The Costly Consequences of Not Being Socially and Behaviorally Ready by Kindergarten: Associations with Grade Retention, Receipt of Academic Support Services, and Suspensions/Expulsions

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Executive Summary

In 2014-15, over 50% of kindergarten children in Baltimore City Public Schools (City Schools) did not meet benchmarks for social-behavior readiness. These include the readiness skills children need to follow directions, comply with rules, manage emotions, solve problems, organize and complete tasks, and get along with others. Social-behavioral readiness skills develop early, before children enter school, and they are essential for learning in a classroom setting. What is the impact of not being socially and behaviorally ready on children's academic outcomes? This report examines the relationships between social-behavioral readiness in kindergarten as measured by the Maryland Model for School Readiness (MMSR) and three costly school outcomes for City Schools' students through third grade: being retained in grade, receiving additional services and supports through an Individualized Education Plan (IEP) or 504 plan, and being suspended or expelled from school.

Relationships were examined in two cohorts of 4,462 and 4,602 students. After controlling for a number of important variables, we found significant relationships between social and behavioral readiness in kindergarten and all three school outcomes. **Specifically, by third grade, students assessed as not socially and behaviorally ready in kindergarten were significantly more likely to be retained in grade, receive services and supports through an IEP or 504 plan, and be suspended or expelled.** These results were consistent across both cohorts of students. In addition, boys were significantly more likely than girls to be assessed as not socially and behaviorally ready for school and to experience all three academic problems.

Our findings underscore the critical importance of young children entering school with essential social-behavioral skills and the costly consequences of not being socially and behaviorally ready for students and their families, school systems, and society. Short-term costs include providing additional services and supports, allocating staff time to address behavioral incidents, educating students for additional years, and lost wages for working parents, particularly when students are suspended or expelled. Long-term costs include increased risk for school dropout, juvenile justice involvement, and reduced participation in the workforce.

In light of these short and long-term costs, we recommend the following:

- Given that social-behavioral readiness begins well before children enter school, the Baltimore City Mayor's Office should convene a Social-Behavioral Readiness Task Force to make programmatic recommendations for increasing the number of young children who enter school socially and behaviorally ready. Programmatic recommendations should be informed, at least in part, by an evaluation of how currently funded early childhood initiatives such as Early Head Start, Head Start, and Judy Centers contribute to the social-behavioral readiness of Baltimore City children.

- City Schools should collect information on evidence-based programs promoting children's social, emotional, and behavioral skills currently offered in district elementary schools. This should include programs targeting teachers, parents, and children. A report should describe which programs are working, the resources and conditions required to deliver these programs with quality, and the estimated cost to scale and sustain the most effective programs for improving students' social and behavioral skills.

- City Schools should consider making evidence-based programs demonstrated to be effective for promoting social-behavioral readiness of City Schools' kindergarteners available to all young children and families in the district, not just those believed to be at greater risk.

- Given the important roles that both parents and teachers play in promoting children's social-behavioral readiness, greater effort and resources need to be directed toward strengthening positive communication and partnerships between parents and teachers.

- Given boys' greater risk for social-behavioral difficulties in kindergarten and for all three costly academic outcomes so early in a child's education, we recommend that further research be conducted to understand the underlying causes of this gender-specific risk.

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Project Background

Social, emotional, and behavioral difficulties are now among the top five chronic disabilities affecting children in the United States (Halfon, Houtrow, Larson, & Newacheck, 2012). They are also more than twice as likely to occur among children from families living in poverty (Larson & Halfon, 2010). The increase in social, emotional, and behavioral problems has important implications for schools as they affect children's abilities to follow directions, comply with rules, manage emotions, solve problems, organize and complete tasks, and get along with adults and peers, all of which are skills required for learning in a classroom setting.

Social, emotional, and behavioral difficulties start early, typically before children enter school (Heckman, 2007). Left unaddressed, these problems can have lasting effects on children's academic success, quality of life, and economic self-sufficiency in adulthood (Knudsen, Heckman, Cameron, & Shonkoff, 2006; National Scientific Council on the Developing Child, 2008). Given the increase in social, emotional, and behavior problems among children nationally, particularly among children growing up in poverty, it is important to examine early indicators of risk and their effects on academic success for children in City Schools. Results can inform district policies for implementing cost-effective strategies to strengthen young children's social, emotional, and behavioral competence.

This report examines the relationships between students' social-behavioral readiness at kindergarten using the Maryland Model for School Readiness (MMSR) assessment and three costly academic outcomes during the first four years of school: being retained in grade, receiving additional services and supports through an Individualized Education Plan (IEP) or 504 plan, and being suspended or expelled from school. Although the MMSR was replaced by the Kindergarten Readiness Assessment (KRA) in 2014-15, both measures assess similar indicators of social-behavioral readiness in kindergarten.

How Children Acquire the Skills Needed for Social-Behavioral Readiness

Social-Behavioral Readiness. Readiness to learn is largely a function of children's social, emotional, and behavioral skills. These "non-cognitive" skills include children's abilities to process, label and respond to their own and other people's emotions (i.e., social information processing skills) (Denham et al., 2013); to attend to tasks, shift attention in response to expectations, inhibit socially inappropriate responses, and process, remember and use information (i.e., executive functioning skills) (Garon, Bryson, & Smith, 2008); and to manage emotions such as frustration, anger, and stress (i.e., emotion regulation skills) (Thompson, Lewis, & Calkins, 2008). All of these skills are inter-related. For example, in order to comply with classroom rules, children need to process and remember the rules, attend to the rules at the appropriate time, and manage negative emotions they might experience in response to the rules.

Social-behavioral readiness skills are significantly associated with children's ability to function in the school setting, establish healthy relationships with teachers and peers, and learn (Graziano, Reavis, Keane, & Calkins, 2007; Raver et al., 2011). In fact, children who exhibit disruptive behavior problems in early childhood, a sign of low social-behavioral readiness, are at greater risk for negative outcomes, including low levels of school achievement, rejection by peers, academic failure, and involvement in delinquency (Campbell, Spieker, Burchinal, & Poe, 2006; Reinke, Herman, Petras, & Ialongo, 2008).

Impact of Poverty and Exposure to Adverse Experiences. By age 5 or 6, the typical child's brain has matured to acquire the social-behavioral skills needed for learning in a classroom setting. However, parent stress, economic disadvantage, and childhood exposure to violence and other adverse events are associated with greater difficulties achieving these skills (Blair & Raver, 2015; Bernier, Carlson, & Whipple, 2010; Rhoades, Greenberg, Lanza & Blair, 2011). Results from the Early Childhood Longitudinal Study based on a nationally representative sample of young children demonstrated that less than 50% of children from low-income families enter school with the essential skills needed to be successful, compared to 75% of their higher income peers (Isaacs, 2012). These gaps only widen with time (Duncan et al., 2007), underscoring the importance of improving school readiness in low-income communities. Like many urban districts, City Schools is working hard to close the income disparities in student learning that begin in early childhood. Currently, only 46% of low-income City School students enter kindergarten fully ready compared to 66% of their higher income peers (City Schools, 2015).

