

The Pennsylvania State University

The Graduate School

The College of the Liberal Arts

**THE EFFECTS OF SCHOOL READINESS ON SUSPENSION IN ELEMENTARY
SCHOOL**

A Thesis in

Criminology

by

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Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Master of Arts

May 2018

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ABSTRACT

There is an increasing interest in the importance of social-emotional skills and school readiness for youth and a growing concern about the frequent use of exclusionary discipline in schools, yet there has been no systematic investigation of the relationship between social-emotional and academic school readiness and suspension. Additionally, suspension for children in elementary school has not been thoroughly studied, where school readiness is likely to matter more because young children have not been in school long or had the chance to catch up if they started with lower levels of readiness. Furthermore, previous studies of suspension often use measures of behavior problems that limit our ability to disentangle the effects of minor, disruptive behavior versus serious, delinquent behavior on a child's likelihood of being suspended. Using data from the Fragile Families and Child Wellbeing Study, results from logistic regression models suggest that certain school readiness variables at age 5 are related to the likelihood of suspension from school by age 9. Results also highlight the importance of child and family characteristics in predicting suspension for young children.

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ACKNOWLEDGEMENTS

There are many incredible individuals to whom I owe many thanks for helping with this thesis. First and foremost, I am forever grateful to my dad and stepmother for their unwavering support and encouragement. Next, I am thankful for the advice and encouragement of many professors and students in the Department of Sociology and Criminology at Penn State. I am especially appreciative of guidance from Corina Graif, my thesis adviser, David Ramey and Eric Baumer, my other thesis committee members, and Michelle Frisco, who taught the research methods class in which this project started. This project would not exist without their guidance.

INTRODUCTION

Externalizing behavior is a robust predictor of suspension (e.g., Costenbader & Markson, 1994; Petras et al., 2011) and is typically measured using a combination of aggressive, disruptive, and delinquent items. However, in elementary school, externalizing behavior is really a measure of different types of social-emotional school readiness. Social-emotional school readiness includes soft skills such as being able to pay attention, follow directions, and have a positive attitude toward learning, whereas academic readiness includes hard skills, such as knowing letters and numbers (Britto, 2012).

Many studies focus on predictors of school readiness (e.g., Duncan & Magnuson, 2005) or the relationship between school readiness and academic achievement (e.g., Duncan et al., 2007). However, a student's level of readiness may also influence his or her disciplinary outcomes. Regardless of the name assigned to these behavioral skills, including character strengths (Park et al., 2004), personality (Duckworth & Carlson, 2013), social-emotional skills (Durlak et al., 2011), and non-cognitive skills (Heckman et al., 2006) to name a few, a student's level of social-emotional and academic readiness affects how prepared a child is to interact with education as an institution. Schools may be more likely to punish students with lower levels of academic and social-emotional readiness, as this lack of readiness may be seen as disruptive or dangerous to the learning environment.

Though not at the same rate as middle or high school students, elementary school students are suspended from school. In the 2009-2010 school year, about 2.4% of elementary school students were suspended from school (Losen & Martinez, 2013). While this does not seem like a large percentage, when considering the millions of students in elementary school, 2.4% is not a trivial figure. For example, in 2008, there were about 20 million students in

kindergarten through 4th grade in the U.S. (Davis & Bauman, 2013).¹ This means that if there were about 20 million students in elementary school in the 2009-2010 school year, then about 480,000 of them were suspended. Even though middle and high school students are not the only ones suspended, those are the grades almost exclusively examined in studies about suspension (see Jacobsen et al., 2017 and Ramey, 2016 for exceptions).

Many school districts have discipline policies that consider delinquent and disruptive behavior to be separate types of misbehavior. Since serious delinquent behavior is a greater threat to school safety, discipline policies provide much detail for various delinquent offenses (e.g., fighting, bullying, vandalism) and their consequences (e.g., suspension, expulsion). As such, most discipline policies only have a few lines dedicated to disruptive behavior. Yet, this catch-all category accounts for a large percentage of suspensions (Raffaele Mendez et al., 2002).

School discipline policies have a range of consequences for disruptive behavior, which means there is a high level of discretion in consequences. To provide context using discipline policies from districts where the students in the sample used in the present study were in school, Metropolitan Nashville Public Schools (MNPS) defines disruptive behavior as “continuously and intentionally disrupting the school environment to the extent the learning of other students or the normal functioning of the school is significantly impaired” and the consequences range from a conversation with the student to in-school suspension (MNPS Student-Parent Handbook, 2017). However, repeated patterns of disruption are considered more serious and consequences range from a conversation with the student to up to 3 days of out-of-school suspension (MNPS Student-Parent Handbook, 2017). MNPS mirrors many other school districts with regard to these discipline policies.

¹ There were about 20 million students in kindergarten through 4th grade in 2003 and 2006 as well, so this number is fairly stable over time.

The high level of discretion in disciplinary consequences may mean that students' levels of readiness affect the consequences they receive. Institutional actors may perceive students who are socially-emotionally and academically ready to interact with schools in a more positive light. A lack of readiness (manifested in behaviors like not working well with others or not following directions) may be seen as disruptive, so low levels of readiness may predict suspension. This may be especially true in elementary school, where students have not had as much time to be socialized into the institution of education and the institutional expectations, particularly if they come into school with low levels of readiness.

However, the relationship between readiness and suspension may differ by readiness type. If we only consider externalizing behavior in models predicting suspension, we are missing out on potentially valuable information about the ways in which disruption and delinquency may function in predicting suspension. Additionally, if we only consider behavior problems, we are missing out on the potential benefits of prosocial behavior. Furthermore, if we only consider social-emotional skills, we are missing out on the potential benefits of academic readiness.

Overall, this study seeks to contribute to the fields of sociology and criminology in several ways. First, it seeks to further our understanding of why students are suspended in elementary school by considering the role of school readiness in predicting suspension. Suspension in younger children has not been thoroughly explored, though it will be valuable to do so because the effects of exclusionary discipline may be more detrimental for younger children, as they are still adjusting to school. The first few years of school are also the years that school readiness is likely to matter more, as compared to older children who have been in school for several years and have had the chance, at least theoretically, to both adjust to school and catch up if they started with lower levels of readiness. Second, it seeks to connect extant

literature on school readiness and suspension and to explore how criminological theories relate to these literatures. Third, unlike many studies that use externalizing behavior in models predicting suspension, this study seeks to model disruptive behaviors separately from delinquent behaviors to better disentangle the effects of readiness on suspension. Fourth, instead of only focusing on problematic behaviors, this study also analyzes the effects of positive types of behavioral readiness on the likelihood of suspension. Fifth, instead of solely focusing on behavioral readiness, the present study also examines the effects of academic readiness on suspension.

With the current focus in education on disproportionalities in suspensions and the school-to-prison pipeline, it makes sense to examine factors that could decrease the likelihood of suspension. Specifically examining the role of school readiness in predicting suspension is especially important because many students are suspended for minor behaviors that are related to low levels of either academic or social-emotional skills, such as disrupting the classroom because of an inability to follow directions. Showing that school readiness is important, not just for academic outcomes, but for disciplinary outcomes too, could be an important contribution not just to our knowledge about school readiness and suspension, but also to our educational policy ideas. Programs to improve school readiness may be policy levers that can be targeted in interventions to both increase academic achievement and decrease rates of suspension.

BACKGROUND LITERATURE & THEORY

This section starts by explaining how two trends in education, when taken together, predict that measures of school readiness will be related to suspension and how these trends relate to criminological theories. Next, it discusses prior work on externalizing behavior and suspension, along with questions left unanswered by using externalizing behavior as the measure of behavior problems. Then, it gives reasons disruption and delinquency may have different

effects on suspension. Lastly, it explains how positive behavior and academic readiness may also be related to suspension.

Increased Expectations of School Readiness

School readiness encompasses both social-emotional and academic skills. Social-emotional school readiness includes soft skills, like being able to pay attention, work well with others, and follow directions, whereas academic school readiness includes hard skills, like knowing letters and numbers (Britto, 2012). Social-emotional school readiness includes social, emotional, and behavioral skills that facilitate learning, such as being able to sit still, pay attention, follow directions, have a positive attitude toward learning, and get along with peers (Britto, 2012; Campbell & von Stauffenberg, 2008; Raver, 2005). Importantly, the social-emotional aspect of school readiness can be viewed as having higher levels of prosocial skills (e.g., getting along with peers), lower levels of disruptive behaviors (e.g., not being able to sit still), or lower levels of delinquent behavior (e.g., fighting).

Both social-emotional and academic school readiness are important in helping students adjust to school and do well in school (Hair et al., 2006). Much research shows that lower levels of readiness predict difficulty adjusting to school and lower test scores and achievement (Bierman et al., 2008; High, 2008; Pagani & Fitzpatrick, 2014; Romano et al., 2010), grade retention (Duncan et al., 2007), assignment to special education classes (Duncan et al., 2007), and other negative outcomes. However, it is less clear how a student's level of readiness affects his or her disciplinary experiences in school.

It makes sense that school readiness may predict disciplinary outcomes. In an increasingly educated society, students are expected to have more skills earlier than ever before, which has changed the ways schools view students entering school. Four decades ago,

kindergarten was a period of adjustment where children spent time learning how to be students and what is expected in school (Gracey, 1975). The focus was on “teaching children the student role” (Gracey, 1975, p. 83), including how to follow routines and directions. Teaching these skills involved exploration and play (Gullo & Hughes, 2011) and readiness skills were ends in and of themselves. In other words, schools had a larger role in preparing students to interact with education as an institution.

This focus changed about 25 years ago (Gullo & Hughes, 2011) and a new trend in focusing on academic achievement started. Today, children are not only expected to adjust to school and learn to be students in kindergarten, but are also expected to reach academic milestones (Gullo & Hughes, 2011). Due to increased academic expectations from initiatives such as No Child Left Behind (Kim & Sunderman, 2005) and new state standards (Gullo & Hughes, 2011) such as Common Core, students are expected to come to school with higher levels of the necessary social-emotional and academic skills so they are ready to learn and to meet the academic goals (Bassok et al., 2016; Miles & Stipek, 2006) instead of being taught these skills from scratch once they get to school.

While expectations of children entering schools are higher, developmentally, children starting school are still 5 years old (Gullo & Hughes, 2011). Many of the expected skills (such as being able to share, sit still, and follow directions) are not normal for a 5-year-old. This means that the responsibility of getting students ready for school falls on families and earlier forms of education, such as pre-school. Parents are children’s first teachers and school readiness skills are an important part of what children learn at home (Sylva et al., 2010). Pre-school today mirrors Gracey’s description of kindergarten from the 1970s, with elements such as show and tell and time for coloring (Gracey, 1975). The focus of pre-school is to teach children foundational skills

so they can hit the ground running when they enter kindergarten. This is why pre-school has become so important, many children attend pre-school, and there is a movement to have high-quality pre-school available to all children (Sylva et al. 2010). It is also why disparities in pre-school attendance and quality and disparities in readiness based on race and income (Duncan & Magnuson, 2005; Janus & Duku, 2007) are important.

