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Multiple risks and educational well being: A population-based investigation of threats to early school success

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ABSTRACT

The current research study used a developmental–epidemiological approach to examine the prevalence and impact of multiple risks on educational outcomes for an entire population of second grade children in a low-income, urban public school system. The Kids Integrated Data System (KIDS) provided information about children's entire histories of involvement with public services from birth through the end of second grade. Educational risk factors identified through these systems included poverty, child maltreatment, homelessness, low-maternal education, and biological birth risks. Multiple logistic regression analyses revealed the differential impacts of *type* and *amount* of risk on multiple academic and behavioral outcomes. Findings emphasized the disproportionate educational challenges that fall squarely in the purview of other publicly funded service providers outside the education system. Implications of this study include the increasing of the collaborations between early childhood educators and public service systems such as child welfare and homelessness. Enhancing the educational well being of young children with disproportionate risks requires intentional, systematic, and comprehensive interventions that can only be done through such collaboration.

Persistent achievement gaps in American public education have called attention to the needs of subgroups of children who fail to meet national education standards. Research shows that children from economically disadvantaged and minority families consistently perform below their non-poor, non-minority peers in both reading and mathematics achievement at all grade levels (Arnold & Doctoroff, 2003; National Center for Education Statistics; NCES, 2000; Neuman & Celano, 2006). These gaps have shown little measurable change since the early 1970s and are detected as early as preschool (Jencks & Phillips, 1998; U.S. Department of Education, 2007). The *No Child Left Behind* legislation was implemented in 2001 to address these gaps by putting in place accountability standards to ensure that all children reach minimal academic proficiency by third grade (NCLB; U.S. Department of Education, 2001). Accountability at grade three highlights the importance of early childhood for the development of foundational school readiness competencies, and the value of early intervention for children at risk of poor school performance.

National Research Council reports indicate that basic early childhood competencies that are necessary for school success are significantly compromised by multiple risk factors in the first few years of life (National Research Council, 1993; Shonkoff & Phillips, 2000). Birth risks such as premature birth, low birth weight and inadequate prenatal care compromise early cognitive ability and hinder children's capacity to capitalize on early educational opportunities (Bhutta, Cleves, Casey, Cradock, & Anand, 2002; Carmody et al., 2006; Nosarti et al., 2002; Peterson, 2003). Family characteristics including maternal education and

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poverty have also been associated with early developmental outcomes (Burchinal, Peisner-Feinberg, Pianta, & Howes, 2002; Fewell & Deutscher, 2004).

Two major risk factors that are routinely tracked by children's social service systems include child maltreatment (e.g., Darwish, Esquivel, Houtz, & Alfonso, 2000; Leiter & Johnsen, 1994; Veltman & Browne, 2001) and homelessness (e.g., Better Homes Fund, 1999; Masten, Miliotis, Graham-Bermann, Ramirez, & Neemann, 1993; Myers & Popp, 2003). The significant effects of these risks have been consistently highlighted in the empirical literature because of their devastating effects on multiple domains of development including cognition, language and literacy, and social–emotional skills. In early childhood, for example, one major consequence of child maltreatment is early onset antisocial behavior that later becomes associated with pervasive mental, physical, and interpersonal problems (Dodge, Pettit, & Bates, 1994; Masten & Wright, 1998).

This empirical literature documents the adverse effects of early exposure to risk factors associated with socioeconomic disadvantage and highlights the multiple, extrafamilial environments that render children less likely to succeed in school. Children living in dense urban environments are exposed to poor, low-quality schools, low-quality and often unregulated child care, inadequate access to health and human services, and economically depressed neighborhoods with high levels of violence and crime—all risk factors that threaten educational well being (Leventhal & Brooks-Gunn, 2000). Because of this multiple risk context, researchers find that low-income families are exposed to more risk factors over the course of their lifetime than non-poor families (Liaw & Brooks-Gunn, 1994). Furthermore, researchers have suggested that the consequences of any particular risk factor are more severe for children from families living in poverty because of the cumulative impact of multiple risks over time (McLoyd, 1990; Parker, Greer, & Zuckerman, 1988).

A cumulative approach to the study of risk has been used to examine the impact of the number of risks, rather than the type of risks, on developmental outcomes (Burchinal, Roberts, Hooper, & Zeisel, 2000; Sameroff, Seifer, Barocas, Zax, & Greenspan, 1987; Sameroff, Seifer, Baldwin, & Baldwin, 1993). This approach considers the hypothesis that child outcomes are affected by the increased stress afforded by additional risk factors rather than by the nature of any particular risk factor (Deater-Deckard, Dodge, Bates, & Pettit, 1998). Studies have shown that the amount of risk, regardless of its specific type, is significantly related to poor child outcomes including cognition, language, and social–emotional skills (Burchinal et al., 2000; Gutman, Sameroff, & Cole, 2003). Furthermore, Sameroff and colleagues (1993) demonstrated through their longitudinal study of risk and cognitive development that the number of risk factors explained additional variance in child IQ above and beyond the variance attributed to the individual risk factors. This cumulative risk approach is particularly salient for young children living in dense, urban environments who are often differentially exposed to multiple risks across time (Liaw & Brooks-Gunn, 1994).

Early childhood risk research underscores the compelling need to examine the developmental impact of multiple risks in multiple ways. Addressing the complex educational needs of America's most vulnerable students requires population-based research that recognizes both the *type* and *amount* of risk experiences as they relate to developmental outcomes over time. Such research requires a comprehensive, multi-dimensional model that makes relevant distinctions between multiple risks and multiple educational outcomes for policy-relevant populations of young children. A developmental–epidemiological model (Buka & Lipsitt, 1994) provides a unique capacity to add to this early risk literature and to inform early childhood education by incorporating both population-focused inquiry *and* multi-dimensional developmental theory.

Foundational concepts from public health and epidemiology inform the developmental–epidemiological model by emphasizing population-based inquiry. This approach is well suited for applied research because it seeks to capitalize on information collected by existing, public surveillance systems that are charged to identify and provide for the needs of vulnerable populations. Every municipality in the U.S. has established public service systems with trained sentinels to monitor specific risk factors across the population that have been identified as national priorities for the well being of children. Public assistance programs such as Temporary Assistance for Needy Families (TANF) provide financial support for families with little or no income. Child welfare systems are charged to protect children from social/familial risks such as child maltreatment and homelessness. Medicaid provides health insurance for low-income, pregnant mothers to facilitate access to prenatal care. As public surveillance systems, these entities have identified personnel who are trained to collect reliable information from the children and families they serve (e.g., teachers, health providers, social workers). These personnel have direct access to entire communities of children providing a unique opportunity to examine multiple early risks across the population of children in large, urban, low-income neighborhoods. Researchers using this approach can capitalize on these built-in surveillance systems to examine the multiple risk context and the distinctive patterns of risk to inform when and where to intervene for vulnerable children (Costello, Foley, & Angold, 2006).

