

BUILDING BRIDGES TO PROMOTE EDUCATIONAL WELL-BEING:
A POPULATION-BASED STUDY OF THE IMPACT AND TIMING OF
OUT-OF-HOME PLACEMENT, CHILD MALTREATMENT & HOMELESSNESS

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DEDICATION

To 'Billy' and the other children who have let me into their lives
and shared their courage and strength with me.
You are the heart and soul of this dissertation.

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In the days immediately preceding my defense, my mentor – John Fantuzzo reminded me that this dissertation is not a ‘period’, but rather a ‘comma’, in an ongoing journey. I am grateful to have been able to share this journey with many supportive individuals. I want to thank my parents for instilling in me at a young age the value of education. This value formed the cornerstone of this dissertation. That this dissertation focused on promoting the well-being of vulnerable young children is a tribute to my father, Earl Peckham – the first social advocate in my life. Thank you for teaching me the importance of giving back and that with hard work and perseverance anything is possible. My mother, Julia Kaufman, and stepfather, Elihu Kaufman, provided great support throughout this process - even though I know at times it must have seemed like it would never end. Thank you for the myriads of phone calls and everything else you have done through the years. I also want to thank my brother, Daniel, and sister, Janeen, for their love, support and shared commitment to the well-being of children.

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ABSTRACT

BUILDING BRIDGES TO PROMOTE EDUCATIONAL WELL-BEING: A POPULATION-BASED STUDY OF THE IMPACT AND TIMING OF OUT-OF-HOME PLACEMENT, CHILD MALTREATMENT AND HOMELESSNESS

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John W. Fantuzzo

Major federal legislation has placed the educational well-being of at-risk children in the national spotlight. *No Child Left Behind* legislation has pressed American public schools to ensure that all children are meeting minimum academic standards by third grade (U.S. Department of Education, 2004). By setting the target at grade three, this legislation affirms the significance of early childhood and the necessity of early identification and intervention for vulnerable young children. Similarly, the *Adoption and Safe Families Act* has increased the accountability of state child welfare agencies for meeting the educational well-being needs of children in public child welfare systems. Guided by a developmental epidemiology framework, the purpose of the present population-based study was to examine the unique impact of out-of-home placement in a multiple risk context and explore the timing of first out-of-home placement, child maltreatment, and homelessness experiences in early childhood. Participants were a population of 12,045 second grade students in a large, urban school district. Information on social risk factors, birth risks, demographics, and academic achievement and adjustment outcomes were obtained and linked through the Kids Integrated Data System as part of a larger collaborative study.

Approximately four-percent of children in the cohort had a history of out-of-home

placement by the end of second grade. Findings revealed a high co-occurrence of out-of-home placement with child maltreatment and homelessness. The unique impact of out-of-home placement in a multiple risk context was assessed using multiple logistic regression. Results showed that after controlling for substantiated child maltreatment and homelessness, out-of-home placement was no longer significantly related to academic achievement. Cox regression analyses demonstrated that child maltreatment and homelessness predicted to out-of-home placement and uncovered a significant interaction between poverty and homelessness and child maltreatment.

This study provides an illustration of how administrative data can be used in a collaborative research process to inform understanding of the educational well-being of young children with histories of out-of-home placement. Implications from this study include: cross-agency training, integrated service planning and delivery, and enhanced collaboration between early childhood education programs and child welfare systems to promote access to high quality early childhood education experiences.

Table of Contents

Dedication.....	ii
Acknowledgements.....	iii
Abstract.....	vi
Table of Contents.....	viii
List of Tables.....	ix
List of Figures.....	x
Chapter 1: Introduction	
Developmental-Epidemiological Framework.....	2
National Child Welfare System.....	6
Out-of-Home Placement and Educational Well-Being.....	7
Application of the Model.....	14
The Current Study.....	16
Chapter 2: Method	
Participants.....	19
Procedures.....	19
Measures.....	21
Data Analysis.....	26
Chapter 3: Results	
Prevalence and Characteristics of Out-of-Home Placement.....	29
Co-Occurrence of Social Risks.....	31
Unique Impact of Out-of-Home Placement.....	31
Multiple Risk Context.....	37
Descriptive Picture of the Timing of Children’s First Risk Experience.....	42
Timing of Social Risks.....	47
Chapter 4: Discussion	
Prevalence.....	51
Impact of Out-of-Home Placement in a Multiple Risk Context.....	54
Co-Occurrence of Out-of-Home Placement with Other Risks.....	57
Predicting to Out-of-Home Placement.....	61
Future Research.....	63
Practice and Policy Implications.....	67
Conclusion.....	72
References.....	75

List of Tables

Table 1. Prevalence of Child Characteristics and Out-of-Home Placement.....	30
Table 2. Odds Ratios for Unique Impact of Placement on Academic Achievement.....	33
Table 3. Odds Ratios for Unique Impact of Placement on Truancy.....	36
Table 4. Odds Ratios for Multiple Risk Context on Academic Achievement.....	38
Table 5. Odds Ratios for Multiple Risk Context on Truancy.....	41
Table 6. Cox Regression for History of Substantiated Child Maltreatment.....	48
Table 7. Cox Regression for History of Substantiated Child Maltreatment.....	50

List of Figures

Figure 1. Survival functions for social risks in early childhood.....	44
Figure 2. Hazard functions for children's first homelessness, child maltreatment, or out-of-home placement	46

CHAPTER ONE

Introduction

Two major pieces of federal legislation, the No Child Left Behind Act (NCLB; P.L. 107-110, 2001) and the Adoption and Safe Families Act (ASFA; P.L. 105-89, 1997), have placed the educational well-being of at-risk children in the national spotlight. No Child Left Behind legislation has pressed American public schools to ensure that all children are meeting minimum academic standards by third grade (U.S. Department of Education, 2004). By setting the target at grade three, this legislation affirms the significance of early childhood and the necessity of early identification and intervention for vulnerable young children. Similarly, the Child and Family Service Reviews (CFSR) were implemented under the auspices of ASFA to increase the accountability of state child welfare agencies. The CFSR evaluate states on three key indicators of child well-being: physical, psychological and educational well-being. Results from the CFSR conducted in 2001 and 2002 indicated that 78% of the states reviewed (25 out of 32) failed to meet the minimum educational well-being needs of children in state child welfare systems (U.S. Department of Health and Human Services, 2002). Reasons for this failure ranged from not adequately assessing the educational needs of children in their jurisdiction to not providing needed educational services for children once needs were identified. One of the evaluation criteria is whether or not early intervention services are provided to preschool children who need them – highlighting the importance of the early childhood years for educational well-being.

Research spotlights the formative nature of the early childhood years for later educational well-being. *Neurons to Neighborhoods*, a major report by the National

Research Council (2000), documents the importance of early childhood experiences and the connection between children's ability to successfully negotiate early developmental challenges and their future well-being. Young children exposed to multiple early childhood risk factors are at increased vulnerability for not acquiring these developmental competencies. A report commissioned by the Child Mental Health Foundation and Agencies Network noted the importance of understanding the relationship between multiple risk and protective factors for early educational well-being (Huffman, Mehlinger, & Kerivan, 2000). This research has identified two types of risk factors: social and environmental. Social risk factors include, for example, poverty, child maltreatment, and parental substance abuse. The second type, environmental risk factors, includes lead exposure and presence of vacant buildings. Each of these risk factors has been demonstrated to place children at risk for poor academic outcomes (Duncan, Brooks-Gunn, & Klebanov, 1994; Huffman, Mehlinger, Kerivan, 2000; McWayne, Fantuzzo & McDermott, 2004; Weiss & Fantuzzo, 2001). This work affirms the need for a broader developmental approach to understanding risk.

Developmental Epidemiology

The developmental epidemiology model provides a comprehensive conceptual framework for examining the impact of biological and social risk factors on children's development (Costello & Angold, 2000). This framework draws from both developmental science and epidemiology to explore, "why vulnerability to, and expression of, different disorders change over the course of individual development" (Costello & Angold, 2000). It combines developmental science's recognition of multiple pathways of development and stage salient developmental processes with epidemiology's

population-based research methods and recognition of specific event characteristics (Costello & Angold, 1995). A developmental epidemiology framework aims to understand: (1) the prevalence of an event; (2) the specific event characteristics; and (3) the impact of risk on development (Buka & Lipsett, 1994; Costello & Angold, 1995; 2000).

Prevalence and Population-based Studies

The cornerstone of developmental epidemiology is the quantification of the number of individuals in a population that have been exposed to a targeted risk factor (Buka & Lipsett, 1994). Quantifying the prevalence of a risk factor requires precise measurement of those exposed to the risk event. Buka and Lipsett (1994) note that some of the research methods used in the social sciences to quantify certain events are inadequate for obtaining a true estimate of the prevalence. For instance, they note the reliance of social science on samples of convenience. Samples of convenience restrict the population to which results can be generalized. Cohort studies, or population-based studies, permit a broader generalization of study findings (Buka & Lipsett, 1994; Drake & Jonson-Reid, 1999; Virnig & McBean, 2001). Furthermore, population-based inquiry permits examination of low prevalence events, such as child maltreatment, homelessness, and out-of-home placement (Drake & Jonson-Reid, 1999).

The epidemiological aspects of this model also emphasize the utility of a public health strategy to collect population-based data. Two 'integral' components of public health are the monitoring and collection of data by frontline sentinels (Virnig & McBean, 2001). Population-based studies using data collected by key frontline sentinels can address the limitations associated with small samples of convenience by permitting an

accurate assessment of how many children within a specific population have experienced a risk factor (Drake & Jonson-Reid, 1999; Virnig & McBean, 2001). Furthermore, by including an entire population of children, selection bias can be reduced by enhancing knowledge of “*exposure/antecedent characteristics*” of children experiencing the risk factor and those not experiencing it (Buka & Lipsett, 1994). Inquiry using population-based data collected by frontline sentinels can account for the array of experiences that children within a population may experience - and it permits a large enough sample size to detect meaningful differences within experiences.

Event Specific Characteristics

In addition to quantifying the occurrence of a risk factor or event within a specific population, developmental epidemiology also seeks to understand the nature of the event – or specific event characteristics (Buka & Lipsett, 1994). One key concept for understanding the specific event characteristics is ‘timing’ (Costello & Angold, 1995). The timing of the event refers to when in the course of development the risk event occurred (Costello & Angold, 1995). One way of defining this is the “age at first exposure” to a risk (Costello & Angold, 1995). This concept can provide information on if individuals in particular age groups (such as infancy or early childhood) are more vulnerable to experiencing a particular risk factor. Examining the ‘age at first exposure’ of multiple risk factors can also provide insight into the temporal ordering of risk factors. Research has shown that the presence of multiple risk factors influences children’s developmental trajectories (Masten & Wright, 1998). Using the concepts of age at first exposure and temporal ordering, researchers could quantify the child’s age of entry into foster care and determine if the child was exposed to other known risk factors prior to

entering care, and explore how the timing of these events relate to their development. In sum, the concept of timing could be used to develop a comprehensive and informed understanding of children's early risk trajectories and how these trajectories relate to their educational well-being.

Risk and Development

Disruption of Stable Relationships

Developmental epidemiology also draws from developmental science in its recognition of the importance of a stable, nurturing environment for children's development. Those relationships that are most proximal to the child (such as the parenting relationship) are most likely to exert the greatest impact on the child's development (Wulczyn, Barth, Yuan, Harden, & Landsverk, 2006). Research has demonstrated that children in stable, nurturing relationships are more likely to have their basic needs met (such as shelter and food) and thus more likely to have enhanced cognitive, physical, and emotional well-being (Berrick, Needell, Barth, & Jonson-Reid, 1998; Brazelton & Greenspan, 2000; Goldstein, Solnit, Goldstein, & Freud, 1996; Wulczyn et al., 2005). Children experiencing social risks, such as maltreatment, are at increased risk for not having these stable, nurturing relationships and/or having these relationships disrupted due to placement in foster care (Goldstein, et al., 1996).

