HHS Public Access
Author manuscript
*Dev Psychol*. Author manuscript; available in PMC 2016 January 26.

Published in final edited form as:
*Dev Psychol*. 2014 July ; 50(7): 1891–1896. doi:10.1037/a0036984.

# Instability Versus Quality: Residential Mobility, Neighborhood Poverty, and Children's Self-Regulation

**Amanda L. Roy**,
Department of Applied Psychology, Steinhardt School of Education, Culture, & Human Development, New York University

**Dana Charles McCoy**, and
Center on the Developing Child, Schools of Education and Public Health, Harvard University

**C. Cybele Raver**
Department of Applied Psychology, Steinhardt School of Education, Culture, & Human Development, New York University

## Abstract

Prior research has found that higher residential mobility is associated with increased risk for children's academic and behavioral difficulty. In contrast, evaluations of experimental housing mobility interventions have shown moving from high poverty to low poverty neighborhoods to be beneficial for children's outcomes. This study merges these disparate bodies of work by considering how poverty levels in origin and destination neighborhoods moderate the influence of residential mobility on 5th graders' self-regulation. Using inverse probability weighting with propensity scores to minimize observable selection bias, this work found that experiencing a move during early or middle childhood was related to negative child outcomes (as indicated by increased behavioral and cognitive dysregulation measured via direct assessment and teacher-report) in 5th grade. However, these relationships were moderated by neighborhood poverty; moves out of low poverty and moves into high poverty neighborhoods were detrimental, while moves out of high poverty and moves into low poverty neighborhoods were beneficial.

### Keywords

residential mobility; self-regulation; neighborhood poverty; inverse probability weighting

---

Self-regulatory skills, such as the ability to delay gratification, pay attention, and control impulsivity, undergird children's behavioral adjustment and early learning (Blair & Razza, 2007; Raver, Blair, & Willoughby, 2013). Emerging research has shown children's self-regulation to be adversely affected by disruptive and stressful environmental characteristics such as household instability (McCoy & Raver, 2014) and neighborhood poverty and crime (McCoy, Raver, & Sharkey, 2014; Raver et al., 2013). However, researchers have yet to

---

Correspondence concerning this article should be addressed to Amanda L. Roy, Department of Applied Psychology, Steinhardt School of Education, Culture, & Human Development, New York University, 627 Broadway, New York, NY 10012. alr260@nyu.edu.

*Supplemental materials:* http://dx.doi.org/10.1037/a0036984.supp

examine the influence of residential mobility on children's self-regulatory skills, even though moving during childhood has been linked with adverse educational (Adam, 2004; Astone & McLanahan, 1994) and behavioral (Adam & Chase-Lansdale, 2002) adjustment outcomes. While moving households may produce instability and stress, a change in residence may also be accompanied by a shift in neighborhood economic conditions, potentially reducing or increasing children's exposure to neighborhood poverty, with potential implications for children's self-regulatory skills.

The current study unites disparate literatures on the effects of mobility and neighborhood poverty by considering (1) whether exposure to a move during early or middle childhood is related to changes in micro- and macro-dimensions of children's self-regulation in fifth grade and (2) whether the economic quality (high vs. low poverty) of the neighborhood of origin or destination moderates this relationship.

## Residential Mobility and Changes in Neighborhood Poverty

Researchers have found detriments to children's educational, behavioral, and adjustment outcomes among low-income families that move relative to those who do not (Adam, 2004; Adam & Chase-Lansdale, 2002; Astone & McLanahan, 1994). The disruptive nature of moving (e.g., interference with activities and routines) is often cited as the factor underlying its influence on children (Adam, 2004). The decision to move does not occur in isolation but rather often happens in response to parental transitions that can be positive (e.g., employment at a better paying job) or negative (e.g., divorce) for children in the long term (McLanahan & Sandefur, 1994; South, Crowder, & Trent, 1998). Although such transitions may affect children's functioning in and of themselves, the instability and stress of a residential move may have an influence on children above and beyond strains associated with precursors to the move (Adam & Chase-Lansdale, 2002).