The developmental aspects of this model recognize child development as multi-dimensional and transactional, underscoring the importance of understanding children in their most proximal contexts. It is well suited to inform early intervention because it underscores the importance of both the *type* and *amount* of risk related to early developmental outcomes. It also recognizes the transactional influences between early competencies and experiences that enhance or impede development over time (Bronfenbrenner, 2005; Garbarino, 1992; Swick & Williams, 2006). For young children living in vulnerable environments, multiple biological and social risk factors interact bi-directionally with the development of early academic and behavioral skills (e.g., Jaffee, Caspi, Moffitt, & Taylor, 2004; Tremblay et al., 2004). Understanding the nature and impact of any individual risk factor is done by examining the unique and interactive relationships between multiple risks and multiple outcomes across multiple developmental stages (Cicchetti & Cohen, 1995). As such, it recognizes that some risk factors are related consistently to multiple sets of outcomes, while others are related differentially to only some sets of outcomes. It also acknowledges that specific developmental competencies are affected differentially by multiple sets of risk factors: some

outcomes are affected by multiple categories of risk, whereas other outcomes are differentially affected by specific risk factors but not others. This examination of "multiples" uniquely allows for the comprehensive understanding of the complex associations between early competencies and risk experiences.

The purpose of the current study was to use a developmental–epidemiological approach to examine the impact of *type* and *amount* of multiple early risks on educational outcomes across an entire second grade cohort of urban, public school students. The primary objective of this study addresses the need for population-based research that is sensitive to the multidimensional nature of early development, the interactive and cumulative nature of risk in the context of poverty, and the need for early identification systems that are cost-efficient and sustainable through the reliance on key community sentinels. The end of second grade academic and behavioral outcomes were selected to provide an evaluation of early developmental competencies during the last year of public school before NCLB accountability standards are enforced (i.e., third grade). The study's primary research questions addressed the nature and impact of specific biological and social risk factors on key developmental outcomes assessed at the end of second grade. First, what is the prevalence of poverty, biological birth risk (i.e., preterm birth, low birth weight, or inadequate prenatal care), low-maternal education, child maltreatment, and homelessness across an entire population of urban, second grade students? Second, what is the unique and interactive impact of these specific risk factors on second grade academic and social-behavioral outcomes? Third, what is the impact of cumulative risk on multiple sets of second grade outcomes?

1. Method

1.1. Participants

The present study was conducted in a large city in the Northeast. The criteria for inclusion in the study were: (a) enrollment in the public school system in second grade during the 2002–2003 academic school year; (b) born in the municipality; and (c) complete data for at least one of the primary outcome measures. There were 14,781 students enrolled in second grade during this year and 80% of these students were born in the municipality ($n = 11{,}835$). The number of students who had complete data for the second grade outcomes ranged from 10,349 to 11,835. Thus, the subset of 10,349 children contained complete data for all outcomes. Table 1 provides a comparison of the demographic characteristics of these students and demonstrates that there were no meaningful differences between the smallest analytic sample ($n = 10{,}349$), the entire study cohort ($n = 11{,}835$), and the total population of second grade students ($N = 14{,}781$). Children in the study cohort were equally distributed between males (52%) and females, with an average age of 8.5 years ($SD = 0.52$ years) at the end of second grade. Sixty-seven percent were African–American, 15% Caucasian, 14% Hispanic, and 4% Asian.

1.2. Procedure

The Kids Integrated Data System was used to integrate municipal services data for the study cohort of second grade students (KIDS; Fantuzzo, Culhane, Rouse, Bloom, & Roig, 2006). This system allowed for individual-level data integration across all relevant municipal agencies that maintain archival, administrative records on children and youth, ages 0–21 years. As such, researchers were able to obtain children's entire histories of involvement with public service agencies from birth through the end of second grade. A Memorandum of Understanding between the City, State, and the University provides guidelines for data access to ensure confidentiality standards. KIDS employs advanced technical methods to ensure data quality and integrity. Complex computer algorithms are used to match individuals and services across systems over time. Data management includes reliability and validity auditing of all data elements as well as the maintenance of data standards for quality.

Databases used for the present study include the School District, Department of Public Health (DPH), Department of Human Services (DHS), and Office of Emergency Shelter Services (OESS). Identifying information was used solely for integrating records across each data system. The final dataset was stripped of all identifiers and contained information on birth records, maternal education, substantiated child maltreatment, family homeless experience, family poverty, and educational outcomes. The matching process used to link these data was completed using Microsoft SQL Server software (2005). Complex algorithms were used to conduct probability matching between datasets based on sets of identifiers (e.g., names, address, date of birth). Cases with potential false positive error comprised less than 1% of all matches in each dataset and were manually cross-referenced to ensure accuracy. Only children with complete birth records were included in the final analyses.

Table 1
Demographic characteristics of the 2002–2003 second grade cohort.

Child characteristic	Entire population ($N = 14{,}781$)	Study cohort ($n = 11{,}835$)	Smallest analytic sample ($n = 10{,}349$)
Sex (male)	51.9	51.6	51.3
African–American	64.6	67.2	66.9
Caucasian	13.9	15.0	14.0
Hispanic	16.2	13.7	14.7
Asian/other	5.2	4.1	4.2

1.3. Measures

1.3.1. Biological birth risk

The Department of Public Health (DPH) provided the birth certificate records. Variables that were used included the amount and type of prenatal care, the gestational age at birth in number of weeks, and the child's birth weight in grams. These variables were dichotomized according to the National Center for Health Statistics definitions of these biological birth risks. Children whose mother received no prenatal care, prenatal care only in the third trimester, or fewer than four prenatal visits overall were coded as "inadequate prenatal care." Children born premature were those born at less than 36 weeks gestation. Children identified through birth records weighing less than 2500 g were categorized as having low birth weight.

1.3.2. Low-maternal education

The Department of Public Health provided information from children's birth records. The number of years of education completed by the child's mother at the time of birth was collected from these records. Low-maternal education was indicated for children whose mothers were at least 18 years old and had completed less than 12 years of formal schooling.

