assess if the hypothesized school-level predictors statistically predict specific types of ODRs. The examination of ODRs within disaggregated domains is consistent with previous research (Kaufman et al., 2010). Office disciplinary referrals were disaggregated into five categories as follows: 1) delinquency, 2) insubordination, 3) disruptive behavior, 4) harassment, and 5) physical offenses. The specific ODRs corresponding with each of these domains, and the percent of ODRs that each domain accounts for is listed in Table 6. As displayed in Table 6, disruptive behavior ODRs accounted for the highest percentage of referrals (20.6%) and delinquency referrals accounted for the lowest percentage (2.4%).

Table 56:^a Office Disciplinary Referrals by Domain

	ODR	N	%
Delinquency	Total	159	2.40%
	Alcohol/Drugs	5	.10%
	Defacing Property	61	.90%
	Forgery	2	.00%
	Gang Relate Behavior	2	.00%
	Set fire/explosion	8	.10%
	Steal/Burglary	41	.60%
	Suspicion of Stealing	5	.10%
	Tobacco	4	.10%
	Weapon(s)	31	.50%
	Insubordination	Total	1102
Defy Request		471	6.80%
Insubordination		631	9.20%
Disruptive Behavior	Total	1414	20.60%
	Disrupting Class	811	11.80%
	Disrupting Educational process	603	8.80%
Harassment	Total	957	13.80%
	Bullying Victim	137	2.00%
	Harassment Sexual Victim	50	.70%
	Harassment Non-sexual Victim	39	.60%
	Hazing	1	.00%
	Inappropriate Affection	18	.30%
	Inappropriate Sexual Behavior Victim	16	.20%
	Pornography	4	.10%
	Racial Slurs Victim	15	.20%
	Sexual Assault Victim	2	.00%
	Threat-Peer Victim	112	1.60%
	Threat-Staff Victim	57	.80%
	Vulgar Language	506	7.30%
Physical	Total	1355	19.70%
	Accomplice to Fighting	4	.10%
	Cause Serious Injury Victim	9	.10%
	Fighting	719	10.40%
	Force unwilling	27	.40%
	Inciting Fight	170	2.50%
	Physical Assault Victim	352	5.10%
	Stabbing Victim	5	.10%
	Throw Objects Victim	69	1.00%

Furthermore, because disciplinary referrals were disaggregated into these domains, office referrals were not dichotomized using the original approach (i.e., students with six or more ODRs classified as Chronic ODRs) because only a limited number of students met this criteria once the ODRs were disaggregated. For example, based on the entire sample, 308 (20.5%) students met the criteria for the Chronic ODR classification). However, when ODRs were disaggregated into these five domains the number of students with chronic ODRs only reaches a maximum of 53 students (i.e., disruptive behavior ODRs), and a minimum of zero students (i.e., delinquency ODRs) (see Table 7). Such a limited number of students with Chronic ODRs within these domains would not allow for this analysis to be conducted.

Table 67: Office Disciplinary Referrals by Type

	1 or more ODRs		6 or more ODRs	
	N	%	N	%
Total Sample	1382	92.1%	308	22.3%
Delinquency	118	7.9%	0	0.0%
Harassment	534	35.6%	10	0.7%
Physical	851	56.7%	28	1.9%
Insubordination	540	36.0%	31	2.1%
Disruptive Behavior	582	38.8%	53	3.5%

Instead, the outcome variable was examined as a logistic outcome variable and was dichotomized as follows: students with at least one ODR during the second, third, or fourth academic quarters = 1, and students with no ODRs during

the second, third, or fourth academic quarters = 0. Whereas the full hypothesized model did not reveal statistically significant findings, statistically significant cross-level interactions were found within the domains of physical and disruptive behavior ODRs (see Table 8).

Table 78: Cross-level Interactions for Disruptive Behavior and Physical ODRS
a

	Disruptive Behavior		Physical		Physical	
	b (SE)	OR	b (SE)	OR	b (SE)	OR
Intercept	-2.70(8.09)		-4.66(4.54)		-4.66(4.69)	
-Gender (Male)	.44(.13)***	1.55	.54(.12)***	1.71	-.29(.41)	.75
-Grade (6-8)	.35(.13)**	1.42	-.38(.12)***	.68	-.38(.12)***	.68
-Ethnicity (A.A.)	1.06(.35)**	2.89	-1.04(.76)	.35	.49(.12)***	1.63
-Quarter 1 ODRs	.49(.05)***	1.63	.45(.06)***	1.57	.44(.06)***	1.55
-School Size	.00(.00)	1.00	.00(.00)	1.00	.00(.00)	1.00
-Implementation Year	-.06(.34)	.94	.12(.19)	1.11	.13(.20)	1.12
-% Students of Color	.03(.078)	1.03	.04(.04)	1.04	.01(.01)	1.04
-Student Mobility	.01(.02)	1.01	.01(.01)	1.00	.01(.01)	1.00
-Student Teacher Ratio	-.11(.16)	.90	.06(.10)	1.06	.13(.09)	1.15
-Communication of Behavioral Expectations	-.00(.02)	.99	.00(.01)	1.00	.00(.01)	1.00
-Student Mobility* Ethnicity	-.02(.01)**	1.00	-	-	-	-
-Student-teacher Ratio* Ethnicity	-	-	.11(.05)*	1.12	-	-
-Communication of Behavioral Expectations* Gender	-	-	-	-	.01(.00)*	1.01

^a Note: All coefficients correspond to the group specified in the left column. Reference groups are female, elementary school students (grades 3-5), and Latino

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Specifically, for physical offenses, statistically significant cross-level interactions were found for Student-teacher Ratio by ethnicity ($B = .11$; $p = .04$), and Communication of Student Behavioral Expectations by gender ($B = .01$; $p = .04$). Regarding the Student-teacher Ratio by ethnicity interaction for physical offenses, African American students were more likely ($OR = 1.19$) to have a physical ODR than Latino students ($OR = 1.06$) as a function of higher Student-teacher Ratio. Further, regarding the Communication of Behavioral Expectations by gender cross-level interaction, male students ($OR = 1.01$) were slightly more likely than female students to have a physical ODR as a function of schools' increased Communication of Behavioral Expectations, whereas female students did not display such an association ($OR = 1.00$).

