

## The Unique and Combined Effects of Homelessness and School Mobility on the Educational Outcomes of Young Children

John W. Fantuzzo<sup>1</sup>, Whitney A. LeBoeuf<sup>1</sup>, Chin-Chih Chen<sup>2</sup>, Heather L. Rouse<sup>3</sup>, and Dennis P. Culhane<sup>1</sup>

This study examined the unique and combined associations of homelessness and school mobility with educational well-being indicators, as well as the mediating effect of absenteeism, for an entire cohort of third-grade students in Philadelphia. Using integrated archival administrative data from the public school district and the municipal Office of Supportive Housing, multilevel linear models were estimated to test these associations while adjusting for nesting of students within schools. Findings demonstrated that homelessness had a unique association with problems in classroom engagement, school mobility was uniquely related to both academic achievement and problems in classroom engagement, and experiencing both homelessness and school mobility was the most detrimental for both forms of educational well-being. Absenteeism was found to partially mediate the relations between homelessness, school mobility, and problems in task engagement. Results provide support for the McKinney-Vento Homeless Assistance Act and the need for educational policies for mobile children.

**Keywords:** at-risk students; child development; educational policy; hierarchical linear modeling

Residential instability is a disruptive experience for children and families. Unpredictable and undesired moves from one's home (e.g., foreclosures and evictions) adversely affect the family support system and children's development and well-being (Buckner, 2007). Homelessness, a severe form of residential instability, disproportionately occurs among young children from low-income families. Eight percent of children from low-income families experience homelessness in the course of a year (Rog, Holupka, & Patton, 2007), and approximately half of the children entering homeless shelters are younger than the age of 6 (U.S. Department of Housing and Urban Development, 2010a). The vulnerability associated with homelessness among young children has become of great concern to policymakers in the education, housing, and child welfare public

service systems, particularly in relationship to children's educational success.

There is a small body of research examining the association between homelessness and educational outcomes for young children. Studies have found that young homeless children exhibit lower academic achievement compared to low-income housed children (Masten et al., 1997; Obradović et al., 2009; Rouse, Fantuzzo, & LeBoeuf, 2011; Rubin et al., 1996). Studies demonstrated that young homeless children are also more likely to have poor attendance records (Fantuzzo & Perlman, 2007; Zima, Bussing, Forness, & Benjamin, 1997). The association between homelessness and behavioral problems is less clear, given mixed findings from previous research. Three studies found that homeless children exhibited more externalizing (e.g., aggression and attention problems) but not internalizing (e.g., withdrawal and anxiety) behavior problems (Bassuk et al., 1997; Rescorla, Parker, & Stolley, 1991; Zima, Wells, & Freeman, 1994), one found an association between early homelessness and internalizing but not externalizing behavior problems (Buckner, Bassuk, Weinreb, & Brooks, 1999), and one study examining early social adjustment in school found that homeless children demonstrated poorer social skills and work habits than their low-income housed peers (Fantuzzo & Perlman, 2007).

It has also been shown that young homeless children are more likely than their housed peers to have instability in their school environment through unanticipated school moves (Buckner, Bassuk, & Weinreb, 2001). This is important as research has documented the wide range of educational outcomes affected by school mobility, such as lower math and reading test scores (Mantzicopoulos & Knutsen, 2000; Xu, Hanaway, & D'Souza, 2009), increased risk for behavior problems (Gruman, Harachi, Abbott, Catalano, & Fleming, 2008; Tucker, Marx, & Long, 1998), and higher likelihood of being held back (Simpson & Fowler, 1994; Tucker et al., 1998). The negative relations between school mobility and academic achievement are particularly pronounced among students from large urban school districts making intradistrict moves (Hanushek, Kain, & Rivkin, 2004). The

<sup>1</sup>University of Pennsylvania, Philadelphia, PA

<sup>2</sup>Virginia Commonwealth University, Richmond, VA

<sup>3</sup>University of Arkansas for Medical Sciences, Little Rock, AR

detrimental association between school mobility and children's educational well-being has garnered national attention and was the focus of a recent workshop sponsored by the National Research Council of the National Academy of Sciences in 2009. A meta-analysis presented at this workshop showed a consistent negative association between school mobility and reading and math achievement (Reynolds, Chen, & Herbers, 2009). These findings demonstrate the importance of considering school mobility when examining the relations between homelessness and educational well-being because these children are particularly vulnerable for school failure.

These few empirical studies investigating the relations between early homelessness, school mobility, and educational well-being are hindered by two primary shortcomings that require additional research to further knowledge in this area. The first shortcoming of this body of research is that these studies do not examine the *unique* and *combined* relations of homelessness and school mobility with the educational well-being of young children. Only one study could be found that examined the unique association of homelessness and school mobility on children's academic achievement. Buckner and colleagues (2001) found that school mobility was significantly related to academic achievement, but homelessness did not have a significant effect. Although this study differentiated the association between these two experiences and academic achievement, the study relied on a sample of convenience from a nonrepresentative group of family shelters. Using this method of convenience sampling draws on only the homeless shelters that are amenable to participating in the research process rather than the full spectrum of operating homeless shelters. A more representative sample of homeless children is needed to fully understand the association between early homelessness and educational well-being. This study also used maternal reports of school mobility, and it has been documented that self-report of past experiences is unreliable because of memory failure and unwillingness to report negative events, such as homelessness (Boruch, 1997). Also, this study did not examine the combined effect of having experienced both homelessness and school mobility. It is important to build on this research with improved methodology to better estimate the effects of homelessness and school mobility to determine which populations of children are most likely to experience difficulty succeeding in school.