1.3.3. Poverty

Poverty data were provided by the School District. Children receiving free or reduced lunch anytime before or during second grade were defined as experiencing poverty. The School District uses TANF to determine eligibility.

1.3.4. Homeless experience

Information regarding children's homeless experiences was collected from both the Office of Emergency Shelter Services (OESS) and Department of Human Services (DHS). A binary variable was created to determine the presence or absence of homeless experience. Homelessness was determined by identifying a parent within the OESS database who registered in a public shelter with children at any time between the child's birth and second grade. Additionally, homelessness was determined if a child had been placed in a DHS-funded homeless shelter.

1.3.5. Child maltreatment

Substantiated child maltreatment was identified using data provided by the DHS. Within the municipality substantiated, indicated, or founded abuse cases include those with alleged harm or with risk or threat of harm to the child. Specifically, this system documents allegations of physical abuse that result in severe pain or dysfunction, medical neglect, sexual abuse, lack of supervision resulting specific physical conditions or impairments, repeated injuries that have no explanation, or psychological abuse substantiated by a physician. Child neglect documentation includes environmental conditions such as inadequate clothing, inadequate housing, and medical neglect not resulting in a specific physical condition (e.g., failure to keep appointments or get prescriptions). A binary variable was created to determine the presence or absence of child maltreatment. Children with a history of at least one substantiated, founded, or indicated allegation of child maltreatment by the end of second grade were considered to have experienced the risk factor of child maltreatment.

1.3.6. Academic achievement outcomes

The School District provided academic achievement outcome data. Children's standardized reading and mathematics achievement was assessed by the Complete Battery Plus version of the *TerraNova, Second Edition* (CTB/McGraw-Hill, 1997). The TerraNova is a group-administered achievement test considered among the most reliable and valid of all standardized achievement tests, also known as the *California Achievement Tests, Sixth Edition*. The Reading Composite includes measures of essential reading skills such as finding the main idea within a passage, drawing conclusions, making inferences, and understanding context clues. The Reading Composite also measures children's vocabulary through recognition tasks to identify words and their meanings in different contexts, matching words with definitions, identifying categories of words based on meaning, and applying the meanings of the words in new contexts. The Mathematics Composite assesses mathematics computation such as addition, subtraction, multiplication, division, fractions, decimals and percents. This composite also evaluates mathematical concepts (e.g., length, weight, time, geometry) and the application of math concepts and computation through word problems.

The nationally standardized scores for Reading and Mathematics composites were used to create two groups of children. "At risk" students included those who scored at or below the 25th percentile, representing one standard deviation below the national mean. This cutoff was selected because it is used by the local school district to allocate intervention resources prior to third grade accountability testing.

1.3.7. Behavioral outcomes

All behavioral outcome data were provided by the School District. The Learning Behaviors Performance Assessment (LBPA) is a teacher report of children's behavioral approaches to learning for school-related tasks within the classroom (Fantuzzo et al., 2005). The LBPA examines a sample of skills derived from the research literature highlighting foundational approaches to learning such as asking for and receiving help from teachers and peers, contributing to class activities and discussions, and persisting on difficult tasks to completion. There are eleven items on the LBPA rated on a scale ranging from 1 (*Improvement Needed*) to 3 (*Competent*). Scores across all eleven indicators were averaged to create composite scores. These composite scores

were standardized using the entire cohort of second grade performance assessments ($N = 14{,}781$). Internal consistency was demonstrated for the LBPA ($\alpha = .90$, $p < .001$). Criterion-referenced validity for the LBPA was established with the Learning Behaviors Scale (LBS; McDermott, Green, Francis, & Stott, 1999) ($r = .48$, $p < .0001$). Convergent and divergent validity for the LBPA was established with the Adjustment Scales for Children and Adolescents (ASCA; McDermott, 1993) in relation to underactive and overactive social problems in the classroom ($r = .14$–$.62$). Children were considered 'at risk' for poor learning behaviors if they scored one standard deviation or more below the mean.

The Social Skills Performance Assessment (SSPA) is similar in format to the LBPA and consists of nine items rated on a scale of 1–3 (Fantuzzo et al., 2005). This assessment examines behaviors from the research literature that highlight pro-social engagement activities with peers and teachers in the classroom, such as cooperation, positive attitudes, sharing, and taking turns. Performance scores across all nine variables were averaged to create composite scores. Composite scores were standardized using the entire cohort of second grade performance assessments ($N = 14{,}781$). Internal consistency was demonstrated for the SSPA ($\alpha = .95$, $p < .001$). Convergent and divergent validity for the SSPA was established with the Adjustment Scales for Children and Adolescents (ASCA; McDermott, 1993) in relation to underactive and overactive social problems in the classroom ($r = .18$–$.70$). SSPA scores were dichotomized at one standard deviation below the mean indicating children 'at risk' for poor social skills outcomes.

1.3.8. School administrative records

Administrative records within the School District include information about children's enrollment, attendance, and suspension histories for each academic year. Attendance, suspension, and grade retention were collected from these records across kindergarten, first, and second grade. Daily attendance in second grade was used to calculate the percentage of days absent for all children in the cohort. Children whose percentage of attendance was one standard deviation below the mean were coded "high absenteeism." A suspension occurs when a child is disciplined for misconduct on school property. Reasons for suspension include, for example, cheating on exams or homework, inappropriate/vulgar language directed at a student or staff, destruction of school property, or possession of weapons on school grounds. Children who had at least one suspension prior to the end of second grade were coded as "suspended." At the end of second grade any child who failed to meet the academic criteria necessary to pass on to third grade was considered "retained."

2. Results

2.1. Prevalence of multiple risks

An examination of the distribution of risks experienced by an entire cohort of second grade students in a large, urban public school system revealed very high levels of each targeted risk (see Table 2). Risk factors with the highest prevalence within this urban cohort of second grade children were poverty and birth risks (62% and 52%, respectively). Over 30% of the children were born to a mother who did not graduate from high school. Nearly 20% of the children had a documented homeless experience prior to the end of second grade, and 8.5% had been victims of at least one substantiated case of child maltreated.

The co-occurrence of risk factors was also examined. Table 3 indicates the percentage of children with each type of risk who also experienced each of the other types of risk. Children who experienced family poverty comprised 62% of the total sample ($n = 7382$); 57% of these children also experienced a biological birth risk, 39% had a mother with less than a high school education, 25% had a homeless experience, and 11% had been maltreated. Out of over 6000 children who experienced

Table 2
Prevalence of child characteristics and risk factors.