Last, a statistically significant cross-level interaction was found within the domain of disruptive behavior. Specifically, a cross-level interaction was found for Student Mobility by ethnicity ($B = -.02$; $p = .01$) such that African American students were less likely to have an ODR ($OR = .99$) than Latino students ($OR = 1.01$) as a function of increased school-level Student Mobility. Stated more simply, having a higher percent of new students within a school was associated with a lower likelihood of receiving a disciplinary referral among African American students as compared to Latino students.

Hypothesis 1b

It was hypothesized that the addition of school-level variables would contribute to significantly more likelihood in predicting chronic office disciplinary referrals, above and beyond the individual-level model. To address this sub-hypothesis, the between-group variance was examined for each of the four models (null, level-one, level-two, demographic control model, and the full model) using Chronic ODRs as the outcome variable (students with six or more ODRs; students with less than six ODRs). Residual Subject Pseudo-likelihood estimation (RSPL) was used for these analyses as this estimation method is able to fit a wider range of models (SAS Institute, 2008). However, pseudo-likelihood estimation methods do not provide model information criteria (e.g., Akaike information criteria), and do not allow for model comparisons. Thus, these models could not be statistically compared to determine if the full model

explained more variance as compared to the individual-level model.

~~As an alternative analysis, the intra class correlation, the proportion of the total variance in the outcome variable that is accounted for by differences between schools, was examined for each of the four respective models to determine if the inclusion of school level variables reduced between group differences. As displayed in Table 9, the intra class correlation for the null model revealed dependency in the data (ICC = 10.6%).~~

Comment [X2]: Note the part cut from here was what was included into hypothesis 1A per Nathan's recommendation.

Table 8: Intra-class Correlations

Nevertheless, as described under the Hypothesis 1a, the intra-class correlations for the subsequent models were then examined to determine if the intra-class correlation was reduced as explanatory individual and school-level predictors were added to the model. First, the individual-level model reduced the intra-class correlation slightly by 11.6% (ICC = 9.4%) when compared to the null model. The school-level demographic control model consisting of School Size, Implementation Year, and Percent Students of Color was added next, which reduced the intra-class correlation by 26% when compared to the null model (ICC = 7.8%). Finally, the full hypothesized model was included, but did not appear to explain additional between-group variance beyond the school-level demographic model as the intra-class correlation actually increased (ICC = 15.7%) when compared to the null model. Thus, variance was mainly reduced by the third model, which includes both individual and school-level demographic variables. However, as previously noted, the extent to which models are more favorable than others remains equivocal given that pseudo-likelihood estimation method does not allow for model comparison and these models could not be statistically compared. Nevertheless, at a descriptive level, the school-level demographic control model appears to reduce the intra-class correlation whereas the hypothesized model did not explain additional variance.

Hypothesis II: Primary Analysis

It was hypothesized that the school-level model consisting of School Mobility, Student-teacher Ratio, and Communication of Behavioral Expectations, would be more likely to predict Chronic ODRs at wave two among middle school students as compared to elementary school students. To test this hypothesis cross-level interactions were added to the full hypothesized model. Specifically, a cross-level interaction term was added, respectively, to the model between each of the hypothesized school-level predictors and grade (e.g., Grade*Student-teacher Ratio). As displayed in Table 409, results indicate that none of the three cross-level interactions were statistically significant.

level interactions were statistically significant.

Table 9: Chronic ODRS Cross-level Interactions ^a

	Student Mobility*Grade		Student-teacher Ratio*Grade		Communication of Behavioral Expectations* Grade	
	b (SE)	OR	b (SE)	OR	b (SE)	OR
Intercept	-8.78 (7.43)		-8.59 (7.47)		-8.73 (8.36)	
-Gender (Male)	.36 (.17)*	1.43	.36 (.17)*	1.43	.36 (.17)*	1.43
-Grade (6-8)	.54(.48)	1.72	.30(.98)	1.35	.61(1.17)	1.84
-Ethnicity (A.A.)	.26 (.16)*	1.30	.26 (.16)	1.30	.26 (.16)*	1.30
-Quarter 1 ODRs	.68 (.06)***	1.97	.68 (.06)***	1.97	.68 (.06)***	1.97
-School Size	.00 (.00)	1.00	.00 (.00)	1.00	.00 (.00)	1.00
-Implement Year	.12 (.30)	1.13	.12 (.30)	1.13	.18 (.34)	1.20
-% Stud. of Color	.06 (.07)	1.06	.06 (.07)	1.06	.07 (.09)	1.07
-Student Mobility	.00 (.02)	1.00	.00 (.02)	1.00	.01 (.02)	1.01
-Student-teacher Ratio	.00 (.14)	1.00	.01 (.15)	1.01	.02 (.16)	1.02
-Communication Behavioral Expectations	.00 (.01)	1.00	.00 (.02)	1.00	.01 (.03)	1.01
-Student Mobility*Grade	-.00(.01)	1.00	-	-	-	-
-Student-teacher Ratio*Grade	-	-	.02(.07)	1.02	-	-
-Communication of Behavioral Expectations* Grade	-	-	-	-	-.02(.04)	.98

^a Note: All coefficients correspond to the group specified in the left column. Reference groups are female, elementary school students (grades 3-5), and Latino.