The second primary limitation of the existing literature is that it does not clarify the role of school absenteeism as a possible mediator of the association between homelessness, school mobility, and educational well-being. The few studies that have examined the link between homeless or mobile children and school absenteeism have provided mixed results. Some studies suggest that homelessness and mobility are linked to lower achievement beyond the effects of absenteeism (Rubin et al., 1996; Vostanis, Grattan, Cumella, & Winchester, 1997). Rubin and colleagues (1996) compared young children living in homeless shelters and their housed classmates on standardized reading achievement scores and found that homeless children exhibited significantly lower levels of reading, spelling, and arithmetic, although the children did not differ in attendance rates. A more recent study examining achievement growth trajectories for an entire cohort of children in Minneapolis public schools found that homeless and/or highly mobile children demonstrated significantly lower

reading and math achievement than their peers after controlling for school attendance rates (Obradović et al., 2009). In contrast, a matched comparison study of homeless and low-income housed children showed no significant differences in achievement scores on an intelligence test but a significant negative association between school mobility and school absenteeism (Buckner et al., 2001). These equivocal findings suggest a need to better understand the mechanisms by which school mobility associates with educational well-being and whether school absenteeism plays a mediating role.

The present study sought to address the limitations of previous studies by investigating homelessness and intradistrict school mobility in an entire population of young children who were born in Philadelphia and enrolled in third grade in the city's public school system. Third grade was selected because it is the first time early achievement is monitored by the public education system in accordance with accountability mandates. Data were provided by two public service systems that are charged with objectively monitoring and promoting the well-being of these children. Homelessness data came from the Office of Supportive Housing (OSH) in Philadelphia, which uses the U.S. Department of Housing and Urban Development (HUD) Homelessness Management Information Systems (HMIS; U.S. Government & Culhane, 2004). HMIS is a municipal-level data system that is used nationally by trained professionals in homeless shelters to collect individual client-level information using a standardized protocol. It provides a uniform definition of homelessness that can be used by local and national policymakers and researchers to understand trends in homelessness. The public school district provided administrative data for children's school enrollment changes and academic and behavioral outcomes over time. Specifically, this study used these two data sources through the Kids Integrated Data System (KIDS). KIDS is a state-of-the-art integrated data system that scientifically integrates and audits administrative data across the public service systems of Philadelphia for research to inform policy decisions (Fantuzzo, Culhane, Rouse, Bloom, & Roig, 2006). The integrated data from KIDS were used to examine the unique and combined association between homelessness, school mobility, and young children's academic achievement and problems in classroom engagement as well as the mediating effect of absenteeism in third grade.

## Method

### *Participants*

Inclusion criteria for this study were chosen such that the results from this study could be generalized to inform meaningful policy decisions for the School District of Philadelphia. To capture the comprehensive homelessness experiences of children from birth through third grade, we included as participants only students who were born in the municipality and were enrolled in one of the 208 elementary schools in the School District of Philadelphia ( $N = 10,738$ ). The sample was further limited to include the 8,762 students who had available outcomes in reading and mathematics achievement as well as problems in classroom engagement in third grade during the 2005–2006 school year. Table 1 provides a comparison of the demographic characteristics for all

**Table 1**  
**Percentage of Demographic Characteristics for All Third Graders, the Birth Cohort, and the Analytic Sample**

Demographic	All Third Graders ( <i>N</i> = 14,034)	Birth Cohort ( <i>n</i> = 10,841)	Analytic Sample ( <i>n</i> = 8,672)
Male	50.9	50.9	51.1
African American	62.1	66.4	65.8
Latino	16.4	14.5	15.8
Caucasian	15.1	14.4	13.4
Other race	6.4	4.7	5.0
Free/reduced lunch	68.2	65.4	67.2

third graders, the birth cohort, and the final analytic sample. Approximately half of the students in the analytic sample were male (51%). Students were predominately African American (66%). Nearly 16% of students were Latino and fewer than 5% of students were Asian. Approximately 68% of students received free or reduced lunch.

### Measures

**Homelessness.** Information regarding children's homelessness experiences was collected from OSH. Ninety-seven percent of the shelter stays in Philadelphia are tracked through the city's automated HMIS, funded by OSH. Homelessness was determined by identifying a parent who stayed in a public shelter with a child at any time between the child's birth and the end of third grade. If the parent was not identified within this system, the child was classified as not having a family homeless experience.

**School mobility.** School mobility was obtained through school district enrollment records. If the child enrolled in a different school within the district any time between each of the kindergarten, first-, second-, and third-grade school years (zero to three possible moves), this was considered a school move and coded as "mobile."

**Reading and math achievement.** Children's standardized reading and math achievement was assessed by the Complete Battery Plus version of the TerraNova (CTB/McGraw-Hill, 1997). The TerraNova demonstrates acceptable internal consistency, with reliability scores ( $\alpha$ ) ranging from the mid-.80s to .90s. During the validation process, items were carefully reviewed to ensure adequate content validity, correlations between subtests and total scores support criterion-related validity, and comparisons with the Test of Cognitive Skills (2nd ed.) and with InView (CTB/McGraw-Hill, 2001) indicate evidence of construct validity. The Reading Composite includes measures of essential reading skills, such as finding the main idea within a passage, drawing conclusions, making inferences, and understanding context clues. It also measures children's vocabulary through recognition tasks to identify words and their meanings in different contexts, matching words with definitions, identifying categories of words based on meaning, and applying the meanings of the words in new contexts. Means and standard deviations for reading and math achievement are presented in Table 2.