Exposure to adverse childhood experiences (ACEs) also affect young children's readiness to learn. Children who have experienced two or more ACEs are nearly three times more likely to repeat at least one grade in school and approximately two times more likely to be diagnosed with ADHD or other behavior-related problems (Bethell, Newacheck, Hawes, & Halfon, 2014) compared to children with no ACEs. In Baltimore City, over 30% of children have experienced two or more ACEs in their life[1] (Child and Adolescent Measurement Initiative, 2014).

Over 30% of Baltimore City children have been exposed to multiple traumatic experiences. These experiences make it harder to focus attention, manage emotions, and process and remember information needed to learn.

The Importance of Parents. There is growing evidence that parenting behavior plays a key role in children's development of social-behavioral skills (Luby et al., 2012; Mathis & Bierman, 2015; Rhoades et al., 2011). In fact, sensitive, consistent, and responsive parenting in the first 5 years of life are among the strongest predictors of children's social-behavioral competence and developmental wellbeing, and can serve as a critical buffer for children exposed to early adverse experiences (Burchinal, Roberts, Zeisel, Hennon, & Hooper, 2006; Iruka, LaForett, & Odom, 2012; Vanderbilt-Adriance & Shaw, 2008).

[1]The measure of Adverse Childhood Experiences (ACEs) includes the following: exposure to violence; emotional, physical, or sexual abuse; neglect; deprivation; parental substance abuse and mental health problems; family discord and divorce; parental death or incarceration; and social discrimination.

Sensitive, consistent, and responsive parenting in the first 5 years of life are among the strongest predictors of children's social and behavioral wellbeing, especially for children exposed to high levels of stress.

However, raising young children can be extremely stressful when parents are also struggling with unstable housing, unsafe and under-resourced neighborhoods, insufficient income to cover basic necessities, and their own emotional wellbeing. These circumstances can make it difficult for parents to provide a safe, positive, consistent and nurturing home environment conducive to building their children's social-behavioral readiness (Barajas-Gonzalez & Brooks-Gunn, 2014; Lunkenheimer et al., 2008; Kaminski et al., 2013; Mistry et al., 2012). A majority of City School students and their families are affected by poverty. For example, in 2015, 86% of enrolled children qualified for the free or reduced priced meals program (FARMs) based on their family's low income (Maryland Report Card, 2015).

The Importance of Teachers. Parents are central to children's social behavior readiness in kindergarten. But so are teachers. When teachers are unable to manage their students' disruptive behavior, children are more likely to be suspended or expelled (Gilliam, 2005) and learning for all students is diminished as teachers spend more instructional time on behavior management (Bailey, Denham, Curby, & Bassett, 2015; Day, Connor, & McClelland, 2015). There is growing evidence that providing teachers training on positive classroom management strategies, integrating children's social skills training into instruction, and providing mental health consultation can reduce disruptive behaviors in the classroom and improve academic achievement (e.g., Morris et al., 2014; Raver et al., 2009).

In sum, children first acquire social-behavioral skills in the context of a family environment that is safe, responsive, consistent, and nurturing. These skills are later reinforced in a positive, well-managed, and supportive classroom setting. However, the increase in social, emotional, and behavioral problems emerging before age 5, particularly among low-income children, suggests that more children may be entering kindergarten without some of the social and behavioral skills needed to learn.

Impact of School Readiness on School Outcomes in Baltimore City Schools

The transition to kindergarten reflects an important developmental period that establishes the foundation for a child's long-term school success (McIntyre, Blacher, & Baker, 2006; Rimm-Kaufmann & Pianta, 2000). One key factor in whether the child will successfully manage this transition is the extent to which they enter school with the skills necessary for learning.

In an effort to increase the number of children entering kindergarten who are ready to learn, City Schools has steadily increased the number of Pre-K seats (Maryland Report Card, 2014), giving priority to children from low-income families (City Schools, 2015B). In 2015, 86% of its 130 elementary and elementary/middle schools include Pre-K. Nationally, funding for early childhood programs has also increased significantly, and there is compelling evidence that Pre-K programs have positive impacts on school readiness (City Schools, 2014; Grigg, Connolly, D'Souza, & Cronister, 2016: Waldfogel & Washbrook, 2011). However, income disparities

remain and it is important to understand the consequences for City Schools' students entering school without some of the skills necessary to succeed.

The purpose of this report is to examine the concurrent and long-term outcomes of entering kindergarten without essential social-behavioral skills. We hypothesized that children assessed as not socially and behaviorally ready at kindergarten would be at greater risk for three school outcomes that are costly to individuals, schools, and society. These outcomes include: (1) being retained in grade, (2) receiving services and supports through an IEP or 504 plan, and (3) being suspended or expelled. This information can be used to inform early intervention efforts targeting students, teachers, and families to strengthen these early social-behavioral skills prior to and during the transition to kindergarten to lay the foundation for children's long-term success in school and in life.

Methodology

The present study is part of a larger project studying the impact of strengthening parenting skills and parent engagement in Pre-K on children's social and behavioral readiness for school, attendance in kindergarten, and academic success in elementary school (The ChiPP Project; Gross & Bettencourt, 2015). The assumption underlying this larger work is that parents are essential partners in any effort designed to promote their children's readiness for school and long-term academic success (Raver, Gershoff, & Aber, 2007). The present study examines the concurrent and long-term associations between social-behavioral readiness in kindergarten and children's likelihood of being retained in grade, receiving services and supports through an IEP or 504 plan, and being suspended or expelled.

Research Questions

The research questions addressed in this study include:

1. What are the characteristics of students assessed in kindergarten as Not Ready on the *Personal and Social Development* domain of the MMSR?
2. What is the association between readiness in the *Personal and Social Development* domain of the MMSR and being retained in grade in kindergarten through third grade?
3. What is the association between readiness in the *Personal and Social Development* domain of the MMSR and receipt of services and supports through an IEP or 504 plan in kindergarten through third grade?
4. What is the association between readiness in the *Personal and Social Development* domain of the MMSR and being suspended or expelled in kindergarten through third grade?

Data Sources

To conduct these analyses, we used de-identified student data files from two cohorts of kindergarteners enrolled in City Schools. Cohort 1 consisted of 4,462 students enrolled in kindergarten in Fall 2007 and Cohort 2 consisted of 4,602 students enrolled in kindergarten in Fall 2009. Longitudinal data were obtained for three additional school years (i.e. through third grade for on-time students) until 2010-11 and 2012-13 for the respective cohorts. These files contained the following information: students' scores on the MMSR assessment taken in kindergarten; attendance; suspensions/expulsions; grade level at each academic year (to determine promotion or retention); student gender; student race/ethnicity; whether the student attended formal schooling prior to kindergarten (e.g., Pre-K, Head Start); and whether the student was identified as receiving Free and Reduced Price Meals (FARMs), an English Language Learner, or receiving special education services or accommodations through a 504 plan.