Multiple Competencies

The developmental epidemiological framework defines development as the emergence of multiple competencies. According to developmental science, these multiple competencies include: cognitive, language, motor, emotional, and social (National Research Council, 2001). Children are assessed on each of these competencies in the

academic environment through standardized performance assessments or report cards. Developmental epidemiology emphasizes the need to consider educational well-being as comprehensively inclusive of the child's cognitive, socio-emotional, verbal and approaches to learning competencies. Furthermore, child development emphasizes the importance of early experiences that impact future educational well-being (National Research Council, 2000). The developmental epidemiology model can therefore, be employed to examine major social risks, such as out-of-home placement, that are tracked nationally and can be used to guide and evaluate the quality of the research literature on children's educational well-being.

National Child Welfare System

The national child welfare system serves as a public surveillance system designed to identify and address major social risks impacting children. Based on the understanding that children best thrive in the context of a safe, stable, and nurturing family environment (Goldstein, et al., 1998), state and local child welfare systems are charged through federal legislation to address risks that disrupt a child's family environment and provide interventions for these risks. Being placed outside the home in substitute care arrangements, such as foster care, kinship care, etc. represents one type of risk that the child welfare system monitors.

According to the most recent national data, approximately 290,000 children entered out-of-home placement during Fiscal Year 1999 (United States Department of Health and Human Services [USDHHS], 2003). This population is disproportionately comprised of children five years of age or younger (USDHHS, 2003). A major policy report by the National Center for Children in Poverty (2001) identified these young

children as being “among the most vulnerable children in the country.” Despite national concern regarding the well-being of children in foster care, limited attention has been focused on the educational well-being of this population.

Out-of-Home Placement and Educational Well-Being Research

Concurrent and retrospective studies demonstrate that children with out-of-home placement experiences are also at high risk of poor academic achievement while in school, and greater risk for school drop out and unemployment. Studies have found that children with a history of out-of-home placement evidenced severe delays in reading and were more likely to perform below grade level in math, language and overall performance compared to their peers (Colton, Heath, & Aldgate, 1995; Stein, 1997; Mitic & Rimer, 2002; Zima, Bussing, Freeman, Yang, Belin, & Forness, 2000). Furthermore, children placed in foster care due to child maltreatment evidenced a long-term decline in school achievement (Fanshel & Shinn, 1978; Heath, Colton, & Aldgate, 1994). Other studies demonstrate that children with a history of out-of-home placement were at increased risk for suspensions and expulsions, grade retention, and drop-out (Dumaret, 1985; Whiting-Blome, 1997; Zima, et.al., 2000).

In addition to facing an increased risk of academic maladjustment, foster children are also at increased risk of academic disengagement. Academic engagement, demonstrated through both learning behaviors and attendance, is critical to children’s future academic success (McClelland, Morrison, & Holmes, 2000). Empirical research demonstrates a relationship between the development of positive learning behaviors and children’s home and family characteristics, with those children from poorer home

environments being less likely to develop positive learning behaviors (McClelland, Morrison, & Holmes, 2000).

Foster children are at high risk of not demonstrating the social and classroom behaviors that they need to meet the challenges of the academic environment (Colton & Heath, 1994; Evans, 2004; Fanshel & Shinn, 1978; Stein, 1997; Zima, et al., 2000). A study conducted by Canning (1974) found that children in foster care were more likely to evidence “withdrawn”, “aggressive”, or “conformist” behaviors in the classroom. In a study of teachers’ assessments of children with a history of out-of-home placement, teachers rated children in foster care as being less likely to engage in prosocial behaviors and more likely to have difficulty with peer relationships (Stein, 1997). Similarly, Zima and colleagues (Zima, et.al., 2000) found that 34% of children with out-of-home placement experience had at least one classroom related behavioral problem. Additionally, in a longitudinal study conducted by Fanshel and Shinn (1978), foster children were found to have high rates of school absences. In a population-based study by Weiss and Fantuzzo (2001), foster children were at 28% greater risk of having poor attendance than children without a history of foster care experience. In sum, most of the research demonstrates that foster children’s educational well-being is severely compromised.

Although research has identified the importance of developmentally appropriate child welfare services for young children (Berrick, et.al., 1998), few empirical studies have evaluated the impact of foster care placement on the overall well-being of children ages 0 - 5 and their adjustment in elementary school. Four studies based on developmental assessments conducted as part of developmental screening programs

found that infants and toddlers in foster care placement evidenced a high rate of developmental delays (Leslie, Gordon, Ganger, & Gist, 2002; Klee, Kronstadt, & Zlotnick, 1997; Horwitz, Simms, & Farrington, 1994; Reams, 1999). An additional study found that infants and toddlers in foster care placement disproportionately experienced language, cognitive or gross motor development delays (Silver, DiLorenzo, Zukoski, Ross, Amster & Schlegel, 1999). Collectively, these studies document that the early development of young children with out-of-home placement histories may be compromised even before they enter school.

Limitations

This initial body of work underscores the importance of understanding the educational well-being of children with a history of out-of-home placement, however a critique of this literature using the developmental epidemiology framework highlights several limitations.

Epidemiological Limitations

The methods employed in past studies have contributed to limited external validity. External validity is the extent to which the findings on the educational well-being of a sample of foster children can be generalized to the broader foster care population. Prior studies have reduced external validity because they have used samples of convenience and employed small sample sizes. The following expands on both of these key areas.

Most of the existing literature has utilized convenience samples. Many of the studies were conducted as part of development assessment or screening programs targeted at early identification of developmental delays (Horwitz, Simms, & Farrington,

1994; Klee, Kronstadt, & Zlotnick, 1997; Leslie, et.al., 2002; Silver, et.al., 1999). One study was based on developmental assessments of infants and toddlers referred by their child welfare worker or other social service agent to a developmental screening program (Silver, et.al., 1999). Another study utilized a sample of children from a shelter for children with a history of child maltreatment (Leslie, et.al., 2002). Furthermore, it is challenging to obtain informed consent for research with children in foster care – which can further limit access to a representative sample of children (Bogolub & Thomas, 2005). These studies can only be generalized to the population of children who were permitted to participate in the assessment programs, those referred to the researchers, or those for whom it was possible to obtain informed consent - which may not describe the experiences of all foster children.

In addition to relying on convenience samples, many of the studies reviewed used small samples. Children in out-of-home placement are exposed to numerous risk factors that may impact their educational well-being. Multivariate statistics are the best approach for assessing the impact of these multiple risk factors. However, multivariate statistics require larger sample sizes (Cohen, 1992). Prior studies have been unable to use advanced, multivariate statistics because their sample sizes do not yield enough power to support the use of these statistics.

Developmental Limitations

This initial body of exploratory foster care research is limited by its lack of a guiding conceptual developmental framework (Wulczyn, Barth, Yuan, Harden, & Landsverk, 2006). A conceptual framework would identify which variables are important, as well as how these variables should be conceptualized and defined. This

limitation impacts the foster care literature in three key ways: (1) children's educational well-being is considered unidimensionally; (2) lack of consideration for children's development in context; and (3) failure to consider the co-occurrence of other risk factors.

The first conceptual limitation of the foster care literature is that it considers educational well-being unidimensionally. A unidimensional definition of educational well-being accounts for only one dimension of school success (e.g. cognitive, social/emotional, language) at a time. However, a recent report on school readiness notes that school readiness is not a one-dimensional construct, but rather a multidimensional construct comprised of five distinct competencies (Kagan, Moore, & Bredekamp, 1995). These competencies include: social/emotional development, cognitive development, language development, approaches towards learning, and physical growth. Although a handful of studies addressed school success as a multidimensional construct (Colton, Heath, & Aldgate, 1995; Weiss & Fantuzzo, 2001), most of it has focused primarily on one dimension of school success at a time – usually the cognitive dimension (Aldgate, Colton, Ghate, & Heath, 1992; Heath, Colton, & Aldgate, 1994; Mitic & Rimer, 2002; and Sawyer & Dubowitz, 1994). These studies typically defined school success based on children's scores on standardized reading and math tests.

Fewer studies addressed children's social/emotional competencies within the academic environment. Two of the studies that examined the social/emotional dimension of school success employed a psychiatric checklist, the Child Behavior Checklist, to measure this competency (Stein, 1997; Zima, et al., 2000). Prior research has demonstrated that checklists such as this may not be appropriate for use with diverse,

low-income populations because they assess behaviors using narrow, one-dimensional, parent-rating scales (Fantuzzo & Mohr, 1999). The lack of consideration for the multidimensional nature of school success limits the extent to which it is possible to develop a comprehensive understanding of the educational experiences of foster children.

The second conceptual critique addresses the need to consider children's development within context. From a developmental perspective, a five year old child is vastly different than a fourteen year old child. The developmental challenges that each of these children face are very distinct and therefore the developmental expectations for each child should be distinct. Yet, nearly all of the studies addressed the educational well-being of children in broad age ranges. One study included children ages five – nineteen (Sawyer and Dubowitz, 1991). Another group of studies included children ages eight – fourteen (Aldgate, Colton, Ghate, & Heath, 1992; Colton, Heath, & Aldgate, 1995; and Heath, Colton, & Aldgate, 1994). Still another study included children ages four to sixteen. Notably, none of these studies included statistical controls for age and therefore were comparing educational outcomes on developmentally very different children. Distinguishing the educational well-being experiences for different age groups of children would have important implications for developing strategies for intervention.

Using the developmental epidemiology framework, a major critique of the out-of-home placement literature is the failure of many studies to account for antecedent or co-occurring of other social risk factors. Although the out-of-home placement literature demonstrates an adverse relationship between out-of-home placement and children's educational well-being, there has not been an examination of how the impact of this risk factor might be mediated by the co-occurrence of other risk factors. This limitation is

notable because several studies have found that reason for entry into out-of-home placement explains some of the variance in children's educational well-being (Aldgate, Colton, Ghate, & Heath, 1992; Colton, Heath, & Aldgate, 1995; Heath, Colton, & Aldgate, 1994) – suggesting that children's experiences prior to entry into placement may mediate the relationship between placement and educational well-being (Rutter, 2001; Wolkind & Rutter, 1973). This finding becomes particularly salient in light of the known co-morbidity of out-of-home placement, child maltreatment, and homelessness.

Several studies have documented the co-morbidity of out-of-home placement, homelessness, and child maltreatment. One study found that 33% of homeless women had experienced some form of out-of-home placement in their childhood (Zlotnick, Robertson, & Wright, 1999). Another study by Park, Metraux, Brodbar, and Culhane (2004) found that 16% of homeless children were in out-of-home placement either before or after their first shelter admission. Additionally, several studies found that 12-15% of children experiencing child maltreatment were placed in out-of-home care (Jonson-Reid, 2003; USDHHS, 2003).

This limitation has significant implications for understanding the educational well-being of children with a history of out-of-home placement. Although most studies have found that foster care places children at increased risk of poor educational well-being, a small number of studies have found that out-of-home placement does *not* uniquely relate to children's academic outcomes *when accounting for other risks*. For instance, studies conducted by Fox and Arcuri (1980) and Maluccio and Fein (1985) found that when compared to children living in low-income households, children in out-of-home placement were not at significantly greater risk for poor cognitive and academic

functioning. A third study (discussed below) found that accounting for the presence of other social risks eliminated the unique risk of out-of-home placement on children's early academic success (Fantuzzo & Perlman, 2007). Findings from these studies suggest that the risk associated with out-of-home placement may be functioning through other known risk factors.