Expectations for both types of school readiness have increased in recent decades and both forms of readiness predict academic outcomes. However, it is less clear if higher levels of social-emotional and academic school readiness lead to a decreased likelihood of suspension.

Increased Use of Exclusionary Discipline

This puzzle of whether school readiness impacts a student's likelihood of being suspended in elementary school is especially important given the context of the second trend: the increasing use of exclusionary discipline (e.g., suspension), with the goal being safe and productive learning environments that are free of disruption (Hirschfield, 2008). Many studies have documented the negative effects of exclusionary discipline, including lower test scores and achievement (Arcia, 2006), higher likelihood of dropping out (Arcia, 2006), and higher likelihood of having contact with the criminal justice system later in life (Ramey, 2016). The negative effects of suspension make it a crucial outcome to better understand.

Taking these two trends together (increased expectations of readiness and increased use of exclusionary discipline in schools), students who come to school with lower levels of both social-emotional and academic readiness may be more likely to get suspended. The stakes of not being ready for school may be higher than just failing to reach academic achievement goals; this lack of readiness may affect disciplinary outcomes as well. Having lower levels of school readiness is now viewed as deviant and problematic by education as an institution. What was

seen as developmentally appropriate behavior for kindergarteners four decades ago is now labeled academic misconduct and may be punished. In a time of increased use of exclusionary discipline, this punishment may be a formal sanction, such as suspension from school. Instead of being taught letters and numbers, along with how to sit still, pay attention, follow directions, and get along with peers in kindergarten, students with lower levels of readiness may instead be seen as troublemakers who distract their peers and disrupt the learning environment. In other words, school readiness is no longer viewed as a bonus if a child comes to school with a higher level of it, but is instead seen as an absolutely necessary prerequisite.

Labeling Theory

Labeling theory (Lemert, 1952) helps explain that behavior is socially constructed, so what is viewed as deviant and punishable depends on the context of the behavior, the audience, and the societal reaction. In the same way, what constitutes an appropriate punishment for a specific type of deviance also depends on the context of the behavior, the audience, and the societal reaction.

Extending this general statement about deviance to school readiness specifically, low levels of readiness may be a form of primary deviance, which then leads school personnel to view students as problematic and deviant, especially in the context of increased expectations of readiness. In this case, the societal reaction to deviance is focused on the reactions of school actors, who constitute the audience of student behaviors. Lemert (1952) actually uses the example of the problematic student who pulls off a classroom prank and is informally punished for it, then does something else disruptive and is informally punished for that, and is eventually blamed for something he did not do because the teacher expects him to misbehave. There are studies, like Vavrus & Cole (2002), that illustrate how this may work. Teachers may respond to a

series of minor, disruptive behaviors, and singling out disruptive students in this way can eventually lead to suspension (Vavrus & Cole, 2002), especially given the frequent use of exclusionary discipline as a sanction in schools.

Focal Concerns

Disciplining students for low levels of various forms of readiness also relates to focal concerns, which include perceptions of the offender's blameworthiness, danger to society, and ability to change, along with practical constraints (Steffensmeier et al., 1998). While traditionally used to study prosecutors (Spohn et al., 2001), judges (Steffensmeier et al., 1998), and more recently child protective services case workers (Crawford & Bradley, 2016), focal concerns can also help explain school actors' reactions to student levels of readiness.

Schools' top priority is keeping students safe; the second priority is making sure students can learn, which leads to concerns about disruption. These priorities suggest that students with behavior that threatens the safety of the school may be viewed as more dangerous to the school environment, more blameworthy, and less likely to change, which can help explain suspensions. On the other hand, a student who is disruptive may be viewed as less blameworthy, less dangerous, and more likely to change, but the practical constraints of needing a learning environment free of disruption may still predict suspension.

Measures of Readiness

Given the expectation that readiness will predict suspension, the question becomes how to best measure readiness. A large body of work supports the conclusion that externalizing behavior is significantly positively related to suspension (e.g., Costenbader & Markson, 1994; Petras et al., 2011; Pressler et al., 2014; Rocque, 2010; Skiba et al., 2014). For example, Rocque (2010) measures externalizing behavior as the average of items such as disobeying rules, acting

out, and being disruptive and finds that misbehavior predicts office referrals. This study focuses on elementary schools, but only uses data from students and schools in one school district. Similarly, Costenbader and Markson (1994) find that physical aggression is the most common reason for suspension reported among the middle and high school principals and in-school suspension monitors they surveyed. This study includes data from ten states, but only surveys school staff and only includes data on middle and high schools. Likewise, Petras et al. (2011) find that their measure of aggressive and disruptive behaviors is predictive of suspension. However, the sample only consists of students in Baltimore and the aggressive/disruptive measure includes items such as fighting and being stubborn.

Some studies consider different types of externalizing behavior as categories of a single variable, which expands our understanding, but is still limited. For example, Skiba et al. (2014) find that about 73% of fighting or battery referrals result in suspension, compared to about 38% of referrals for defiance or disruption. Results from HLM models suggest that cases of fighting are significantly more likely to result in suspension than cases of defiance or disruption (Skiba et al., 2014). However, data come from only one state and the behavioral measures do not explore the effects of less serious behavior separately from serious behavior.

This body of work suggests the following hypothesis:

H1: Children with higher levels of externalizing behavior at age 5 will be more likely to be suspended from school by age 9 than children with lower levels of externalizing behavior.

However, externalizing behavior, especially in elementary school, is really a combination of different forms of social-emotional readiness. Prior studies mainly focus on middle and high school students and often measure externalizing behavior using a combination of disruptive items (such as being loud or arguing) and delinquent items (such as getting in fights). This leaves

unanswered questions as to which type of externalizing behavior is more likely to lead to suspension generally, and specifically in elementary school. In other words, it is unclear whether disruption is predictive of suspension or if the effect of externalizing behavior is largely driven by the delinquent items.

These questions are especially important because some studies have found that many students are suspended for nonviolent “disruptive” behavior, especially in middle and high school (Raffaele Mendez et al., 2002; Skiba et al., 1997). In elementary school, disruptive behavior may actually be indicative of lower levels of readiness. Students who are not behaviorally ready to interact with schools may be viewed as disruptive to the learning environment and may be punished. This may be particularly true in elementary school, because students have not had as much time to be socialized into the institution of education and the institutional expectations, especially if they start school with low levels of readiness.

However, in elementary school, disruption and delinquency may work differently in predicting suspension and disruption may not lead to suspension the way it seems to in middle and high school. Delinquent behavior is more dangerous to the school environment, whereas disruptive behavior is not necessarily dangerous. Discipline policies are in place to protect students and ensure schools are safe, so delinquent behaviors should be likely to result in suspension. For example, getting in fights is predictive of suspension, regardless of other social-emotional skills, because it is a violation of the code of conduct in most districts and has a specific assigned consequence (usually suspension).

On the other hand, disruptive behavior should not be likely to result in suspension when considered separately from delinquent items, especially in elementary school. Ideally, schools would help disruptive students adjust to school and learn how to behave appropriately while in

school. If disruption does not predict suspension once delinquency is accounted for, this would mean the effects of externalizing behavior in predicting suspension are largely driven by delinquent items. This would imply that schools are likely using suspension in serious cases, instead of in disruptive cases. However, if disruption has a significant effect in predicting suspension even when controlling for delinquent behavior, it would mean that students are likely to be suspended for disruptive behavior.

Prior research and theory support the following hypotheses with regard to disruptive behavior and delinquent behavior predicting suspension:

H2: Children with higher levels of delinquent behavior at age 5 will be more likely to be suspended from school by age 9 than children with lower levels of delinquent behavior.

H3a: Children with higher levels of disruptive behavior at age 5 will be more likely to be suspended from school by age 9 than children with lower levels of disruptive behavior, even when controlling for delinquent behavior.

H3b: Disruptive behavior will not have a significant effect in predicting suspension once controlling for delinquent behavior.

In addition to measuring behavior problems, theory and prior research also suggest that higher levels of positive types of social-emotional readiness (hereafter referred to as prosocial skills) will decrease the likelihood of suspension. Since skills such as getting along with others, understanding others' feelings, and having many interests help children adjust to school and do well in school (e.g., Bierman et al., 2008), these prosocial skills may influence the way schools view students and may influence disciplinary outcomes as well.

Few studies have looked explicitly at the relationship between social-emotional readiness and suspension, and those that have often use small, specific samples of older youth. Since these

samples consist of older youth, the measures of social-emotional skills are indicators of students' current levels of these skills, not their social-emotional readiness when entering school. For example, West et al. (2016) find that students with higher levels of social-emotional skills (e.g., grit and a growth mindset) have fewer suspensions. However, the sample only consists of eighth graders in 32 Boston public schools. Similarly, Morrison et al. (2001) find that students with higher levels of optimism are less likely to have office referrals and students with higher levels of social responsibility are less likely to be suspended. However, data come from 85 middle school students referred to a suspension intervention program in California.

Theory and prior research generally suggest the following hypothesis:

H4: Children with higher levels of prosocial behavior at age 5 will be less likely to be suspended from school by age 9 than children with lower levels of prosocial behavior.

Furthermore, theory and prior literature suggest that higher levels of academic readiness may decrease the likelihood of suspension. Students who are not academically ready to interact with schools may be viewed as disruptive to the learning environment and may be punished. Additionally, a student's level of readiness could also affect the likelihood of suspension because institutional actors may view students with higher levels of academic readiness as smart and be less likely to punish them because they are seen as beneficial for the school's academic performance. This may mean that students with high levels of academic readiness will be less likely to be suspended, even if they are disruptive.

Few studies have looked explicitly at the relationship between academic readiness and suspension, and evidence is mixed in the effects on suspension. Pressler et al. (2016) find that children with higher levels of math skills in kindergarten are less likely to be suspended in 6th grade than children with lower levels of math skills in kindergarten. However, the study only

includes 357 children who took part in the Chicago School Readiness Project. Similarly, Bal et al. (2017) find that higher reading and math test scores are related to a decreased likelihood of exclusionary discipline for individual students (including in-school suspension, out-of-school suspension, expulsion). However, data only come from Wisconsin. Contrary to these studies, Mendez et al. (2002) find that the percentage of kindergarteners in a school district who have proficient levels of readiness is not significantly related to suspension. However, the data are at the district level instead of the individual level, so there may be significant differences in the relationship between an individual's school readiness and the likelihood of being suspended that are not captured through the aggregated data.