MMSR Assessment. Each Fall between 2001 and 2014, kindergarten students were assessed using the MMSR. The MMSR is a portfolio-based assessment tool developed by the University of Michigan to determine children's readiness for school. Using this tool, teachers rated students'

skills on 30 items representing 7 domains as "proficient", "in process," or "needs development." The domains are *Personal and Social Development* (e.g., self-concept, self-control), *Language and Literacy*, *Mathematical Thinking, Social Studies, Scientific Thinking, Physical Development*, and *The Arts*. Each domain includes four items with the exception of *Language and Literacy,* which includes six items. A numerical score (raw score) for a given domain is calculated using the sum of the items within that domain, which is translated into one of three categories (Developing, Approaching, Fully Ready) based on the total points obtained for that domain (Maryland State Department of Education [MSDE], 2010; Pearson, 2011).

Relevant Definitions

Chronic Absence. Attendance data for the first four years of school was used to determine if students were chronically absent. The MSDE defines chronic absence as missing more than 20 days when enrolled for at least 90 days. For the present study, we identified students as chronically absent if they were enrolled at least 5 days and missed more than one-ninth of their days enrolled, 20 days absent out of 180 school days (Connolly & Olson, 2012). Days spent out of school due to suspension or expulsion also count as an absence and affects a student's identification as chronically absent.

Formal School Prior to Kindergarten. Receipt of formal schooling prior to kindergarten was determined using a combination of City Schools' Pre-K attendance files and parent responses on the MMSR Kindergarten Readiness survey. Students were identified as receiving formal schooling prior to kindergarten if they had attended Pre-K, Head Start, a Day Care Center, or a non-public Nursery school prior to enrolling in City Schools' Kindergarten.

Grade Retention. Grade retention was determined by examining a child's grade progression from the base year (kindergarten) through the fifth year enrolled (fourth grade for on-time students). Data from the fifth year was only used to determine whether the child was retained at the end of the fourth year of school (third grade for on-time students).

Academic Support Services. Because students can move in between receiving accommodations through a 504 plan and receiving services and supports through an IEP, these measures were combined into a single outcome. Throughout this report, this outcome is referred to as receipt of services and supports through an IEP or 504 plan.

Suspensions/Expulsions. If a student was identified as receiving a suspension or expulsion at any point during the school year according to school records, they were designated as such in our analysis.

In this analysis, data on all three outcomes (grade retention, receipt of services and supports through an IEP or 504 plan, being suspended/expelled) were dichotomized into experiencing the outcome or not experiencing the outcome.

Data Analysis

Two cohorts of students were used to answer our research questions. The first cohort entered kindergarten in City Schools in 2007-08 and reached third grade (for on-time students) four years later in 2010-11. The second cohort entered kindergarten in 2009-10 and reached third grade (for on-time students) four years later in 2012-13. The original cohort sizes were 6,357 and 6,514 respectively. However, students who did not have scores for all seven domains of the MMSR or were not enrolled in City Schools for all five years (kindergarten through fourth grade) were excluded. The final samples used in subsequent analyses include 4,462 students for the 2007-08 cohort and 4,602 students for the 2009-10 cohort. There were statistically significant differences between those included and excluded from this study. Specifically, students excluded from the final analyses were more likely to be White or chronically absent in kindergarten, and less likely to be African American, identified as FARMs, or have attended formal schooling (e.g., Head Start, Pre-K) prior to kindergarten. Tables describing the original and final samples are included in Appendix A.

Descriptive statistics were used to describe our study sample. School readiness scores were dichotomized for all analyses such that students scoring as either Developing or Approaching on a given domain reflected one category (Not Ready) and students scoring as Fully Ready reflected a separate category that was used as the reference group. Bivariate analyses (Chi-square) were conducted to compare sample characteristics and experience of outcomes between students who were assessed as Fully Ready and those who were assessed as Not Ready in the *Personal and Social Development Domain.* Multilevel logistic regression models, accounting for nesting within schools where students took the MMSR, were used to examine predictive relations between social-behavioral readiness in kindergarten and being retained, receiving services and supports through an IEP or 504 plan, or being suspended/expelled at kindergarten and during the next three years of school.

The same set of control variables was used across all analyses. Specifically, student characteristics (gender, race/ethnicity) and whether they were chronically absent in kindergarten, were English Language Learners in kindergarten, qualified for FARMs in kindergarten, and attended formal schooling prior to kindergarten were entered as covariates. In addition, scores on the other six domains of the MMSR were controlled for in all analyses.

Data were analyzed separately for each cohort to examine generalizability across testing years. Two sets of analyses were conducted for each outcome variable – one for whether the child experienced the outcome during kindergarten to assess the concurrent impact of social-behavioral readiness at kindergarten, and one for whether the child experienced the outcome at some point during the next three years of school following kindergarten to assess the long-term academic impact of social-behavioral readiness at kindergarten.

Limitations

This study is not without limitations. First, we only know the outcomes for students who were assessed on the MMSR and who remained in City Schools through fourth grade. As previously noted, there was some bias in the characteristics of students not included in these analyses (i.e., students not included were more often White and chronically absent, and less often African American, identified as FARMs, or identified as attending formal schooling prior to kindergarten; see Appendix A for details). However, our exclusion criteria were carefully chosen to assure our findings will be relevant to students who received a kindergarten readiness assessment and remained within City Schools.

Second, there may be other relevant factors, such as parent's education level, family and neighborhood stress, and child and family health problems that may contribute to later grade retention, receipt of additional services and supports through an IEP or 504 plan, and suspensions/expulsions that were not controlled for in this analysis.

Third, the MMSR social-behavioral domain ratings rely heavily on teachers' subjective assessments of students' behavior. Thus, students' ratings may vary based on what each teacher deems acceptable in their classroom. There is a growing body of research demonstrating that what teachers deem acceptable can be biased by their own cultural perspective, which may disadvantage African American and male students (Bean, 2013; DiPrete & Jennings, 2012; Kozlowski, 2015; Skiba, Michael, Nardo, & Peterson, 2002). To account for some of this potential bias, we used multilevel modeling to nest students within the schools where they were assessed on the MMSR.

Finally, the social-behavioral readiness measure used in this analysis, the MMSR, was replaced by the KRA in 2014-15. Although it is unclear whether the same results reported here would be replicated using the KRA, as shown in Appendix B, both measures assess similar indicators of social-behavioral readiness in young children.

Findings

Characteristics of Students on the *Personal and Social Development* Domain

Table 1 compares the characteristics of students rated as Not Ready to those rated as Fully Ready on their social-behavioral skills in kindergarten. As shown in Table 1, 42.2% of students enrolled in Fall 2007 and 35.6% of students enrolled in Fall 2009 were rated as Not Ready on the *Personal and Social Development* domain (social-behavioral skills) of the MMSR.