**Problems in classroom engagement.** The Problems in Classroom Engagement Scale (PCES) is a 14-item checklist designed to

**Table 2**  
**Descriptive Statistics for Educational Outcome Measures**

Measure	<i>M</i> ( <i>SD</i> )
Reading achievement	607.07 (40.90)
Mathematics achievement	570.01 (45.05)
Third-grade PSE	200.38 (43.74)
Third-grade PTE	200.57 (43.56)
Prior academic level	50.11 (10.07)
Prior PSE (%)	26.63
Prior PTE (%)	27.73

Note. PSE = Problems in Social Engagement; PTE = Problems in Task Engagement. Percentages indicate needing improvement on at least three items.

identify children's difficulties engaging in routine learning experiences in their elementary school classrooms (Fantuzzo, Li, LeBoeuf, Rouse, & McDermott, 2012). This checklist was incorporated in the districtwide report card, and teacher ratings on the PCES were recorded at the end of each marking period during third grade. Teachers indicated whether the child "needed improvement" on each behavior item. Two distinct dimensions of the PCES were identified, including Problems in Task Engagement and Problems in Social Engagement. Concurrent and predictive validity findings support the use of this scale with children in elementary school, and items demonstrated no differential functioning across gender and race groups (Fantuzzo et al., 2012). Problems in Task Engagement included items such as difficulty persisting on tasks to completion and working independently. Examples from the Problems in Social Engagement dimension include lack of cooperation with peers and teachers and difficulty asking for and receiving help. Item response theory was used to create standard scores for each factor. The PCES demonstrated adequate internal consistency for Problems in Task Engagement ( $\alpha$  = .90) and Problems in Social Engagement ( $\alpha$  = .87). Test-retest correlations of .81 and .80 were demonstrated for the social engagement and task engagement dimensions, respectively. Scores at the end of third grade for these two dimensions of the PCES were used in this study, and means and standard deviations are presented in Table 2.

**Prior academic level.** Children's previous academic achievement was assessed using Letter Naming Fluency, the only subscale collected by kindergarten teachers at the end of the spring semester with the Dynamic Indicators of Basic Early Literacy Skills (DIBELS; Good & Kaminski, 2002). The DIBELS is a standardized direct assessment of reading ability. The subscale used in this study was Letter Naming Fluency. As reported by the DIBELS manual, test-retest reliability coefficients range from .72 to .88 and concurrent validity coefficients from .36 to .70 against pertinent criteria in kindergarten (Good & Kaminski, 2002). Means and standard deviations for prior academic level are presented in Table 2.

**Prior problems in classroom engagement.** Teachers used a prior version of the PCES on districtwide report cards when the study sample was in kindergarten in 2002–2003 (Fantuzzo et al., 2005). Items included in this prior version were representative of

those used for the third-grade problems in classroom engagement, rated on a scale ranging from 1 (*improvement needed*) to 3 (*competent*) instead of dichotomous. Internal consistency has been demonstrated for Problems in Task Engagement ( $\alpha = .90$ ,  $p < .001$ ) and Problems in Social Engagement ( $\alpha = .95$ ,  $p < .001$ ). Criterion-referenced validity for Problems in Task Engagement was established with the Learning Behaviors Scale (Stott, McDermott, Green, & Francis, 1988). Convergent and divergent validity for problems in task and social engagement was established with the Adjustment Scales for Children and Adolescents (McDermott, Marson, & Stott, 1993) in relation to underactive ( $r = .14$  and  $.18$ , respectively) and overactive ( $r = -.62$  and  $-.70$ , respectively) social problems in the classroom. Percentages of students demonstrating problems in prior classroom engagement (needing improvement on three or more items) are presented in Table 2.

*Child and family demographic covariates.* Child demographic data were collected from school district enrollment records and included age, gender, race or ethnicity, and free or reduced lunch status at any point before the end of third grade. The school district primarily used enrollment in Temporary Assistance for Needy Families to determine eligibility for free or reduced price lunch.

*Absenteeism.* School district administrative records included absences for every child. Daily unexcused absences were used to determine absenteeism rates for each child across the third-grade school year. The number of unexcused absences was divided by the total days that child was enrolled in school and multiplied by 100. The resulting percentage of absenteeism was used as a mediating variable.

#### Procedure

This study used integrated administrative data from municipal agencies and the school district through KIDS (Fantuzzo et al., 2006). KIDS is one of the nation's first fully integrated municipal administrative data systems for children and youth. It was developed to improve public services to children and youth through scientifically rigorous research and evaluation studies reflecting co-constructed research agenda. KIDS includes individual-level administrative data from children's birth records, physical and mental health service use records, Medicaid eligibility, public housing and child welfare services, and public school education records. These data are collected annually from each of these public systems from 1990 through 2008. This comprehensive archival system provides the capacity to extract research-ready data sets to respond directly to community-based needs through population-based inquiry. It provides for cost-effective and time-sensitive research to inform public policy and practice.

KIDS uses state-of-the-art data management and data integration expertise to prepare scientifically credible integrative data sets for research projects. Scientifically valid integration of these data involves complex computer algorithms (both probabilistic and deterministic) that use individual child-level identifiers from each of the original data sources (e.g., first and last name, date of birth) to systematically match unique records from across different databases. Such integration generates a score for each pair of records indicating the likelihood of an accurate match.

Previous studies have indicated that these procedures result in less than a 1% false-positive match rate. After the integration has been completed and verified, all identifiers used for matching are removed from the data set, rendering the data anonymous. The research-ready data set provided for this study was created following these procedures.

#### Missing Data

Missing data has been an analytical issue in many large-scale, longitudinal studies. In this study, missing values were assumed to be missing at random. Multiple imputation (MI) was implemented as a method to respond to missing values in this study (Graham, 2009). The Imputation by Chained Equations program in Stata was used to impute incomplete data in the MI procedure five times, creating five multiply imputed data sets. Even though there were missing data in the measures of predictors and outcomes, only predictor variables were imputed in this analysis because it has been shown that imputing outcome data demonstrates biased parameter estimates for predictor variables (Allison, 2001). When imputing predictor variables, all variables, including predictors and outcome measures in the analytical model and several auxiliary variables related to the predictor variables, were included to obtain unbiased estimates. Analyses were then run on each of the five multiply imputed data sets, and these results were aggregated for final estimates.