At the individual level, the following is expected:

H5: Children with higher levels of academic readiness at age 5 will be less likely to be suspended from school by age 9 than children with lower levels of academic readiness.

DATA & MEASURES

Data

Data come from the Fragile Families and Child Wellbeing Study (FFS), which is a longitudinal study of about 4,900 children born between 1998 and 2000 and their birth parents. Data were collected using a stratified random sample of 77 U.S. cities with a population of at least 200,000. Within each city, hospitals were sampled, and within each hospital, births were sampled (Reichman et al., 2001). Since the focus of the study is unwed parents (hence, “fragile families”), births to unmarried parents were oversampled. The focus is to study these parents and their children's outcomes.

Both the birth mother and father were interviewed soon after the baby was born. Follow-up waves were conducted when child was one, three, five, and nine years old. These interviews

included questions about topics such as demographics, health, employment, parenting practices, and neighborhood characteristics. When children were three, five, and nine years old, researchers also did home visits and in-home interviews to gather information about children's home environments, health, and cognitive and emotional development. Children were interviewed and given questionnaires for the first time in Year 9. Due to attrition, the response rate in Year 9 is 77% for the primary caregivers and 72% for home visits. There are 3,648 cases in the Year 9 data that completed either a child or primary caregiver survey (or both).

FFS well-suited for the present study because it asks about suspension when the child is nine years old and in elementary school. Since it is a disadvantaged sample of urban youth, there is enough variation in suspension to detect effects. It is the only dataset I know of that is recent, collects data longitudinally about young children, and includes a measure of suspension in elementary school. For comparison, ECLS (B and K-12) asks about suspension in 8th grade, so it is not a measure of suspension in elementary school. Since FFS is longitudinal, it is beneficial in ensuring temporal order to try to isolate the effects of school readiness on suspension. Fragile Families drew its sample from large cities and has data on elementary school-aged children, so it can be used to further our understanding of the relationship between school readiness and suspension and build upon studies that have found benefits of readiness skills in small, specific samples of older youth (e.g. West, 2016) or studies that only look at one state (Skiba et al., 2014) or school district (Rocque, 2010).

The key variables in this project come from data collected from the primary caregiver and in-home surveys when children were 5 years old and the primary caregiver and child surveys given when the child was 9 years old. Due to the small sample size of respondents of "other" race (N=194), these cases were dropped. The presented analyses include children with no

missing data on any of the variables in the analysis. This listwise deletion sample includes 1,643 children and is comparable to the full sample in many ways.

Most of the missing data are due to the collection of primary caregiver and in-home data. Of the original 4,898 cases, one case is missing in every wave because the family decided they did not want their information included. Of the 4,897 cases with reported data at the time of the child's birth, 4,055 respondents completed the core surveys when the child was five years old. Of these, 3,700 were invited to participate in the in-home survey and primary caregiver survey; 3,001 agreed (699 did not). Of the 3,001 who agreed, 2,366 completed all or part of the in-home survey and primary caregiver survey; 635 completed only the primary caregiver survey over the phone because they did not agree to an in-home visit. The measure of academic school readiness comes from the in-home survey when the child was 5 years old and has 2,339 valid observations.

Measures

Dependent Variable. The dependent variable is a binary indicator of whether the focal child had been suspended from school by age 9 (1=yes 0=no). Suspension is measured primarily using the Year 9 Child Survey, and supplemented using the Year 9 Primary Caregiver Survey (both collected in 2007-2010). The Child Survey asks "Have you ever been suspended or expelled from school?" Children were given the Child Survey during the in-home visit, and the response rate was slightly lower than the Primary Caregiver Survey, which could be done over the phone if the in-home visit was refused. The Primary Caregiver Survey asks about the child's absences from school and the reasons for the absences, one of which is if the child was "suspended or expelled". A positive response on either the child or primary caregiver survey items is coded as a 1. The ability to supplement child responses with primary caregiver responses is a strength of the Fragile Families data.

Independent Variables. There are three key measures of social-emotional school readiness: prosocial behavior, disruptive behavior, and delinquent behavior. Building on previous research, externalizing behavior is also considered. All behavioral items come from the primary caregiver (mostly mother) reports of child behavior when the child was 5 years old. All of the items are scored from 0 (“not true”) to 2 (“very true or often true”). The measure of prosocial skills comes from the items in the Adaptive Social Behavior Inventory (ASBI), such as being sympathetic, confident, and interested in many things. ASBI items generally hung together in principal component factor analyses, so the prosocial skills measure is the sum of the original 12 items from the ASBI ($\alpha=0.80$).

All measures of problem behavior come from the Child Behavior Checklist (CBCL) questions that primary caregivers were asked to assess children’s behavioral and emotional problems and abilities (Achenbach & Ruffle, 2000). The measure of disruptive behavior comes from CBCL items that focus on attention problems, social problems, and some items from the CBCL aggressive behavior subscale. The original aggressive behaviors subscale includes items such as being loud, arguing, fighting, and physically attacking others. For the purposes of this study, items like fighting and physically attacking are considered delinquent items and are combined with the delinquent subscale. Items like being loud and arguing are considered disruptive and included in the measure of disruptive behavior.

Scales of the items indicative of disruptive behavior were created by first doing principal component factor analyses, and then taking the sum of the CBCL items that hung together. In this manner, several scales were created: social problems, attention problems, and other disruptive behaviors. Social problems includes clingy, does not get along with others, and acts too young for age ($\alpha=0.38$). Attention problems includes confused fog, daydreams,

impulsive, nervous movements, cannot concentrate, and cannot sit still ($\alpha=0.64$). Other disruptive behaviors include argues, showoff, talks too much, loud, and screams ($\alpha=0.68$). Due to high correlations (of about 0.4) and relatively low alpha values, social problems, attention problems, and other disruptive behaviors were combined into one comprehensive measure of disruptive behavior by summing the values of these three variables ($\alpha=0.76$).²

The delinquent behavior measure is the sum of the original delinquent CBCL subscale items, combined with some of the aggression items ($\alpha=0.72$). These delinquent behaviors include items such bullies, physically attacks, fights, vandalizes, threatens, lies/cheats, steals, and disobedient at school that can result in suspension in most codes of conduct, including those of the cities where the children in the Fragile Families Study attended school (e.g., Metro Nashville Public Schools, New York City Department of Education, Austin Independent School District).

Due to high correlations between disruptive and delinquent behavior (0.56), models were also estimated using a binary indicator of whether a child had no behavior problems or just disruptive behavior problems (coded as 0) compared to children with both disruptive and serious behavior problems (coded as 1). Combining disruptive and delinquent behavior into a binary variable in this way results in the loss of potentially meaningful variation in the disruptive and delinquent variables, but decreases the correlation among covariates.

Externalizing behavior is the sum of all items from the CBCL aggressive and delinquent subscales ($\alpha=0.86$).

The measure of academic readiness (hard skills) is the child's standardized score from the Woodcock-Johnson Letter-Word Recognition Test (W-J Test). This test was done during the in-home portion of the study when the child was 5 years old and a researcher gave the test to the

² Analyses were also done using variety scores for behaviors instead of the sum of the items. Results (not shown) were similar.

child. The child was instructed to point to the word that described the picture they were shown. This test lasted until the child answered incorrectly three times in a row. The standardized W-J score is indicative of a child's performance on the test compared to other children the same age.³

Control Variables. Models control for demographic factors, student characteristics, and family characteristics that have been shown to impact levels of school readiness and likelihood of suspension and may confound any relationship that exists between school readiness and suspension. Most controls come from data collected at the time of the child's birth or when the child was 3 years old in order to ensure that controls are measured before the independent and dependent variables.

Gender is a binary indicator of male (coded as 1) or female (reference group). Race is measured using reports of mom's race and includes white (reference), black, and Hispanic. ADD/ADHD is a binary indicator of whether the child has been diagnosed with ADD or ADHD by age 9 (1=yes 0=no). This is measured at age 9 because many students are diagnosed with ADD/ADHD once they enter school, so many have not been diagnosed by age 3 or 5, but have been by age 9.⁴ Mental delays is a binary indicator of whether the child has any type of mental delay or disability diagnosed by age 9 (1=yes 0=no). This includes Autism, Down Syndrome, and mental retardation or developmental delays. Speech problems is a binary indicator of whether the child has any speech problems at age 5, including a doctor's diagnosis and any

³ In addition to the direct effects of the behavioral and academic school readiness variables, potential mediating effects were also assessed. First, OLS regression models with delinquency and disruption as the dependent variable were estimated (Appendix Table 2). Then, the KHB method (Connelly et al., 2016; Kohler et al., 2011) was used to assess the direct and indirect effects of delinquency, disruption, and academic readiness (Appendix Table 3).

⁴ Since some of the cases in the measure of ADD/ADHD come from the same wave as the measure of suspension, there are potential issues of reverse causality. Models predicting suspension were also estimated without ADD/ADHD as a covariate. Results (not shown) were similar, except that academic readiness was significant (or marginally significant), even when including all control variables.

observed stuttering (1=yes 0=no). Child age is the child's age in months at the time of the age 3 data collection. Child health is a measure of overall child health at age 3 and ranges from excellent (1) to poor (5). This is included as a continuous measure in regression analyses. Internalizing behavior includes 22 items from the CBCL internalizing behavior scale about a child's level of behaviors indicative of anxiety, depression, and withdrawal ($\alpha=0.76$) when the child was 5 years old.

Mom's poverty category is a constructed categorical variable indicating the mother's level of poverty when the child was 3 years old. Due to small sample sizes in the 200-299% and 300+% categories, these categories were combined in main analyses.⁵ Mom's PPVT is the mother's score on the Peabody Picture Vocabulary Test (PPVT) when the child was 3 years old. This is supplemented with data from when the child was 5 years old if the mother was missing the PPVT in the data from when the child was 3 years old. Mom's education is the highest level of education the child's mother achieved by the time the child was born. Responses range from 1 (less than high school) to 4 (college or graduate degree). This is included as a continuous variable in regression analyses. Mom's marital status is a binary indicator of whether the mother was married when the child was born (1=married 0=not married) and is important to include to weight the data because Fragile Families oversampled non-marital births.

Father's incarceration is a binary indicator of whether the child's father had ever been incarcerated by the time the child was 9 years old (1=yes 0=no). Parenting stress is the sum of primary caregiver responses to twelve items such as "you often have the feeling that you cannot handle things very well", "you find yourself giving up more of your life to meet child's needs than expected", and "you feel trapped by your responsibilities as a parent". It was measured

⁵ Analyses were also done using poverty as a continuous measure, with similar results (not shown).

when the child was 3 years old. Responses to each item range from 1 (strongly agree) to 5 (strongly disagree). Family routines is the sum of responses to four binary items asking if the child has a regular bedtime, bedtime routine, regular place to sleep, and if the family eats together. It was measured when the child was 3 years old. Spanking is a binary indicator of whether the mother has spanked the child in the past month (1=yes 0=no) and was measured when the child was 3 years old.