Application of the Developmental Epidemiology Model

The documented co-occurrence of social risks highlights the need to investigate children's history of multiple risks and how these risks impact educational well-being. However, it is challenging to build the capacity to conduct this kind of research. Fantuzzo, McWayne, and Bulotsky (2003) propose that building capacity requires 'partnering with natural contributors,' such as frontline sentinels from human service agencies. Partnership with these sentinels not only permits access to data, but more importantly fosters both a better understanding of the issues the agencies are facing and the unique nuances of the data (Born, 1997; Drake & Jonson-Reid, 1999; Duran, Wilson, Carroll, 2003). The Kids Integrated Data System (KIDS) is a primary example of a citywide interagency data partnership (Fantuzzo, Culhane, & Hadley, 2005). KIDS represents a unique partnership between a university and local municipal agencies. The aim of this partnership is to use integrated data to inform strategic planning of programs and policies for children and youth (Fantuzzo, Culhane, & Hadley, 2005). KIDS provides an infrastructure for integrating administrative data across all major city agencies that work with children and youth, including the school district, child welfare system, and homeless shelter system. This capacity for integrated data provides unique opportunities to examine children's histories of early risk experiences.

Using a dataset constructed through KIDS, a population-based study was conducted recently to evaluate the unique impact of history of out-of-home placement and the mediating effects of history of maltreatment and homelessness on the educational well-being of an entire cohort of second grade children in a large urban school district (Fantuzzo & Perlman, 2007). Data were integrated from the school district and city child welfare, public health, and emergency shelter service agencies for each child in the cohort. Mediation analysis steps outlined by Baron and Kenny (1986) were used to determine the extent to which history of child maltreatment or homelessness mediated the relationship between out-of-home placement and educational outcomes. This study found that when out-of-home placement was in the model by itself, it was associated with risk for poor academic achievement and school adjustment. This finding corroborated prior studies that found an association between out-of-home placement and poor academic outcomes. However, the multivariate examination of out-of-home placement in the context of children's experiences of maltreatment, and homelessness revealed that the unique impact of out-of-home placement was eliminated when maltreatment and homelessness were entered into the model.

The Fantuzzo and Perlman (2007) study extended our understanding of the impact of out-of-home placement on early school success by revealing a complex relationship among child maltreatment, homelessness, out-of-home placement and relevant indicators of educational well being. This study did not however provide information about whether there was a significant pattern of occurrence of these events in the course of the children's development or if experiencing one risk factor increases the risk of experiencing another risk factor. Just as the developmental epidemiological framework

stresses the need to understand the context of risk, it also highlights the importance of understanding how the sequencing of risk events impacts children's development across time (Costello & Angold, 2000). Timing of early childhood risks events is an important factor in making finer distinctions in determining the relationship between maltreatment, homelessness, and out-of-home placement (Allison, 1995; Blossfeld & Rohwer, 2002). By collecting data on when these types of social risk events occur we can describe the timing characteristics of risk events in early childhood and determine if out-of-home placement is systematically preceded by these social risks.

The Current Study

The purpose of the present study was to replicate and extend the Fantuzzo and Perlman (2007) study. It replicated the prior study by employing a population-based sample to explore the prevalence of out-of-home placement within an entire cohort of second grade children in public education. This population-based sample was then used to examine the unique impact of out-of-home placement in the context of other social risk factors on multiple educational outcomes. Use of a large, population-based sample both provided sufficient power to permit the use of multivariate logistic regression and broader generalization of study findings. The current study extended the Fantuzzo and Perlman (2007) study by exploring the timing of the first occurrence of out-of-home placement, child maltreatment, and homelessness. These analyses were designed to extend our understanding of the complex relationship among these social risk factors and educational well-being.

This study addressed three primary research questions:

1. What is the prevalence of out-of-home placement within a cohort of second grade

students in a large urban school district? Examination of the prevalence of out-of-home placement will include characteristics of out-of-home placement (such as age of entry and number of placements) as well as the co-occurrence of out-of-home placement with two other social risk factors – substantiated child maltreatment and homelessness.

Based on findings from the prior study, it was hypothesized that children who had experienced out-of-home placement would be disproportionately more likely to have experienced substantiated child maltreatment and homelessness.

2. To what extent does out-of-home placement impact educational well-being in a multiple risk context? A multivariate model will first be used to assess the effect of history of out-of-home placement, controlling for demographics, birth risks and poverty on multiple academic and behavioral outcomes. Then, a second set of multivariate models will be used to assess the effect of history of out-of-home placement, controlling for demographics, poverty, birth risks, substantiated child maltreatment and homelessness, on multiple academic and behavioral outcomes. It was hypothesized that out-of-home placement would have a significant impact on multiple educational well-being outcomes, when controlling only for demographics, poverty and birth risks – but that inclusion of substantiated child maltreatment and homelessness in the model would eliminate the impact of out-of-home placement on educational well-being.
3. To what extent do first experiences of substantiated child maltreatment and homelessness predict to first experience of out-of-home placement?
A descriptive pattern of risk events and the extent to which child maltreatment

and homelessness predict to out-of-home placement will be explored.

CHAPTER TWO

Method

Participants

This study was conducted in a large northeastern city with an entire cohort of second grade children enrolled in the city's public school system. Participants included 12,045 students from the population of 15,934 children who were: enrolled in second grade during the 2004-2005 academic year, and born to mothers living in the city. Children were equally distributed between males (51%) and females (49%), with an average age of 8.5 years (SD 0.52) at the end of second grade. Sixty-six percent were African American, 15% Caucasian, 15% Hispanic, and 4% Asian.

Procedure

To develop an understanding of children's early childhood risks, a large integrated dataset was created using citywide administrative data. Data for the study were obtained through the Kids Integrated Data System (KIDS) (Fantuzzo, Culhane, & Hadley, 2005). KIDS is a database infrastructure established by the University of Pennsylvania, under agreement with the participating municipality. Its purpose is to support integrated database research to inform practice and policies for children and youth. Participating agencies include the Department of Public Health (Medicaid behavioral health, birth records, lead registry), the Department of Human Services (child abuse and neglect, preventive services), the School District (attendance, achievement, standardized testing, special education), Behavioral Health System (mental health services) and the Office of Supportive Housing (public shelter use). A Memorandum of Understanding between the City, State, and the University outlines the procedures under

which the data may be used. These procedures ensure confidentiality under the Health Insurance Portability and Accountability Act (HIPAA) and Family Educational Rights and Privacy Act (FERPA). KIDS employs advanced 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 data elements and the maintenance of data standards.

For the present study, a linked dataset of the Department of Public Health (DPH), Department of Human Services (DHS), Office of Supportive Housing (OSH), and School District was obtained. All identifying information, such as names, addresses, etc., was used solely for matching purposes and the final data set was stripped of identifiers other than identification numbers. After the matching was complete, individual level data on each child were then extracted using identification numbers and appended to the core data set. Thus, a large data set was formed containing birth records, homeless experience, child maltreatment and out-of-home placement data, and school information for each child.

The matching process used to link the data into an integrated dataset was completed using a personal computer and Microsoft SQL Server software (2005). Data from each of the participating agencies was standardized prior to the matching process. Additionally, duplicate records were eliminated from each dataset prior to matching. Matching algorithms were used to link children across the datasets. Once the matching process was completed, observations for which there was a possible false positive error were identified. These observations comprised less than 1% of all matches in each dataset and were manually cross-referenced across each of the datasets to ensure accuracy. The

resulting integrated dataset consisted of 15,934 second grade children. Of these children, 75.6% had complete birth records. To ensure that only children with complete risk histories were included in the study, only the 75.6% (n = 12,045) of children with complete birth records were included in analyses.

Measures

Birth Risks

Birth risks data were provided by the Department of Public Health. The variable ‘birthrisks’ was defined as whether or not a child experienced at least one of the following risk factors: inadequate prenatal care, premature birth, or low birth weight. Each of these risk factors was recorded on the birth certificate and entered into a larger birth record database. Children identified as having received no prenatal care, prenatal care only in the third trimester, or fewer than four prenatal visits were considered to have received inadequate prenatal care. Those whose mothers received more than four visits throughout the course of their pregnancies were identified as having receiving adequate prenatal care. Similarly, children born at less than 36 weeks gestation were considered to be premature. Those born after 36 weeks gestation were considered to be full-term. Lastly, children experiencing low birth weight were identified through their birth record. Typically, children weighing less than 2500 grams are considered to have low birth weight. A binary variable was created to determine the presence or absence of birth risks. Children experiencing any one of these risks were considered to have experienced birth risks. Children experiencing none were considered not at risk.

Poverty

Children were defined as having had an experience of poverty if they received a

free or reduced school lunch. These data were recorded in a dataset maintained by the School District. A binary variable was created to determine the presence or absence of poverty. Children identified as qualifying for a free or reduced lunch either in second grade or in a prior year were considered to have experienced poverty. Those who did not qualify or who were not identified within the database were considered to be not at risk.

Out-of-Home Placement

Out-of-home placement was identified using data provided by DHS. DHS maintains a database of all placement services that are paid for by the Agency. There are five types of out-of-home placement services provided by DHS: kinship care, foster care, group home care, institutional care, and supervised independent living. A binary variable was created to determine the presence or absence of out-of-home placement experience. Children with a history of at least one placement in kinship care, foster care, group home care, or non-homeless shelter institutional care by the end of second grade were considered to have experienced the risk factor of out-of-home placement. Those without a history of placement in at least one of those settings were considered to be not at risk. Additionally, a continuous variable was created to determine the child's age at the time of first placement. The child's date of birth was subtracted from the date of first placement to determine the child's age (in days) at the time of first placement.

Child Maltreatment

DHS also provided data on substantiated child maltreatment. DHS maintains a database tracking system that archives each allegation of child maltreatment. Within the municipality, substantiated child maltreatment is designated by a Child Protective Services (CPS) or General Services Report (GPS) that is substantiated, indicated, or

founded. 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. Children without a history of at least one substantiated, founded, or indicated allegation of child maltreatment were considered not at risk. A continuous variable was created to determine the child's age at the time of first substantiated child maltreatment. The child's date of birth was subtracted from the date of first substantiated child maltreatment to determine the child's age (in days) at the time of first substantiated child maltreatment.

Homeless Experience

Homeless experience was defined as whether or not the child had ever been placed in a homeless shelter. Information regarding children's homeless experiences was collected by both OSH and DHS. A binary variable was created to determine the presence or absence of homeless experience. If a child's parent was identified within the OSH database or a child was identified as having been placed in a DHS funded homeless shelter, the child was considered to have had a homeless experience. If a child's parent was not identified within the OSH database and the child was not identified as having been placed in a DHS-funded homeless shelter, then the child was considered to not have had a homeless experience. A continuous variable was also created to determine the child's age at the time of first homeless experience. The child's date of birth was subtracted from the date of first homeless experience to determine the child's age (in days) at the time of first homeless experience.

Academic Achievement

All academic achievement data were provided by the School District. The Developmental Reading Assessment (DRA; Pearson Learning Group, 2003) is an individually administered test of reading accuracy, fluency, and comprehension. It is appropriate for use with children in grades kindergarten through third grade, and can be administered and interpreted by classroom teachers in approximately 10 to 20 minutes. In a one-to-one format, students read from texts within each level, progressing until they are unable to meet accuracy and comprehension thresholds. The overall score on the DRA is an Instructional Reading Level – or the level at which the student can engage in teacher-instructed text. Across all grade levels and reading levels of the DRA, test-retest reliability estimates range from .91 to .99, and inter-rater reliability estimates range from .74 to .80. Criterion-related construct validity has also been established, with coefficients ranging from .65 to .84 when compared to scores on other nationally standardized measures of early reading ability. For the present study, DRA scores were dichotomized at the 25th percentile. Children scoring below the fifteenth percentile were coded as ‘at risk’ for inadequate school performance. Children scoring at or above the 25th percentile were coded as having adequate school achievement.