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Hypothesis 2II: Supplemental Analyses

Last, office disciplinary referrals were analyzed across the five disaggregated disciplinary referral domains listed under hypothesis one (i.e., delinquency, insubordination, disruptive behavior, harassment, and physical offenses). A cross-level interaction between each of the three hypothesized school-level predictors (Student Mobility, Student-teacher Ratio, and Communication of Behavioral Expectations) and student grade-level (elementary versus middle school) was conducted across each of these five respective disciplinary referral categories.

As displayed in Table 4+10, results revealed a series of four statistically significant Student-teacher Ratio by grade cross-level interactions within the physical ($B = .17; p = .001 < .01$), delinquency ($B = .01; p = .04 < .05$), insubordination ($B = .13; p = .03 < .05$), and disruptive behavior domains ($B = -.18; p = .001 < .01$). All four interactions were in the hypothesized direction as middle school students revealed a higher likelihood of having ODRs as a function of with higher levels of Student-teacher Ratio at the school level. In regards to physical ODRs, middle school students (OR = 1.23) were more likely to have a disciplinary referral than elementary school students (OR = 1.04) as a function of higher Student-teacher Ratio. Middle school students were more likely to have a delinquency ODR (OR = 1.18) than elementary school students (OR = 1.00). Middle school students were more likely to have an insubordination ODR (OR = 1.09) as compared to elementary school students (OR = .96). Finally, for

disruptive behavior ODRs, middle school students were more likely (OR = 1.20) than elementary school students (OR = 1.00) to receive such a disciplinary contact as a function of increased Student-teacher Ratio.

Table 10: Cross-Level Interactions: School-level Predictors by Grade^{a,b}

	b (SE)	OR	b (SE)	OR	b (SE)	OR	b (SE)	OR
	Physical Offenses		Delinquency		Insubordination		Disruptive Behavior	
Intercept	-3.47(4.72)		-2.73(5.32)		-8.86(5.79)		-3.95(8.20)	
-Gender (Male)	.55(.12)***	1.73	1.01(.29)***	2.75	-.16(.13)	.85	.42(.13)***	1.52
-Grade (6-8)	-2.80(.77)***	.06	-2.38(1.31)	.09	-1.45(.81)	.23	2.88(.81)***	17.81
-Ethnicity (A.A.)	.47(.12)***	1.60	-.30(.21)	.74	.03(.12)	1.03	.15(.12)	1.16
-Quarter 1 ODRs	.44(.06)***	1.55	.31(.05)***	1.36	.67(.06)***	1.95	.49(.05)***	1.63
-School Size	-.00(.00)	1.00	.00(.00)*	1.00	.00(.00)	1.00	.00(.00)	1.00
-Implementation Year	.13(.20)	1.14	-.11(.19)	.90	-.14(.24)	.87	-.06(.34)	.94
-% Students of Color	.03(.04)	1.03	.00(.04)	1.00	.08(.05)	1.08	.03(.08)	1.03
-Student Mobility	-.01(.01)	.99	.00(.01)	1.00	.01(.01)	1.01	.00(.02)	1.00
-Student-teacher Ratio	.04(.10)	1.04	.00(.11)	1.00	-.04(.12)	.96	.00(.16)	1.00
-Communication of Behavioral Expectations	.00(.01)	1.00	.01(.01)	1.01	.01(.01)	1.01	.00(.02)	1.00
-Student-teacher Ratio*Grade	.17(.05)***	1.19	.18(.01)*	1.20	.13(.06)*	1.14	.18(.06)***	1.20

^a Only models displaying statistically significant cross-level interactions are included in this table. ^b All models were conducted separately.

^c All coefficients correspond to the group specified in the left column. Reference groups are female, elementary school students (grades 3-5), and Latino

CHAPTER IV

DISCUSSION

This study ~~uses~~used logistic multilevel modeling to examine the extent to which school-level characteristics are significantly associated with student chronic disciplinary offenses, and if these characteristics predict students with chronic ODRs above and beyond individual-level predictors. Additionally, this study examines how school-level characteristics predict differences in disciplinary referrals among middle school students as compared to elementary school students. Results from this investigation provide evidence of the role of school-level factors in predicting student office disciplinary referrals. Specifically, our findings reveal that school-level factors, namely Student-teacher Ratio, Communication of Behavioral Expectations, and Student Mobility, moderate the association between individual-level predictors and specific types of student ODRs. Taken together these findings suggest that school-level variables may contribute to student ODRs and that school-level examinations of these disciplinary events are warranted.

Major FindingsHypothesis 1a:

It was hypothesized that school-level variables in our model would contribute significantly in predicting chronic office discipline referrals. Although our findings did not find that school-level variables significantly predicted Chronic ODRs, our analyses provided support for the role of school-level

characteristics in relation to specific types of ODRs. For example, we found that African American students were more likely to have an office disciplinary referral for physical offenses as compared to Latino students, ~~as a function of~~with higher Student-teacher Ratio at the school level. This finding is consistent with previous research, which has found physical office referrals to be more prevalent among African American students in comparison to Latino students (Kaufman, et al., 2010). However, this study provides evidence for an environmental contribution in which higher Student-teacher Ratios contribute to African American students' higher likelihood of having a referral for physical offenses.

Yet, despite the contribution of Student-teacher Ratio to disciplinary referrals, the unique pathway by which this variable leads to higher rates of physical ODRs among African American students is unclear. One possibility, which is consistent with Social Disorganization Theory, is that a higher student-teacher ratio diminishes the opportunity for teachers to develop meaningful relationships with students (Walker & Gresham, 1997; Gottfredson & DiPietro, 2011). However, although consistent with Social Disorganization Theory, this explanation does not necessarily explain why this pattern is more strongly associated with African American students as compared to Latino students.