#### Data Analysis

Multilevel linear regression was used to analyze the unique and combined association of homelessness and school mobility with academic achievement and problems in classroom engagement in third grade. Because students were nested within schools, the dependency within schools violates the assumptions of the regression modeling. Multilevel linear modeling was used to account for the nested hierarchies and estimate the coefficients appropriately while partitioning the variability in outcome variables into between- and within-school components (Raudenbush & Bryk, 2002).

For each educational outcome (reading, mathematics, problems in social engagement, and problems in task engagement), three sets of analytical models were estimated while controlling for child and family characteristics (gender, race or ethnicity, poverty, prior academic achievement, and prior classroom engagement problems). The first set of analytical models differentiated the academic achievement and problems in classroom engagement of students with the experience of homelessness only, school mobility only, or homelessness *and* school mobility as compared to students without any homelessness or school mobility experiences. The second set of models estimated the mediating effects of absenteeism on the relations between homelessness and school mobility and each educational outcome. As this mediator was continuous, it was centered on the school mean (group-mean centered; Raudenbush & Bryk, 2002). A fully mediated effect was evident when the parameter estimate for each of the homelessness and school mobility variables dropped to zero or near zero and was no longer significant. A partially mediated risk was determined if the parameter estimate decreased but was not at or near zero (Baron & Kenny, 1986). For all models, effect sizes (Cohen's  $d$ ) were calculated as the differences between the two



**Table 3**  
**Descriptive Statistics for Homelessness**  
**and School Mobility**

Variable	Percentage
Homelessness	8.6
Mobile	41.2
Number of moves	
1	29.48
2	9.97
3	1.77
Homeless only	3.15
Mobile only	35.76
Homeless and mobile	5.46

group means (adjusted for covariates in the model) divided by a pooled standard deviation to compare the relations among homelessness, school mobility, and educational outcomes. It was assumed that the relations between each explanatory and response variable were consistent across schools, and therefore the slopes were estimated as fixed.

## Results

Descriptive statistics for the primary independent variables of interest, homelessness and school mobility, are presented in Table 3. Almost 9% of the sample experienced homelessness and 41% had at least one school move before the end of third grade. Approximately 12% of students moved two or three times between kindergarten and third grade. Among the sample, more than 5% of students experienced both homelessness and school mobility.

### *Unique and Combined Association of Homelessness and School Mobility With Academic Achievement and Problems in Classroom Engagement*

This study differentiated the effects of homelessness and school mobility by studying the association between having one or both of these experiences and academic achievement and problems in classroom engagement. As shown in the first and third columns of Table 4, students who experienced only homelessness had no significant differences in reading and math achievement compared to students without any homelessness and school mobility experiences. Students who experienced school mobility alone had lower reading ( $d = 0.06$ ) and math ( $d = 0.07$ ) scores than students without any homelessness and school mobility experiences. Students with the combined experience of homelessness and school mobility had lower reading ( $d = 0.13$ ) and math ( $d = 0.08$ ) achievement scores than students who did not experience homelessness or school mobility.

Homelessness, school mobility, and the combined experience of homelessness and school mobility had differentiated relations with problems in classroom engagement, as presented in the first and third columns of Table 5. Students with only a homelessness experience had significantly more problems in social engagement ( $d = 0.18$ ) and task engagement ( $d = 0.15$ ) than students without a homelessness or school mobility experience. Although the effect sizes were not as large, students who changed schools but did not

experience homelessness also had more problems in both social ( $d = 0.12$ ) and task ( $d = 0.11$ ) engagement than students without any homelessness and school mobility experience. Furthermore, students with the combined experience of homelessness and school mobility had the greatest amount of problems in social ( $d = 0.25$ ) and task ( $d = 0.21$ ) engagement. In general, experiencing homelessness, school mobility, or both homelessness and school mobility had stronger associations with problems in social engagement than with problems in task engagement.

### *Mediating Effects of School Absenteeism*

The models testing the mediating effect of school absenteeism on the relations between homelessness, school mobility, and academic achievement are presented in the second and last columns of Table 4. For both reading and math achievement, students with lower school attendance attained lower achievement scores ( $p < .001$ ). Comparing the parameter estimates to the previous models, we found that the inclusion of absenteeism in the model led to minimal decreases in the magnitude of the parameter estimates for homelessness only, mobility only, and both homeless and mobile for both achievement outcomes. Similarly, absenteeism demonstrated a direct significant association with more problems in social and task engagement ( $p < .0001$ ). The mediating effect of absenteeism on the relations between homelessness, school mobility, and problems in classroom engagement was more notable, particularly for problems in task engagement. For instance, the parameter estimate for the association between problems in task engagement and experiencing both homelessness school mobility decreased by 23%, bringing the effect size down from 0.21 to 0.16. The decrease in the parameter estimate for problems in social engagement was negligible.

## Discussion

This study was conducted using integrated administrative data collected by public surveillance systems and prepared for empirical study. These integrated data allowed for the first population-based study to examine the differentiated and combined relations between homelessness and school mobility and the educational well-being of young children for their first national benchmark of academic proficiency under the No Child Left Behind Act of 2001 (2002). Results indicated that after demographic characteristics with known relations to educational well-being are accounted for, the combined experience of homelessness and school mobility was related to both poor academic achievement and problems in classroom engagement. Furthermore, experiencing both homelessness and school mobility was associated with higher risk for poor educational well-being than experiencing either homelessness or school mobility alone. Finally, there was a small partial mediating effect of absenteeism only for problems in task engagement, indicating there was primarily a direct association between homelessness, school mobility, and educational well-being.