The TerraNova, Second Edition (CTB/McGraw-Hill, 1997) is a group-administered achievement test considered to be among the most reliable and valid of all standardized achievement tests; it is also known as the California Achievement Tests, Sixth Edition. Standard scores are provided across three subtests related to reading: reading, vocabulary, and language. Standard scores were also provided for math and science subtests. The TerraNova was nationally standardized on a stratified sample of

114,312 students (grades 1-12) from 778 school districts during the fall of 1999 and another 149,798 students (grades K-12) in the spring of 2000. Stratification variables included geographic region, urbanicity, socioeconomic status, and special needs. The TerraNova demonstrates acceptable internal consistency, with Kuder-Richardson Formula 20 coefficients for all subtests and total scores ranging from the mid .80s to .90s. Extensive validity work has been conducted on the TerraNova. Items were carefully reviewed to ensure adequate content validity, comparisons with the Test of Cognitive Skills, Second Edition and with InView (CTB/McGraw-Hill, 2001) indicate evidence of construct validity, and correlations between subtests and total scores support criterion-related validity. Further, the publishers plan to correlate the TerraNova with the National Assessment of Educational Progress (NAEP), the Third International Mathematics and Science Study (TIMSS), and the SAT and ACT. Based on similar studies relating the California Achievement Tests with the SAT and ACT, the publishers expect strong relationships. For the present study, TerraNova scores on each of the subtests were dichotomized at the 25th percentile. Children scoring below the twenty-fifth percentile were coded as 'at risk' for inadequate school performance. Children performing at or above the 25th percentile were coded as having adequate school achievement.

School Adjustment

All academic adjustment data were provided by the School District. Truancy data were obtained from the School District's computerized records. A binary variable was constructed to indicate children who were considered truant. To create a dichotomous variable, the School District's definition of truancy was used. Children who had three or more unexcused absences were identified as truant.

Similar to truancy, suspension data were obtained from the School District's computerized records. Children were identified as having been suspended if they experienced at least one in-school suspension or out-of-school suspension in the 2004-2005 academic school year.

Data Analysis

Descriptive Picture of Out-of-Home Placement and Other Social Risk Factors

The first set of analyses was conducted to develop an understanding of the demographic characteristics and prevalence of history of out-of-home placement for a cohort of second grade children. Frequency analyses and descriptive statistics were used to determine the prevalence and characteristics of out-of-home placement within the entire cohort. The second set of analyses explored the co-occurrence of out-of-home placement, child maltreatment and homelessness within a cohort of second grade children. Frequency analyses were used to determine the prevalence of these experiences within the population of children with a history of out-of-home placement.

Unique Impact of Out-of-Home Placement on Educational Well-Being

A series of multiple logistic regression models were conducted to evaluate the unique impact of out-of-home placement on educational well-being within a multiple risk context. This multivariate statistical technique was chosen because it is frequently used in epidemiology research to assess the unique impact of targeted risks on individual outcomes (Scott, Mason, & Chapman, 1999). It produces odds ratio that quantify the magnitude of risk associated with each risk variable for each outcome (Nash & Bowen, 2002) while controlling for the influence of other variables (e.g. demographics and other risk factors). The overall chi-square statistic was examined to determine if the model was

significant and therefore whether the individual Wald chi-squares could be examined. For each significant Wald chi-square, the odds-ratios were inspected to assess their relative importance for the outcome variable. The odds-ratio is more easily interpreted as the degree of risk exerted by the independent variables on the dependent variable.

The first set of logistic regression models examined the association of out-of-home placement with multiple outcomes of second grade academic achievement and school adjustment, while controlling for sex, race, birth risks and poverty. For these analyses, the statistical significance of out-of-home placement was examined to see if it was diminished or eliminated upon introduction of child maltreatment and homelessness.

Timing of Out-of-Home Placement, Child Maltreatment, & Homeless Experiences

Cox regression analysis, a form of event history analysis, was used to explore the extent to which child maltreatment and homeless experience predicted to out-of-home placement, when controlling for sex, race, child maltreatment, and homeless experiences. This multivariate technique was chosen because it permits the use of time-dependent covariates whose values change over time (Allison, 1995) while also controlling for sex, race, poverty and birth risks. It produces hazard ratios which quantify the relative risk of an event occurring for each risk factor (Wright, 2000). The overall Likelihood Ratio was examined to determine if the model was significant and therefore whether the individual Wald chi-squares could be examined. For each significant Wald chi-square the hazard ratio was inspected to assess its relative influence on the dependent variable. The hazard ratio is easily interpreted as the multiplier of the risk for a unit of change in the independent variable. For example, a hazard ratio of 2.3 for maltreatment would indicate that a child with a history of maltreatment is over two times more likely than a child

without a history of maltreatment to enter out-of-home placement.

CHAPTER THREE

Results

Prevalence and Characteristics of Social Risks

Frequency analyses and descriptive statistics were used to develop an understanding of the prevalence of out-of-home placement within the cohort and to evaluate the demographic and specific event characteristics associated with out-of-home placement (Table 1). Within this cohort of children, approximately 4% had experienced out-of-home placement, 12% had experienced substantiated child maltreatment, and 9% had experienced homelessness by the end of second grade. Children who had experienced out-of-home placement were disproportionately African American (82%). These children were also more likely than their peers to have experienced birth risks.

Specific event characteristics of out-of-home placement were also explored. The average age of first placement was 3.67 years, and nearly 70% of children with a history of out-of-home care experienced their first placement by the time they were five years old. The total length of time in care ranged from one day through over eight years, with an average of just over two years. Over 60% of children with a history of placement had experienced two or more placements.

Table 1

Prevalence of Child Characteristics and Out-of-Home Placement

Child Characteristic	Percentage of Total Sample (N = 12,045)	Percentage of Out-of-Home (N = 460)
Sex (male)	51.0	50.4
Caucasian	14.7	7.9
African American	65.9	82.4
Hispanic	14.6	8.5
Asian	3.8	.4
Birth Risks	47.2	66.0
Poverty	56.2	54.1
Substantiated Maltreatment	11.9	63.3
Homeless Experience	8.6	45.5
Out-of-Home Placement	4.3	-

Co-occurrence of Social Risks

Descriptive statistics were also used to determine the co-occurrence of out-of-home placement with child maltreatment and homelessness. Frequency analyses revealed a high co-occurrence of history of out-of-home placement and history of child maltreatment or homelessness. Within the population of children with a history of out-of-home placement, approximately 63% also had a history of substantiated maltreatment by the end of second grade. Nearly 50% of children with a history of out-of-home placement also had a history of homelessness by the end of second grade. Of those children with a history of substantiated child maltreatment, 23% had a history of out-of-home placement, and 27% had a history of homelessness. Twenty-three percent of children with a history of homelessness also had a history of out-of-home placement and 37% had a history of substantiated child maltreatment.

Unique Impact of Out-of-Home Placement

The unique risk of the independent variable, history of out-of-home placement, on academic achievement and academic engagement was evaluated. Score statistics indicated that child demographics, birth risks, poverty, and out-of-home placement were significantly related to children's academic achievement. Table 2 presents the odds ratios and probability levels for the independent effects of each demographic characteristic, birth risks, poverty, and out-of-home placement on each academic achievement outcome. Out-of-home placement was significantly related to children's performance on standardized assessments of mathematics, reading, language, vocabulary, and science. Similar patterns of risk emerged for each of the literacy assessments: Language, Score (7, $N = 10,638$) = 503.74, $p < .0001$; Reading, Score (7, $N = 10,639$) = 465.44, $p < .0001$;

and Vocabulary, Score (7, $N = 9871$) = 422.80, $p < .0001$. Boys, children of African American and Hispanic backgrounds, children living in low-income households, children with birth risks, and children with a history of out-of-home placement were all associated with increased risk for poor outcomes in early literacy. Children with a history of out-of-home placement, children of African American American, Hispanic, and Asian backgrounds, children with a birth risks, and children living in low-income households were all at increased risk of poor achievement on the second grade standardized Science assessment, Score (7, $N = 10,431$) = 337.87, $p < .0001$. For Math, Score (7, $N = 10,480$) = 367.34, $p < .0001$, children of African American and Hispanic backgrounds, children with birth risks, children living in low-income households, and children with a history of out-of-home placement were all at increased risk for poor performance. The overall chi-square statistic was not significant for the Developmental Reading Level assessment, and therefore the individual Wald chi-squares were not reported.

Table 2

Odds Ratios for Unique Impact of Placement on Academic Achievement

Risk factor/covariate	TN Language	TN Reading	TN Vocabulary	TN Math	TN Science
Child Characteristics					
Gender (Male)	1.78 ^{****}	1.63 ^{****}	1.85 ^{****}	1.04	.89 [*]
African American	2.14 ^{****}	2.26 ^{****}	2.12 ^{****}	2.81 ^{****}	3.10 ^{****}
Hispanic	3.28 ^{****}	3.32 ^{****}	3.24 ^{****}	2.90 ^{****}	3.59 ^{****}
Asian	1.0	1.25	1.44	1.15	2.22 ^{****}
Poverty	1.48 ^{****}	1.40 ^{****}	1.46 ^{****}	1.44 ^{****}	1.43 ^{****}
Birth risks	1.44 ^{****}	1.43 ^{****}	1.30 ^{****}	1.35 ^{****}	1.42 ^{****}
Out-of-Home Placement	1.41 ^{**}	1.64 ^{****}	1.36 ^{****}	1.40 ^{**}	1.47 ^{****}

Note. Score statistics for the above models were as follows: TN Language = (7, $N = 10,638$) = 476.01, $p < .0001$; TN Reading = (7, $N = 10,639$) = 438.35, $p < .0001$; TN Vocabulary = (7, $N = 9871$) = 399.99, $p < .0001$; TN Math = (7, $N = 10,480$) = 344.63, $p < .0001$; and TN Science = (7, $N = 10,431$) = 313.64, $p < .0001$.

Significance is based on Wald chi-square statistic.

* $p < .05$, ** $p < .01$, *** $p < .001$, **** $p < .0001$.

The unique risk of out-of-home placement on academic engagement was also assessed. Table 3 presents the odds ratios and probability levels for the independent effects of each demographic characteristic, birth risks, poverty, and out-of-home placement on both of the academic engagement outcomes. Boys, children of African American and Hispanic backgrounds, children with birth risks, children living in low-income households, and children with a history of out-of-home placement were at increased risk of experiencing truancy, Score, $(7, N = 11,115) = 862.26, p < .0001$. The unique risk of out-of-home placement on school suspensions was also examined. The overall chi-square statistic was not significant and therefore the individual wald chi-squares are not reported.

Table 3

Odds Ratios for Unique Impact of Placement on Truancy

Risk factor/covariate	Truancy
Child characteristics	
Gender (Male)	1.11 ^{**}
African American	2.52 ^{****}
Hispanic	2.74 ^{****}
Asian	.85
Poverty	1.93 ^{****}
Birth risks	1.48 ^{****}
Out-of-Home	1.29 [*]

Note. Score statistics for the above models were as follows: Truancy = (7, N = 11,115) = 798.69, $p < .0001$.

Significance is based on Wald chi-square statistic.

* $p < .05$, ** $p < .01$, *** $p < .001$, **** $p < .0001$.

Multiple Risks Context

Child maltreatment, homelessness and out-of-home placement were entered simultaneously into a logistic regression model for children's performance on Reading, Language, Vocabulary, Science, and Math (Table 4). Similar patterns of results were found for two of the literacy assessments, Language, Score (9, $N = 10,638$) = 503.97, $p < .0001$, and Reading, Score (9, $N = 10,639$) = 469.88, $p < .0001$. Boys, children of African American and Hispanic backgrounds, children living in low-income homes, birth risks, child maltreatment and homelessness all placed children at increased risk for poor performance on both of these performance assessments. Boys, children of African American and Hispanic backgrounds, children living in low-income homes, and children experiencing birth risks, child maltreatment or homelessness were at increased risk for poor performance on a standardized assessment of Vocabulary, Score (9, $N = 10,638$) = 428.18, $p < .0001$. For science, Score (9, $N = 10,431$) = 331.29, $p < .0001$, children of African American, Hispanic, and Asian backgrounds, children living in low-income households, and children experiencing birth risks and child maltreatment were at increased risk of poor performance. The pattern of risk for the second grade standardized math assessment, Score (9, $N = 10,480$) = 372.69, $p < .0001$, was similar except that *boys* were not at increased risk for poor performance on the standardized math assessment. Notably, when child maltreatment and homelessness were entered into the models, out-of-home placement no longer had a unique impact on any of the academic achievement outcomes.