Neighborhood disorder is the sum of responses to eight items asking how often certain things happen in the residential neighborhood, such as “drug dealers or users hang around the neighborhood”, “unemployed adults loiter in the neighborhood”, and “you see disorderly or misbehaving groups of teens in the neighborhood”. It was measured when the child was 3 years old. Responses to each item range from to 1 (never) to 4 (frequently). Higher values indicate higher levels of disorder.

Neighborhood collective efficacy is the sum of responses to five items asking how likely neighbors would take certain actions, such as “intervene if children are skipping school and hanging out at the street corner”, “intervene if children are spray-painting graffiti on local buildings”, and “intervene if a nearby fire station is threatened with budget cuts” and was measured when the child was 3 years old. Responses range from to 1 (very likely) to 5 (very unlikely). Higher values indicate lower levels of collective efficacy.⁶

ANALYTICAL STRATEGY

Logistic regression models with robust standard errors are used to appropriately model the binary dependent variable and adjust for heteroscedasticity (Long, 1997). Coefficients are

⁶ Analyses were also done combining neighborhood collective efficacy and disorder into a single summed measure, with similar results (not shown). However, principal component factor analysis suggests that these two measures load on different factors. Additionally, the measures are only correlated at .19. For these reasons, main analyses consider these predictors as two separate variables.

exponentiated so that odds ratios are shown. The key predictors are the social-emotional readiness (prosocial behavior, disruptive behavior, and delinquency) and academic readiness (W-J score) variables. A significant positive coefficient would indicate that higher values of the variable increase the likelihood of suspension, whereas a significant negative coefficient would mean that higher values of the variable decrease the likelihood of suspension.

RESULTS

Descriptive Statistics

Descriptive statistics (Table 1) show that the analytic sample is similar to the full sample in many ways, but includes a higher percentage of black respondents and a lower percentage of Hispanic respondents. The analytic sample also has a higher percentage of children who have been spanked and children who have a father who has been incarcerated. Notably, there is variation in suspension status by age 9, with about 13% and 20% having ever been suspended in the full sample and analytic samples, respectively.

Tables 2 and 3 show descriptive statistics by whether a child has been suspended by age 9 for the full and analytic samples, respectively. Patterns are largely similar between the full and analytic samples. Those suspended have slightly lower W-J standardized scores and slightly higher levels of disruption and delinquency. A higher percentage of those who are suspended are male, black, have been spanked, and have a father who has been incarcerated. It also appears that a lower percentage of children living in extreme poverty are suspended.

Table 1. Descriptive Statistics of Full Fragile Families Study Sample Compared to Analytic Listwise Deletion Sample.

Variable	Full FFS Sample (N=4,703)					Analytic Sample (N=1,590)				
	Frequency	Mean/Pct.	Std. Dev.	Min	Max	Frequency	Mean/Pct.	Std. Dev.	Min	Max
Suspended										
Yes	626	13.31	–	0	1	326	20.50	–	0	1
No (reference)	2,831	60.20	–	0	1	1,264	79.50	–	0	1
W-J Standardized Score	–	99.22	15.07	46	186	–	100.03	14.79	46	186
Prosocial Behavior	–	20.71	3.43	0	26	–	20.91	3.21	3	26
Disruptive Behavior	–	5.85	4.30	0	24	–	7.11	4.20	0	24
Delinquent Behavior	–	1.31	1.85	0	14	–	1.44	1.97	0	14
Just Disruptive vs. Disruptive and Delinquent										
Just Disruptive (reference)	1,310	27.85	–	0	1	672	42.26	–	0	1
Disruptive and Delinquent	1,584	33.68	–	0	1	918	57.74	–	0	1
Externalizing Behavior	–	10.51	7.76	0	45	–	13.07	7.68	0	44
Internalizing Behavior	–	4.46	4.23	0	26	–	5.49	4.29	0	26
Gender										
Male	2,465	52.41	–	0	1	821	51.64	–	0	1
Female (reference)	2,238	47.59	–	0	1	769	48.36	–	0	1
Race										
White (reference)	1,030	21.90	–	0	1	359	22.58	–	0	1
Black	2,326	49.46	–	0	1	920	57.86	–	0	1
Hispanic	1,336	28.41	–	0	1	311	19.56	–	0	1
ADD/ADHD										
Yes	405	8.61	–	0	1	215	13.52	–	0	1
No (reference)	3,397	72.23	–	0	1	1,375	86.48	–	0	1
Speech Problems										
Yes	405	8.61	–	0	1	227	14.28	–	0	1
No (reference)	2,490	52.94	–	0	1	1,363	85.72	–	0	1
Mental Delays										
Yes	213	4.53	–	0	1	88	5.53	–	0	1
No (reference)	3,648	77.57	–	0	1	1,502	94.47	–	0	1
Child Age (months)	–	38.57	3.27	31.60	53.40	–	37.98	2.94	32.30	53.40
Child Health	–	4.39	0.81	1	5	–	4.42	0.78	2	5
Mom's Martial Status										
Married	1,097	23.33	–	0	1	348	21.89	–	0	1
Not Married (reference)	3,577	76.06	–	0	1	1,242	78.11	–	0	1
Mom's Poverty Category										
0-49% (reference)	932	19.82	–	0	1	380	23.90	–	0	1
50-99%	795	16.90	–	0	1	278	17.48	–	0	1
100-199%	1,025	21.79	–	0	1	408	25.66	–	0	1
200+%	1,319	28.05	–	0	1	524	32.96	–	0	1
Mom PPVT	–	49.34	12.32	0	120	–	49.61	12.43	0	120
Mom Education	–	2.03	1.02	1	4	–	2.11	1.01	1	4
Spanking										
Yes	1,941	41.27	–	0	1	914	57.48	–	0	1
No (reference)	2,100	44.65	–	0	1	676	42.52	–	0	1
Family Routines	–	3.53	0.71	0	4	–	3.55	0.68	0	4
Parenting Stress	–	46.70	8.48	12	60	–	46.71	8.29	12	60
Father Ever in Jail										
Yes	2,147	45.65	–	0	1	874	54.97	–	0	1
No (reference)	2,313	49.18	–	0	1	716	45.03	–	0	1
Neighborhood Collective Efficacy	–	11.83	6.12	1	25	–	11.78	6.11	1	25
Neighborhood Disorder	–	13.73	6.80	1	32	–	14.11	6.94	1	32

Notes: If percents do not sum to 100, the rest of the data are missing.

Table 2. Descriptive Statistics of Full Fragile Families Study Sample by Suspension Status.

Variable	Full Sample Ever Suspended (N=626)					Full Sample Never Suspended (N=2,831)				
	Frequency	Mean/Pct.	Std. Dev.	Min	Max	Frequency	Mean/Pct.	Std. Dev.	Min	Max
W-J Standardized Score	–	97.06	14.40	58	138	–	100.28	15.01	46	186
Prosocial Behavior	–	20.62	3.25	9	26	–	20.83	3.42	0	26
Disruptive Behavior	–	7.28	4.56	0	22	–	5.88	4.15	0	24
Delinquent Behavior	–	2.19	2.46	0	13	–	1.11	1.60	0	14
Just Disruptive vs. Disruptive and Delinquent										
Just Disruptive (reference)	138	22.04	–	0	1	998	35.25	–	0	1
Disruptive and Delinquent	345	55.11	–	0	1	1,042	36.81	–	0	1
Externalizing Behavior	–	14.11	8.90	0	45	–	10.42	7.22	0	44
Internalizing Behavior	–	5.18	4.52	0	25	–	4.62	4.23	0	26
Gender										
Male	450	71.88	–	0	1	1,361	48.07	–	0	1
Female (reference)	176	28.12	–	0	1	1,470	51.93	–	0	1
Race										
White (reference)	50	7.99	–	0	1	714	25.22	–	0	1
Black	498	79.55	–	0	1	1,285	45.39	–	0	1
Hispanic	78	12.46	–	0	1	825	29.14	–	0	1
ADD/ADHD										
Yes	160	25.56	–	0	1	271	9.57	–	0	1
No (reference)	466	74.44	–	0	1	2,554	90.22	–	0	1
Speech Problems										
Yes	82	13.10	–	0	1	266	9.40	–	0	1
No (reference)	401	64.06	–	0	1	1,775	62.70	–	0	1
Mental Delays										
Yes	46	7.35	–	0	1	139	4.91	–	0	1
No (reference)	580	92.65	–	0	1	2,687	94.91	–	0	1
Child Age (months)	–	38.24	2.94	32.30	49.80	–	38.49	3.22	32.7	53.4
Child Health	–	4.30	0.88	1	5	–	4.42	0.79	1	5
Mom's Martial Status										
Married	63	10.06	–	0	1	721	25.47	–	0	1
Not Married (reference)	558	89.14	–	0	1	2,095	74.00	–	0	1
Mom's Poverty Category										
0-49% (reference)	185	29.55	–	0	1	549	19.39	–	0	1
50-99%	157	25.08	–	0	1	474	16.74	–	0	1
100-199%	144	23.00	–	0	1	665	23.49	–	0	1
200-299%	102	16.29	–	0	1	928	32.78	–	0	1
Mom PPVT	–	46.55	11.13	0	86	–	50.37	12.58	0	120
Mom Education	–	1.79	0.84	1	4	–	2.12	1.04	1	4
Spanking										
Yes	363	57.99	–	0	1	1,383	48.85	–	0	1
No (reference)	218	34.82	–	0	1	1,222	43.16	–	0	1
Family Routines	–	3.45	0.75	0	4	–	3.54	0.70	0	4
Parenting Stress	–	45.25	8.62	12	60	–	46.98	8.40	12	60
Father Ever in Jail										
Yes	420	67.09	–	0	1	1,336	47.19	–	0	1
No (reference)	206	32.91	–	0	1	1,489	52.60	–	0	1
Neighborhood Collective Efficacy	–	12.32	6.08	3	25	–	11.61	6.08	1	25
Neighborhood Disorder	–	15.76	7.26	2	32	–	13.33	6.61	1	32

Notes: If percents do not sum to 100, the rest of the data are missing.

Table 3. Descriptive Statistics of Analytic Fragile Families Study Sample by Suspension Status.