An explanation for this differential may be that physical offenses may be stereotypically associated with African American students and that teachers may be more susceptible to these beliefs as student-teacher ratio increases. For example, previous research has found certain violent crimes to be stereotypically

associated with African Americans (Sunnafrank & Fontes, 1983), and that racially congruent crimes are more likely to be attributed to internal factors (Jones & Kaplan, 2003). Therefore, within the school context, teachers may be more likely to view physical behavior infractions (e.g., fighting) as corresponding with African American students as compared to Latino students. In addition, these attributions may become more pronounced in a school context with higher student-teacher ratios in which teachers may experience greater difficulty in monitoring and managing student behavior. In such settings teachers may become more susceptible to simple decision making heuristics when making decisions about student discipline as opposed to more systematic and reflective approaches (Jones & Kaplan, 2003), ultimately leading to higher ODRs among African American students. Further research is needed in this area, and can benefit from the inclusion of psychometric instruments that directly assess teachers' racial/ethnic attitudes.

Furthermore, we found that boys were slightly more likely to have an office disciplinary referral for physical offenses than girls as a function of higher school-level Communication of Behavioral Expectations. Male students' higher level of ODRs than girls is consistent with previous research (Kaufman, et al., 2010). Yet, at a glance, the fact that male students have increasing physical ODRs as a function of schools' Communication of Student Behavioral Expectations is inconsistent with Social Disorganization Theory, and previous research that has documented the inverse association between clarity of school

rules and lower levels of student misbehavior (Metzler et al., 2001; Gottfredson & Gottfredson, 1985).

However, one possibility is that with increased school-wide communication concerning student behavioral expectations, teachers' thresholds for tolerating physical offenses diminish, and boys may be more likely to receive an ODR given that they are more likely to display externalizing behaviors.

Alternatively, from a Resistance Theory perspective (Langhout, 2005), it is possible that greater clarity of school rules may lead male students into feeling as though they are being oppressed, which in turn translates into more overt oppositional behaviors. Resistance Theory holds that acts of resistance often occur in response to an institution's dominant narrative, particularly when an institution (e.g., school) seeks to control identity and values (Langhout, 2005). From this standpoint, a schools' communication of behavioral norms may be viewed as a hegemonic attempt to create behavioral uniformity, leading students, in this case boys, to display resistance in the form of externalizing behaviors. Future research can benefit from the inclusion of measures that directly assess student perceptions of school behavioral expectations and norms.

Last, we found that in schools with higher levels of student mobility, African American students were less likely to have a disciplinary referral for disruptive behavior than Latino students. At a glance, explanations for this finding are unclear, as it is not consistent with Social Disorganization Theory, previous research on student mobility (Brown & Beckett, 2006; Engec, 2006), and the

research literature documenting higher rates of ODRs among African American students (Kaufman et, al. 2010).

However, it is possible that a self-selective process may account for these findings in which students with behavioral problems may be more likely to exit the school and thus contribute to school mobility (Brown & Beckett, 2006; Engec, 2006). As a result, a higher proportion of students with fewer disciplinary problems remain at the school, thus, explaining the inverse relationship between School Mobility and lower disruptive behavior ODRs. Nonetheless, these findings remain equivocal and future research can further examine this association by including measures of student mobility at the individual-level that are then aggregated to also examine school-level mobility in relation to student disciplinary referrals.

Hypothesis 1b.

It was hypothesized that the addition of school-level variables would contribute to significantly more likelihood in predicting Chronic ODRs, above and beyond individual-level variables. Although results for this secondary hypothesis could not be tested using statistical tests (SAS Institute, 2008), there was descriptive evidence (examination of the intra-class correlation reduction across models) that the hypothesized school-level model did not explain variance in ODRs beyond that of the individual-level and school-level demographic models. For example, the individual-level model and the school-level demographic model both explained 11.6% and 26%, respectively, of the variance

in office disciplinary referrals whereas the full hypothesized model did not reduce between-school variance. The fact that the school-level demographic model explained some of the between-school variance is consistent with previous studies (Birnbaum, Lytle, Hannan, Murray, Perry, & Forster, 2003; Pas, Bradshaw, & Mitchell, et al., 2011), which have found school demographic characteristics (e.g., school size) to be associated with student problem behaviors.

Moreover, although the hypothesized school-level variables in this study did not explain between-school variance despite having been previously linked to student problem behaviors (e.g., Engec, 2006; Molhart, et al., & Gottfredson & Gottfredson, 1985) it is necessary to note that these previous studies did not utilize multi-level modeling strategies. Thus, it is possible that these associations may not hold at the school level. Another possibility is that school demographic characteristics, (e.g., percent of students of color at the school), which were included into the third model as control variables, may have explained some of the variance that could have been accounted for by the hypothesized model. As one example, the Percent of Students of Color variable that was included into the third model may have indirectly accounted for some of the variance that would have been explained by Student Mobility, which was included into the hypothesized model. Specifically, higher proportions of students of color at a school is likely to be closely associated with lower income, which is in turn associated with higher likelihood of student mobility since student turnover often reflects neighborhood housing instability related to low income.

Despite these possibilities, it is still important to note that only a quarter of the variance in student ODRs is explained by the individual and school-level models leaving three-fourths of unexplained variance. The hypothesized variables in our model included more distal school-level indicators (e.g., student-teacher ratio, communication of behavioral expectations), and it is possible that more direct measures of student perceptions and behaviors (e.g., school belonging, school connectedness) may account for [part of](#) this remaining variance.