Table 4

Odds Ratios for Multiple Risk Context on Academic Achievement

Risk factor/covariate	TN Language	TN Reading	TN Vocabulary	TN Math	TN Science
Child Characteristics					
Gender (Male)	1.73 ^{****}	1.57 ^{****}	1.68 ^{****}	1.05	.88 ^{**}
African American	2.18 ^{****}	2.44 ^{****}	2.35 ^{****}	2.73 ^{****}	2.96 ^{****}
Hispanic	3.14 ^{****}	3.32 ^{****}	3.29 ^{****}	2.78 ^{****}	3.24 ^{****}
Asian	1.07	1.35	1.38 [*]	1.14	2.43 ^{****}
Poverty	1.43 ^{****}	1.41 ^{****}	1.37 ^{****}	1.40 ^{****}	1.33 ^{****}
Birth risks	1.40 ^{****}	1.36 ^{****}	1.32 ^{****}	1.33 ^{****}	1.31 ^{****}
Out-of-Home Placement	1.19	1.24	1.08	1.12	1.17
Substantiated Maltreatment	1.34 ^{****}	1.35 ^{****}	1.34 ^{****}	1.42 ^{****}	1.32 ^{****}
Homelessness	1.28 ^{**}	1.30 ^{**}	1.32 ^{***}	1.12	1.11

Note. Score statistics for the above models were as follows: TN Language = (9, $N = 10,638$) = 503.97, $p < .0001$; TN Reading

= (9, $N = 10,639$) = 469.88, $p < .0001$; TN Vocabulary = (9, $N = 9871$) = 428.18, $p < .0001$; TN Math = (9, $N = 10,480$) = 372.69, $p < .0001$; and TN Science = (9, $N = 10,431$) = 331.29, $p < .0001$.

Significance is based on Wald chi-square statistic.

* $p < .05$, ** $p < .01$, *** $p < .001$, **** $p < .0001$.

The effect of child maltreatment and homelessness on the relationship between out-of-home placement and truancy was also evaluated (Table 5). Boys, children of African American and Hispanic background, children living in low-income homes, birth risks, child maltreatment, and homelessness placed children at increased risk for truancy, $F(9, N = 11,115) = 881.35, p < .0001$, by the end of second grade. Once child maltreatment and homelessness were entered into the model, out-of-home placement was no longer significantly related to truancy – suggesting again that experiences of homelessness and/or child maltreatment account for variance typically attributed to out-of-home placement.

Table 5

Odds Ratios for Multiple Risk Context on Truancy

Risk factor/covariate	Truancy
<hr/>	
Child Characteristics	
Gender (Male)	1.11**
African American	2.43****
Hispanic	2.75****
Asian	.89
Poverty	1.84****
Birth risks	1.43****
Out-of-Home Placement	.80
Substantiated Maltreatment	1.76****
Homelessness	1.75***

Note. Score statistics for the above models were as follows: Truancy = (9, $N = 11,115$) = 881.35, $p < .0001$.

Significance is based on Wald chi-square statistic.

* $p < .05$, ** $p < .01$, *** $p < .001$, **** $p < .0001$.

Descriptive Picture of the Timing of Children's First Risk Experiences

Life table analyses were used to develop an understanding of the timing of children's first experiences of out-of-home placement, substantiated maltreatment, and homelessness. These analyses produced two key statistics for understanding the timing distribution of these events: hazard functions and survival functions. The survival function describes the risk that the individual will *not* experience an event following a given time interval. All individuals are born not yet having experienced any of the social risks – and therefore, the survival function is 1.0 (that is, that the probability of *not* yet having experienced a social risk is 100%). As the children age the probability of *not* experiencing a given social risk event declines. The severity of the decline lends insight into the risk of experiencing a given social risk. For example, if the survival function for homelessness equaled 0.9745 for two year olds, and .9034 for three year olds, this could be interpreted as an increase in risk of experiencing homelessness from the end of the second year of life to the end of the third year of life.

Survival functions for each of the social risks demonstrated the unique risk trajectories of out-of-home placement, child maltreatment, and homelessness across early childhood (Figure 1). The survival function for out-of-home placement steadily declined from birth through the end of second grade. This is interpreted as a low, but consistent risk of placement from birth through the end of second grade. The survival function for out-of-home placement at the end of second grade was .9565 – indicating that 96% of the population 'survives' through the end of second grade without experiencing out-of-home placement (and that approximately 4% will experience out-of-home placement). There was a moderate decline in the survival function for child maltreatment from birth through

the end of second grade. This suggests that the risk of experiencing child maltreatment is moderate, but persistent. The survivor function for child maltreatment at the end of second grade was equal to approximately .88 – signifying that 88% children had *not* experienced child maltreatment by the end-of-second grade. The survival function for homelessness evidenced a moderate decline from birth through age five and then remained steady through the end of second grade. This suggests that children’s risk of experiencing homelessness was moderate from birth through age five and then stabilized thereafter.

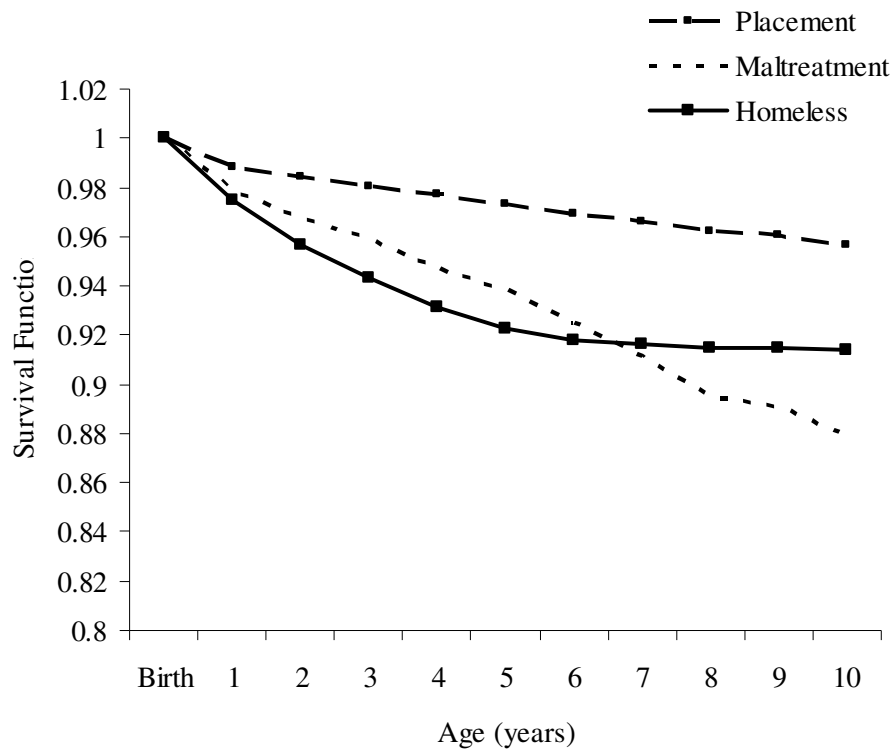


Figure Caption

Figure 1. Survival functions for social risks in early childhood ($n=12,045$).

The hazard function describes the rate of event occurrence within a given time period. For instance, if the daily hazard rate for first homeless experience is 0.000051 in the second year of life, this means that the rate of first homeless experience for children in their second year of life is .000051 per day. This daily rate could then be multiplied by 365 (the number of days/year) to obtain an annual hazard rate of .02 – suggesting that 2% of children in their second year of life will experience homelessness for the first time.

Hazard functions for each of the social risks were also calculated. Figure 2 demonstrates the rate of occurrence for each of the social risks was highest in the first year of life, but unique risk trajectories emerged across early childhood. The rate of homelessness steadily decreased over time. For instance, the rate of homelessness is 2.6% in the first year of life (hazard function = .000071/day) for one-year olds – but then declines to .95% (hazard function = .000026/day) by age four. This means that a one-year old child has more than twice the rate of first homeless experiences than a four-year old child. The rate of first out-of-home placement declined in the first year of life, remained steady between ages three-to-six, and then increased after age six. In the first year of life the rate of placement was 1% (hazard function = .000031/day) and approximately .5% (hazard function = .000016) by the end of second grade. Finally, the risk pattern that emerged for child maltreatment varied significantly from out-of-home placement and homelessness. The rate of child maltreatment was highest at birth (.000058) and then declined through age two (.000026). At age three (.000034), the rate of first maltreatment began an upward progression, marked by points of decreasing and then increasing risk. In the second year of life, the rate of maltreatment was 1.13%, – by the end of second grade, this rate nearly doubled to 2% (.000055/day).

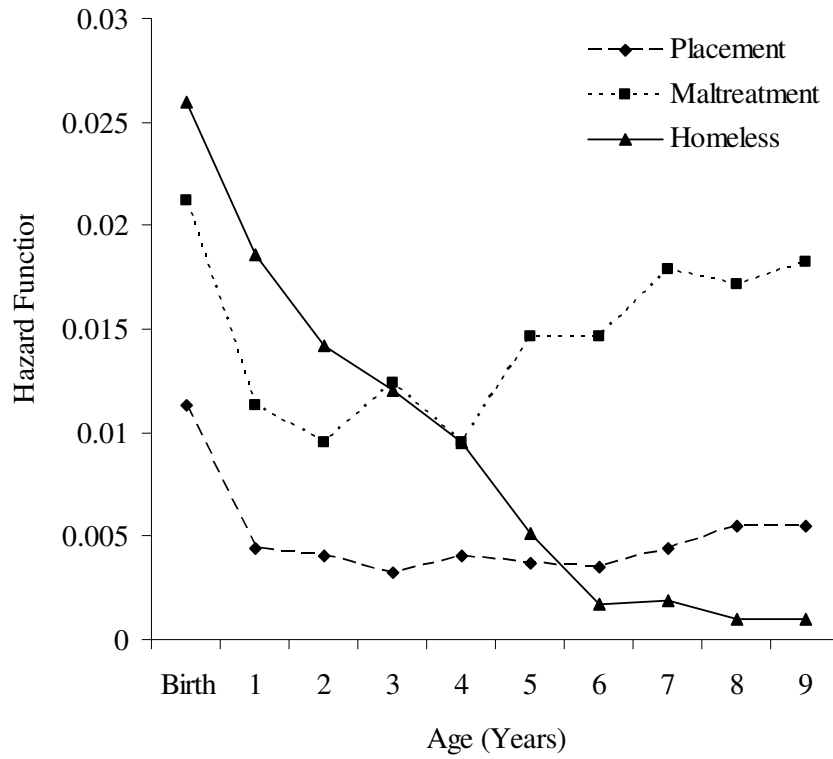


Figure Caption

Figure 2. Hazard functions for children's first homelessness, child maltreatment, or out-of-home placement ($n=12,045$).

Timing of Social Risks

The extent to which child maltreatment and homelessness predict to out-of-home placement was explored using Cox time-dependent regression. Wald chi-square statistics indicated that demographics, birth risks, poverty, history of substantiated maltreatment, and history of homelessness significantly predicted to risk of out-of-home placement. Table 6 presents the Hazard Ratios and probability levels for the independent predictive effects of demographic characteristics, poverty, birth risks, substantiated maltreatment and homelessness. History of substantiated child maltreatment or homelessness, birth risks, and African American backgrounds placed children at increased risk of experiencing out-of-home placement, Likelihood Ratio (8, $N = 12,045$) = 1158.44, $p < .0001$. Children with a history of homelessness were four times as likely as children without a history of homelessness to enter out-of-home placement. Notably, children with a history of substantiated child maltreatment were nearly twenty-five times more likely to enter out-of-home placement than their peers. Notably, poverty was found to be associated with a *decreased* likelihood of placement into out-of-home care.