Variable	Analytic Sample Ever Suspended (N=326)					Analytic Sample Never Suspended (N=1,264)				
	Frequency	Mean/Pct.	Std. Dev.	Min	Max	Frequency	Mean/Pct.	Std. Dev.	Min	Max
W-J Standardized Score	–	96.75	14.38	58	133	–	100.88	14.78	46	186
Prosocial Behavior	–	20.43	3.39	9	26	–	21.03	3.14	3	26
Disruptive Behavior	–	8.40	4.45	0	22	–	6.78	4.07	0	24
Delinquent Behavior	–	2.37	2.60	0	11	–	1.20	1.69	0	14
Just Disruptive vs. Disruptive and Delinquent										
Just Disruptive (reference)	90	27.61	–	0	1	582	–	46.04	0	1
Disruptive and Delinquent	236	72.39	–	0	1	682	–	53.96	0	1
Externalizing Behavior	–	16.41	8.76	1	41	–	12.21	7.13	0	44
Internalizing Behavior	–	5.94	4.60	0	25	–	5.37	4.20	0	26
Gender										
Male	225	69.02	–	0	1	596	–	47.15	0	1
Female (reference)	101	30.98	–	0	1	668	–	52.85	0	1
Race										
White (reference)	26	7.98	–	0	1	333	–	26.34	0	1
Black	270	82.82	–	0	1	650	–	51.42	0	1
Hispanic	30	9.20	–	0	1	281	–	22.23	0	1
ADD/ADHD										
Yes	87	26.69	–	0	1	128	–	10.13	0	1
No (reference)	239	73.31	–	0	1	1,136	–	89.87	0	1
Speech Problems										
Yes	59	18.10	–	0	1	168	–	13.29	0	1
No (reference)	267	81.90	–	0	1	1,096	–	86.71	0	1
Mental Delays										
Yes	24	7.36	–	0	1	64	–	5.06	0	1
No (reference)	302	92.64	–	0	1	1,200	–	94.94	0	1
Child Age (months)	–	38.02	2.90	32.30	49.80	–	37.97	2.96	32.70	53.40
Child Health	–	4.30	0.88	2	5	–	4.46	0.75	2	5
Mom's Martial Status										
Married	30	9.20	–	0	1	318	–	25.16	0	1
Not Married (reference)	269	90.80	–	0	1	946	–	74.84	0	1
Mom's Poverty Category										
0-49% (reference)	107	32.82	–	0	1	273	–	21.60	0	1
50-99%	91	27.91	–	0	1	187	–	14.79	0	1
100-199%	83	25.46	–	0	1	325	–	25.71	0	1
200+%	45	13.80	–	0	1	479	–	37.90	0	1
Mom PPVT	–	46.48	10.92	0	80	–	50.41	12.68	0	120
Mom Education	–	1.79	0.84	1	4	–	2.20	1.03	1	4
Spanking										
Yes	212	65.03	–	0	1	702	–	55.54	0	1
No (reference)	114	34.97	–	0	1	562	–	44.46	0	1
Family Routines	–	3.44	0.74	1	4	–	3.58	0.67	0	4
Parenting Stress	–	44.59	8.50	14	60	–	47.26	8.15	12	60
Father Ever in Jail										
Yes	226	69.33	–	0	1	648	–	51.27	0	1
No (reference)	100	30.67	–	0	1	616	–	48.73	0	1
Neighborhood Collective Efficacy	–	12.79	6.38	3	25	–	11.52	6.01	1	25
Neighborhood Disorder	–	16.35	7.34	3	32	–	13.53	6.72	1	32

Notes: If percents do not sum to 100, the rest of the data are missing.

Multivariate Analyses

In order to determine which of these variables are significant predictors of suspension while controlling for other variables, the analysis next moves to results from logistic regression models. Analyses first consider the effects of externalizing behavior as it has typically been measured in predicting suspension (Table 4). Then, analyses move to including disruption and delinquency as separate variables (Table 5), instead of an overall predictor of externalizing behavior. Next, analyses with a binary indicator of children with no behavior problems or just disruptive behavior compared to children with both disruptive and delinquent behavior are presented (Table 6).⁷ All presented coefficients are odds ratios.

Not surprisingly, Table 4 shows that externalizing behavior is significantly positively related to suspension, even when including all controls (M7), which is in support of H1. Child and family characteristics appear to explain a small portion of the effect, but externalizing behavior never loses any significance. Once controlling for other forms of readiness, externalizing behavior regains some of the magnitude it originally loses when controlling for child and family characteristics. In the final model (M7), every unit increase in externalizing behavior is associated with about a 6% increase in the odds of being suspended by age 9. In M7, neither academic readiness nor prosocial behavior has a significant effect in predicting suspension, which is not in support of H4 or H5. However, these models do not explain if the effect of externalizing behavior is largely being driven by disruptive or delinquent behavior.

To explore whether disruptive or delinquent behavior is more strongly associated with suspension, Table 5 shows models where disruption is the key predictor. Disruptive behavior is

⁷ Appendix Table 1 considers all readiness variables simultaneously.

Table 4. Logistic Regression of Externalizing Behavior Predicting Suspension from School by Age 9.

	M1	M2	M3	M4	M5	M6	M7
Readiness Variables							
Social-Emotional Readiness							
Externalizing Behavior	1.064*** (.008) [1.047,1.081]	1.067*** (.009) [1.048,1.085]	1.058*** (.010) [1.039,1.077]	1.052*** (.010) [1.034,1.071]	1.045*** (.010) [1.026,1.064]	1.043*** (.010) [1.024,1.063]	1.059*** (.012) [1.036,1.083]
Prosocial Behavior							1.003 (.022) [.960,1.047]
Internalizing Behavior							.943** (.020) [.904,.983]
Academic Readiness							
W-J Score							.992 (.005) [.981,1.002]
Other Child Variables							
Gender							
Female (reference)							
Male		2.668*** (.370) [2.033,3.500]	2.458*** (.348) [1.862,3.244]	2.495*** (.358) [1.883,3.306]	2.451*** (.355) [1.846,3.254]	2.433*** (.352) [1.832,3.232]	2.351*** (.347) [1.760,3.140]
Race							
White (reference)							
Black		4.849*** (1.156) [3.039,7.739]	5.458*** (1.319) [3.399,8.764]	4.731*** (1.148) [2.941,7.610]	4.610*** (1.156) [2.820,7.536]	4.493*** (1.132) [2.741,7.363]	4.540*** (1.157) [2.755,7.481]
Hispanic		1.222 (.366) [.679,2.200]	1.242 (.380) [.682,2.262]	1.105 (.341) [.603,2.025]	1.072 (.337) [.580,1.984]	1.068 (.336) [.577,1.978]	1.149 (.356) [.626,2.109]
Child Health			.890 (.076) [.752,1.053]	.903 (.078) [.763,1.068]	.943 (.082) [.795,1.119]	.945 (.083) [.796,1.121]	.918 (.081) [.772,1.092]
ADD/ADHD			2.717*** (.513) [1.877,3.932]	2.751*** (.534) [1.880,4.026]	2.917*** (.569) [1.991,4.275]	2.936*** (.574) [2.001,4.307]	2.890*** (.568) [1.966,4.247]
Mental Delays			.568+ (.188) [.297,1.087]	.504* (.167) [.263,.966]	.496* (.164) [.260,.947]	.501* (.167) [.261,.962]	.495* (.166) [.256,.957]
Child Age			1.012 (.022) [.969,1.056]	1.018 (.023) [.973,1.064]	1.024 (.024) [.978,1.072]	1.024 (.024) [.978,1.072]	1.023 (.024) [.976,1.072]

Table 4 Continued.

Family Variables

Mom's Marital Status							
Not married (reference)							
Married	.342*** (.070) [.229,.512]	.522** (.117) [.337,.809]	.548** (.123) [.352,.852]	.791 (.189) [.495,1.263]	.900 (.224) [.552,1.467]	.904 (.226) [.555,1.475]	.883 (.222) [.540,1.445]
Mother's Poverty Level							
0-49% (reference)							
50-99%				1.245 (.244) [.848,1.827]	1.299 (.257) [.881,1.916]	1.302 (.260) [.881,1.924]	1.340 (.266) [.908,1.977]
100-199%				.694* (.128) [.484,.994]	.776 (.154) [.526,1.146]	.785 (.157) [.531,1.161]	.793 (.159) [.535,1.174]
200+%				.394*** (.087) [.255,.607]	.473** (.113) [.296,.755]	.491** (.118) [.307,.786]	.513** (.123) [.320,.822]
Mom's PPVT							
					1.001 (.007) [.986,1.015]	1.001 (.007) [.987,1.015]	.999 (.008) [.984,1.015]
Mom's Education							
					.874 -(.087) [0.719,1.063]	.879 -(.088) [0.722,1.069]	.897 -(.091) [0.735,1.095]
Spanking							
					1.309+ (.198) [.973,1.760]	1.304+ (.197) [.969,1.754]	1.296+ (.197) [.962,1.745]
Family Routines							
					.849+ (.084) [.698,1.031]	.854 (.085) [.703,1.038]	.837+ (.084) [.688,1.018]
Father Ever in Jail							
					1.230 (.189) [.910,1.662]	1.241 (.191) [.917,1.679]	1.219 (.189) [.900,1.652]
Parenting Stress							
					.988 (.008) [.972,1.005]	.990 (.008) [.974,1.006]	.986 (.009) [.970,1.003]
Neighborhood Variables							
Disorder							
						1.009 (.010) [.989,1.029]	1.010 (.010) [.989,1.030]
Collective Efficacy							
						1.009 (.012) [.986,1.032]	1.009 (.012) [.985,1.032]
Intercept	.128*** (.018) [.097,.168]	.021*** (.006) [.012,.038]	.021*** (.021) [.003,.147]	.024*** (.024) [.003,.172]	.045** (.052) [.005,.425]	.033** (.039) [.003,.335]	.124 (.166) [.009,1.706]

Notes: N=1,590. Standard errors in parentheses. 95% confidence intervals in brackets. Exponentiated coefficients (odds ratios) shown.
+p<0.10; *p<0.05; **p<0.01; ***p<0.001

Table 5. Logistic Regression of Disruptive Behavior Predicting Suspension from School by Age 9.