Hypothesis II: Primary Analysis

It was hypothesized that the school-level model would be more likely to predict chronic office discipline referrals at wave two among middle school students as compared to elementary school students. Our analyses did not statistically predict Chronic Office Disciplinary Referrals. Chronic disciplinary referrals have been examined in previous studies (Tobin, Sugai, & Colvin, 1996), and have been linked to externalizing behaviors (McIntosh, Campbell, Carter, & Zumbo, 2009). However, several possibilities emerge as to why the hypothesized model was not significantly associated with Chronic ODRs within [this the current](#) investigation. First, from a statistical standpoint, this chronic category only consisted of a limited percent of all students, which could have made it more difficult to statistically detect students with this high level of ODRs, especially given the small school-level sample. From a more conceptual standpoint, it is also possible that ODRs in a disaggregated form may be more likely to be associated

with school-level predictors, particularly if there is a strong theoretical link between the school-level predictor and the specific type of disciplinary referral.

Although our analyses did not reveal statistically significant findings in regards to chronic office disciplinary referrals, we found statistically significant cross-level interactions between Student-teacher Ratio and student grade with regards to specific types of ODRs. For example, regarding physical, delinquency, insubordination, and disruptive behavior ODRs, we found that middle school students were more likely to have a disciplinary referral than elementary school students as Student-teacher Ratio increased.

However, an important caution is necessary prior to discussing why middle school students were more likely to have an ODR than elementary school students as a function of higher Student-teacher Ratio. That is, these findings do not suggest that these offenses are more prevalent among middle school students as compared to elementary school students. Rather, these findings suggest that middle school students, as compared to their counterparts, are more likely to have these specific ODRs (i.e., physical, delinquency, insubordination, and disruptive behavior) as a function of higher school-level Student-teacher Ratio. For example, to illustrate this point, middle school students were more likely to have a physical and insubordination offense as a function of higher Student-teacher Ratios, despite elementary school students accounting for a greater proportion of these ODRs. Therefore, the central focus across these four moderation findings is not ~~the~~ necessarily the type of ODR, but the moderating role of Student-teacher Ratio

across these disciplinary offenses and understanding why this particular school-level variable played a role is warranted.

From a Person-environment Fit Theory perspective, [\(Eccles, et al., 1993\)](#), school settings with a higher student-teacher ratio may not correspond to the developmental needs of middle school students. From this perspective middle school settings place new social and educational demands on students and may not match the developmental needs of these students. For example, middle school settings can be less personal and departmentalized (Eccles, et al., 1993). Additionally, there is a greater emphasis on competitiveness at a developmental period in which students are increasingly self-conscious, and the quality of student-teacher relationships tend to decline at a time when students need positive adult relationships (Eccles & Midgley, 1989; Eccles, Lord, & Midgley, 1991). Thus, from this standpoint, school settings with higher Student-teacher Ratios are not congruent with the developmental needs of these children resulting in maladaptive behavior. Ultimately, such settings may accelerate the likelihood of middle school students having an ODR.

Thus, Person-environment Fit Theory [\(Eccles, et al., 1993\)](#) adds additional nuance to Social Disorganization Theory explanations of student disciplinary referrals. Whereas Social Disorganization Theory suggests that increases in school disorder are associated with student misbehavior, Person-environment Fit Theory suggests that certain subgroups, in this case middle school students, may be more likely to be impacted as a function of individual-environmental

mismatch. Future examinations of student disciplinary referrals may benefit from combining Social Disorganization and Person-Environment explanations to guide this research. In particular, future research can include measures that assess person-environment fit such as student perceptions of belonging, school connectedness, school competitiveness, and relationships with adults and peers in the school setting.

However, while such school environments may contribute to middle school students' risk for an ODR, it is also important to note that Student-teacher Ratio may moderate ODRs that specifically reflect risk pathways for developing problem behaviors (Loeber et al., 1993, Kaufman et al., 2010). Longitudinal research by Loeber and colleagues (1993) highlights three pathways (i.e., the overt, covert, and the authority conflict pathways) for developing problem behaviors, each of which is linked to developmental tasks. An overt pathway is identified which involves aggressive behaviors (e.g., fighting). The covert pathway involves behaviors such as vandalism and theft. Third, the authority conflict pathway involves conflict with and avoidance of authority figures (Loeber et al., 1993). In the current study, the overt pathway, which involves aggressive behavior, was reflected in physical ODRs (e.g., fighting, physical assaults), the covert pathway was reflected in delinquency ODRs for which vandalism and burglary constituted the majority of these offenses, and the authority conflict pathway is reflected in insubordination and disruptive behavior ODRs. Thus, from this standpoint, higher school-level student-teacher ratios may

~~not~~ necessarily be associated with any ODRs, but may particularly accelerate ODRs reflecting these risk pathways.

Yet, although the connection between Student-teacher Ratio and these pathways may be possible, it is not immediately clear if students in this study receive ODRs reflecting all three pathways, or if students' ODRs reflect subgroups in which ODRs cluster along the overt, covert, and authority conflict pathways respectively. Future research can explore this question in more detail using cluster analyses and statistical approaches that allow for the examination of clustering of student disciplinary referrals. Nevertheless, this presents an interesting possibility such that school-level characteristics may interact with ODRs that specifically reflect pathways of risk.

Limitations and Strengths of Research

This study contains several limitations. Foremost, although this study includes a large participant sample, the number of schools is limited. While the original number of schools in this study was originally larger (over thirty schools), only a select number of schools were included into the final sample due to variability in data collection practices, and lack of school-level data for some schools. This limitation led to the inclusion of only three of the four hypothesized school-level variables into the final model within our main analysis. This limitation speaks to one of the challenges in conducting research based on schools' administrative disciplinary data. That is, these data are often not collected by research scientists and are therefore more susceptible to variable data

collection practices. Efforts to limit samples to schools with adequate data recording practices can ultimately reduce sample size. Secondly, this study relies on administrative data which has been raised as a concern by some authors (Nelson, Gonzalez, Epstein, & Benner, 2003) and support by others (McIntosh, Frank, & Spaulding, 2010). Nevertheless, ODRs are a widely used form of data both in research as well as in school decision-making processes, and it is likely that the use of ODR data by schools will continue (McIntosh, Frank, & Spaulding, 2010). Future research examining ODRs can be strengthened by the inclusion of reliable and validated individual-level measures that can capture student misbehavior. Third, and related to the previous limitation, this study is challenged by mono-method bias as it only examines ODRs as a measure of student behavior. This challenge further speaks to the need of including additional measures that can capture student misbehavior. Fourth, this study examines school-level characteristics, rather than classroom-level characteristics. Yet, research has documented that the majority of student ODRs originate within the classroom setting (Spaulding, Irvin, Horner, May et al., 2010). Future, research would benefit from investigations that include individual, classroom, and school-level variables to ascertain which contextual levels within school settings explain most of the variance in student disciplinary referrals.