Although residential moves can be accompanied by disruption, they also have the potential to shift the quality of a family's neighborhood of residence. Decades of research has established that residence in economically disadvantaged neighborhoods is related to detriments in children's functioning (Brooks-Gunn, Duncan, & Aber, 1997). Moreover, findings from two of the most well studied mobility interventions, the Gautreaux Project and Moving to Opportunity, have linked moving from higher poverty to lower poverty areas with benefits in children's education, behavioral, and health outcomes (Kaufman & Rosenbaum, 1992;Kling, Liebman, & Katz, 2007). In addition, some work has suggested that considering mobility in the context of the quality of the move is important (Sharkey & Sampson, 2010).

## Instability, Neighborhood, and Self-Regulation

The theoretical framework of experiential canalization offers insight into the developmental processes that may underlie relationships between residential mobility, neighborhood poverty, and children's cognitive and behavioral outcomes. Cumulative exposure to harsh, unpredictable environments (especially where stressors are outside the individual's control) leads to disruptions in parasympathetic function (e.g., the HPA-axis, as indicated by blunted or otherwise altered diurnal patterns of cortisol output), which in turn affect synaptic activity in the prefrontal cortex and higher order cognitive processing, or executive function (Badanes, Watamura, & Hankin, 2011; Blair, 2010). Recent studies have provided support for this framework: preschoolers living in poverty are almost five times as likely to demonstrate disrupted patterns of diurnal cortisol as their nonpoor counterparts (Zalewski et al., 2012), and increased exposure to economic hardship is associated with significantly lower levels of cognitive self-regulation (Blair & Raver, 2012; Raver et al., 2013). Moreover, children's exposure to additional family and neighborhood stressors (e.g., high levels of household instability, neighborhood crime) also has direct effects on their self-regulatory outcomes (McCoy & Raver, 2014; McCoy et al., 2014).

## The Issue of Selection in Residential Mobility

A common concern in studies of residential mobility is the issue of selection, where decisions around moving are nonrandom and driven by a wide range of economic factors, psychosocial stressors, and family circumstances. The resulting empirical challenge is that those same factors have also been established as detrimental to children's developmental outcomes, and therefore may represent significant threats to the ability to draw inferences regarding the role of mobility, per se, on child self-regulation. In the present article, we control for baseline levels of children's self-regulation (i.e., "residualized change" approach), thereby reducing bias associated with time-invariant characteristics such as genetics and other stable characteristics of the child, family, and environment (Votruba-Drzal, 2006). In addition, we employ inverse probability weighting using propensity scores to reweight the control group (nonmovers) to be more similar to the treatment group (families who move) across measured characteristics. This approach minimizes the observable selection bias associated with mobility and more accurately estimates the influence of moving itself (Imbens, 2004; Kurth et al., 2006).

## The Present Study

The present study aims to address several gaps in the literature. First, this work explores the long-term consequences of experiencing a move in early or middle childhood and low-income children's gains in self-regulatory functioning in elementary school. In addition, we operationalize self-regulation using multiple forms of assessment across multiple time points, including more fine grained, microanalytic measures of children's latency to respond on specific lab-based tasks and at a more molar level through adults' reports of children's observable regulatory behaviors, increasing our ability to identify the influence of residential mobility on children's cognitive and behavioral self-regulation over time. Finally, by examining the joint influence of residential mobility and the economic quality of origin and destination neighborhoods, this work considers whether the instability of moving or the extent of exposure to neighborhood poverty matters more for children's self-regulation.