These findings indicate that instability in both home and schooling environments is associated with the poorest educational outcomes. Additionally, the combined experience of homelessness and school mobility had a more substantial negative relation with reading than with math achievement. This is consistent with the previous study by Obradović and colleagues

**Table 4**  
**Associations of Homelessness, School Mobility, Academic Achievement, and Mediating Effect of Absenteeism in Third Grade (n = 8,482)**

Variable	Reading		Math	
	Model 1	Model 2	Model 1	Model 2
Fixed effects				
Intercept	619.74***	619.21***	587.49***	586.85***
Homeless only	-4.39	-4.04	-5.33*	-4.93
Mobile only	-3.81***	-3.21***	-4.30***	-3.59***
Homeless and mobile	-8.49***	-7.70***	-5.64**	-4.72*
Male	-6.18***	-6.16***	-1.22	-1.20
African American	-6.68***	-6.95***	-16.65***	-16.97***
Latino	-7.00***	-7.14***	-12.25***	-12.42***
Other race	-2.37	-3.28	-0.52	-1.59
Free/reduced lunch	-4.99***	-4.26***	-4.39***	-3.54**
Prior academic level	1.49***	1.46***	1.47***	1.44**
Absenteeism		-0.33***		-0.39***
Random effects				
Intercept	137.69***	139.68***	169.12***	171.50***
Residual	1302.40***	1296.97***	1533.80***	1526.20***

Note. Parameter values are unstandardized coefficients. Reference group = students without any history of homelessness or school mobility.  
 \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

**Table 5**  
**Associations of Homelessness, School Mobility, Problems in Classroom Engagement, and Mediating Effect of Absenteeism in Third Grade (n = 7,897)**

Variable	Problems in Social Engagement		Problems in Task Engagement	
	Model 1	Model 2	Model 1	Model 2
Fixed effects				
Intercept	170.02***	170.76***	172.22***	174.19***
Homeless only	11.53***	11.22***	9.43***	8.63***
Mobile only	7.85***	7.23***	7.30***	5.69***
Homeless and mobile	15.35***	14.31***	12.97***	10.25***
Male	20.43***	20.39***	21.62***	21.51***
African American	13.78***	14.15***	8.75***	9.76***
Latino	6.30**	6.48**	7.01***	7.52***
Other race	-6.51**	-5.41*	-5.83*	-2.95
Free/reduced lunch	3.56***	2.74**	4.32*	2.16*
Prior engagement problems	8.37***	8.12***	9.05***	8.25***
Absenteeism		0.38***		1.00***
Random effects				
Intercept	105.03***	103.30***	107.54***	102.73***
Residual	1578.27***	1571.53***	1620.73***	1574.98**

Note. Parameter values are unstandardized coefficients. Reference group = students without any history of homelessness/mobility.  
 \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

(2009) that found homeless students had lower reading than math growth rates through the elementary school years. An extensive body of research has shown that early social interactions, particularly with parents in a stable home environment, are necessary to support the early development of language and literacy skills (Dickinson & Neuman, 2006; Hart & Risley, 1995). Early homelessness represents a significant disruption in social support systems in the home learning environment that are essential for positive reading achievement.

The lack of stability in early social interactions associated with homelessness was also shown to greatly affect young children's classroom engagement in this study. Children with a family homeless experience demonstrated substantially more problems in both task and social engagement in school, and these findings were more pronounced for social engagement. This supports previous studies that found larger relations between homelessness and externalizing versus internalizing behavior problems (Bassuk et al., 1997; Rescorla et al., 1991; Zima et al., 1994). Young

children who are homeless often become disconnected from their social support systems (i.e., family, peers, and neighborhoods), and the findings from this study indicate that disruption to early social ties triggers greater difficulty developing cooperative learning in the classroom. These skills have been shown to be particularly important for future academic and social development as well as buffers against school dropout (Children's Defense Fund, 2007).

The present study found that there was no significant relation between homelessness and academic achievement. This is supported by one other study that found that homelessness was not significantly associated with a composite measure of reading achievement but that school mobility did demonstrate a unique association (Buckner et al., 2001). These findings indicate that the association between homelessness and reading achievement is relatively small and suggest that any relation may be operating through intermediate school mobility experiences. School mobility was uniquely associated with academic achievement in third grade and affected both reading and math achievement at comparable levels. These findings are consistent with previous school mobility research that was reviewed in a recent meta-analysis (Reynolds et al., 2009). Literature has shown that young children's cognitive development is largely dependent on a stable and consistent learning environment, and disruption in their learning experience can have long-lasting effects on later development (Mashburn et al., 2008; Rimm-Kaufman, Grimm, & Curby, 2009). Intradistrict school mobility within a large, urban district represents such a disruptive influence to students, because they are required to adjust to an entirely new school setting, including new teachers, peers, and academic curricula. This study demonstrates that this particular form of instability, even when one controls for prior achievement and homelessness, has meaningful negative associations with both reading and math achievement.

School mobility was also related to problems in classroom engagement, which is consistent with previous work (Pettit, 2004; Tucker et al., 1998). Specifically, this study found that the association of school mobility with the two dimensions of problems in classroom engagement was similar to that of homelessness in that it was larger for problems in social engagement than for problems in task engagement. This comports with one recent study that found school mobility had a greater association with early classroom participation than with positive attitudes toward school (Gruman et al., 2008). These findings suggest that school moves may have a more harmful effect on the development of positive peer relationships than they have on individual attention to task.

Finally, the present study found minor evidence that absenteeism mediated the relations between homelessness and school mobility and problems in classroom engagement. The association between both homelessness and school mobility and problems in task engagement decreased by roughly one quarter of a standard deviation as a result of the inclusion of absenteeism in the model. Although the partial mediation was small, this suggests that children who experience instability both at home and at school are more likely than their peers to disconnect from their school learning environment in that they experience difficulty attending school and subsequently focusing on their work in the classroom.