Table 6

Cox Regression for History of Substantiated Child Maltreatment and Homelessness

Risk factor/covariate	Out-of-Home Placement (<i>n</i> = 498)
<hr/>	
Child Characteristics	
Gender (Male)	.93
African American	1.48*
Hispanic	.98
Asian	.27
Poverty	.59****
Birth risks	1.46***
Child Maltreatment	24.18****
Homelessness	4.13****

Note. The overall Likelihood Ratio for the above model was: OOH = (8, *N* = 12,045) = 1158.44, *p* < .0001.

Significance is based on Wald chi-square statistic.

p* < .05, *p* < .01, ****p* < .001, *****p* < .0001.

Given the unexpected finding that poverty was associated with a decreased likelihood of placement and the high co-occurrence of poverty with substantiated child maltreatment and homelessness (68% and 72%, respectively) interactions between poverty and each of these risks were also examined. Table 7 presents the hazard ratios for the interactions of poverty with maltreatment and homelessness. The two-way interactions of poverty and substantiated child maltreatment and homelessness were found to significantly relate to out-of-home placement, Likelihood Ratio (10, $N = 12,045$) = 1081.19, $p < .0001$. The risk of out-of-home placement for children experiencing both child maltreatment and poverty was calculated by multiplying the hazard ratio for child maltreatment with the hazard ratio for poverty. Findings indicated that children who were living in poverty and maltreated were *half* as likely to experience out-of-home placement, relative to children who were not living in poverty and had been maltreated. This same calculation was used to determine the risk of placement for children who had experienced homelessness and poverty compared to children who had not experienced both of these risks. Similarly, children who had been living in poverty and who had experienced homelessness were nearly half as likely to experience out-of-home placement relative to children who had not lived in poverty.

Table 7

Cox Regression with Poverty Interactions

Risk factor/covariate	Out-of-Home Placement (<i>n</i> = 498)
<hr/>	
Child Characteristics	
Gender (Male)	.95
African American	1.42*
Hispanic	.92
Asian	.26
Poverty	1.06
Birth risks	1.42***
Child Maltreatment	33.89****
Homelessness	6.50****
Poverty*Maltreatment	.52***
Poverty*Homeless	.44***

Note. The overall Likelihood Ratio for the above model was: OOH = (10, *N* = 12,045) = 1198.69, *p* < .0001.

Significance is based on Wald chi-square statistic.

p*<.05, *p*<.01, ****p*<.001, *****p*<.0001.

CHAPTER FOUR

Discussion

Informed by a developmental epidemiology framework, the primary aim of this study was to conduct a multivariate, population-based investigation of the unique impact of out-of-home placement on the educational well-being of young urban children considering their multiple-risk context. This research addressed three major foci: (1) providing the prevalence of children with a history of out-of-home placement in an entire cohort of second grade students in a large urban city; (2) determining the unique impact of out-of-home placement on multiple academic achievement and academic engagement outcomes, controlling for demographics, poverty, birth risks, and two additional social risks – child maltreatment and homelessness; and (3) examining the extent to which first experiences of child maltreatment and homelessness predict first experience of out-of-home placement.

Prevalence

This study indicated that nearly four percent of this cohort had experienced out-of-home placement by the end of second grade. This is higher than the national or state prevalences of .07% (Wertheimer, 2006; USDHHS, 2003). The discrepancy between the local and national statistics may be explained by prior research that has found that children living in urban areas characterized as higher in poverty are more likely to have higher rates of out-of-home placement than children in rural or suburban areas (Barth, Wildfire, & Green, 2006; Wulczyn, Hislop, & Harden, 2002). The prevalence of out-of-home placement histories found in this study is comparable to findings from two other studies conducted in the same municipality as the present study (Culhane, Webb, Grim,

Metraux, & Culhane, 2003; Fantuzzo & Perlman, 2007). Fantuzzo and Perlman (2007) examined the prevalence of history of out-of-home placement in a second grade cohort and found that approximately 3% of a second grade cohort had experienced out-of-home placement. Additionally, a population-based birth cohort study conducted by Culhane, et al. (2003) examined the prevalence of child welfare involvement for families connected with the homeless shelter system, as well as the prevalence of out-of-home placement within the entire cohort. They found that 4.4% of children in the birth cohort had a history of out-of-home placement.

Nearly 70% of the children with a history of placement in this cohort had entered care by the time they were five. These findings are congruent with prior that examined the age distributions of first placement. In a prior study conducted by Fantuzzo and Perlman (2007), approximately 75% of children with placement histories had entered care by the time they were five years old. Similarly, Goerge & Wulczyn (1998/1999) found that children under five were twice as likely to enter care as older children. Findings from each of these studies are consistent with national data that demonstrate that children under five represent the largest percentage of children entering into out-of-home placement (USDHHS, 2003). Although prior studies on the educational well-being of children in out-of-home placement have focused primarily on the educational well-being of school-age children, findings from this study are particularly salient because they indicate that most of the children with placement histories had entered care prior to reaching school age. These findings illustrate the need for developing an understanding of how early placement experiences impact young children's school readiness.

Findings from this study also provide insight into the co-occurrence of two social

risks that children with a history of placement might experience: child maltreatment and homelessness. In this study, nearly two-thirds of the children with a history of out-of-home placement also had a history of substantiated child maltreatment and nearly half had a history of homelessness. In a similar study, 35% of second grade children with a history of out-of-home placement had also experienced substantiated child maltreatment and approximately 70% had experienced homelessness (Fantuzzo & Perlman, 2007). The findings on co-occurrence of substantiated maltreatment with out-of-home placement from the prior study may be discrepant from the current study due to the fact that for the prior study, child welfare records were only available from 1995 forward. As such, the prior study may have under-estimated the number of children with histories of substantiated maltreatment since some of the children were born before 1995.

Although other studies have explored the overlap of these populations (Bassuk, Buckner, Weinreb, Browne, Bassuk, Dawson, & Perloff, 1997; Culhane, Webb, Grim, Metraux, & Culhane, 2003; Herman, Susser, Struening & Link, 1997; Horwitz, Balestracci, & Simms, 2001; Park, Metraux, Brodbar, & Culhane, 2004) few have explored the prevalence of homelessness and maltreatment within a population of children with a history of out-of-home placement. Two studies of homeless populations found that the prevalence of out-of-home placement within the homeless population was approximately 60% (Culhane et al, 2003; Zlotnick, Robertson, & Wright, 1999). A study conducted by Cowal and colleagues (Cowal, Shinn, Weitzman, Stojanovic, & Labay, 2002) found that 26% of homeless children were placed in out-of-home care.

Research has also evaluated the prevalence of out-of-home placement within populations of children who have experienced child maltreatment. These studies differ

from the homelessness literature because out-of-home placement was conceptualized as one possible intervention strategy for child maltreatment. Nationally one-fifth of the population of children who experience substantiated child maltreatment are placed into out-of-home care (USDHHS, 2007). The research literature indicates a slightly higher overlap of 44% to 48% of children with a history of substantiated maltreatment being placed into out-of-home care (McCue-Horwitz, Balestracci, & Simms, 2001; Zuravin & DePanfilis, 1997). An unpublished study by Burley and Halpern (2001) of the educational well-being of foster children in Washington State found that 61% of children in foster care had a prior substantiated incident of child maltreatment.

Impact of Out-of-Home Placement in a Multiple Risk Context

In recognition of the high co-occurrence of out-of-home placement with homelessness and substantiated child maltreatment – a two-step process was used to evaluate the unique impact of out-of-home placement on educational well-being in a multiple risk context. First, the impact of out-of-home placement on academic achievement and engagement was evaluated controlling only for demographics, birth risks, and poverty. Second, the impact of out-of-home placement on academic achievement and engagement was evaluated controlling for demographics, birth risks, poverty, *and* substantiated child maltreatment and homelessness.

Findings from the first step demonstrated that history of out-of-home placement placed children at increased risk for poor performance on standardized assessments of literacy, math and science, and also placed them at increased risk of truancy. These findings corroborate findings from prior studies examining the isolated impact of out-of-home placement on educational well-being.

In the current study, children with a history of out-of-home placement were at 64% increased risk of poor performance on a standardized assessment of reading and 41% increased risk of performing poorly on a standardized assessment of language. Findings from this study are similar to a prior study conducted by Fantuzzo and Perlman (2007). In the prior study, children with a history of out-of-home placement were 35% more likely to perform poorly on a standardized assessment of reading and 57% more likely to perform poorly on language. Additionally, findings from the current study are similar to a group of studies that used chi-square analyses or t-tests to examine the literacy achievement of children with a history of out-of-home placement (Colton, Heath, & Aldgate, 1995; Mitic & Rimer, 2002; Sawyer & Dubowitz, 1994; Smithgall, Gladden, Howard, Goerge, & Courtney, 2004; Stein, 1997). For instance, Mitic and Rimer (2002) found that 38.3% of children in out-of-home placement performed below grade level on a standardized literacy assessment while only 20.3% of children not in out-of-home care performed below grade level. Similarly, in a study examining the educational well-being of children in foster care in New York City, children in out-of-home care were disproportionately more likely to perform below proficiency in reading (79% vs. 53%) (Conger & Rebeck, 2000).

Children with a history of out-of-home placement were also 40% more likely than their peers to evidence poor performance on a standardized assessment of mathematics. A handful of studies have used bivariate statistics to examine the relationship between history of out-of-home placement and performance on standardized assessments of math (Colton, Heath, & Aldgate, 1995; Conger & Rebeck, 2000; Mitic & Rimer, 2002; Sawyer & Dubowitz, 1994; Stein, 1997). For example, one study found that 42% of children in

out-of-home care performed below proficiency on a standardized mathematics assessment compared to 20.2% of children not in out-of-home care (Mitic & Rimer, 2002). Conger and Rebeck (2000) found that children in out-of-home care were disproportionately more likely than their peers to perform below grade level for math (74% vs. 40%). The prior study by Fantuzzo and Perlman (2007) did not find that history out-of-home placement significantly predicted to poor mathematics performance. This may be due to the fact that in the present study, children were identified as 'at risk' if scored below the 25th percentile for performance on the standardized math assessment, whereas in the prior Fantuzzo and Perlman (2007) study, children were identified as 'at risk' if they scored below the 15th percentile.

Children with a history of out-of-home placement were at 40% greater risk of poor performance on a standardized science assessment. This is similar to the prior study by Fantuzzo and Perlman (2007) which found that children with a history of out-of-home placement were 35% more likely than their peers to evidence poor performance on a standardized assessment of science. Only one other study has examined this outcome for children with a history of out-of-home placement (Sawyer & Dubowitz, 1994). Descriptive statistics from the Sawyer and Dubowitz (1994) study demonstrated that 35% of children with a history of out-of-home placement scored 'below' or 'well-below average' on a standardized science assessment.

This study extended the prior Fantuzzo and Perlman (2007) study by examining the extent to which history of out-of-home placement related to truancy. Findings from the current study demonstrated that children with a history of out-of-home placement were 29% more likely than their peers to experience truancy. Although other studies have

not examined the relationship between out-of-home placement and truancy, a study conducted by Conger and Rebeck (2000) addressed the relationship between out-of-home placement and attendance. They found that children with a history of out-of-home placement evidenced a lower overall attendance rate than their peers.

Co-Occurrence of Out-of-Home Placement with Other Risks

Rutter (2000) and Waldfogel (2000) emphasize the importance of examining other risks that children in out-of-home placement have been exposed. Although prior studies have accounted for some of the variability in out-of-home placement experiences, they did not account for how children's pre-placement experiences related to their educational well-being. The current study evaluated the impact of out-of-home placement on children's educational well-being within a multiple risk context by controlling for the impact of substantiated child maltreatment and homelessness, in addition to demographics, poverty, and birth risks. Once the impact of substantiated child maltreatment and homelessness was accounted for, out-of-home placement was no longer significantly related to any of the academic achievement and truancy outcomes.