	Percentage of the total sample ($N = 11{,}835$)
Child characteristic	
Sex (male)	51.6
African–American	67.2
Caucasian	15.0
Hispanic	13.7
Asian/other	4.1
Individual risks	
Poverty	62.3
Birth risks	51.8
Low-maternal education at birth	31.9
Homeless experience	19.7
Child maltreatment	8.5
Cumulative risk	
No risk	16.5
One risk	28.1
Two risks	26.3
Three or more risks	26.1

Table 3
Prevalence of co-occurring risk factors ($N = 11{,}835$).

	Poverty (62.3)[a]	Birth risk (51.8)[a]	Low-maternal education (31.9)[a]	Homeless (19.7)[a]	Maltreatment (8.5)[a]
Percentage within each risk group					
Poverty ($n = 7382$)	–	56.7	39.0	25.3	11.0
Birth risk ($n = 6098$)	68.3	–	36.3	24.9	10.5
Low-maternal education ($n = 3780$)	76.2	58.7	–	27.7	11.6
Homeless experience ($n = 2331$)	80.2	65.3	44.9	–	20.6
Maltreatment ($n = 1002$)	80.7	64.3	43.9	47.8	–

Note: Numbers in each row represent percentages of children within each risk group who also experience another risk. For example, of the children experiencing poverty, 11% also experience maltreatment. Percentages will not sum to 100 because some children experience more than two risks.
[a] Overall percentage in the cohort.

a biological birth risk, 68% also had a family poverty experience, 36% had a mother with less than a high school education, 25% had a homeless experience, and over 10% had been maltreated. There were 3765 children whose mother did not graduate from high school; 76% of these children experienced family poverty, 59% had a significant biological birth risk, 28% had a homeless experience, and nearly 12% had been maltreated. Of the 2331 children with a homeless experience, 80% experienced family poverty, 65% had a significant birth risk, and 20% had been maltreated. There were 1002 children who had at least one substantiated child maltreatment case; over 80% of these children also experienced poverty, 64% had a significant birth risk, 44% had a mother with less than a high school education, and 48% were homeless.

2.2. Type of risk: Unique and interactive effects of multiple risks

Multi-level, multiple logistical regression models were used to determine the relationship between each risk factor and each second grade outcome, controlling for school location (nesting), child demographics (age, gender, and race), and other risk factors. These analyses yielded two relevant statistics for each independent variable in the model: odds ratios and relative risk. Odds ratios range from 0 to infinity and indicate the odds of experiencing a given outcome for children who have a risk event compared to the odds of experiencing the outcome in the absence of the risk. Odds ratios less than one indicate reduced odds and ratios above one indicate increased odds of a particular outcome. Relative risk is a ratio based on the probability of outcomes, rather than the odds of an outcome. Relative risk is calculated by dividing the probability of a given outcome with exposure to the risk factor by the probability of that outcome without exposure to the risk.

Significant Score statistics within each analysis indicated at least one explanatory variable was significant and thus, individual Wald chi-squares were examined. For each significant Wald chi-square, the odds-ratio was visually inspected to assess its relative importance for each outcome variable. Significant interactions among independent risk factors were also examined. Interaction terms were created by multiplying combinations of risk factors that were found to have significant independent effects and entering them simultaneously into the regression models with individual risks and control covariates. In this case, significant odds ratios indicate that the relationship between one risk factor and a given outcome is *different* when that risk factor co-occurs with another independent risk. To examine these relationships, odds ratios were converted into relative risk so that this differential impact could be examined for each of the significant risks in the interaction.

2.2.1. Academic outcomes

Table 4 presents the mean and standard deviation for each of the second grade outcome variables and the prevalence of children indicated "at risk." Table 5 presents the results of the multiple logistic regression models for the academic outcomes. There was significant variance in outcomes associated with school location, so this variable was dummy coded and used as a control covariate in each of the logistic regression models. Findings indicate that every risk factor targeted in the present study was negatively associated with all three of the academic outcomes: reading achievement, mathematics achievement, and promotion to third grade. Controlling for child demographics and school location, child maltreatment, low-maternal education, poverty, biological birth risk, and homelessness were significantly related to not meeting the reading proficiency standards at the end of second grade, Score (212, $N = 11{,}254$) = 1629.02, $p < .0001$. Child maltreatment evidenced the largest

Table 4
Descriptive statistics for second grade outcome variables.

	N	Mean	Standard deviation	% of students at risk
National reading percentile	11,254	37.13	25.99	40.25
National mathematics percentile	11,321	42.60	29.30	35.64
Social skills T-score	10,349	50.21	10.70	18.77
Learning behaviors T-score	10,349	50.74	10.64	15.49
Attendance rate	10,647	0.91	0.08	17.93
Suspension history	11,835	–	–	5.91
Second grade retention	11,835	–	–	5.92

Note: Suspension history and second grade retention were dichotomous items indicating whether or not the child experienced these events prior to third grade.

Table 5
Odds ratios for unique and interactive risk factors on academic outcomes.

	End of second grade outcomes		
	Poor reading achievement[a]	Poor mathematics achievement[b]	Second grade retention[c]
Control covariates			
Gender (boys)	1.43**	1.25**	1.47**
African–American	1.48**	2.10**	2.01**
Hispanic	1.46**	1.65**	1.90*
Asian/other	0.63*	0.65	0.26*
Risk factors & two-way interactions			
Poverty	1.37**	1.28**	1.62**
Birth risk	1.19**	1.18**	1.28*
Low-maternal education (ME)	1.47**	1.32**	1.47**
Child maltreatment (CM)	1.60**	1.50*	1.80*
Homelessness (H)	1.23*	1.24**	1.34*
ME × H	0.91	0.87	0.79
ME × CM	0.84	0.79	0.66
CM × H	0.73*	0.76*	0.73
Score	1621.02(212)	1626.21(213)	852.99(213)
C statistic[d]	0.72	0.73	0.81
Fit statistic[d]	11.9(8)	7.5(8)	8.9(8)

Note: Significance is based on Wald chi-square statistics. Dummy codes for school location were included in all models to control for the nesting of children within schools.

[a] $N = 11{,}254$.

[b] $N = 11{,}321$.

[c] $N = 10{,}647$.

[d] *C* statistic is the area under the ROC curve, represents the amount of agreement. Fit statistic is chi-square from the Hosmer & Lemenshow test for goodness-of-fit. Numbers in parentheses represent degrees of freedom.

* $p < .05$.