This study of homelessness and school mobility examining intradistrict moves in the large, urban public school system of Philadelphia represents a substantial extension to the previous literature. First, it examines these two forms of home and school instability simultaneously and allows for direct comparison of their effects on academic and engagement outcomes. Second, it accounts for prior achievement and problems in classroom engagement as well as school absenteeism, further providing a more accurate assessment of the unique associations of homelessness and school mobility with educational well-being indicators. Nonetheless, there are two limitations and qualifications of this study that can help guide how future research can be advanced. First, this study used the available nationally standardized HMIS definition of homelessness as shelter stays. Children younger than the age of 6 make up half of the children entering the shelter system, so it is likely that this definition captures the majority of young children experiencing homelessness (Khadduri, Culhane, Leopold, Rothschild, & Cortes, 2010). Nevertheless there are other forms of homelessness tracked by public school districts, such as short stays with friends or relatives or living on the street. These records are not uniform across districts and are typically reliant on self-report. Future work should strive to enhance the measurement methodology for recording homeless experiences in school district records to include this information in subsequent research. Second, this study represents the first exploration of homelessness and school mobility in a comprehensive model within a large, urban school district. It began with a dichotomous classification of ever having experienced homelessness or school mobility to first determine whether these populations were at greater risk for school failure in general. An important next step would be to look within these two groups of children and examine the distinguishing characteristics of their experiences (e.g., number and timing of experiencing homelessness or school mobility) to better understand how heterogeneity within these populations may better explain the associations found in this study. Third, there is limited understanding of the mechanisms behind the effects of homelessness and school mobility on educational well-being, such as the unbalanced association between problems in task and social engagement as well as the larger relation to reading than to math achievement. Additional data, such as family characteristics (e.g., parental attachment, family cohesion, social support), could help to uncover the pathways in which these forms of instability affect the educational well-being of young children. This work could be extended by using both administrative data and family data derived from intensive, structured interviews of randomly sampled families in the cohort.

Overall, the results from this study provide important empirical evidence for the McKinney-Vento Homelessness Assistance Act (1987). The provisions of this act were designed to lessen the risk for mobility among homeless children by requiring transportation to and from the homeless child's school of origin if the child is still living within the school district boundaries. These provisions are intended to create a more stable learning environment for young children who experience homelessness so they have equal opportunity to meet educational requirements as their housed peers. The current study suggests that this policy is appropriately targeting children who are experiencing both homelessness and school mobility, a population at exceptional

risk for poor educational well-being. Using accurate national HMIS definitions of homelessness and school mobility from existing professional surveillance systems, this study establishes that children who experience both of these forms of instability are more likely to have difficulty meeting the educational demands during the early elementary years. Therefore, the educational support provisions of the McKinney-Vento Homelessness Assistance Act are much needed and are of great benefit to school administrators and teachers serving this vulnerable group of young children.

As this study also demonstrated unique associations of experiencing either homelessness or school mobility, these subgroups of children also require additional assistance. Recently, HUD committed \$1.68 billion to housing assistance grants for families, recognizing that alternative housing opportunities are necessary to prevent the harmful disruption caused by homelessness (U.S. Department of HUD, 2010). This funding commitment is designed to work hand in hand with the McKinney-Vento Homelessness Assistance Act (2001) to provide greater stability for young vulnerable children and to prevent the harmful effects of homelessness on early educational well-being. In addition, HUD has also recently put forth an extensive set of relevant research priorities that will examine which housing provisions are most beneficial for the educational progress of children (U.S. Department of HUD, 2010). These funding and research foci underscore the importance of providing stable home environments for children and the need to better understand how these housing improvements have the potential to assist in positive development of young children. On the other hand, there is currently no legislation and subsequent education policy and funding structures to support children who are experiencing school mobility without homelessness. As demonstrated in this study and previous research, children who move between schools are at great risk for experiencing delays in both academic and engagement facets of educational well-being, even more so than family homeless children. At present, mobile students represent an “invisible population” that is not formally being acknowledged in the education system. This study examined a particularly detrimental form of school moves, those occurring within a large urban school district. In addition to previous research by Hanushek and colleagues (2004) demonstrating this as the most harmful type of move, this is the most policy-relevant form of school mobility because individual school districts would have the power to respond to their own mobile students prior to and after such moves. Given the known educational struggles experienced by these children, school policies and supports are needed to provide these students with equal opportunity for educational success.

Along with imperative policy changes to mitigate the negative associations of homelessness and school mobility with children's educational outcomes, more research is needed to help provide a better understanding of the different manifestations of residential and school instability as well as the risk and protective factors that moderate their association. More precise distinctions are needed between the types of residential and school mobility and their differential impact on educational well-being. Such studies have the potential to improve policies and programs that seek to assist these vulnerable young children.

## NOTES

This research was supported in part by grants from the National Institute of Child Health and Human Development and the William Penn Foundation. Data were provided through the Kids Integrated Data System, a partnership between the City of Philadelphia and the School District of Philadelphia. The findings and discussion presented in this manuscript, however, represent the views of the authors and do not reflect those of the City or the School District of Philadelphia.