These findings are supported by prior studies that have found that out-of-home placement does not have a unique adverse impact on educational well-being when other pre-placement factors are accounted for (Fox & Acuri, 1980; McCue-Horwitz, Balestracci, & Simms, 2001). Fox and Arcuri (1980) found that cognitive and academic outcomes for children with a history of out-of-home placement were similar to children living in low-income households. Additionally, a study by Colton and colleagues (1995) found that children who had experienced child maltreatment pre-placement evidenced *worse* academic performance than their peers who had entered care for other reasons.

Findings from the current study support the documented impact of child maltreatment on educational well-being. The child maltreatment literature consistently demonstrates that experiences of child maltreatment adversely impact educational well-being (Crozier & Barth, 2005; Eckenrode, Laird, & Doris, 1993; Fantuzzo & Perlman, 2007; Gregory & Beveridge, 1984; Kendall-Tackett & Eckenrode, 1996; Kinard, 1999; Kurtz, Gaudin, Wodarski, & Howing, 1993; Leiter & Johnson, 1994; Perez & Widom, 1994; Reyome, 1993; Shonk & Cicchetti, 2001; Veltman & Browne, 2001; Wodarski, Kurtz, Gaudin, & Howing, 1990). Several studies found that child maltreatment experiences placed children at increased risk of poor performance on reading measures (Crozier & Barth, 2005; Eckenrode, Laird, & Doris, 1993; Fantuzzo & Perlman, 2007; Kinard, 1999; Leiter & Johnson, 1994; Perez & Widom, 1994; Reyome, 1993). Child maltreatment experiences were also related to poor performance in mathematics (Crozier & Barth, 2005; Eckenrode, Laird, & Doris, 1993; Kinard, 1999; Leiter & Johnson, 1994; Reyome, 1993). Two additional studies (Kurtz, Gaudin, Wodarski, & Howing, 1993 and Kendall-Tackett & Eckenrode, 1996) that used a composite academic score found that children who had experienced child maltreatment evidenced poorer overall academic achievement than their peers. Finally, although none of the studies reviewed examined the relationship between child maltreatment and truancy, several studies did note that child maltreatment was related to poor attendance (Kinard, 1999; Leiter & Johnson, 1994).

A limited body of research exists that documents the impact of homelessness on educational well-being. The majority of research examining the relationship between homelessness and educational well-being has found that children who have experienced

homelessness are at increased risk for poor educational well-being relative to their peers (Holden, Danseco, & Evangeline, 1996; Fantuzzo & Perlman, 2007; Masten, Sesma, Si-Asar, Lawrence, Miliotis, & Dionne, 1997; Rubin, Erickson, Agustin, Cleary, Allen, & Cohen, 1996; Zima, Wells, Freeman, 1994). Each of these studies found that children who had experienced homelessness were at increased risk for poor reading achievement. Three of these studies also found that homelessness was related to poor mathematics achievement (Holden & Danseco, 1996; Masten, et al., 1997; Rubin, et al., 1996). Although none of the studies examined truancy as an outcome, Zima and colleagues (1994) and Rubin and colleagues (1996) found that homeless children were more likely to evidence poor attendance.

The current study addressed some of the limitations of the prior child maltreatment and homelessness research. While these studies demonstrate that child maltreatment and homelessness adversely impact children's educational well-being, they have several notable limitations. Several of the child maltreatment (Crozier & Barth, 2005; Wodarski, Kurtz, Gaudin, & Howing, 1990) and homelessness (Holden & Danseco, 1996; Masten, et al, 1997; Zima, et al.) studies did not include comparison groups. By using an entire cohort of second grade children, the present study was able to examine the educational well-being of children who had experienced social risks relative to those who had not. Second, only one of the prior studies was population-based (Fantuzzo & Perlman, 2007) limiting the generalizability of findings. Because the current study was based on an entire population – rather than a sample of convenience – the findings are generalizable to the entire population of second grade children in the municipality. Third, few of the studies considered child maltreatment or homelessness

within a multiple risk context (Crozier & Barth, 2005; Eckenrode, Laird, & Doris, 1993; Gregory & Beveridge, 1984; Holden, Danseco, & Evangeline, 1996; Kendall-Tackett & Eckenrode, 1996; Kinard, 1999; Kurtz, Gaudin, Wodarski, & Howing, 1993; Masten, Sesma, Si-Asar, Lawrence, Miliotis, & Dionne, 1997; Perez & Widom, 1994; Reyome, 1993; Rubin, Erickson, Agustin, Cleary, Allen, & Cohen, 1996; Shonk & Cicchetti, 2001; Veltman & Browne, 2001; Wodarski, Kurtz, Gaudin, & Howing, 1990; Zima, Wells, Freeman, 1994) and none of them considered the impact of child maltreatment and homelessness simultaneously. The present study addressed this limitation by examining the impact of child maltreatment, homelessness, and out-of-home placement, while controlling for demographics, birth risks, and poverty.

While the current study calculated the prevalence of maltreatment and homelessness within the out-of-home placement population, most prior studies calculated the prevalence of children with out-of-home placement experiences within either the homeless population or the maltreatment population (Jonson-Reid, 2003). This distinction is critical because unlike homelessness and child maltreatment which are well-documented risk factors, out-of-home placement was developed to be intervention for social risks such as homelessness and child maltreatment – and not intended to be a risk factor unto itself. Wolkind and Rutter (1973) note that while out-of-home placement has been ‘assumed’ to be the ‘harmful’ experience’, “[w]ithout knowledge of the prior and subsequent family life experienced by children taken into care, this is an unwarranted assumption”. This is similar to work that has been done in the area of special education (Kauffman, 2005). Studies documented that children receiving special education services did not perform as well as their peers not receiving these services. Yet, it was not receipt

of these special education services that explained the disparity in outcomes, but rather the constellation of risks/disabilities that led children to be placed in special education (Kauffman, 2005). This distinction highlights the importance of understanding the extent to which out-of-home placement functions as a proxy for *pre-placement* risks, such as child maltreatment and homelessness – and underscores the importance of the temporal sequencing of these events.

Predicting to Out-of-Home Placement

The current study examined the extent to which substantiated child maltreatment and homelessness predicted to first out-of-home placement. Findings demonstrated that the rates of occurrence for substantiated child maltreatment, homelessness, and out-of-home placement were highest in the first year of life. First experiences of homelessness were highest in the first year – and then steadily declined across time. Although out-of-home placement occurred at a lower rate than substantiated child maltreatment, both displayed similar bimodal patterns. First experiences of substantiated child maltreatment and out-of-home placement were highest in the first year of life, and then following a brief decline peaked again at around ages five and six, respectively.

Findings on the temporal ordering of these risks are supported by national data on out-of-home placement, child maltreatment, and homelessness. According to the most recent national maltreatment data, children under the age of five experienced the highest rate of child maltreatment (USDHHS, 2007). Similarly, according to the most recent AFCARS report, children under five represented the largest group entering out-of-home placement (USDHHS, 2003). The bimodal peak evidenced by substantiated child maltreatment underscores the fact that teachers represent the largest reporting source. The

most recent *Child Maltreatment* report (USDHHS, 2007) documents that 16% of all child abuse reports are made by educational personnel. The second ‘peak’ of substantiated child maltreatment occurs at approximately age five – which coincides with when the child enters the formal educational setting,

The extent to which first experiences of homelessness and child maltreatment predicted to out-of-home placement was also examined. Both of these risks were found to predict to out-of-home placement. Prior studies examining the extent to which risks such as homelessness and substantiated child maltreatment predict to out-of-home placement experiences support the findings from this study. A population-based study of a birth cohort conducted by Culhane and colleagues (Culhane, Webb, Grim, Metraux, & Culhane, 2003) found that children with homeless experiences were at nearly nine times greater risk of placement than children without homeless experiences. Another population-based study conducted by Park, Metraux, Brodbar, & Culhane (2004) also found that experiences of homelessness predicted to out-of-home placement. These studies did not, however, account for the presence of birth risks and maltreatment – nor did they examine the interaction of poverty with homelessness and child maltreatment.

Due to the high co-occurrence of child maltreatment and poverty and homelessness and poverty, interactions between these risks were examined. These findings demonstrated that children who were living in poverty and had a history of homelessness, and children who were living in poverty and had a history of substantiated child maltreatment were *less* likely to experience out-of-home placement than children who experienced homelessness or substantiated child maltreatment but not poverty.

The relationship between poverty, child maltreatment, and out-of-home placement

has been addressed in the child welfare decision-making literature. A study by Zuravin and DePanfilis (1997) found that poverty was *not* a significant predictor of the decision to place a child in out-of-home care *and* that children who had experienced neglect were less likely to be placed in out-of-home care than children who had experienced physical abuse. Prior studies have examined the relationship between type of maltreatment and poverty (Coulton, Korbin, & Su, 1998; Drake & Pandey, 1995; Jones & McCurdy, 1992; Slack, Holl, McDaniel, Yoo, & Bolger, 2004; Spearly & Lauderdale, 1983). A study by Jones and McCurdy (1992) found that children who had experienced neglect were more likely to be living in poverty than children who had experienced physical abuse. Additionally, Drake and Pandey (1995) found that children who had experienced neglect were more likely to be living in neighborhoods characterized as high in poverty than children who had experienced either physical abuse or sexual abuse. These prior studies, as well as the present study, begin to shed light on how the interaction of substantiated maltreatment and poverty relates to a child being placed into out-of-home care. While similar studies have not been conducted on the relationship between poverty, homelessness, and out-of-home placement, it is plausible that given the high co-occurrence of homelessness and poverty (Culhane, Webb, Grim, Metraux, & Culhane, 2003; Institute for Children and Poverty, 1993; 1999), that similar processes are at play.

Future Research

The developmental epidemiological model used to guide this research provides a framework to address three important areas in early childhood development: impact of multiple risks on educational well-being, delineation of the event characteristics of risks, and prevalence of risks within a policy relevant population. An examination of relevant

social risks to early school success highlighted the significance of identifying both the unique and interactive impact of hypothesized risk factors on multiple educational outcomes.

The present study revealed an interesting interaction between poverty and child maltreatment and homelessness. In both cases, poverty interacted with these risks to reduce the likelihood of out-of-home placement. It is believed that these interactions do not indicate the poverty is 'protective' against placement, but rather that they reflect complexities that arise when case workers are considering child maltreatment and homelessness data in the context of a family's poverty status. Given the historical emphasis on not removing a child from the home for reason of poverty alone, it is quite possible that the poverty context makes the decision to place the child in care outside of the home more complex. Zuravin and DePanfilis (1997) found that once type of maltreatment was accounted for, poverty was no longer a significant factor in the decision to place a child in out-of-home care. Specifically, children experiencing neglect only were less likely to be placed in out-of-home care than children who had experienced either physical abuse or multiple types of abuse. These findings suggest that it is harder for the caseworker to disentangle how the family's poverty status relates to the caregivers' overall ability to meet the child's needs. Future research should employ both quantitative and qualitative research methods to further explore the latent relationships between poverty, type of maltreatment and child placement decision-making. Administrative data could be used to evaluate the interaction between types of maltreatment (physical abuse, neglect, sexual abuse, etc.) and poverty and the degree to which these interactions relate to the decision to place a child in out-of-home care.

Additionally, qualitative focus groups or interviews with frontline child welfare workers could be conducted to gain further insight into how various factors – including type of maltreatment and poverty status - influence their decision to remove a child from the home.