Despite these limitations, this study contains several strengths. Foremost, this study includes students in both elementary and middle school grades whereas previous studies (Tobin & Sugai, 1999) have primarily examined ODRs among

elementary school or middle school students in one sample. The inclusion of both elementary and middle school students in one sample elucidates how ODRs differ by grade level, in this case elementary verses middle school. Last, this study examines school-level predictors of student disciplinary referrals using multi-level modeling techniques. Such a statistical approach allows for the examination of individual and school-level contributions to student disciplinary referrals within one model. In addition, this is a more robust statistical approach, as ordinary least squares regression assumes that the regression coefficients apply equally to all contexts, and the correlated errors between students within a given school violates the assumption of non-dependence (Bradshaw, Sawyer, & O'Brennan, 2009).

Implications for Research, Theory, ~~and~~ Practice and Community Psychology

Implications for Research

This study has several implications for future research. This investigation finds that school-level characteristics moderate the association between individual-level variables and specific student ODRs. Very few studies have examined interactions between school-level characteristics and student ODRs, and, therefore, this study is a positive step forward for this area of research and similar methodological approaches should be replicated in future studies.

However, while the examination of student ODR using multi-level modeling and the inclusion of school-level variables represents a stronger analysis, it is important to note that the actual pathways by which school-level characteristics contribute to ODRs remain unclear. For instance, such pathways

between school-level variables and students ODRs may be student or teacher driven or both. This marks an area for research to explore. As one example, previous research has documented the association between high student-teacher ratio and student misbehavior (Gottfredson & DiPietro, 2011) suggesting that in such settings students are more prone to engage in deviant behavior. At the same time, research has documented the association between high student-teacher ratios and teacher stress (Olson, 1982), which may lead teachers into being less tolerant of certain student behaviors. Taken together, school-level effects on ODRs may be the product of student or teacher processes, and these possibilities highlight the need for future studies to incorporate measures that can capture these pathways in order to elucidate these respective processes.

Furthermore, future research may benefit from the examination of the classroom context, in addition to schools, as it is a more proximal ecological setting (Bronfenbrenner, 1979) and because the majority of student disciplinary referrals originate within the classroom setting (Spaulding, Irvin, Horner, May et al., 2010). Ideally, such research can examine classroom and school-level contexts within the same model. Such research can also incorporate validated measures at the individual-level that can be aggregated to the classroom as well as school level to determine how respective ecological units account for variance in students ODRs.

Implications for Theory

Nelson and colleagues (2003) state that ~~ODR~~-research examining student disciplinary referrals lacks a guiding conceptual framework and has suffered from the ‘shot gun’ approach to research. This literature has not been guided by strong theory and has primarily focused on individual-level explanations of ODRs, which provides a limited picture. However, results from this investigation support the use of certain theoretical frameworks. Broadly, results from this study support the use of Social Ecological Theory (Bronfenbrenner, 1977) given that specific contextual contributions to student disciplinary referrals were found. Such an approach can help guide research by exploring ODRs at different ecological levels of analysis. However, such a broad framework may not necessarily inform the processes responsible for ODRs and may not take into account specific sub-groups (e.g., middle school students, African American students) within these settings, thus, warranting more nuanced theories.

Toward this end, our findings provide preliminary evidence for alternative theories that can also help guide this research with greater nuance. For example, while Ecological Theory may provide a broad framework to understand behavior in context, Social Disorganization Theory supports the notion that ODRs emerge in specific contexts that are disorganized and consist of diminished social control (Shaw and McKay, 1969; Elliot, Wilson, Huizinga, Sampson, Elliot, & Rankin, 1996). In this study we found that higher Student-teacher Ratio was associated with a greater likelihood of receiving an ODR among middle school students. From this perspective higher student to teacher ratios diminish social control

leading to higher ODRs. However, in this case, Social Disorganization potentially falls short by not accounting for why Social Disorganization Theory applies only to middle school students.

Instead, Person-environment Fit Theory (Eccles, Lord, & Midgley, 1991) sheds light on why ODRs may be more prevalent among specific subgroups (e.g., middle school students as compared to elementary schools students) as a function of school characteristics. From this perspective, and as discussed earlier, middle school students may be more likely to have an ODR due to the incongruence between their developmental needs and the demands of the school environment, resulting in maladaptive behavior, which in this case is reflected by ODRs.

Taken together, several possible theories emerge to guide this research, and future research is needed to examine which frameworks are better suited to guide this work. Using Higgins (2004) incisive discussion of what constitutes a strong theory, three elements become particularly salient among the above-mentioned theories. That is, theories should be coherent, economical, and explain known findings. While ecological explanations can broadly guide ODR research, Social Disorganization Theory and Person-Environment Fit Theory arise as more coherent and economical alternatives as they can explain some of the specific nuances found in this study in which contextual factors (e.g., Student-teacher Ratio) had differential impacts on certain subgroups as compared to others. These nuances are not immediately explained by Ecological Theory and attempts to

adjust this theory to explain the moderation effects found in this study would lead to the inclusion of new parameters rendering this theory more complex and less useful (Higgins, 2004). Additionally, Higgins (2004) suggests that a strong theory should not only explain old data, but should guide research on how to move forward to generate new data. From this standpoint, Social Disorganization Theory and Person-environment Fit theory suggest that future research should examine ODRs by investigating variables within the school milieu linked to social disorganization and diminished social control, and to also explore contexts of person-environment incongruence.