Table 1
Characteristics of Kindergarteners Enrolled in Fall 2007 and 2009 Who Are and Are Not Fully Ready in the *Personal and Social Development* Domain

	Personal & Social Development		Full Cohort
	Not Ready	Fully Ready	
Fall 2007			
All Cohort 1 Students	42.2%	57.8%	100.0%
Gender			
Male	57.9%**	45.2%	50.6%
Female	42.1%	54.8%	49.4%
Race/Ethnicity			
African American	89.8%**	86.2%	87.7%
Hispanic	3.1%	5.0%	4.2%
White	6.7%	7.4%	7.1%
Other	0.5%	1.4%	1.0%
Services Receipt in 2007-08			
FARMs	82.4%**	77.6%	79.6%
English Language Learner	3.3%*	4.7%	4.1%
Attended Formal School prior to K	75.4%**	82.4%	79.5%
Chronically Absent in K	21.7%**	15.2%	18.0%
Fall 2009			
All Cohort 2 Students	35.6%	64.4%	100.0%
Gender			
Male	62.8%**	45.6%	51.7%
Female	37.2%	54.4%	48.3%
Race/Ethnicity			
African American	84.5%	86.1%	85.5%
Hispanic	6.3%	5.0%	5.5%
White	8.4%	7.9%	8.1%
Other	0.8%	1.1%	1.0%
Services Receipt in 2009-10			
FARMs	92.1%**	89.4%	90.4%
English Language Learner	5.9%	4.7%	5.1%
Attended Formal School prior to K	77.7%**	86.1%	83.1%
Chronically Absent in K	24.2%**	19.9%	21.4%

Source: City Schools' A-File and MMSR files. FARMs = Free & Reduced Meals. *p<.05. **p<.01.

These percentages are lower than those found using the KRA in 2014-15, in which 52% of City Schools' kindergarten children were rated as Not Ready on the social-behavioral domain. However, differences in the MMSR and KRA scoring procedures preclude drawing direct comparisons between these two readiness measures (e.g. one cannot interpret the percent difference between those Fully Ready on the MMSR with those Fully Ready on the KRA as an indication that there were more children with social-behavioral challenges in 2015 than in 2009).

There were significant differences between students who scored in the Developing or Approaching ranges (Not Ready) on the *Personal and Social Development* domain of the MMSR and their Fully Ready peers (see Table 1). In particular, students rated as Not Ready were more likely to be male, qualify for FARMs, or be chronically absent, and less likely to have attended formal schooling prior to kindergarten. These trends were consistent across cohorts. Race/ethnicity and being an English Language Learner were significantly associated with social-behavioral readiness in Cohort 1 only. Specifically, students entering in Fall 2007 who were rated as Not Ready were more likely to be African American and less likely to be English Language Learners.

Social-Behavioral Readiness and School Outcomes

In this section, we describe key findings related to the *Personal and Social Development* domain of the MMSR. Each academic outcome will be presented separately. The descriptive results are presented first (i.e., differences in percentage of Not Ready and Fully Ready students who experience the outcome) followed by results of multilevel logistic regressions (i.e., predictive relations between readiness and school outcomes). Regression tables for Cohort 1 and Cohort 2 are reported in Appendix C.

Association with Grade Retention

Table 2 compares the proportions of students who were retained in grade by their readiness level (Fully Ready versus Not Ready) in the *Personal and Social Development* domain of the MMSR. This table shows that those who were assessed as Not Ready were more likely to be retained in grade during kindergarten and during the next three years of school compared to their Fully Ready peers.

Table 2
Percent of Students Retained in Grade by Readiness Level in the *Personal and Social Development* Domain

	Personal & Social Development		Full Cohort
Fall 2007	Not Ready	Fully Ready	
All Cohort 1 Students	42.2%	57.8%	100.0%
Retained in K	4.5%**	1.2%	2.6%
Retained in Years 1-3 of Elementary School	22.8%**	9.2%	14.9%
Fall 2009			
All Cohort 2 Students	35.6%	64.4%	100.0%
Retained in K	4.9%**	1.1%	2.4%
Retained in Years 1-3 of Elementary School	18.4%**	9.0%	12.3%

Source: City Schools' A-File and MMSR files. ***p*<.01.

Results of a multilevel logistic regression are presented in Appendix C, Table C1. Our findings show that readiness in the *Personal and Social Development* Domain of the MMSR (social-behavioral readiness) in kindergarten was a significant predictor of grade retention, even after taking into account scores on the other readiness domains of the MMSR. Across both cohorts, kindergarteners who were rated as Not Ready in social-behavioral skills were 1.4 to 1.6 times more likely to be retained at some point during the next three years of school compared to their Fully Ready peers. But the concurrent relationship between social-behavioral readiness and grade retention at kindergarten was only significant for Cohort 2, where students identified as Not Ready were 1.8 times more likely to be retained at the end of kindergarten.

City Schools' kindergarteners assessed as not socially and behaviorally ready for school were 1.4 to 1.8 times more likely to be retained in their grade at some point between kindergarten and third grade.

Association with Receipt of Services and Supports through an IEP or 504 Plan

Table 3 compares the proportions of students who received services and supports through an IEP or 504 plan by their readiness level (Fully Ready versus Not Ready) in the *Personal and Social Development* domain of the MMSR. This table shows that those rated as Not Ready were more likely to receive services and supports through an IEP or 504 plan during kindergarten and during the next three years of school compared to their Fully Ready peers. Despite reflecting a smaller proportion of the total sample, students who were rated as Not Ready in the Fall 2009 cohort made up a larger proportion of those receiving services and supports through an IEP or 504 plan compared to students identified as Not Ready in the Fall 2007 cohort.

Table 3
Percent of Students Receiving Supports and Services through an IEP or 504 Plan by Readiness Level in the *Personal and Social Development* Domain

	Personal & Social Development		Full Cohort
	Not Ready	Fully Ready	
Fall 2007			
All Cohort 1 Students	42.2%	57.8%	100.0%
Receipt of Services and Supports through IEP or 504 Plan			
Receipt in K	14.7%**	6.1%	9.7%
Receipt in Years 1-3 of Elementary School	28.8%**	12.1%	19.2%
Fall 2009			
All Cohort 2 Students	35.6%	64.4%	100.0%
Receipt of Services and Supports through IEP or 504 Plan			
Receipt in K	16.9%**	6.9%	10.5%
Receipt in Years 1-3 of Elementary School	34.5%**	13.5%	21.0%

Source: City Schools' A-File and MMSR files. **$p<.01$.

Results of a multilevel logistic regression are presented in Appendix C, Table C2. Results reveal that readiness in the *Personal and Social Development* domain (social-behavioral readiness) in kindergarten was not significantly related to receiving supports and services through an IEP or 504 plan during kindergarten. However, after controlling for the other readiness domains and student characteristics, social-behavioral readiness was a significant predictor of receipt of such supports and services during the next three years of school. Students rated as Not Ready at kindergarten were 1.5 to 1.8 times more likely to receive these types of services and supports at some point during the next three years of school compared to their Fully Ready peers.