** $p < .0001$.

odds ratio (*OR*: 1.6), followed by low-maternal education (*OR*: 1.47), poverty (*OR*: 1.37), homelessness (*OR*: 1.23), and biological birth risks (*OR*: 1.19).

There was one significant interaction among maltreatment and homelessness related to reading proficiency (*OR*: .73; 95% confidence interval: .54–.99). This interaction represents shared variance in reading proficiency outcomes that is associated with maltreatment and homelessness. The significance of this interaction can be determined by comparing the probabilities associated with the odds ratios for cases where maltreatment occurs alone, homelessness occurs alone, and maltreatment and homelessness co-occur. In the case of child maltreatment, the unique probability of poor reading was found to be .61. This unique impact was reduced when it co-occurred with homelessness, changing the unique probability of poor reading associated with maltreatment to .57. A similar pattern was found for homelessness. The unique probability of poor reading for a child who was homeless was .55. However, the unique probability of poor reading associated with homelessness for children who were also maltreated decreased to .47. These findings indicated that when both maltreatment and homelessness occur together, reading proficiency is impacted by unique maltreatment risk, unique homelessness risk, and shared risk associated with both maltreatment and homelessness.

Mathematics achievement revealed a similar pattern of risks, although the magnitude of effects was slightly smaller than those found for reading achievement. Child maltreatment, low-maternal education, poverty, biological birth risk, and homelessness were significant, unique risk factors for not meeting mathematics proficiency standards, Score (213, $N = 11{,}321$) = 1626.21, $p < .0001$. Child maltreatment again evidenced the greatest odds of a poor outcome (*OR*: 1.50; 95% confidence interval: 1.19–1.90), followed by maternal education, poverty, homelessness, and birth risks, respectively. No significant interactions were found.

The outcome in this study that most literally represents being 'left behind' in elementary school is retention at the end of second grade. Retention was uniquely affected by all five risk factors, Score (213, $N = 11{,}835$) = 852.99, $p < .0001$. Child maltreatment was again identified in the multivariate model as showing the greatest odds for retention (*OR*: 1.80; 95% confidence interval: 1.19–2.72) when school, child demographics, and other risks were controlled. Family poverty, low-maternal education, homelessness, and biological birth risk also demonstrated significant odds of being left behind in second grade. Similar to the findings for mathematics, no significant two-way interactions were found between early risk factors and retention at the end of second grade.

2.2.2. Behavioral outcomes

The behavioral outcome in this study that was conceptually most related to academic classroom learning was poor learning behaviors. These behaviors capture foundational approaches to learning including persistence, initiation, academic motivation, and positive interactions with teachers and peers during instruction (giving and receiving help). Similar to the academic outcomes, learning behaviors were negatively associated with *all* five risk factors: maltreatment, poverty,

low-maternal education, homelessness, and biological birth risk, Score (189, $N = 10{,}349$) = 771.85, $p < .0001$. Furthermore, the magnitude of increased risk followed the same pattern as academic achievement and grade retention outcomes. Child maltreatment and poverty afforded the greatest increase in odds for poor learning behaviors when controlling for child demographics and other risk factors. Low-maternal education, homelessness, and biological birth risk also increased the odds of poor learning behaviors. No significant two-way interactions were found.

Significant problems with social skills were related to all of the non-biological, social risk factors: child maltreatment, homelessness, poverty, and low-maternal education, Score (189, $N = 10{,}349$) = 1206.4, $p < .0001$. Child maltreatment demonstrated the greatest unique risk for poor social skills (*OR*: 1.62, 95% confidence interval: 1.24–2.13). The next largest odds ratio was found for homelessness, followed by poverty and low-maternal education, respectively. No significant two-way interactions were found for social skills.

Following a similar pattern to social skills outcomes, high absenteeism in second grade was significantly associated with non-biological risk factors including poverty, homelessness, child maltreatment, and low-maternal education, Score (189, $N = 10{,}647$) = 898.7, $p < .0001$. Poverty evidenced the greatest magnitude of risk for absenteeism, increasing the odds of poor attendance by 100%. Homelessness and child maltreatment increased the odds of poor attendance by 54% and 47%, respectively. Children whose mothers did not complete high school had 23% greater odds of high absenteeism in second grade. No significant two-way interactions were found.

Children's suspension history was uniquely predicted by three of the social risk factors: child maltreatment, homelessness, and poverty, Score (213, $N = 11{,}835$) = 1295.4, $p < .0001$. Maltreatment increased the odds of school suspension by 148%. Homelessness and poverty increased the odds of school suspension by 51% and 41%, respectively. One significant interaction was found between child maltreatment and maternal education (*OR*: .61; 95% confidence interval: .37–.99) indicating that the effect of maltreatment on children's risk of school suspension is different depending on whether or not the child's mother has a high school education. This interaction is interpreted by comparing the probability of school suspension for children who only experience maltreatment with the probability of school suspension for children who experience maltreatment and also have a mother with less than a high school education. The probability of suspension for a child who was maltreated and mother has a high school education is .71, whereas the probability of suspension for a child who was maltreated and whose mother did not graduate from high school is .60. Since there was no unique impact of maternal education on school suspension, this finding indicates that the unique impact of maltreatment is reduced for children whose mother did not graduate from high school.

2.3. Amount of risk: Cumulative impacts on academic and behavioral outcomes

A second set of multi-level, multiple logistic regression analyses examined the relationship between cumulative risk and academic and behavioral outcomes in second grade. A cumulative risk indicator was created by counting the number of early risk factors for each child, including birth risk, poverty, child maltreatment, homelessness, and low-maternal education (see Table 2). School location, child demographics, and the cumulative risk count were entered simultaneously in the regression analysis. Overall Score statistics for each model and individual Wald chi-squares for the cumulative risk score were examined across the seven outcome variables. School location was significantly related to each outcome, so dummy coded variables were used in the logistic regression analyses to control for the nesting of children within schools. Post hoc analyses examined the confidence intervals for each of the significant odds ratios to determine the distinct differences between one, two, or three or more risks (Table 6).

Results indicate that only 16% of this population did not experience one of the above risk factors prior to second grade. The distribution of one, two, and three or more risk factors was 28%, 26%, and 26%, respectively. Table 7 presents the mean and standard deviation of second grade outcome scores for each of these three groups of children. Table 8 presents the odds ratios and probability levels for the effects of cumulative risk on second grade academic outcomes. Score statistic indicated that controlling for school location and child demographics, the number of risk factors was significantly related to standardized reading achievement at the end of second grade, Score (205, $N = 11{,}254$) = 1622.6, $p < .0001$. Regardless of the type of risk, each additional risk experience increased the odds of poor reading achievement at the end of second grade by 28%. Post hoc analyses of the point estimates and confidence intervals for reading achievement revealed statistically significant differences between all three groups of risk factors. Exposure to three risks was significantly greater than two risks or one risk, and to two risks was significantly greater than one risk.