Implications for Practice

This study also has implications for practice. Research has shown that disciplinary referrals are associated with future problem behaviors (e.g., Tobin & Sugai, 1999). Consistent with previous research (Kaufman et al., 2010), our individual-level findings suggest that male, African American, and middle school students are more likely to have an office disciplinary referral-than their counterparts (i.e., gender, Latino, elementary school students). Findings from this study can help guide schools' universal, selective and indicated interventions (Horner, Sugai, et al., 2009). For example, school-wide interventions such as Positive Behaviors and Supports (PBIS) (Horner, Sugai, et al., 2009) can specifically target the most frequently occurring ODRs and then develop school-wide expectations, rules, and contingencies that specifically target these ODRs. At a selective level of intervention, schools can target groups displaying elevated

levels of disciplinary referrals. For example, elementary school students in this study were more likely than middle school students to have a physical disciplinary referral. Schools can specifically target these groups (e.g., 4th graders, elementary school students) and provide interventions to help prevent these outcomes. Additionally, given that reducing student-teacher ratios may be costly, it may be possible for schools to decrease student-teacher ratios for at-risk groups. For example, rather than decreasing student-teacher ratios across an entire school, it may be possible to reduce class sizes among middle school students, or middle school classrooms displaying elevated levels of misbehavior. Lastly, at an indicated intervention level, schools can identify specific students displaying elevated levels of risk. For example, in our sample some students displayed a high number of ODRs during the first academic quarter suggesting that they are at very high-risk for committing future disciplinary infractions (Tobin, Sugai, & Colvin, 1996; McIntosh, Frank, & Spaulding, 2010) and having clinical levels of externalizing behaviors (McIntosh, Campbell, Carter, & Zumbo, 2009). In this study, students were 97% more likely to have Chronic levels of disciplinary referrals by the end of the school year with each additional disciplinary referral during the first academic quarter. Thus, schools can use this individual-level criteria, along with other risk criteria (e.g., gender, school grade, race/ethnicity) to identify, prioritize, and provide necessary supports to mitigate risk for future disciplinary referrals (Horner, Sugai, et al., 2009). Upon identification, schools

can direct support services (e.g., counseling, group counseling, anger management) to these students depending of the types of ODRs.

Despite some of the advantages of using individual-level approaches to guide school interventions, such approaches can be coupled with school-level interventions. Our findings support contextual contributions to student disciplinary referrals suggesting that school-wide interventions can be implemented to reduce the likelihood of ODRs. Indeed, such school-wide interventions addressing student problem behavior are prevalent (Horner, Sugai, et al., 2009). However, while many of these interventions are behavioral in nature (Horner, Sugai, et al., 2009), this study suggests that structural characteristics of the school setting (e.g., student-teacher ratio) may also play a role in student disciplinary referrals. Addressing such structural determinants may be less malleable than school-wide behavioral interventions, but signify alternative systemic approaches to mitigate student discipline referrals.

Implications for Community Psychology

Findings in this study also have implications for the field of Community Psychology. Douglas Luke (2005), in his timely manuscript regarding methods that capture context, argues that using traditional analytic methods can be inconsistent with Community Psychology's core values as these may fail to capture the contexts in which the data of interest are embedded. Thus, while student disciplinary referrals have traditionally been examined by examining individual-level predictors and using ordinary least squares regression (e.g.,

Tobin, Sugai, & Colvin, 1996), this study uses multi-level modeling strategies that allow for the examination of the contexts in which student disciplinary referrals occur. Moreover, Luke (2005), while sharing advice given to him when he was a graduate student of Jullian Rappaport, states that Community Psychology is “always about something real.” That is, Community Psychology is concerned with social problems that the scientist seeks to change, requiring methodological tools that can capture context (Luke, 2005). Indeed, the disproportionality in office disciplinary referrals in which certain subgroups (e.g., students of color, low-income students, boys) have disproportionately higher rates of disciplinary referrals is concerning, and warrants further examination that can help better understand the contexts in which these events occur.

However, while the methodologies proposed by Luke (2005) (e.g., multi-level modeling) are innovative, and can help elucidate context, a plethora of classic Community Psychology literature exists that has thoughtfully analyzed the social settings of schools. For example, Seymour Sarason and Edward Seidman have both insightfully described the social regularities that are inherent to the culture of schools (Sarason, 1996), particularly the power differential between teachers and students. Although not directly examined within this investigation, it is reasonable to suspect that student office disciplinary referrals are a byproduct of such social regularities, and it is here that Community Psychology becomes uniquely positioned to have a contribution to this area of research. Merging these theories and constructs (e.g., social regularities) with some of the more modern

methodologies (Luke, 2005), may allow Community Psychology to have a unique contribution by helping to comprehensively understand the contexts in which student office disciplinary referrals occur. As one example, it may be possible to explore student disciplinary referrals using multi-level modeling strategies while also incorporating constructs that capture social processes, such as those advanced by Sarason (1996) and Seidman (2011) (e.g., social regularities). Ultimately, the unification of statistical methodologies that capture social processes, dynamics and norms that are unique to school settings will help advance this body of research by allowing for a deeper understanding of the contexts in which these disciplinary referrals are embedded.