City Schools' kindergarteners assessed as not socially and behaviorally ready for school were 1.5 to 1.8 times more likely to receive services and supports through an IEP or 504 plan during the next three years of school.

Association with Suspensions and Expulsions

Table 4 compares the proportions of students who were suspended or expelled by their readiness level (Fully Ready versus Not Ready) in the *Personal and Social Development* domain. This table shows that those rated as Not Ready were more likely to be suspended or expelled during kindergarten and during the next three years of school compared to their Fully Ready peers. Although there are fewer students identified as Not Ready in the Fall 2009 cohort, a larger proportion of those students were suspended or expelled compared to those rated as Not Ready in the Fall 2007 cohort.

Table 4
Percent of Students Suspended or Expelled by Readiness Level in the *Personal and Social Development* Domain

	Personal & Social Development		Full Cohort
	Not Ready	Fully Ready	
Fall 2007			
All Cohort 1 Students	42.2%	57.8%	100.0%
Suspended/Expelled in K	1.9%**	0.5%	1.1%
Suspended/Expelled in Years 1-3 of Elementary School	12.9%**	5.8%	8.8%
Fall 2009			
All Cohort 1 Students	35.6%	64.4%	100.0%
Suspended/Expelled in K	2.9%**	0.3%	1.3%
Suspended/Expelled in Years 1-3 of Elementary School	15.1%**	6.2%	9.4%

Source: City Schools' Suspension/Expulsion files and MMSR files. ***p*<.01.

Results of a multilevel logistic regression are shown in Appendix C, Table C3. Results indicate that readiness in the *Personal and Social Development* domain (social-behavioral readiness) significantly predicted student suspensions and expulsions, both in kindergarten and over the next 3 years of school. In particular, those rated as Not Ready were 3.2 to 7.3 times more likely to be suspended or expelled in kindergarten, and 2.0 to 2.7 times more likely to be suspended or expelled in the next three years of school compared to their Fully Ready peers. In fact, social-behavioral readiness was the only domain within the MMSR that significantly predicted students' suspensions and expulsions during kindergarten.

City Schools' kindergarteners assessed as not socially and behaviorally ready for school were up to 7 times more likely to be suspended or expelled at least once between kindergarten and third grade.

Child Gender and Outcomes

Our earlier results showed that boys were less likely to be rated as Fully Ready in the *Personal and Social Development* domain of the MMSR compared to girls. In the process of conducting our regression analyses, we found that being a male student was also the most consistent and often strongest child characteristic associated with all three negative school outcomes. These findings therefore seemed important to highlight in this report. It is important to keep in mind that we controlled for the effects of gender to determine the unique predictive relation between social-behavioral readiness at kindergarten and each of the school outcomes of interest, yet gender remained a significant and strong predictor of school outcomes throughout the analyses.

As shown in Appendix C, Tables C1-C3, with all things being equal, including all MMSR results and other student characteristics, boys were 1.8 times more likely to be retained (Cohort 1 only),

2.0 to 2.5 times more likely to receive services and supports through an IEP or 504 plan, and 3.2 to 4.0 times more likely to be suspended or expelled compared to girls in kindergarten. Within the next 3 years of school, boys were 1.3 times more likely to be retained, 2.2 to 2.4 times more likely to receive services and supports through an IEP or 504 plan, and 3.3 to 4.2 times more likely to be suspended or expelled.

Boys are more likely than girls to be assessed as not socially and behaviorally ready for school, be retained in grade, receive services and supports through an IEP or 504 plan, and be suspended or expelled at some point between kindergarten and third grade.

Discussion and Recommendations

In 2014-15, 52% of City Schools' kindergarteners were assessed as entering school without sufficient social-behavioral skills needed to learn. Imagine a kindergarten teacher assigned to teach 32 students (City Schools' average class size; MSDE 2013). At least 16 of those students are experiencing challenges in following directions, managing their emotions, organizing and completing class tasks, and getting along with other adults and children in the classroom. Now imagine this teacher attempting to teach all of these students to read or understand how numbers work. This scenario underscores the educational challenges City Schools' kindergarten teachers are facing when so many of their students are entering school without some of the social-behavioral skills that are foundational to learning.

City Schools students identified as Not Ready in their social-behavioral skills at kindergarten were more likely to qualify for the free and reduced-priced meals program, to be male, and to be chronically absent in kindergarten, and less likely to have attended formal schooling prior to kindergarten. These data are consistent with national trends suggesting that living in poverty, being male, and not attending preschool are associated with greater social and behavioral difficulties in kindergarten (Isaacs, 2012), and other research linking chronic absenteeism with social-behavioral readiness challenges in kindergarten (Ehrlich et al., 2014). It is important to note that the impacts of poverty may be a key driver of these relationships. Many obstacles faced by low-income families – such as housing and job instability, unsafe neighborhoods, limited public transportation, and access to health care-- make it difficult to provide safe, consistent, responsive, and nurturing home environments and reliably access the necessary resources to support their children's development of social-behavioral skills (e.g., Barajas-Gonzalez & Brooks-Gunn, 2014; Chang & Romero, 2008; Kiernan & Mensah, 2011; Mayberry, Shinn, Beton, & Wise, 2014).

As expected, City Schools' kindergarteners assessed as not socially and behaviorally ready for school are significantly more likely to be retained in grade or receive services and supports through an IEP or a 504 plan by third grade. Additionally, they are suspended or expelled more often than their Fully Ready peers, losing valuable opportunities to strengthen their social-behavioral skills. These findings are consistent with other research linking deficits in social-behavioral skills in early childhood to children's increased risk of being retained in elementary school (DiPrete & Jennings, 2012), being referred for special education services (Darney, Reinke, Herman, Stormont, & Ialongo, 2013; Hibel, Farkas, & Morgan, 2010), and being suspended or expelled (Darney et al., 2013; Reinke et al., 2008).

The High Cost of Not Being Socially and Behaviorally Ready for School. Being retained in grade, being referred for additional services and supports through an IEP or 504 plan, and being suspended or expelled can come at significant cost to the child and family, to schools, and to society at large. In the present study, about one quarter of the students identified as not ready on social-behavioral skills at kindergarten had been retained in grade at least once by the end of third grade. Students who are retained in grade tend to struggle more academically in subsequent school years, and are more likely to drop out of high school (Jimerson, 1999; Jimerson & Ferguson, 2007; Reschly & Christenson, 2013), less likely to enroll in postsecondary education (Jimerson, 1999; Ou & Reynolds, 2010), and less likely to be successful in the workforce

(Jimerson, 1999). Previous economic valuations estimate the cost of grade retention (in 2013 dollars) to be $11,153 per student per year retained in school (U.S. Department of Education, 2013).

Approximately 1 in 7 students identified as being behind in their social-behavioral skills received services through an IEP or 504 plan in kindergarten, and between 29%-35% of these students received these types of supports in the next three years of school. Although the cost of receiving services through an IEP or 504 plan varies across needs and disabilities, the estimated average cost of special education can be an additional $10,000 per student per year (Bartik, 2011; National Education Association, 2002-2015).