	M1	M2	M3	M4	M5	M6	M7	M8	
Readiness Variables									
Social-Emotional Readiness									
Disruptive Behavior	1.083*** (.016) [1.052,1.114]	1.093*** (.017) [1.059,1.127]	1.069*** (.018) [1.034,1.104]	1.060*** (.018) [1.025,1.096]	1.041* (.019) [1.005,1.078]	1.037* (.019) [1.000,1.075]	1.055* (.023) [1.012,1.100]	1.003 (.024) [.957,1.051]	
Delinquent Behavior								1.225*** (.054) [1.123,1.335]	
Prosocial Behavior							1.008 (.022) [.966,1.052]	1.020 (.023) [.975,1.066]	
Internalizing Behavior							.967 (.021) [.926,1.010]	.958+ (.022) [.916,1.001]	
Academic Readiness									
W-J Score							.992 (.005) [.981,1.002]	.991+ (.005) [.980,1.001]	
Other Child Variables									
Gender									
Female (reference)									
Male		2.640*** (.364) [2.015,3.458]	2.430*** (.343) [1.843,3.206]	2.458*** (.351) [1.858,3.252]	2.411*** (.347) [1.818,3.197]	2.389*** (.345) [1.801,3.169]	2.310*** (.338) [1.734,3.077]	2.313*** (.344) [1.729,3.095]	
Race									
White (reference)									
Black		4.807*** (1.139) [3.021,7.649]	5.360*** (1.284) [3.352,8.571]	4.606*** (1.105) [2.879,7.371]	4.533*** (1.128) [2.783,7.383]	4.378*** (1.096) [2.681,7.150]	4.487*** (1.134) [2.735,7.363]	4.538*** (1.146) [2.767,7.444]	
Hispanic		1.147 (.342) [.640,2.058]	1.181 (.358) [.652,2.141]	1.037 (.317) [.569,1.889]	1.028 (.319) [.559,1.889]	1.024 (.319) [.556,1.886]	1.055 (.327) [.575,1.935]	1.122 (.345) [.614,2.050]	
Child Health			.886 (.076) [.750,1.047]	.901 (.077) [.762,1.064]	.943 (.081) [.797,1.117]	.945 (.082) [.798,1.119]	.932 (.081) [.787,1.104]	.922 (.082) [.774,1.098]	
ADD/ADHD			2.820*** (.535) [1.944,4.090]	2.880*** (.565) [1.961,4.230]	3.118*** (.620) [2.112,4.603]	3.152*** (.629) [2.132,4.660]	3.067*** (.616) [2.068,4.546]	2.943*** (.605) [1.967,4.402]	
Mental Delays			.578+ (.191) [.302,1.106]	.521* (.171) [.274,.991]	.516* (.168) [.272,.978]	.523* (.173) [.273,1.000]	.507* (.167) [.266,.967]	.510+ (.176) [.259,1.005]	
Child Age			1.01 (.022) [.968,1.054]	1.017 (.023) [.973,1.063]	1.023 (.024) [.978,1.070]	1.022 (.024) [.977,1.070]	1.023 (.024) [.977,1.071]	1.021 (.025) [.974,1.071]	

Table 5 Continued.

Family Variables

Mom's Marital Status

Not married (reference)

Married

	.327***	.505**	.526**	.774	.894	.902	.890	.881
	(.067)	(.112)	(.119)	(.183)	(.221)	(.223)	(.221)	(.224)
	[.220,.488]	[.327,.780]	[.338,.818]	[.487,1.232]	[.551,1.452]	[.555,1.466]	[.546,1.449]	[.535,1.451]

Mom's Poverty Level

0-49% (reference)

50-99%

	1.239	1.296	1.304	1.329	1.368
	(.241)	(.255)	(.258)	(.262)	(.273)
	[.846,1.813]	[.881,1.906]	[.885,1.923]	[.903,1.955]	[.925,2.023]

100-199%

	.703+	.789	.802	.812	.805
	(.128)	(.155)	(.158)	(.160)	(.160)
	[.492,1.004]	[.537,1.160]	[.545,1.181]	[.552,1.195]	[.545,1.190]

200+%

	.374***	.458**	.481**	.494**	.520**
	(.083)	(.109)	(.115)	(.119)	(.126)
	[.243,.576]	[.288,.730]	[.301,.770]	[.308,.791]	[.324,.835]

Mom's PPVT

	1.002	1.002	1.001	.999
	(.007)	(.007)	(.008)	(.008)
	[.987,1.016]	[.987,1.016]	[.986,1.017]	[.984,1.015]

Mom's Education

	.864	.869	.887	.880
	(.086)	(.086)	(.089)	(.090)
	[.711,1.048]	[.715,1.056]	[.728,1.080]	[.720,1.076]

Spanking

	1.365*	1.359*	1.359*	1.331+
	(.205)	(.204)	(.205)	(.202)
	[1.017,1.833]	[1.012,1.824]	[1.011,1.826]	[.988,1.791]

Family Routines

	.851	.857	.848+	.850
	(.084)	(.084)	(.084)	(.085)
	[.702,1.032]	[.706,1.039]	[.698,1.030]	[.698,1.033]

Father Ever in Jail

	1.287+	1.300+	1.286	1.198
	(.197)	(.200)	(.198)	(.184)
	[.953,1.738]	[.962,1.757]	[.950,1.740]	[.886,1.620]

Parenting Stress

	.985+	.987	.985+	.984+
	(.008)	(.008)	(.009)	(.009)
	[.969,1.002]	[.971,1.003]	[.969,1.002]	[.967,1.001]

Neighborhood Variables

Disorder

	1.012	1.013	1.012
	(.010)	(.010)	(.011)
	[.992,1.033]	[.993,1.033]	[.992,1.033]

Collective Efficacy

	1.009	1.009	1.006
	(.012)	(.012)	(.012)
	[.987,1.033]	[.987,1.033]	[.983,1.030]

Intercept

	.169***	.028***	.032***	.035***	.071*	.048**	.110+	.154
	(.023)	(.008)	(.030)	(.035)	(.081)	(.057)	(.145)	(.208)
	[.130,.221]	[.016,.049]	[.005,.208]	[.005,.244]	[.008,.661]	[.005,.482]	[.008,1.464]	[.011,2.167]

Notes: N=1,590. Standard errors in parentheses. 95% confidence intervals in brackets. Exponentiated coefficients (odds ratios) shown.

+p<0.10; *p<0.05; **p<0.01; ***p<0.001

significantly positively related to suspension until controlling for delinquent behavior. While the coefficient loses some magnitude when controlling for child characteristics and poverty, it does not lose any of its significance until controlling for other family characteristics. However, it remains significant until controlling for delinquency, which is in support of H3b (and not H3a). Delinquency is significantly positively related to suspension, which is in support of H2. Specifically, a one unit increase in delinquency is associated with about a 23% increase in the odds of suspension in the full model (M8). When considering disruption and delinquency as separate predictors, academic readiness is marginally significant in the full model (M8), with higher levels of academic readiness decreasing the likelihood of suspension, which is in support of H5.

Table 6 shows results from models using the binary variable comparing children with no behavior problems or just disruptive behavior to children with both disruptive and delinquent behavior. Results suggest that suspensions are driven by the combination of disruptive and delinquent behavior, which is in support of H2 and H3b (not H3a). The magnitude of the coefficient decreases once controlling for child and family characteristics, but it never loses any significance. Specifically, in the full model (M8), compared to children with no behavior problems or just disruptive behavior, children with both disruptive and delinquent behavior are about 1.7 times more likely to be suspended. Once again, prosocial behavior and academic readiness are both insignificant, which does not support H4 or H5.

Importantly, the same variables that have been shown to be the most robust predictors of suspension in samples of middle and high school students are also the most robust predictors of suspension for the elementary school aged children in this sample. In every full model, being black, male, or having an ADD/ADHD diagnosis are consistently the strongest predictors of

Table 6. Logistic Regression of Binary Indicator of Just Disruptive Behavior versus Disruptive and Delinquent Behavior Predicting Suspension from School by Age 9.

	M1	M2	M3	M4	M5	M6	M7	M8
Readiness Variables								
Social-Emotional Readiness								
Just Disruptive vs. Disruptive and Delinquent								
Just Disruptive (reference)								
Disruptive and Delinquent	2.193*** (.301) [1.675,2.871]	2.110*** (.304) [1.591,2.798]	1.890*** (.275) [1.421,2.514]	1.778*** (.263) [1.330,2.377]	1.633** (.248) [1.212,2.199]	1.615** (.246) [1.198,2.177]	1.684*** (.261) [1.243,2.282]	1.685*** (.261) [1.243,2.283]
Prosocial Behavior							1.014 (.022) [.972,1.058]	1.014 (.022) [.972,1.059]
Internalizing Behavior							.981 (.019) [.944,1.019]	.980 (.019) [.944,1.018]
Academic Readiness								
W-J Score								
								.992 (.005) [.981,1.002]
Other Child Variables								
Gender								
Female (reference)								
Male		2.700*** (.372) [2.061,3.536]	2.439*** (.346) [1.847,3.221]	2.465*** (.354) [1.861,3.266]	2.420*** (.350) [1.823,3.214]	2.394*** (.347) [1.802,3.180]	2.407*** (.350) [1.810,3.200]	2.324*** (.341) [1.743,3.100]
Race								
White (reference)								
Black		4.408*** (1.041) [2.774,7.004]	5.050*** (1.207) [3.162,8.067]	4.326*** (1.032) [2.710,6.905]	4.310*** (1.068) [2.652,7.006]	4.169*** (1.038) [2.559,6.792]	4.131*** (1.032) [2.532,6.741]	4.265*** (1.075) [2.603,6.989]
Hispanic		1.142 (.341) [.636,2.052]	1.198 (.360) [.664,2.160]	1.046 (.317) [.578,1.893]	1.028 (.317) [.562,1.881]	1.026 (.318) [.559,1.884]	1.046 (.322) [.573,1.911]	1.044 (.321) [.571,1.908]
Child Health			.865+ (.074) [.732,1.022]	.882 (.075) [.747,1.042]	.933 (.081) [.788,1.105]	.936 (.081) [.790,1.108]	.923 (.080) [.779,1.095]	.925 (.080) [.780,1.097]
ADD/ADHD			3.087*** (.570) [2.149,4.434]	3.119*** (.595) [2.146,4.535]	3.263*** (.624) [2.243,4.746]	3.268*** (.626) [2.245,4.757]	3.353*** (.646) [2.298,4.892]	3.290*** (.634) [2.255,4.800]
Mental Delays			.672 (.224) [.350,1.291]	.589 (.196) [.307,1.130]	.560+ (.185) [.293,1.071]	.564+ (.189) [.292,1.086]	.594 (.199) [.308,1.147]	.554+ (.184) [.289,1.061]
Child Age			1.008 (.022) [.965,1.053]	1.015 (.023) [.970,1.061]	1.022 (.024) [.976,1.070]	1.022 (.024) [.976,1.069]	1.021 (.024) [.975,1.069]	1.023 (.024) [.976,1.071]

Table 6 Continued.