CHAPTER V

SUMMARY

Student misbehavior has become a problem gaining much warranted national attention. Nationally representative surveys of teachers and students present sobering accounts of student misbehavior with 49% of high school students reporting that teachers spend more time on discipline than teaching (Johnson, Duffet, Vine, & Moye, 2003), and 66% of teachers reporting disruptive students as the most stressful part of their occupation (Kuzsman & Schnall, 1987). Moreover, such discipline problems have been shown to be associated with school drop-out (Altenbaugh, Engel, & Martin, 1995), school failure (Morrison & Skiba, 2001), and delinquency (Gottfredson and Gottfredson, 1985).

To monitor such student behavior problems, school districts are increasingly relying on student office disciplinary data to monitor and identify students who may be at-risk for future behavioral problems and who can benefit from additional support services (Nelson, Gonzalez, Epstein, & Benner, 2003). Toward this end, research has shown that ODR data can be useful to predict future disciplinary problems (Tobin, Sugai, & Colvin, 1996; Tobin & Sugai, 1999; McKintosh, Frank, & Spaulding, 2010). However, such studies have not employed multi-level analyses, which may be necessary given the nested nature of these data (e.g., students within schools). Additionally, such research has

lacked a guiding conceptual framework (Nelson, Gonzalez, Epstein, Benner et. al, 2003).

The current study draws upon Social Disorganization Theory to guide an investigation of student office disciplinary referrals (ODRs) (Elliot, Wilson, Huizinga, Sampson, Elliot, & Rankin, 1996; Shaw & McKay, 1969). This study examines office disciplinary referrals among 1,501 students across 13 schools in a high-poverty urban school district. Multilevel modeling strategies are used to examine the extent to which school-level variables (Student Mobility, Student-teacher Ratio, Student-teacher Relations, and Communication of Behavioral Expectations) predict students with chronic levels of disciplinary referrals (i.e., six or more ODRs).

While school-level characteristics did not directly predict Chronic ODRs, results from this investigation reveal that school-level characteristics moderate associations between individual-level predictors and student ODRs. Specifically, findings reveal that school-level characteristics, namely, Student-teacher Ratio, Student Mobility, and Communication of Behavioral Expectations, moderate the associations between individual predictors (e.g., race/ethnicity, gender) and student disciplinary referrals. In addition, findings from this investigation provide some support for the hypothesis that school-level characteristics are associated with greater likelihood of student disciplinary referrals among middle school students as compared to elementary school students.

Previous research has mainly examined individual-level predictors of student disciplinary referrals. Findings in this study support the examination of student disciplinary referrals by examining individual and school-level predictors and employing multi-level modeling techniques. Moreover, findings from this study provide support for Social Disorganization Theory as well as Person-Environment Fit Theory as guiding frameworks to examine student disciplinary referrals, whereas the literature examining student disciplinary referrals has often lacked guiding theoretical frameworks. Future research examining student ODRs should continue these practices (i.e., incorporating multi-level modeling, research guided by theory), and should also investigate pathways (i.e., teacher or student driven process) leading to these disciplinary events.

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Appendix A
List of Measures

Appendix A

List of School District Disciplinary Codes

	Office Referral Type		Office Referral Type
1	Accomplice to Fighting	33	Obscene Behavior
2	Alcohol	34	Obscene Gestures
3	Attendance Policy	35	Obscene Messages
4	Bullying Victim	36	Obstruct flow
5	Burglary/B & E	37	Out of Build
6	Cause Serious Injury Victim	38	Phy Assault Victim
7	Cheating	39	Poisoning
8	Cutting Class	40	Pornography
9	Deface	41	Pranks-Mischief
10	Defy Request	42	Race Slurs Hate Victim
11	Disrupt Class	43	Reckless Drive
12	Disrupt Ed process	44	Refuse to ID
13	Dress Code Violation	45	Sch/Bomb Threat
14	Drug Paraphernalia	46	Set fire/explos
15	Drugs	47	Sexual Assault Victim
16	Electric Device	48	Snd False Alarm
17	Emergency Evacuation Violation	49	Stabbing Victim
18	Excessive Tardiness	50	Steal
19	Fighting	51	Steal w/Force Victim
20	Force unwilling	52	Suspected of Stealing
21	Forgery	53	Threat-Peer Victim
22	Gang Relate Behavior	54	Threat-Staff Victim
23	Harassment Sexual Victim	55	Throw Objects
24	Harrassment NonSexual Victim	56	Throw Objects Victim
25	Hazing	57	Tobacco
26	Inappropriate Affect	58	Trespassing
27	Inappropriate Sexual Behavior Victim	59	Truancy
28	Inciting Fight	60	Turn Off Lights
29	In Class w/o permission	61	Unserved Detent
30	Insubordination	62	Unserved ISS
31	Leave Class	63	Verbal Altercation
32	Network Violation	64	Vulgar Lang Dir
		65	Weapon(s)

**School-wide Evaluation Tool
(SET)
Scoring Guide**

School _____

District _____

Pre _____ Post _____ SET data collector _____

Feature	Evaluation Question
B. Behavioral Expectations Taught	1. Is there a documented system for teaching behavioral expectations to students on an annual basis? (0= no; 1 = states that teaching will occur; 2= yes)
	2. Do 90% of the staff asked state that teaching of behavioral expectations to students has occurred this year? (0= 0-50%; 1= 51-89%; 2=90%-100%)
	3. Do 90% of team members asked state that the school-wide program has been taught/reviewed with staff on an annual basis? (0= 0-50%; 1= 51-89%; 2=90%-100%)
	4. Can at least 70% of 15 or more students state 67% of the school rules? (0= 0-50%; 1= 51-69%; 2= 70-100%)
	5. Can 90% or more of the staff asked list 67% of the school rules? (0= 0-50%; 1= 51-89%; 2=90%-100%)
	6. Can the administrator identify an out-of-school liaison in the district or state? (0= no; 2=yes)