## REFERENCES

- Allison, P. (2001). *Missing data*. Thousand Oaks, CA: Sage.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182.
- Bassuk, E. L., Buckner, J. C., Weinreb, L. F., Browne, A., Bassuk, S. S., Dawson, R., & Perloff, J. (1997). Homelessness in female-headed families: Childhood and adult risk and protective factors. *American Journal of Public Health*, 87(2), 241–248. doi:10.2105/AJPH.87.2.241
- Boruch, R. F. (1997). *Randomized experiments for planning and evaluation: A practical guide*. Thousand Oaks, CA: Sage.
- Buckner, J. C. (2007). Impact of homelessness on children: An analytic review of the literature. In D. Rog, S. Holupka, & C. Patton (Eds.), *Characteristics and dynamics of family homeless families with children: Final report*. Washington, DC: U.S. Department of Health and Human Services, Office of Human Services Policy, Office of the Assistant Secretary for Planning and Evaluation.
- Buckner, J. C., Bassuk, E. L., & Weinreb, L. F. (2001). Predictors of academic achievement among family homeless and low-income housed children. *Journal of School Psychology*, 39, 45–69. doi:10.1016/S0022-4405(00)00059-5
- Buckner, J. C., Bassuk, E. L., Weinreb, L., & Brooks, M. (1999). Homelessness and its relation to the mental health and behavior of low-income school aged children. *Developmental Psychology*, 35(1), 246–257. doi:10.1037/0012-1649.35.1.246
- Children's Defense Fund. (2007). *America's cradle to prison pipeline*. Washington, DC: Author.
- CTB/McGraw-Hill. (1997). *TerraNova*. Monterey, CA: Author.
- CTB/McGraw-Hill. (2001). *Test of Cognitive Skills* (2nd ed.). Monterey, CA: Author.
- Dickinson, D. K., & Neuman, S. B. (2006). *Handbook of early literacy research* (2nd ed.). New York, NY: Guilford.
- Fantuzzo, J., Culhane, D., Rouse, H. R., Bloom, R., & Roig, A. (2006, August). *The Kids Integrated Data System (KIDS)*. Invited presentation to the Assistant Secretary of Planning and Evaluation, Department of Education, Washington, DC.
- Fantuzzo, J. W., Li, F., LeBoeuf, W. A., Rouse, H. L., & McDermott, P. A. (2012). *Problems in Classroom Engagement Scale: Validation of a school district-wide longitudinal measure used across primary grades*. Manuscript submitted for publication.
- Fantuzzo, J. W., & Perlman, S. (2007). The unique impact of out-of-home placement and the mediating effects of child maltreatment and homelessness on early school success. *Children and Youth Services Review*, 29(7), 941–960.
- Fantuzzo, J. W., Rouse, H. L., McDermott, P. A., Sekino, Y., Childs, S., & Weiss, A. (2005). Early childhood experiences and kindergarten success: A population-based study of a large urban setting. *School Psychology Review*, 34(4), 571–588.
- Good, R. H., & Kaminski, R. A. (2002). *Dynamic Indicators of Basic Early Literacy Skills* (6th ed.). Eugene, OR: Institute for Development of Educational Achievement.