Between 15%-18% of children identified as not ready on social-behavioral skills were suspended or expelled by the time they reached third grade. While suspending or expelling a kindergarten child with social-behavioral difficulties may make the classroom environment more manageable for the teacher, it is a highly problematic decision for the struggling child who desperately needs the structure and supports of the classroom to catch up to his or her peers (Gilliam, 2005). Moreover, students who are suspended or expelled are at greater risk for a cascade of negative outcomes, including lower academic achievement due to missed academic instruction (Rausch & Skiba, 2005), dropping out of high school (Christle, Jolivette, & Nelson, 2005; Suh & Suh, 2007), involvement in delinquency, and incarceration (Forsyth et al., 2014; Skiba, Arredondo, & Williams, 2014). Although specific information on the costs of suspensions/expulsions are not available, relevant costs include those linked to school staff time allocated to address the behavioral incident, as well as lost school funding due to the student's absence. Parents also incur costs from lost wages due to missed work or paying others to supervise their children who have been suspended or expelled from school.

Gender Gap. Boys were significantly more likely than girls to be rated as behind in social-behavioral skills at kindergarten and to be retained in grade, receive services and supports through an IEP or 504 plan, and to be suspended or expelled. These findings are consistent with prior research indicating that boys are disproportionately identified as having disruptive behavior problems and overrepresented in referrals for special education services (Bean, 2013; Darney et al., 2013; Freeman, 2004; Hibel et al., 2010). Similarly, research and national data show that boys are significantly more likely than girls to be retained in grade (DiPrete & Jennings, 2012; Freeman, 2004) and suspended or expelled (Darney et al., 2013; Gilliam, 2005; Skiba et al., 2002; US Department of Education Office of Civil Rights, 2014). These trends contribute to the widening gender gap in academic achievement and educational attainment (DiPrete & Jennings, 2012; Kena et al., 2015), a trend that appears to begin well before kindergarten based on the data presented in this report.

Attending Preschool Is Not Enough. Research has consistently shown that receipt of formal schooling or childcare prior to kindergarten has positive impacts on social and behavioral readiness (Grigg et al., 2016; Waldfogel & Washbrook, 2011) and the present study provides support for this finding. However, even after controlling for prior exposure to classroom environments, a significant proportion of children are still experiencing social-behavioral difficulties. Thus, attending Pre-K or Head Start alone does not appear to be sufficient to support

children's development of the essential social-behavioral skills needed for success in kindergarten and beyond.

It should be noted that the current analysis did not differentiate between children's exposures to different types of preschools programs (i.e., Pre-K, Head Start, other formal childcare settings). Recent research indicates that children attending City Schools Pre-K were significantly more socially and behaviorally ready by kindergarten than children who attended Head Start (Grigg et al., 2016). Future research should compare the contributions of different types of preschool programs and care settings to children's social-behavioral readiness at kindergarten.

Recommendations

The findings reported here suggest the need for a more comprehensive strategy that will require Baltimore City as a whole, and schools in particular, to rethink their role in promoting young children's social-behavioral readiness for school. We will need (1) programs that support parents in building and nurturing their children's core social-behavioral skills, (2) resources and trainings for teachers on positive and effective behavioral management, and (3) instructional experiences for children aimed at strengthening their social-behavioral skills. Indeed, there are numerous evidence-based interventions targeting parents, teachers, children, and classroom environments that have been shown to strengthen children's social, emotional, and behavioral competence. (Breitenstein et al., 2012; Morris et al., 2014; Perry, Allen, Brennan, & Bradley, 2010; Raver et al., 2009; Schindler et al., 2015).

Programs supporting young children's social and behavioral readiness can be costly. But the cost of *not* addressing the growing problem of children entering kindergarten without a strong social and behavioral foundation may be far greater.

However, high quality programs come at a significant cost. A key finding of this report is that *not* addressing the growing problem of children entering kindergarten without a strong social and behavioral foundation also has significant costs to schools, families, and society at large. In light of the findings, we recommend the following:

- Given that social-behavioral readiness begins well before children enter school, the Baltimore City Mayor's Office should convene a Social-Behavioral Readiness Task Force. This task force should be comprised of parents, principals, teachers, City Schools representatives from the Offices of Engagement and Early Learning, representatives from other key early childhood organizations in Baltimore City (e.g., Head Start, Judy Centers, home visiting programs), mental and behavioral health service providers, early childhood researchers, community partners representing Baltimore City and the business community, and other relevant stakeholders. The purpose of this task force would be to examine the findings of this report, make programmatic recommendations for increasing the number of children entering kindergarten socially and behaviorally ready for school, and identify a sustainable financing plan to support the recommended initiatives.

Task force recommendations should be informed, at least in part, by an evaluation of how currently funded early childhood initiatives such as Early Head Start, Head Start, and Judy Centers contribute to the social-behavioral readiness of Baltimore City children. Such an evaluation should also identify programmatic components producing the greatest effects on social-behavioral readiness.

- There are four types of early interventions designed to strengthen children's social-behavioral skills that have shown promise in effectively supplementing global early childhood programming. There is compelling evidence that integrating one or more of these enhancements into traditional early childhood programming has positive impacts on children's social-behavioral skills development (Breitenstein et al., 2012; Morris et al., 2014; Perry et al., 2010; Raver et al., 2009; Schindler et al., 2014). A number of Baltimore City schools are already using one or more of the following evidence-based programs to promote children's social and behavioral readiness:

  1) Parenting programs that strengthen parents' knowledge and skills for managing their children's behavior and preparing their children for the routines and social-behavioral expectations of the school environment,
  2) Providing support for teachers in positively and effectively managing children's behavior problems in the classroom through formal professional development programs and one-to-one consultation with a behavior specialist,
  3) Mental health consultation including provision of family-focused services and consultation with staff related to managing children who are experiencing emotional and behavioral challenges, and
  4) Social skills training for children to support their development of core social information processing skills, such as social problem-solving and self-control skills.

  City Schools should collect information on all evidence-based programs promoting children's social-behavioral skills currently offered in district elementary schools. This information will help identify which programs are working, the resources and conditions required to implement these programs with quality, the barriers to implementation, the qualities of the school's organizational environment that enable these programs to work most effectively, and the estimated cost to scale and sustain the most effective programs for improving students' social and behavioral skills.

- Programs instituted to promote children's social-behavioral readiness should be made available to all young children and families in the district and not targeted only to those at highest risk based on readiness scores, child gender, or other available data. Making such programs universal would limit stigma that might be associated with seeking or receiving supports and services and increase child and family engagement in such services.

- Given the key roles of parents and teachers in promoting children's social-behavioral readiness, greater effort and resources need to be directed toward strengthening positive

communication and partnerships between parents and teachers so communications that do occur do not focus solely on teachers' concerns about student behavior problems.