Findings from this study demonstrated the unique and pervasive deleterious impact of child maltreatment on educational well-being. Child maltreatment emerged as a significant risk factor for *all* academic achievement and engagement outcomes controlling for demographics, poverty, birth risks, homelessness, and out-of-home placement. The purpose of this study was to investigate the relative risk of three social risk factors in a multiple risk context and as such child maltreatment was treated as a binary risk factor in the logistic regression analyses. Future research should explore, in light of these pervasive findings, the relative impact of relevant event characteristics of the child maltreatment on multiple educational outcomes. A classification system that operationalizes key event characteristics (such as the Maltreatment Classification System, Shonk & Cicchetti, 2003) should be employed to categorize relevant event characteristics identified in the child maltreatment literature – such as type of maltreatment, number of maltreatment events (dose), and length of time exposed to maltreatment (duration) (Costello & Angold, 1995). Using this classification system, the variability of these event characteristics could be explored within an entire population of children. The relationship between these characteristics and multiple educational outcomes could then be studied to develop a more comprehensive of understanding of how maltreatment impacts educational well-being.

Building on the developmental epidemiology framework, this study extended the

prior Fantuzzo and Perlman (2007) study by exploring the timing of first experiences of homelessness and substantiated child maltreatment as they related to first experience of out-of-home placement. While this provided unique insight into the antecedent characteristics of out-of-home placement, it did not fully explore the risk trajectories for children experiencing homelessness, child maltreatment, and out-of-home placement. Future research should build on this understanding by exploring the timing of substantiated child maltreatment and homelessness relative to one another. Such research would offer further insight into the risk trajectories of children experiencing each of these social risks.

This study examined the impact of *history* of out-of-home placement, child maltreatment, and/or homelessness on educational well-being at the end of second grade. While these findings demonstrate a relationship between history of risk and educational well-being, they do not offer insight into how the timing of these risks in early childhood impact the timing of educational well-being. Future research should examine how the specific timing of social risks in early childhood relates dynamically to children's educational well-being. Using event history techniques it is possible to explore how the 'onset' of a risk factor, such as maltreatment, coincides with the 'onset' of academic difficulty and thus gain a better understanding of how these risks impact development across time.

In the present study, the educational outcomes of a population of second grade children in a large urban public school system and important low-frequency social risk were the focus of study. A developmental epidemiology framework stresses the use of population-based studies as the most scientifically valid method of examining the

prevalence of low-frequency events (such as out-of-home placement). This method provides a large enough ‘sample’ to capture the variability of low-prevalence events while simultaneously addressing the validity concerns associated with convenience samples. However, this study is qualified by the fact that the findings are generalizable only to the specific demographics of this large urban population in the Northeast – primarily low-income, minority students of African-American background. Future research should replicate this study with large urban populations in other regions of the country.

Practice and Policy Implications

The current era of accountability of public child welfare and school systems has led to an increased demand for evidence-based practice (McGuinn, 2007; Wulczyn, Barth, Yuan, Harden, & Landsverk, 2005). To meet this increased demand, social service and education professionals need access to relevant, high-quality information. Guided by a developmental epidemiology model and using integrated, administrative data from multiple social service systems, the present study developed a comprehensive understanding of how children’s early social risk histories impact their educational well-being. Findings from this study generated the following major policy and practice implications.

The Value of Administrative Data

The current study demonstrates the utility of administrative databases (Virnig & McBean, 2003). This study was conducted using integrated data provided through the Kids Integrated Data System (KIDS). KIDS was originally developed to provide a reliable research capacity to inform intervention services for vulnerable young children

(KIDS; Fantuzzo, Culhane, & Hadley, 2005). This system addresses many of the data quality issues related to using administrative data for research purposes. KIDS uses an ongoing process of data improvement that includes quality audits of agency datasets, routine feedback to agencies, and evidence-based changes in data collection to provide more accurate data. Quality criteria were developed to determine which data elements to include into the integrated system. This system excludes variables that contain more than five percent of missing data. It also monitors the variables to ensure there are consistent codes applied across different years of data. Unreliable variables evidencing changing definitions or values are excluded from the research system. This system also addresses the interagency challenges of using administrative data by using complex computer algorithms to conduct probability matching between the individual agencies datasets to permit linkage of data across systems. Development of a system, such as KIDS, that can ensure the quality of administrative data is one important aspect of maximizing the use of administrative data to inform practice and policy – another important element is the creation of a context for practitioner-researcher partnerships.

The present study was part of a larger research agenda that was co-constructed by the public child welfare system and university researchers to use KIDS. KIDS was developed to enhance the process of a practitioner-researcher partnership. This partnership addresses some of the limitations of administrative data by providing a context for understanding the meaning and utility of data elements captured in the administrative records. For instance, child welfare caseworkers can offer insight into how data collection processes may have altered in responses to changes in child welfare policy. Co-construction of the research agenda can also increase the likelihood that study

findings will meaningfully inform evidence-based practice and policy. Grounding the research agenda in partnership makes visible the issues and challenges that are important to practitioners – and ensures that study findings are interpreted in a way that is consonant with the day-to-day realities of the frontline sentinels.

Importance of Interagency Collaboration.

The high co-occurrence of child maltreatment, homelessness, and out-of-home placement found in the present study, as well as the high risk of poor educational well-being associated with each of these social risks, underscores the importance of interagency collaboration. Increased collaboration among social service agencies provides the opportunity and context for ‘sustainable’ comprehensive and integrated service delivery to children and their families (Roussos & Fawcett, 2000). The fact that 47% of the children with a history of placement also had a history of homelessness and 63% had a history of maltreatment, and that both of these risks significantly predicted to placement, points to the great need for inter-agency collaboration. Based on these findings, the shelter system and the child welfare system could collaborate to develop a systemic response for housing issues impacting children and families connected to the child welfare system. Giving housing priority to families at-risk for involvement in child welfare system could help to deter these families from the child welfare system as well as potentially reduce the total number of out-of-home placements (D.Culhane, personal communication, June 15, 2007).

Collaboration between social service and education professionals also has the potential to inform service planning and help enhance educational well-being for children experiencing early childhood risks. Altshuler (2003) outlined concrete benefits of routine

meetings between social service case managers and educators. For example, this contact could inform school personnel of any changes in a child's living status that might affect the child's school performance and provide an explanation for behavior change (Altshuler, 2003; Jozefowicz-Simbeni, Debra, & Israel, 2006). Also, educators who are informed of a child's service plan can support the family's participation with social services by linking participation to positive educational outcomes.

The high co-occurrence findings speak to the need for interagency professional development. Professional development consisting of training both within professional discipline and across disciplines could increase awareness of the educational needs of children who have experienced social risks (Altshuler, 2003; Jozefowicz-Simbini, Debra, & Israel, 2006). Professional development training could be used to increase social service professionals' understanding of education and early intervention policies that address the needs of children in the child welfare and homeless shelter systems (Altshuler, 2003; Dicker & Gordon, 2006; Jozefowicz-Simbini, Debra, & Israel, 2006; Mahoney, 2007). These trainings could also be used to enhance social service professionals' knowledge of the resources that are available to help bridge the gaps between the social service and educational systems – such as Court Appointed Special Advocates (CASA's) and school social workers (Dicker & Gordon, 2006; Mahoney, 2007).

Cross-training could also be used to enhance the educational well-being of children who have experienced social risks. In a study conducted by Altshuler (2003) caseworkers suggested a two-pronged approach to cross-training: an opportunity for interdisciplinary dialogue and an opportunity for 'shadowing'. This type of cross-training

could increase “respect, communication, and empathy between professionals working in the systems” and contribute to improved educational well-being for vulnerable young children.

Emphasis on Early Childhood

Findings from the current study emphasize the importance of early identification and intervention for children experiencing social risks. In this study, the period of highest risk was in the first year of life, and over 75% of the children in the second grade cohort with a history of placement in out-of-home care had experienced their first placement before they were five years old. Current child welfare, homeless, and early intervention policies mandate that young children involved in the child welfare system be evaluated for early intervention services (Jozefowicz-Simbini, Debra, & Israel, 2006; Mahoney, 2007; Markward & Miros, 2001). Court Appointed Special Advocates (CASA’s) can serve as a liaison between the social service systems and early intervention systems to ensure that children are receiving needed early intervention services (Dicker & Gordon, 2006; Mahoney, 2007).

The current study’s findings on children’s early childhood social risk experiences also point to the importance of quality early childhood education programs. Provision of quality early childhood education, such as Head Start, can promote educational well-being for children with a history of social risks (Fantuzzo, Rouse, McDermott, Sekino, Childs, & Weiss, 2005; Jozefowicz-Simbini, Debra, & Israel, 2006). Research demonstrates that children participating in these programs are more likely to evidence better cognitive, language, and social/emotional outcomes than children who participated in other forms of early childhood experiences (NICHD, 2000; National Research

Council, 2000; 2001; Raver & Knitzer, 2002).

Research findings, like the ones in this present study, can motivate and inform population-based collaborations between Head Start and city and state governments. The state of Connecticut provides an excellent illustration of how a statewide partnership between social service agencies and Head Start can result in beneficial policies and practices for vulnerable young children. This partnership, based on interagency research conducted by Fantuzzo and his colleagues (2001), generated strategies to address cross-agency information sharing, professional development, and seamless service provision. Protocols were developed to facilitate sharing information across systems. These protocols included release forms for Head Start educators to provide information to child welfare workers, as well as development of a system to inform Head Start educators of the status of child abuse reports. Cross-training among Head Start and social service professionals was provided to share interagency policies and practices and to address interagency barriers. For example, Head Start professionals were trained by child welfare professionals on how to identify child abuse or neglect and access preventative services. This statewide partnership also created strategies to ensure seamless service provision to children being served by multiple systems. Social service systems and Head Start were charged with 'coordinating services' for homeless children or those placed in out-of-home care to suggest possible substitute caregivers and to ensure that the child's early education experience was uninterrupted (Grace Whitney, personal communication, September 5, 2007).

Conclusion

Kettl (in Bier, 2006) suggests that the inadequate response to Hurricane Katrina

was not due to a failure of any one person or system to do their job – but that the breakdown of response resulted from “problems of coordination at the interfaces *between* multiple systems”. While not a disaster in the magnitude of Hurricane Katrina, children entering public schools with a history of one or more social risks are weathering their own type of storm with the likelihood of poor outcomes. Findings from the current study demonstrate that children experiencing social risks experience them at a young age, are at increased risk of experiencing more than one, and that these risks make them vulnerable to evidencing poor educational well-being.

As with Hurricane Katrina, much of the challenge – and much of the hope – for addressing the needs of these children lies at the interfaces of the multiple systems to which they are connected. Recent child welfare, homelessness, early intervention and education policies have mandated communication across systems. This study supports the importance of this mandate by highlighting the complexity of need and systemic involvement for children with a history of out-of-home placement. Addressing these complex needs requires what Bier (2006) referred to as the “subtle weaving together of forces from a vast array of [systems]”. To do this, we are called to the difficult challenge of identifying ways to build bridges between systemic gaps and divides.

The current study provided an example of how research grounded in a developmental epidemiology framework can be used to create bridges between public surveillance systems, public school systems, and researchers to address the educational well-being needs of young children exposed to social risks. Building these bridges requires a ‘common purpose’, ‘common language’, and ‘common procedures’ (Fantuzzo, McWayne, & Bulotsky, 2003). Social service professionals, educators, and early

childhood researchers all share the ‘common purpose’ of promoting the educational well-being of vulnerable children, especially those children who have been exposed to social risks. Fantuzzo and colleagues (2003) note that this common purpose “provides the opportunity to create a common language” to inform research that identifies social risks that impact multiple educational outcomes. Common language developed in collaborative partnerships between researchers and practitioners informs the research process by shaping the research questions that are asked, determining which data are collected, and how they are collected. Findings generated from this partnership-based research can then be used to inform common procedures around future assessment, intervention, and research endeavors. By fostering communication around a common purpose, this partnership-based research process provides the capacity to build bridges between agencies for more comprehensive, integrated service provision that addresses the complex needs of vulnerable young children.

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