Family Variables

Mom's Marital Status

Not married (reference)

Married

	.309***	.468***	.502**	.737	.863	.873	.870	.862
	(.063)	(.103)	(.112)	(.173)	(.213)	(.216)	(.215)	(.214)
	[.207,.459]	[.304,.720]	[.324,.777]	[.465,1.168]	[.533,1.399]	[.537,1.418]	[.536,1.414]	[.529,1.404]

Mom's Poverty Level

0-49% (reference)

50-99%

	1.222	1.286	1.296	1.306	1.321
	(.238)	(.253)	(.257)	(.259)	(.261)
	[.835,1.789]	[.874,1.892]	[.878,1.911]	[.885,1.925]	[.896,1.946]

100-199%

	.678*	.779	.795	.792	.804
	(.123)	(.154)	(.158)	(.157)	(.159)
	[.475,.969]	[.529,1.147]	[.539,1.174]	[.537,1.169]	[.545,1.185]

200+%

	.373***	.467**	.493**	.492**	.506**
	(.082)	(.110)	(.117)	(.117)	(.120)
	[.243,.573]	[.294,.742]	[.309,.785]	[.308,.784]	[.317,.807]

Mom's PPVT

	1.001	1.001	1.000	1.001
	(.008)	(.007)	(.008)	(.008)
	[.986,1.016]	[.987,1.016]	[.985,1.015]	[.986,1.016]

Mom's Education

	.860	.869	.869	.883
	(.085)	(.086)	(.086)	(.088)
	[.709,1.043]	[.715,1.055]	[.716,1.056]	[.725,1.074]

Spanking

	1.367*	1.358*	1.364*	1.366*
	(.205)	(.204)	(.205)	(.206)
	[1.019,1.834]	[1.012,1.822]	[1.016,1.831]	[1.017,1.835]

Family Routines

	.839+	.845+	.832+	.837+
	(.082)	(.083)	(.081)	(.083)
	[.693,1.015]	[.697,1.023]	[.687,1.008]	[.690,1.016]

Father Ever in Jail

	1.255	1.267	1.263	1.256
	(.193)	(.195)	(.195)	(.194)
	[.929,1.696]	[.936,1.714]	[.933,1.710]	[.928,1.701]

Parenting Stress

	.984*	.986+	.984+	.984+
	(.008)	(.008)	(.008)	(.008)
	[.968,1.000]	[.970,1.002]	[.967,1.000]	[.968,1.001]

Neighborhood Variables

Disorder

	1.015	1.016	1.016
	(.010)	(.010)	(.010)
	[.995,1.036]	[.996,1.036]	[.996,1.036]

Collective Efficacy

	1.008	1.008	1.008
	(.012)	(.012)	(.012)
	[.985,1.031]	[.985,1.031]	[.985,1.031]

Intercept

	.189***	.0359***	.043**	.046**	.093*	.058*	.063*	.117
	(.022)	(.010)	(.042)	(.046)	(.105)	(.069)	(.082)	(.158)
	[.150,.238]	[.021,.061]	[.006,.288]	[.007,.322]	[.010,.855]	[.006,.586]	[.005,.808]	[.008,1.648]

Notes: N=1,590. Standard errors in parentheses. 95% confidence intervals in brackets. Exponentiated coefficients (odds ratios) shown.

+p<0.10; *p<0.05; **p<0.01; ***p<0.001

suspension, along with delinquent behavior. For example, in the full model in Table 6 (M8), the coefficient for male is 2.324. This exponentiated coefficient means that, compared to female students, male students are about 2.3 times more likely to get suspended by age 9 (or 130% increase in the odds of suspension). Compared to white students, black students are about 4 times more likely to be suspended and students that have been diagnosed with ADD/ADHD are about 3 times more likely to be suspended compared to those who do not have this diagnosis. This suggests that the trends in suspension in middle and high schools likely start earlier for some students than is typically captured in suspension data. Interestingly, extreme poverty seems to be negatively related to suspension so that there is about a 49% decrease (1-.506) in the odds of suspension for children with mothers below 200% or more of the federal poverty level compared to those whose mothers are below 0-49% of the federal poverty level. Though not in the same magnitude, results also suggest that children who have mothers who discipline using spanking have a higher likelihood of being suspended.⁸

DISCUSSION

This study analyzed the relationship between school readiness and suspension from elementary school. In the context of increased expectations of readiness (Bassok et al., 2016) and increased use of exclusionary discipline (Hirschfield, 2008), students with lower levels of academic and social-emotional (including disruptive behavior, delinquent behavior, and prosocial behavior) readiness were expected to be more likely to be suspended in elementary school.

Schools today expect children to come to school with higher levels of both academic and social-emotional readiness skills (Miles & Stipek, 2006). Kindergarten used to be focused on

⁸ Results (not shown) were similar in analyses using chained multiple imputation with 20 added datasets (N=1,966).

teaching readiness skills as ends in and of themselves (Gracey, 1975), but with increased academic expectations as the result of initiatives such as No Child Left Behind (Kim & Sunderman, 2005) and new state standards of education (Gullo & Hughes, 2011), even the earliest grades in elementary school now focus on ensuring students reach academic milestones (Gullo & Hughes, 2011). This is paired with an increased use of exclusionary discipline (e.g., suspension) and focal concerns of keeping schools safe and free of disruption so that learning can occur.

This study began by analyzing the effects of externalizing behavior (the sum of the aggressive and delinquent CBCL subscales) on suspension. It then sought to measure school readiness in multiple ways in order to include both academic and social-emotional readiness and to try to disentangle the effects of disruptive behaviors versus delinquent behaviors in predicting suspension. While externalizing behavior has been shown to predict suspension (e.g., Costenbader & Markson, 1994; Petras et al., 2011), these measures often combine items indicative of disruption and delinquency into a single measure. This limits our ability to determine if disruptive and delinquent behaviors are each predictive of suspension, which is an important question because many students are suspended for disruptive behavior (Raffaele Mendez et al., 2002; Skiba et al., 1997), especially in middle and high school.

Results show that externalizing behavior is significantly positively related to suspension, even when including all control variables. However, when breaking externalizing behavior into disruptive and delinquent behavior, it seems the effect of externalizing behavior in predicting suspension is largely driven by delinquent behavior or the combination of disruptive and delinquent behavior. In models that consider disruptive and delinquent behaviors separately, delinquent behavior is significantly positively related to suspension in every model, but

disruptive behavior is only significant until accounting for delinquent behavior. In models that compare students with no behavior problems or just disruptive behavior to those with both disruptive and delinquent behavior, students with both disruptive and delinquent behavior are significantly more likely to be suspended than those with no behavior problems or just disruptive behavior.

These results may be explained if elementary schools deal with behaviors that are just disruptive in informal ways. There may be a higher tolerance for minor, disruptive behavior in elementary school if faculty and staff help students adjust to school and learn to behave appropriately while at school, even in the face of increased expectations of academic achievement. This relates to both labeling theory (Lemert, 1952; Vavrus & Cole, 2002) and focal concerns (e.g., Steffensmeier et al., 1998). In elementary school, school actors may view students with delinquent behavior as more blameworthy, less likely to change, and more dangerous to the school environment but may view students who are disruptive as not at fault for their behavior and likely to change with proper instruction. Students with high levels of delinquent behavior may be more likely to be labeled as deviant because of the perceived danger to the school environment, whereas students who are disruptive may be given informal sanctions and chances to correct their behavior before a formal sanction is used. Since school safety is the top priority, it is possible that the audience response (i.e., school personnel) to delinquency will be different than the response to disruption, especially as young children adjust to school.

Prosocial behavior is confounded by child race and gender, so is not a significant predictor of suspension. However, academic readiness appears to be marginally significant in decreasing the odds of suspension, depending on how other behavioral readiness variables are measured. Students who are not academically ready to interact with the institution of education

may be viewed as disruptive to the learning environment and may be more likely to be punished. On the other hand, institutional actors may view students with higher levels of academic readiness as beneficial for the school's academic performance and be less likely to punish them, even if they engage in minor misbehavior.

Importantly, the effects of race, gender, and ADD/ADHD diagnosis in predicting suspension are consistently the largest and most robust variables in every model (other than delinquent behavior). These effects exist even after controlling for student behavior, which means that suspensions from elementary school are not solely predicted by differences in student behavior. Results mirror a large body of extant research in samples of middle and high school students that finds that race and gender are among the largest and most robust predictors of suspension, along with an ADD/ADHD diagnosis (e.g., DiPrete & Jennings, 2012; Skiba et al., 2014; Sullivan et al., 2013).

Family variables also seem to be important in predicting suspension. Though not to the same magnitude, results suggest that children with mothers who use spanking as a disciplinary measure are more likely to be suspended from school. This could extend previous work that has linked spanking to children's externalizing behavior (e.g., Gershoff et al., 2018; Ma et al., 2018). Additionally, there may be a protective factor of extreme poverty in this sample in elementary school. Students seen as most at-risk may be provided extra support or services to help them in their early years of school. This could explain the significant negative relationship between extreme poverty and suspension, which contradicts some prior findings in middle and high school samples that student poverty increases the likelihood of suspension (e.g., Sullivan et al., 2013). Poverty is negatively related to school readiness (Duncan & Magnuson, 2005; Janus & Duku, 2007; Nores & Barnett, 2014), and schools may anticipate children in situations of

extreme disadvantage having lower levels of school readiness. This may mean that schools try to help children catch up instead of initially responding to their disruptive behavior in a punitive manner. However, there may be a point when lower levels of readiness are no longer tolerated, which could explain the positive relationship between poverty and suspension in samples of middle and high school students (e.g., Theriot et al., 2010). The labeling process (Lemert, 1952; Vavrus & Cole, 2002) may work differently in middle and high schools so that delinquency and disruption are viewed as equally deviant and punishable by formal sanctions. With regard to focal concerns (e.g., Steffensmeier et al., 1998), by the time a student is in middle or high school, school actors may view disruptive students as being at fault for the disruptive behavior and unlikely to change. Additionally, the practical constraints of needing a learning environment free of disruption may be greater in higher grades because the material is more complex and teaching social-emotional skills is not generally a goal.

While an important contribution to the fields of sociology and criminology, the present study has several limitations. First, the dependent variable only tells whether a child has ever been suspended. It does not tell the reason for suspension, when the child was suspended, the number of times the child was suspended, the duration of each suspension, or whether the suspension was in-school or out-of-school. The relationship between key variables and suspension may be different for students only suspended once, versus students suspended multiple times and may be different for students only suspended one day, versus multiple days. The relationship may also be different for students suspended in an earlier grade versus a later grade. Since the Primary Caregiver Survey asks the suspension question in the section about absences from school, the answer likely does not include in-school-suspensions. This means that the results may be conservative estimates because the number of suspended students is likely

higher than reported. However, the relationships between key variables and in-school suspension may be different than the relationship with out-of-school-suspension. Also, because the questions about suspension ask about suspension or expulsion, there is no way of knowing if the child was suspended or expelled. Additionally, since the dataset is drawn from large, urban areas, and focuses on disadvantaged youth with unmarried parents, the findings are only informative of this type of youth and may not be generalizable to other types of youth. Caution should be used when interpreting results, as results are not meant to be interpreted as strictly causal.