Similar results were found for mathematics achievement and second grade retention. Controlling for school location and child demographics, the cumulative number of risk factors was significantly related to mathematics achievement, Score (206, $N = 11{,}321$) = 1619.2, $p < .0001$. As the number of early risk experiences increased, the odds of not meeting mathematics proficiency standards increased. Being "left behind" in second grade (i.e., retention) was significantly affected by the amount of risk, Score (206, $N = 11{,}321$) = 845.6, $p < .0001$. For each additional early risk the odds of being retained in second grade increased.

Each of the behavioral outcomes was also incrementally impacted by the amount of risk prior to second grade (see Table 9). The odds of poor classroom learning behaviors (Score (182, $N = 11{,}321$) = 922.09, $p < .0001$) and classroom social skills (Score (182, $N = 11{,}321$) = 1179.34, $p < .0001$) increased with each additional risk. The amount of risk increased the odds of high absenteeism in second grade, Score (182, $N = 11{,}321$) = 846.99, $p < .0001$, as well as the odds of school suspension, Score (206, $N = 11{,}321$) = 1259.25, $p < .0001$.

Table 6
Odds ratios for unique and interactive risk on behavioral outcomes.

	End of second grade behavioral outcomes			
	Poor learning behaviors[a]	Poor social skills[a]	High absences[b]	Suspension history[c]
Control covariates				
Gender (boys)	2.70**	2.74**	1.10	4.17**
African–American	1.58*	2.47**	0.84	2.09**
Hispanic	1.11	1.25	0.82	1.04
Asian/other	0.33**	0.21**	0.20**	0.29*
Risk factors & two-way interactions				
Poverty	1.50**	1.30**	2.0**	1.41**
Birth risk	1.13*	1.03	1.03	0.96
Low-maternal education (ME)	1.36**	1.25*	1.23*	1.06
Child maltreatment (CM)	1.62**	1.62**	1.47*	2.48**
Homelessness (H)	1.34*	1.50**	1.54**	1.51*
ME × H	0.92	0.98	0.82*	1.06
ME × CM	0.75	0.83	0.97	0.61*
CM × H	1.24	0.95	0.81	0.71
Score	771.85(189)	1206.4(189)	898.7(189)	1295.4(213)
C statistic[d]	0.74	0.75	0.72	0.84
Fit statistic[d]	19.8(8)	5.6(8)	2.0(8)	17.3(8)

Note: Significance is based on Wald chi-square statistics. Dummy codes for school location were included in all models to control for the nesting of children within schools.
[a] $N = 10{,}349$.
[b] $N = 11{,}835$.
[c] $N = 10{,}647$.
[d] *C* statistic is the area under the ROC curve, represents the amount of agreement. Fit statistic is the Hosmer & Lemenshow test for goodness-of-fit, presented as chi-sq. Numbers in parentheses represent degrees of freedom.
* $p < .05$.
** $p < .0001$.

Table 7
Mean second grade outcome scores for children with one, two, and three or more risks.

	One[a]	Two[b]	Three or more[c]
Reading achievement	41.31 (25.9)	34.95 (24.9)	28.15 (23.1)
Mathematics achievement	46.30 (28.8)	39.93 (28.6)	34.84 (27.4)
Social skills	51.64 (10.3)	50.01 (10.6)	47.27 (10.8)
Learning behaviors	52.43 (10.2)	50.30 (10.5)	47.64 (10.6)
Attendance	0.92 (0.07)	0.91 (0.08)	0.89 (0.1)

Note. Numbers in parentheses represent standard deviations.
[a] $N = 3179$.
[b] $N = 3291$.
[c] $N = 2905$.

Table 8
Odds ratios for cumulative risk on academic outcomes.

	End of second grade academic outcomes		
	Poor reading achievement[a]	Poor mathematics achievement[b]	Second grade retention[c]
Gender (boys)	1.42**	1.24**	1.45**
African–American	1.45**	2.01**	1.98**
Hispanic	1.49**	1.67**	1.95*
Asian/other	0.65*	0.66*	0.28*
Cumulative risk	1.28**	1.21**	1.32**
Score	1622.6(205)	1619.2(206)	845.57(206)
C statistic[d]	0.72	0.73	0.81
Fit statistic[d]	6.5(8)	12.52(8)	9.7(8)

Note. Significance is based on Wald chi-square statistics. Dummy codes for school location were included in all models to control for the nesting of children within schools.
[a] $N = 11{,}254$.
[b] $N = 11{,}321$.
[c] $N = 10{,}647$.
[d] *C* statistic is the area under the ROC curve, represents the amount of agreement. Fit statistic is chi-square from the Hosmer & Lemenshow test for goodness-of-fit. Numbers in parentheses represent degrees of freedom.
* $p < .05$.
** $p < .0001$.

Table 9
Odds ratios for cumulative risk on behavioral outcomes.

	End of second grade behavioral outcomes			
	Poor learning behaviors[a]	Poor social skills[a]	High absences[b]	Suspension history[c]
Gender (boys)	2.68**	2.72**	1.09	4.12**
African–American	1.62**	2.54**	0.88	2.22**
Hispanic	1.14	1.24	0.87	1.01
Asian/other	0.33**	0.20**	0.20**	0.27*
Cumulative risk	1.32**	1.27**	1.33**	1.25**
Score	922.09(182)	1179.34(182)	846.99(182)	1259.25(206)
C statistic[d]	0.73	0.75	0.71	0.84
Fit statistic[d]	15.7(8)	8.8(8)	9.3(8)	9.5(8)

Note. Significance is based on Wald chi-square statistics. Dummy codes for school location were included in all models to control for the nesting of children within schools.

[a] $N = 10{,}349$.

[b] $N = 10{,}647$.

[c] $N = 11{,}835$.

[d] *C* statistic is the area under the ROC curve, represents the amount of agreement. Fit statistic is chi-square from the Hosmer & Lemenshow test for goodness-of-fit. Numbers in parentheses represent degrees of freedom.

* $p < .05$.