- Our results suggest that boys are disproportionately at risk for being identified as experiencing social and behavioral difficulties in kindergarten, and being retained, receiving services and supports through an IEP or 504 plan and being suspended/expelled in kindergarten and elementary school compared to girls. While this problem is not unique to City Schools (DiPrete & Jennings, 2012; Freeman, 2004; US Department of Education Office of Civil Rights, 2014), its root causes for Baltimore children are not well understood, making it difficult to identify and implement the most appropriate interventions. Therefore, we recommend that further research be undertaken to develop a better understanding of the underlying causes of the heightened risk for poorer academic outcomes among young boys enrolled in City Schools.

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Appendices

Appendix A: Characteristics for Cohorts 1 and 2 Original Sample Compared to Final Analysis Sample

Table A1

Characteristics of the Original Cohort 1 Population and the Final Analysis Sample (Students Entering Baltimore City Schools Kindergarten in 2007-08)

	Total Sample	Sample w/ Complete Data	Sample w/o Complete Data	Chi Square Value	Chi Square P-value
Gender				0.01	0.90
Male	50.5	50.6	50.4		
Female	49.5	49.4	49.6		
Race/Ethnicity				80.1	0.00
African American	85.4	87.7	79.9		
Hispanic	4.3	4.2	4.7		
White	9.0	7.1	13.3		
Other	1.3	1.0	2.1		
Services Receipt in K					
Free and Reduced Price Meals	74.6	79.6	62.9	196.6	0.00
English Language Learner	4.1	4.1	4.1	0.0	0.98
Receiving Special Education Services	9.1	9.5	8.2	2.5	0.11
Receiving Supports 504 Plan	0.4	0.3	0.6	3.6	.06
Attended Formal Schooling Prior to K	74.6	80.7	60.1	26.8	0.00
Chronically Absent in K	19.6	18.0	23.6	297.6	0.00

Note: Total Sample N=6357. Total number with complete data N=4462. Total with missing data N=1895. K=Kindergarten.

Table A2

Characteristics of the Original Cohort 2 Population and the Final Analysis Sample (Students Entering Baltimore City Schools Kindergarten in 2009-10)

	Total Sample	Sample w/ Complete Data	Sample w/o Complete Data	Chi Square Value	Chi Square P-value
Gender				1.4	.24
Male	51.2	51.7	50.1		
Female	48.8	48.3	49.9		
Race/Ethnicity				88.5	.00
African American	83.4	85.5	78.3		
Hispanic	5.3	5.5	5.1		
White	9.8	8.1	14.1		
Other	1.4	1.0	2.5		
Services Receipt in K					
Free and Reduced Price Meals	87.9	90.4	81.8	93.1	.00
English Language Learner	5.1	5.1	4.9	0.2	.66
Receiving Special Ed Services	10.4	10.1	11.0	1.3	.26
Receiving Supports 504 Plan	0.3	0.3	0.2	1.7	.19
Attended Formal Schooling Prior to K	73.9	79.8	59.7	283.4	0.00
Chronically Absent in K	22.2	21.4	24.2	6.1	0.01

Note: Total Sample N=6514. Total number with complete data N=4602. Total with missing data N=1912. K=Kindergarten.

Appendix B: Assessment Standards and Indicators of Social-behavioral Readiness on the MMSR and the KRA

Table B1: Maryland Model for School Readiness *Personal and Social Development* Domain Standards, Indicators & Objectives

Standard	Indicator	Objective
Emotional Self-Regulation	Student will demonstrate healthy self-confidence	• Attempts new play and learning experiences independently and purposefully • Knows resources are available in the classroom and how to use them
	Uses coping skills independently	• States needs, wants, and feelings verbally to others • Perseveres with tasks using alternate solutions
	Shows self-direction in familiar and unfamiliar settings	• Makes choices independently and pursues task with intention • Cares for own belongings independently
	Follows classroom rules and routines	• Identifies reasons for classroom and school rules such as maintaining order and keeping everything safe • Recognized some rules which ensure fair treatment of everyone • Plans routine activities in the classroom independently
	Uses classroom materials appropriately	• Uses materials with appropriate intention and purpose • Puts away classroom materials after use independently
Social Self-Regulation	Students initiates and maintains relationship with peers and adults	• Initiates conversation with peers • Able to take turns when working in groups • Shares materials and equipment • Offers verbal suggestions when solving interaction conflicts
	Participates cooperatively in group activities	• Listens to directions from peers and responds to multi-step tasks • Understands rules to group activities • Describes individual contributions and group accomplishments
	Shows empathy and concern for peers and adults	• Understands a variety of feeling expressed by others verbally or nonverbally • Cares independently for peers who are in distress
	Shows eagerness and curiosity as a learner	• Shows eagerness and curiosity in learning new things independently • Ask many questions about new things and experiences c. Describes new learning experiences • Initiates and offers ideas for new projects

Approaches Toward Learning	Student will explore and attend to learning tasks	• Manages transitions from one activity to the next independently • Manages transitions and adapts to changes in routine. • Listens to a variety of directions specific to one or more tasks • Completes short and long-term tasks
	Student will use a variety of learning strategies when approaching new tasks	• Plans and carries out familiar tasks independently • Asks specific questions to see ideas for new tasks • Relates and applies previous experiences to new task • Summarizes relevant information about new task
	Student accepts responsibility for learning	• Puts away materials after completing activity or task • Participates and actively contributes to classroom activities and discussions • Recognizes and learns from mistakes

Table B2*:* Kindergarten Readiness Assessment *Social Foundations* Domain Strands, Standards, and Essential Skills and Knowledge

Strand	Standard	Essential Skills and Knowledge
Social Emotional	Recognize and identify emotions of self and others.	Express, understand, and respond to feelings (emotions) of self and others.
	Look to adults for emotional support and guidance.	Seek security and support from familiar adults in anticipation of challenging situations. Adults
		Request and accept guidance from familiar adults.
Approaches to Learning/ Executive Functioning	Manage the expression of feelings, thoughts, impulses, and behaviors.	Demonstrate the ability to delay gratification for short periods of time.
	Demonstrate the ability to persist with a task.	Focus on an activity with deliberate concentration despite distractions and/or temptations.
	Demonstrate the ability to retain and apply information.	Follow routines and multi-step directions.
		Use prior knowledge and information to assess, inform, and plan for future actions and learning.
	Seek and gather new information to plan for projects and activities.	Express a desire to learn by asking questions and seeking new information.
	Demonstrate cooperative behavior in interactions with others.	Interact with peers in complex pretend play, including planning, coordination of roles, and cooperation.
		Share materials and equipment with other children, with adult modeling and support.
Social Studies	Demonstrate understanding of rules and responsible behavior.	Explain how rules promote order, safety, and fairness.

Appendix C: Logistic Regression Models for Students in Cohorts 1 and 2

The numbers shown in these tables are the coefficients of the logistic regression models. These coefficients are odds ratios which reflect a one unit change in the independent variable (e.g., Not Ready in the Social and Behavioral Domain) on the odds of being retained in grade (or receiving supports and services through an IEP or 504 plan, or being suspended or expelled). For instance, an odds of 1.50 means that the odds of being suspended or expelled for students who are Not Ready is 50% higher than the odds of students who are Fully Ready. On the other hand, if the odds ratio for the same comparison is .75, this means that the odds of being suspended or expelled for students who are Not Ready is 25% lower than the odds of students who are Fully Ready.