CONCLUSION

This study is an important step in considering predictors of suspension among students in elementary school. Given the focus in research on disproportionalities in suspension and concern over the school-to-prison pipeline, understanding predictors of suspension in elementary school is a crucial step in research. This research has implications for policies that seek to decrease suspension rates in schools by finding support for previous findings that suspension does indeed occur in elementary school (Losen & Martinez, 2013), and many of the same variables that predict suspension in middle and high school also predict suspension in elementary school. Furthermore, certain types of readiness (especially delinquent behavior) are related to suspension, which highlights the importance of early childhood interventions to increase a large range of school readiness skills. Relatedly, social-emotional learning in schools is likely important. Additionally, since what constitutes delinquent behavior for young children may be different than what constitutes delinquent behavior for teenagers, it may be beneficial for school districts to have separate discipline policies for elementary school. Informal discipline strategies and positive behavior programs in schools are also a good idea, especially for young students who are adjusting to school.

The present study largely confirms findings from research on suspension in middle and high schools with regard to the effects of child characteristics such as gender, race, and ADD/ADHD diagnosis in predicting suspension. This is important because it suggests that the same factors that predict suspension in upper grades also predict suspension in elementary school. This means that the disparities and disproportional effects in suspension and the detrimental effects of suspension (e.g., lower test scores, higher likelihood of dropping out) start as soon as school starts and are already in place for some students by the time they reach middle and high school. Education as an institution does not just affect upper grades, so it is important to better understand how suspensions are used in elementary school and what impact this may have on young students who are being socialized into the institution of education for the first time.

Future research should analyze the effects of academic and social-emotional school readiness variables in predicting suspension among different racial groups, in urban versus rural populations, and in samples that are larger and more nationally representative. Exploring the potential difference in math readiness versus reading readiness would also be useful. Additionally, future research is needed to further investigate the relationship between parental discipline strategies, such as spanking, and a child's likelihood of being suspended from school.

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APPENDIX

Appendix Table 1. Logistic Regression of All School Readiness Variables Predicting Suspension from School by Age 9 (with Disruptive and Delinquent Behavior as Separate Variables).

	M1	M2	M3	M4	M5	M6	M7
Readiness Variables							
Social-Emotional Readiness							
Disruptive Behavior	1.075*** (.016) [1.044,1.107]	1.035 (.022) [.993,1.079]	1.042+ (.023) [.998,1.088]	1.023 (.023) [.979,1.070]	1.019 (.023) [.974,1.066]	1.005 (.024) [.959,1.054]	1.003 (.024) [.957,1.051]
Delinquent Behavior		1.268*** (.049) [1.175,1.368]	1.252*** (.053) [1.152,1.362]	1.240*** (.053) [1.141,1.348]	1.231*** (.052) [1.133,1.338]	1.227*** (.054) [1.126,1.337]	1.225*** (.054) [1.123,1.335]
Prosocial Behavior	.961* (.019) [.926,.998]	.965+ (.019) [.928,1.004]	.995 (.021) [.955,1.038]	1.002 (.022) [.960,1.045]	1.012 (.022) [.969,1.057]	1.019 (.023) [.975,1.065]	1.020 (.023) [.975,1.066]
Internalizing Behavior		.947** (.019) [.911,0.984]	.961+ (.020) [.923,1.001]	.966 (.021) [.926,1.009]	.965 (.022) [.923,1.008]	.958+ (.022) [.917,1.001]	.958+ (.022) [.916,1.001]
Academic Readiness							
W-J Score	.987** (.004) [.979,.996]	.985** (.005) [.976,.994]	.985** (.005) [.976,.995]	.985** (.005) [.976,.995]	.989** (.005) [.979,.999]	.991+ (.005) [.980,1.001]	.991+ (.005) [.980,1.001]
Other Child Variables							
Gender							
Female (reference)							
Male			2.411*** (.341) [1.827,3.181]	2.263*** (.326) [1.706,3.001]	2.337*** (.341) [1.755,3.111]	2.320*** (.345) [1.743,3.115]	2.313*** (.344) [1.729,3.095]
Race							
White (reference)							
Black			4.898*** (1.168) [3.070,7.815]	5.459*** (1.319) [3.400,8.765]	4.807*** (1.166) [2.988,7.732]	4.693*** (1.180) [2.867,7.681]	4.538*** (1.146) [2.767,7.444]
Hispanic			1.202 (.359) [.670,2.158]	1.236 (.375) [.682,2.239]	1.136 (.346) [.626,2.062]	1.123 (.346) [.614,2.055]	1.122 (.345) [.614,2.050]
Child Health				.877 (.077) [.738,1.042]	.883 (.078) [.743,1.050]	.921 (.082) [.773,1.096]	.922 (.082) [.774,1.098]
ADD/ADHD				2.582*** (.507) [1.758,3.793]	2.654*** (.536) [1.787,3.942]	2.910*** (.596) [1.948,4.348]	2.943*** (.605) [1.967,4.402]
Mental Delays				.523+ (.177) [.270,1.016]	.495** (.170) [.253,.969]	.505* (.172) [.259,.983]	.510+ (.176) [.259,1.005]
Child Age				1.012 (.023) [.967,1.058]	1.016 (.024) [.970,1.064]	1.021 (.025) [.974,1.071]	1.021 (.025) [.974,1.071]

Appendix Table 1 Continued.

Family Variables

Mom's Marital Status							
Not married (reference)							
Married	.349***	.346***	.525**	.547**	.771	.875	.881
	(.071)	(.073)	(.121)	(.126)	(.187)	(.222)	(.224)
	[.233,.521]	[.229,.523]	[.335,.823]	[.348,.860]	[.479,1.240]	[.532,1.439]	[.535,1.451]
Mom's Poverty Level							
0-49% (reference)							
50-99%					1.286	1.360	1.368
					(.253)	(.269)	(.273)
					[.875,1.891]	[.923,2.003]	[.925,2.023]
100-199%					.703+	.792	.805
					(.130)	(.157)	(.160)
					[.490,1.010]	[.537,1.168]	[.545,1.190]
200+%					.412***	.499***	.520***
					(.092)	(.119)	(.126)
					[.267,.673]	[.312,.797]	[.324,.835]
Mom's PPVT							
						.999	.999
						(.008)	(.008)
						[.984,1.014]	[.984,1.015]
Mom's Education							
						.873	.880
						(.089)	(.090)
						[.715,1.067]	[.720,1.076]
Spanking							
						1.334+	1.331+
						(.202)	(.202)
						[.991,1.796]	[.988,1.791]
Family Routines							
						.846+	.850
						(.085)	(.085)
						[.696,1.030]	[.698,1.033]
Father Ever in Jail							
						1.186	1.198
						(.182)	(.184)
						[.879,1.602]	[.886,1.620]
Parenting Stress							
						.983*	.984+
						(.009)	(.009)
						[.966,1.000]	[.967,1.001]
Neighborhood Variables							
Disorder							
							1.012
							(.011)
							[.992,1.033]
Collective Efficacy							
							1.006
							(.012)
							[.983,1.030]
Intercept							
	1.422	1.984	.166*	.158	.107+	.215	.154
	(.843)	(1.232)	(.118)	(.189)	(.131)	(.284)	(.208)
	[.445,4.543]	[.587,6.703]	[.041,.670]	[.015,1.652]	[.010,1.194]	[.016,2.842]	[.011,2.167]

Notes: N=1,590. Standard errors in parentheses. 95% confidence intervals in brackets. Exponentiated coefficients (odds ratios) shown. +p<0.10; *p<0.05; **p<0.01; ***p<0.001

Appendix Table 2. OLS Regression of Readiness Variables Predicting Disruptive Behavior and Delinquent Behavior.

Disruptive Behavior		Delinquent Behavior	
Social-Emotional Readiness		Social-Emotional Readiness	
Delinquent Behavior	2.203*** (.048) [.2.008,2.419]	Disruptive Behavior	1.262*** (.016) [1.224,1.301]
Prosocial Behavior	1.137*** (.024) [1.084,1.193]	Prosocial Behavior	.956*** (.014) [.930,.983]
Academic Readiness		Academic Readiness	
W-J Score	.987** (.005) [.977,.997]	W-J Score	1.005+ (.003) [.999,1.010]

Notes: N=1,590. Standard errors in parentheses. 95% confidence intervals in brackets. Exponentiated coefficients (odds ratios) shown. Models control for other child characteristics: internalizing behavior, race, gender, health, ADD/ADHD, mental delays, age; family characteristics: mom's marital status, poverty, mom's PPVT score, mom's education, spanking, family routines, father ever in jail, parenting stress; and neighborhood characteristics: disorder +p<0.10; *p<0.05; **p<0.01; ***p<0.001

Appendix Table 3. KHB Method for Assessing Potential Mediating Relationships among School Readiness Variables in Predicting Suspension from School by Age 9.

Disruptive Behavior			Delinquent Behavior			Academic Readiness		
Total Effect	.054*		Total Effect	.204***		Total Effect	-.009	+
Direct Effect	.004		Direct Effect	.202***		Direct Effect	-.009	+
Indirect Effect	.049***		Indirect Effect	.002		Indirect Effect	.000	
Confounding Ratio	12.000		Confounding Ratio	1.007		Confounding Ratio	.958	
Confounding Percent	91.67		Confounding Percent	0.74		Confounding Percent	-4.43	
Mediating Variable	Pct. Difference	Pct. Reduced	Mediating Variable	Pct. Difference	Pct. Reduced	Mediating Variable	Pct. Difference	Pct. Reduced
Academic Readiness	3.64	3.34	Academic Readiness	-70.46	-0.52	Delinquent Behavior	97.16	-4.30
Delinquent Behavior	93.05	85.30	Disruptive Behavior	233.23	1.72	Disruptive Behavior	-12.58	0.56
Prosocial Behavior	3.31	3.03	Prosocial Behavior	-62.77	-0.46	Prosocial Behavior	15.42	-0.68

Notes: N=1,590. Models control for other child characteristics: internalizing behavior, race, gender, health, ADD/ADHD, mental delays, age; family characteristics: mom's marital status, poverty, mom's PPVT score, mom's education, spanking, family routines, father ever in jail, parenting stress; and neighborhood characteristics: disorder and collective efficacy.

Coefficients are in log odds for the total, direct, and indirect effects for delinquent behavior, disruptive behavior, and academic readiness. Underneath these effects are the indirect effects due to each of the other readiness variables, which are used as mediators. The percent difference column shows how much each mediating variable contributes to the indirect effect. The percent reduced column shows how much of the total effect of the key independent variable is due to each of the mediating variables. The confounding ratio indicates how much larger the total effect is than the direct effect. The confounding percentage shows how much of the total effect is because of the additional variables added to the model (Connelly et al., 2016).

+p<0.10; *p<0.05; **p<0.01; ***p<0.001