** $p < .0001$.

3. Discussion

Findings from the present study underscore the significance of multiple, early risk factors that threaten the educational well being of students in a large urban public elementary school system. This study documented the prevalence and impact of early childhood biological and social risks that are monitored by mandated, public health surveillance systems. It used these population-based systems to examine the impact of *type* and *amount* of early childhood risks on academic and behavioral outcomes of an entire second grade cohort. These research findings make significant contributions to the early risk literature by identifying *what's behind being behind* for a policy-relevant population of urban public school students.

The current study identified the disproportionate challenges faced by an entire population of children that render them vulnerable for early school failure. Childhood poverty was indicated for 62% of the cohort, a rate three times the national estimate (18%; NCCP, 2006) and nearly double the rates for other large, urban areas (33%, Ravallion, 2007). Over half of the children in this study evidenced significant birth risks. National estimates, by comparison, indicate 7.7% of children experience low birthweight, 12% premature birth, and 4% inadequate prenatal care (Hamilton, Martin, Ventura, Sutton, & Menacker, 2005; UNCFWHO, 2004; U.S. DHHS, 2003). Within this urban, second grade cohort, the prevalence of substantiated child maltreatment was 8%, homelessness 20%, and low-maternal education 32%. These compare to national statistics indicating less than 2% of children are victims of child maltreatment, 3% homelessness, and 12% low-maternal education (U.S. DHHS, 2007; U.S. DOE NCES, 2004).

This research not only made visible the high rates of individual and co-occurring risk, but it also provided a multivariate investigation of the *type* and *amount* of these risks as they relate to multiple educational outcomes. Findings from this comprehensive study make three significant contributions to the early risk literature. First, policy-relevant academic outcomes (i.e., reading and mathematics proficiency and second grade retention) were found significantly affected by *all* of the five publicly monitored risks. These academically based outcomes at third grade entry serve as an evaluation of pre-kindergarten and primary grades educational experiences. This study found that in a model that carefully accounted for child characteristics and co-morbid risks, each social and biological risk factor had a *unique* significant relationship to each of these academic outcomes. Moreover, these unique impacts persisted even after controlling for potential school-level influences and the ethnic and gender differences that are consistently reported in the risk literature.

Second, this study demonstrated that the *type of risk matters*. Different risks demonstrated different impacts for different outcomes controlling for school and child demographics and the impact of family poverty. Existing research has consistently documented the negative consequences of family poverty (see Arnold & Doctoroff, 2003; Coulton & Pandey, 1992). A unique contribution of the present study, however, is the examination of poverty in the context of co-occurring, multiple risks. Findings indicate that there are risks that often co-occur with poverty that are more predictive of academic outcomes than poverty itself (e.g., maltreatment and maternal education). School attendance, on the other hand, was most affected by poverty in this multiple risk context. For the most policy-relevant, academic outcomes in second grade (i.e., reading proficiency, mathematics proficiency, and grade retention), child maltreatment and maternal education evidenced the greatest odds of a poor outcome. This suggests that these risk factors operate more distinctly for cognitive as compared to behavioral outcomes such as classroom social skills and learning behaviors.

Another pattern related to the *type* of risk was found for family, social factors that were associated with the most pervasive negative outcomes. Child maltreatment and homelessness were found related to poor outcomes across all academic and behavioral indicators at the end of second grade. The current study also demonstrates that children who experience homelessness and maltreatment *also* disproportionately experience other risk factors. In advanced, multivariate models

that control for the effects of child demographics and all other co-occurring risk factors, these social risks in the family context were uniquely related to reading and mathematics proficiency, retention, absenteeism, suspension, and classroom learning behaviors and social skills. These findings provide support for the growing body of research suggesting that the worst outcomes for children are found when there are consistent, maladaptive transactions between multiple risks and developmental outcomes over time (Jaffee et al., 2005; Swick & Williams, 2006).

Child maltreatment evidenced the highest level of risk across the greatest number of outcomes. Odds ratios indicated that this risk significantly and consistently predicted poor performance across all behavioral and academic outcomes, controlling for co-morbid risks. Furthermore, maltreatment was the strongest indicator of poor reading and mathematics outcomes. Comparatively, homelessness had a greater impact on behavioral outcomes than academic outcomes. Controlling for the effects of all other risks, homelessness was one of the strongest indicators for high absenteeism, school suspensions, and teacher-rated low social skills. The existing literature suggests that high mobility rates of homeless children and instability of home address are significant contributors to their risk of being academically disengaged (Better Homes Fund, 1999; National Coalition for the Homeless, 1997).

The pervasive impact of child maltreatment and family homelessness is consistent with developmental–ecological theory indicating that the most detrimental risks are those which occur within a child's most proximal system of influence (Cicchetti, 2004). In this study, the detrimental effects of family homelessness and substantiated child maltreatment suggest a systemic, maladaptive response to living in dense, urban poverty. Researchers have hypothesized that maltreatment could be considered one of the most detrimental environmental failures for children's well being (Ayoub et al., 2006; Cicchetti, 2004; National Research Council, 1993). It has been suggested that child maltreatment is a function of a larger breakdown of community and children who experience multiple risks are most likely to be maltreated because of increased family stress (Coulton, Korbin, Su, & Chow, 1995). Theoretical models of family stress relate the accumulation of risk experiences over time to negative developmental outcomes (Conger et al., 2002).

Findings from the current study make a significant contribution to this literature. This study used a comprehensive approach that included multiple significant risk factors routinely monitored by public surveillance systems. It also included an entire cohort of children, most of whom did not experience maltreatment or homelessness. Further, the analyses in this study carefully controlled for the effects of school location and child characteristics that are often found associated with poor educational outcomes (i.e., minority status and gender). As such, this study provides the first comprehensive examination of the relative prevalence and magnitude of educational risk associated with maltreatment and homelessness, controlling for co-morbid risks across an entire cohort of children.

The third policy-relevant set of findings indicates that the *amount* of risk was significantly related to all educational outcomes, and most distinctly related to reading achievement prior to third grade. Regardless of the type, each additional early childhood risk was significantly related to increased odds of poor academic and behavioral performance. This cumulative impact was most distinct for reading proficiency, where statistically significant differences indicated that three risks were significantly more detrimental than two risks, and two risks had a significantly greater impact than one risk. This finding underscored the significance of the *amount* of individual risk experiences for this policy-relevant outcome and therefore has important implications for major federal literacy initiatives such as *Reading First* and *Early Reading First* (U.S. DOE, 2007).