Tables C1-C3: Logistic Regression Models Controlling for Nesting within MMSR School, Student Characteristics, and the Other MMSR Domains

Table C1	Regression Model Predicting Grade Retention in Kindergarten and During Grades 1-3
Table C2	Regression Model Predicting Receipt of Supports and Services through an IEP or 504 Plan in Kindergarten and During Grades 1-3
Table C3	Regression Model Predicting Suspensions or Expulsions in Kindergarten and During Grades 1-3

Table C1: Regression Model Predicting Grade Retention in Kindergarten and During Grades 1-3

Independent Variables	**2007-08 Cohort: Odds of Being Retained in K**	**2009-10 Cohort: Odds of Being Retained in K**	**2007-08 Cohort: Odds of Ever Being Retained During Years 1-3 of Elementary school**	**2009-10 Cohort: Odds of Ever Being Retained During Years 1-3 of Elementary school**
Gender (Male)	1.80**	1.08	1.28**	1.33**
African American	0.67	1.13	1.47	1.09
Free and Reduced Price Meals in K	1.03	8.57*	1.13	1.19
English Language Learner in K	2.54	1.03	0.44**	0.79
Attended Formal Schooling Prior to K	0.60**	0.46**	0.71**	0.77*
Chronically Absent in K	2.32**	2.38**	1.61**	1.50**
Language/Literacy Domain of the MMSR Not Ready (Developing or Approaching)	3.59*	3.04**	2.01**	2.32**
Mathematical Thinking Domain of MMSR Not Ready (Developing or Approaching)	6.31**	2.89**	2.18**	1.66**
Scientific Thinking Domain of the MMSR Not Ready (Developing or Approaching)	1.02	0.91	1.08	1.13
Social Studies Domain Not Ready (Developing or Approaching)	0.86	1.01	1.16	0.93
The Arts Domain Not Ready (Developing or Approaching)	0.60	0.67	0.75	1.08
Physical Development Domain Not Ready (Developing or Approaching)	1.77	1.45	0.93	0.64**
Social-Behavioral Domain Not Ready (Developing or Approaching)	1.34	1.80*	1.56**	1.40**

Notes: Total number with complete data included in analysis is N=4462 for 2007-08 cohort and N=4602 for 2009-10 cohort. Outcomes with ** are significant at the $p<=.01$. Outcomes with * are significant at the $p<.05$ level. For all MMSR domains, students scoring as Fully Ready are the reference group for odds ratios. These results account for nesting within the school in which the student took the MMSR. K=Kindergarten.

Table C2: Regression Model Predicting Receipt of Services & Supports through an IEP or 504 Plan in Kindergarten and During Grades 1-3

Independent Variables	2007-08 Cohort: Odds of Receiving Services & Supports through IEP or 504 Plan in K	2009-10 Cohort: Odds of Receiving Services & Supports through IEP or 504 Plan in K	2007-08 Cohort: Odds of Receiving Services & Supports through IEP or 504 Plan During Years 1-3 of Elementary School	2009-10 Cohort: Odds of Receiving Services & Supports through IEP or 504 Plan During Years 1-3 of Elementary School
Gender (Male)	2.48**	1.98**	2.41**	2.20**
African American	0.52**	0.53**	0.72*	0.76
Free and Reduced Price Meals in K	0.96	1.02	1.12	1.28
English Language Learner in K	0.33**	0.18**	0.41**	0.22**
Attended Formal Schooling Prior to K	1.48**	1.72**	1.23	0.93
Chronically Absent in K	1.08	1.14	1.15	0.95
Language/Literacy Domain of the MMSR Not Ready (Developing or Approaching)	2.16**	2.76**	1.78**	2.27**
Mathematical Thinking Domain of MMSR Not Ready (Developing or Approaching)	2.05**	0.96	2.06**	1.44**
Scientific Thinking Domain of the MMSR Not Ready (Developing or Approaching)	1.14	1.64*	1.06	1.21
Social Studies Domain Not Ready (Developing or Approaching)	0.96	0.89	0.95	1.08
The Arts Domain Not Ready (Developing or Approaching)	0.97	1.11	0.93	0.79
Physical Development Domain Not Ready (Developing or Approaching)	1.44*	1.70**	1.29	1.31
Social-Behavioral Domain Not Ready (Developing or Approaching)	1.11	1.17	1.53**	1.77**

Notes: Total number with complete data included in analysis is N=4462 for 2007-08 cohort and N=4602 for 2009-10 cohort. Outcomes with ** are significant at the p<=.01. Outcomes with * are significant at the p<.05 level. For all MMSR domains, students scoring as Fully Ready are the reference group for odds ratios. These results account for nesting within the school in which the student took the MMSR. K= Kindergarten.

Table C3: Regression Model Predicting Suspensions or Expulsions in Kindergarten and During Grades 1-3

Independent Variables	**2007-08 Cohort: Odds of Being Suspended or Expelled in K**	**2009-10 Cohort: Odds of Being Suspended or Expelled in K**	**2007-08 Cohort: Odds of Ever Being Suspended or Expelled During Years 1-3 of Elementary School**	**2009-10 Cohort: Odds of Ever Being Suspended or Expelled During Years 1-3 of Elementary School**
Gender (Male)	3.98**	3.15**	4.22**	3.34**
African American	3.93	2.10	1.81*	2.42**
Free and Reduced Price Meals in K	0.78	1.31	1.26	2.29**
English Language Learner in K	1.88	0.00	0.32	0.38
Attended Formal Schooling Prior to K	2.25	1.24	0.93	0.79
Chronically Absent in K	1.39	2.01**	1.03	1.17
Language/Literacy Domain of the MMSR Not Ready (Developing or Approaching)	0.59	0.42	1.23	1.01
Mathematical Thinking Domain of MMSR Not Ready (Developing or Approaching)	0.90	1.35	0.90	1.09
Scientific Thinking Domain of the MMSR Not Ready (Developing or Approaching)	0.93	1.37	1.16	0.63*
Social Studies Domain Not Ready (Developing or Approaching)	2.64	1.98	1.00	1.13
The Arts Domain Not Ready (Developing or Approaching)	0.95	0.89	0.89	1.20
Physical Development Domain Not Ready (Developing or Approaching)	1.45	1.02	0.92	0.75
Social-Behavioral Domain Not Ready (Developing or Approaching)	3.19*	7.29**	2.02**	2.71**

Notes: Total number with complete data included in analysis is N=4462 for 2007-08 cohort and N=4602 for 2009-10 cohort. Outcomes with ** are significant at the p<=.01. Outcomes with * are significant at the p<.05 level. For all MMSR domains, students scoring as Fully Ready are the reference group for odds ratios. These results account for nesting within the school in which the student took the MMSR. K= Kindergarten.