- Graham, J. W. (2009). Missing data analysis: Making it work in the real world. *Annual Review of Psychology*, 60, 549–576. doi:10.1146/annurev.psych.58.110405.085530
- Gruman, D. H., Harachi, T. W., Abbott, R. D., Catalano, R. F., & Fleming, C. B. (2008). Longitudinal effects of student mobility on three dimensions of elementary school engagement. *Child Development*, 79(6), 1833–1852. doi:10.1111/j.1467-8624.2008.01229.x
- Hanushek, E. A., Kain, J. F., & Rivkin, S. G. (2004). Disruption versus Tiebout improvement: The costs and benefits of switching schools. *Journal of Public Economics*, 88, 1721–1746. doi:10.1016/S0047-2727(03)00063-X
- Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experiences of young American children*. Baltimore, MD: Paul H Brookes.
- Khadduri, J., Culhane, D., Leopold, J., Rothschild, L., & Cortes, A. (2010). *Office of Community Planning and Development: The 2010 annual homelessness assessment report to Congress*. Washington, DC: U.S. Department of Housing and Urban Development.
- Mantzicopoulos, P., & Knutson, D. J. (2000). Head Start children: School mobility and achievement in the early grades. *Journal of Educational Research*, 93(5), 305–311.
- Mashburn, A. J., Pianta, R. C., Hamre, B. K., Downer, J. T., Barbarin, O. A., Bryant, D., . . . Howes, C. (2008). Measures of classroom quality in prekindergarten and children's development of academic, language, and social skills. *Child Development*, 79(3), 732–749. doi:10.1111/j.1467-8624.2008.01154.x
- Masten, A. S., Sesma, A., Jr., Si-Asar, R., Lawrence, C., Miliotis, D., & Dionne, J. A. (1997). Education risks for children experiencing homelessness. *Journal of School Psychology*, 35(1), 27–46. doi:10.1016/S0022-4405(96)00032-5
- McDermott, P. A., Marston, N. C., & Stott, D. H. (1993). *Adjustment scales for children and adolescents*. Philadelphia, PA: Edumetric and Clinical Science.
- McKinney-Vento Homeless Assistance Act, as amended, Title VII, Subtitle B, 42 U.S.C. 11431–11435 (1987).
- No Child Left Behind Act of 2001, Pub. L. No. 107-110, § 115, Stat. 1425 (2002).
- Obradović, J., Long, J. D., Cutuli, J. J., Chan, C.-K., Hinz, E., Heistad, D., & Masten, A. S. (2009). Academic achievement of family homeless and highly mobile children in a urban school district: Longitudinal evidence on risk, growth, and resilience. *Development and Psychopathology*, 21(2), 493–518. doi:10.1017/S0954579409000273
- Pettit, B. (2004). Moving and children's social connections: Neighborhood context and the consequences of moving for low-income families. *Sociological Forum*, 19(2), 285–311. doi:10.1023/B:SOFO.0000031983.93817.ff
- Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models* (2nd ed.). Thousand Oaks, CA: Sage.
- Rescorla, L., Parker, R., & Stolley, P. (1991). Ability, achievement, and adjustment in family homeless children. *American Journal of Orthopsychiatry*, 61(2), 210–220. doi:10.1037/h0079236
- Reynolds, A. J., Chen, C.-C., & Herbers, J. E. (2009, June). School mobility and educational success: A research synthesis and evidence on prevention. Paper presented at the Workshop on the Impact of Mobility and Change on the Lives of Young Children, Schools, and Neighborhoods, Washington, DC.
- Rimm-Kaufman, S. E., Curby, T. R., Grimm, K. J., Nathanson, L., & Brock, L. L. (2009). The contribution of children's self-regulation and classroom quality to children's adaptive behaviors in the kindergarten classroom. *Developmental Psychology*, 45, 958–972.
- Rog, D., Holupka, S., & Patton, C. (2007). *Characteristics and dynamics of family homeless families with children: Final report*. Washington, DC: U.S. Department of Health and Human Services, Office of Human Services Policy, Office of the Assistant Secretary for Planning and Evaluation.
- Rouse, H. L., Fantuzzo, J. W., & LeBoeuf, W. (2011). Comprehensive challenges for the well being of young children: A population-based study of publicly monitored risks in a large urban center. *Child & Youth Care Forum*, 40(4), 281–302.
- Rubin, D. H., Erickson, C. J., San Agustin, M., Cleary, S. D. Allen, J. K., & Cohen, P. (1996). Cognitive and academic functioning of family homeless children compared with housed children. *Pediatrics*, 97(3), 289–294.
- Simpson, G. A., & Fowler, M. G. (1994). Geographic mobility and children's emotional/behavioral adjustment and school functioning. *Pediatrics*, 93(2), 303–309.
- Stott, D. H., McDermott, P. A., Green, L. F., & Francis, J. M. (1988). *Study of children's learning behaviors*. San Antonio, CA: Psychological Corporation.
- Tucker, C. J., Marx, J., & Long, L. (1998). "Moving on": Residential mobility and children's school lives. *Sociology of Education*, 71(2), 111–129.
- U.S. Department of Housing and Urban Development. (2010). *HUD Offers \$1.68 Billion in Family homeless Assistance Grants to Support Thousands of Local Projects Nationwide*. Press Release, HUD No. 10-197. Retrieved from U.S. Department of Housing and Urban Development website: [http://portal.hud.gov/portal/page/portal/ HUD/ press/press\\_releases\\_media\\_advisories/2010/HUDNo.10-197](http://portal.hud.gov/portal/page/portal/ HUD/ press/press_releases_media_advisories/2010/HUDNo.10-197)
- U.S. Government & Culhane, D. P. (2004). *Homeless Management Information Systems (HMIS): Data and technical standards final notice*. Retrieved from [http://works.bepress.com/dennis\\_culhane/18](http://works.bepress.com/dennis_culhane/18)
- Vostanis, P., Grattan, E., Cumella, S., & Winchester, C. (1997). Psychosocial functioning of homeless children. *Journal of the American Academy of Child and Adolescent Psychiatry*, 36(7), 881–889.
- Xu, Z., Hannaway, J., & D'Souza, S. (2009, June). Student transience in North Carolina: The effect of school mobility on student outcomes using longitudinal data. Presentation for the Workshop on the Impact of Mobility and Change on the Lives of Young Children, Schools, and Neighborhoods, Washington, DC.
- Zima, B. T., Bussing, R., Forness, S. R., & Benjamin, B. (1997). Sheltered family homeless children: Their eligibility and unmet need for special education evaluations. *American Journal of Public Health*, 87(2), 236–240. doi:10.2105/AJPH.87.2.236
- Zima, B. T., Wells, K. B., & Freeman, H. E. (1994). Emotional and behavioral problems and severe academic delays among sheltered family homeless children in Los Angeles County. *American Journal of Public Health*, 84(2), 260–264. doi:10.2105/AJPH.84.2.260

## AUTHORS

**JOHN W. FANTUZZO** is the Albert M. Greenfield Professor at University of Pennsylvania, Graduate School of Education, 3700 Walnut Street, Philadelphia, PA 19104; [johnwf@gse.upenn.edu](mailto:johnwf@gse.upenn.edu). His research focuses on the design, implementation, and evaluation of school- and community-based assessment and prevention strategies for vulnerable children from low-income households.

**WHITNEY A. LEBOEUF** is a research analyst at University of Pennsylvania, 3701 Locust Walk, Philadelphia, PA 19104; [wleboeuf@upenn.edu](mailto:wleboeuf@upenn.edu). Her research focuses on the educational well-being of children in large urban school districts and the intersection of public services, including education, public health, housing, and child welfare.

**HEATHER L. ROUSE** is an assistant professor at the College of Medicine, Center for Applied Research and Evaluation, and research director for

the Arkansas Center for Health Improvement, University of Arkansas for Medical Sciences, 1 Children's Way, Little Rock, AR 72202; *HLRouse@uams.edu*. Her research focuses on the development and use of integrated administrative data systems for education, social, and health policy research with an emphasis on identifying mutable risk and protective factors in early childhood.

**CHIN-CHIH CHEN** is an assistant professor of special education and disability policy at Virginia Commonwealth University, 1015 West Main Street, Richmond, Virginia, 23284; *ccchen@vcu.edu*. Her research focuses on the risk and protective factors related to educational well-being, evidence-based intervention practices, and service trajectories and developmental pathways for at-risk children and children with disabilities.

**DENNIS P. CULHANE** is the Dana and Andrew Stone Professor of Social Policy at University of Pennsylvania, School of Social Policy and Practice, 3701 Locust Walk, Philadelphia, PA 19104; *culhane@upenn.edu*. His research focuses on homelessness, assisted housing policy, and the use of integrated administrative data for policy analysis and systems reform.

Manuscript received October 12, 2011  
Revisions received May 16, 2012, and October 16, 2012  
Accepted October 24, 2012