3.1. Implications for future research

Current national emphasis on evidence-based decision-making challenges the early childhood research community to produce better methods and conduct more comprehensive and practical applied research. Such research is needed to reduce the likelihood that children will be left behind and ill-served by early childhood systems that are ignorant of their needs (Cicchetti & Toth, 2006). Findings from the present study underscore the value of integrated municipal systems designed in partnership with practitioners and researchers (Duran, Wilson, & Carroll, 2005). They are qualified, however, by the scientific quality of the data within these systems. Typically, administrative data do not meet the rigorous scientific criteria needed for research, since they were primarily designed for fiscal reporting and client monitoring purposes. They do not have scientific checks and balances to ensure the information is reliable and valid, and they often have unspecified amounts of missing data with inadequate documentation. Such missing data combined with typographical errors such as misspellings and transposed digits render these data unreliable and preclude their use in sophisticated research methods.

Administrative data used in the current study were part of a system that was intentionally built to address these data quality limitations for conducting research with integrated administrative municipal records (KIDS; Fantuzzo et al., 2006). The Kids Integrated Data System (KIDS) reflects a built capacity based on a co-constructed research agenda for the municipality. The KIDS system was designed to incorporate advanced technical methods and auditing procedures that ensure the scientific integrity of data to be used for research. The KIDS data analysts work in close collaboration with technicians from each data-contributing agency to keep abreast of the specific data codes or changes in data policy or practice. Once these datasets and documentation are obtained, scientific criteria for reliability and validity are used to ensure that only high-quality variables are available for KIDS research. Variables with substantial or systematic missing data are excluded from the system. Multiple years of the same data are checked for consistency in coding, trends, and outliers. The validity of particular data elements that are collected across multiple systems is also examined. Additional data management strategies are used to conduct routine, random audits of key variables that are frequently used for research purposes (e.g., birth weight, maternal education, or family homelessness).

Future research can be enhanced by increasing the amount and quality of integrated, administrative data that are available for comprehensive research questions. For example, routine records of contact between families and each of the public service providers could be examined. Informed by a developmental model, this research could capitalize on the dates provided in these records to explore the timing and sequence of risk events as they differentially relate to educational outcomes. Advanced statistical techniques like event history analysis (Allison, 1995) could be used to investigate the impact of child maltreatment prior to kindergarten compared to the impact of maltreatment that occurs at later developmental stages. The sequence of risk events, such as whether family homelessness most often precedes or follows child maltreatment, can also be examined to determine the developmental implications of patterns of risk events across early childhood and into elementary school (Christakis & Allison, 2006).

Additional research could investigate the potential mediating or moderating effects of protective factors for children experiencing multiple risks. For example, a pilot study was recently conducted to examine the impact of formal early childhood experiences for an entire cohort of urban kindergarteners (Fantuzzo et al., 2005). In collaboration with teachers and administrators, a standard, structured interview was developed for teachers to use with parents as children enter kindergarten to identify the nature and extent of children's early childhood education experiences. Research findings indicated that children who participated in formal early childhood programs prior to public school entry demonstrated significantly higher early language and mathematics skills, fine and gross motor capacities, and social and behavioral competencies. Population-based information on children's involvement with formal early childhood programs will enhance our understanding of multiple risks in future research. Other hypothesized protective factors could also be incorporated into these municipal data systems for future investigations, such as family involvement in early childhood (Day & Lamb, 2004; McWayne, Hampton, Fantuzzo, Sekino, & Rouse-Cohen, 2004).

3.2. Practice and policy implications

Findings from this study provide evidence that there are substantial risks beyond the classroom that are *behind being behind*. In addition to poverty, indicators of accumulated family distress accounted for significant variance in all measures of educational well being. Findings underscore the importance of federal mandates that are specifically designed to address these multiple risk factors. A number of major pieces of federal legislation provide the authority and resources to mitigate family and social risks that threaten educational well being. The Adoption and Safe Families Act of 1997 and Stewart B. McKinney Homelessness Act, for example, each contain mandates for the provision of comprehensive services for children with special needs. They identify vulnerable groups of children and provide authorization for the use of public resources to enhance their educational well being. Findings from this study demonstrate the impact of social risk factors that fall outside of the authority of public school educators. Appropriate assessments and interventions for these risks require collaboration between early childhood educators and child welfare workers, in accord with the federal legislation. This highlights the need to establish substantial partnerships between pre-kindergarten to third grade public education systems and public social service providers.

Early childhood administrators who have developed partnerships with social service agencies will be able to better serve children evidencing the impact of multiple risks. Early intervention partnerships between educators, social service providers, homeless shelter services, and other public health providers create a capacity for better access and better coordination of services for children experiencing multiple risks to their educational success. Such partnerships will increase access to resources and expertise that are designed specifically for children experiencing biological and social risk factors. Early intervention partnerships between educators and the homeless shelter system, for example, have the ability to identify children and families who qualify for special education resources through the McKinney Act as soon as they walk in the door of the shelter. Similar collaborations could be facilitated between early intervention providers and child protective services for children exposed to or at risk of maltreatment.

Early childhood partnerships can also serve to strategically identify children and families most in need of comprehensive intervention and appropriately refer them to public services poised to serve them. Recent research by McCrae and Barth (2008) demonstrated that child welfare risk assessment information used in the form of a cumulative risk index can be a reliable, cost-effective way for identification and referral of children needing mental health services. Findings from the current study further underscore the value of such a cumulative risk indicator related to educational well being. Cumulative risk indices compiled from social service workers could be used as a screening tool for children and families during their initial contact with child welfare and homeless shelter systems and direct them to comprehensive services. Early childhood and public education administrators need to recognize that strategic partnerships with public service providers will ultimately support their overall goals of improving educational outcomes for all children.

No Child Left Behind makes visible the fact that many children are not meeting minimum academic standards and are falling behind. It also makes visible the schools that are behind by implementing a zero tolerance accountability system for failure. Unfortunately, this legislation fails to make visible *what's behind being behind* and the multiple public systems that are poised to support children's educational well being. The current study identifies a multiple risk context that is significantly associated with poor early educational outcomes. It further identifies a set of particularly adverse family risks that are beyond the influence of the early childhood teacher. These findings underscore the injustice of holding public educators *solely* responsible for the educational well being of our most vulnerable children. Moreover, this study illustrates a collaborative research model that enhances the capacity to reveal *what's behind being behind* and makes visible the multiple

service agencies that are simultaneously charged with the well being of children who are behind. Educating children who are behind calls for the coordination of multiple service systems to meet these challenges.

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