## Method

### Sample

Data for this study come from the Chicago School Readiness Project, a longitudinal follow-up of 602 children who participated in a socioemotional intervention trial implemented in preschool programs located in high-poverty Chicago neighborhoods. Data were collected at four time points: fall of preschool (baseline), kindergarten (baseline + 1 year), third grade (baseline + 4 years), and fifth grade (baseline + 6 years). At baseline, caregivers were an average of 29.53 years old (*SD* = 7.66). The majority of caregivers identified as African American (70%) or Latino (26%), and the average income-to-needs ratio for the sample was 0.67 (*SD* = 0.59), indicating that the majority of children came from households whose income and family size placed them below the national poverty line. On average, the children in the sample were 49.16 (*SD* = 7.38) months old, and there were slightly more girls (53%) than boys. The majority of families (72%) moved at least once over the 6-year course of the study. Of those that moved, 56% moved once, 33% moved twice, and 11% moved three times (see the online supplemental materials for additional sample descriptives).

## Measures

**Residential mobility—**Household addresses reported by caregivers at each of the four waves of data collection were used to calculate residential mobility. Families that moved across any two subsequent waves of data were coded as movers (1), and those who did not move were coded as nonmovers (0).

**Neighborhood poverty—**Families' addresses at each wave were geocoded using ArcGIS software (Version 10; ESRI, 2011). We used census block groups as our operationalization of neighborhood boundaries. Estimates of the percentage of the block group population living in poverty were obtained from the American Community Survey 2006–2010 5-year estimates. Measures of neighborhood poverty at baseline and fifth grade were used in these analyses.

**Child self-regulation—**At baseline, child self-regulation was measured using the Preschool Self-Regulation Assessment (PSRA), a comprehensive 30-min battery capturing children's self-regulation and cognitive skills (Smith-Donald, Raver, Hayes, & Richardson, 2007). Children completed the Balance Beam and Pencil Tap direct assessment tasks, both of which examined children's attention to assessor instructions, working memory of the rules, and inhibition of impulsive responses. Tasks were scored based on children's performance and time to completion. Following the assessment, each assessor completed the 28-item PSRA assessor report, rating children's attention, behavior, and emotion during the tasks on a scale of 0 to 3. For these analyses we use items capturing children's attention/impulse control ($\alpha$ = .92). To reduce collinearity, scores on the Pencil Tap task, the Balance Beam task, and the attention/impulse control factor of the PSRA assessor report were standardized (i.e., *z*-scored) and averaged to represent children's baseline self-regulatory skills.

At the fifth grade follow-up, two dimensions of self-regulation were measured. The first was executive function, conceptualized as a microlevel cognitive dimension of self-regulation encompassing three skills (working memory, inhibitory control, and attention set shifting) assessed using the computerized Hearts and Flowers task (Davidson, Amso, Anderson, & Diamond, 2006). In this task, a heart or flower appears on either the right or left side of a computer screen. In the congruent condition, children are told to press the key that is on the "same side as the heart." In the incongruent condition, children are told to press the key that is on the "opposite side as the flower." Finally in the mixed condition, incongruent and congruent trials are intermixed, therefore taxing all three dimensions of executive function. Stimuli were presented for 2,000 ms, with an interstimulus interval of 1,000 ms. Trials were excluded from aggregates if the response was incorrect or if the response latency was less than 200 ms, indicating that participants could not have consciously seen the stimulus. In our analyses, the outcome of interest was mean response latency on the mixed trials, adjusting for mean latency on hearts only trials. This approach captures children's cognitive flexibility by measuring how much longer it takes children to accurately respond when the cognitive demands of the task are higher. Lower mean latency indicates higher executive functioning.

The second representation of self-regulation included a global measure of cognitive and behavioral self-regulation that was rated by children's classroom teachers at the fifth grade follow-up. A composite of two measures, the Barratt Impulsiveness Scale, Version 11 (BIS-11; Patton, Stanford, & Barratt, 1995) and the Behavior Rating Inventory of Executive Function (BRIEF; Gioia, Isquith, Guy, & Kenworthy, 2000), was used to assess children's self-regulatory skills (McCoy, Raver, Lowenstein, & Tirado-Strayer, 2011). The full scale used in these analyses consisted of 27 items ($\alpha$= .97) that tap dimensions of cognitive (e.g., "Has short attention span") and behavioral dysregulation (e.g., "Interrupts others"). All items were standardized on a 0 to 1 scale before scale creation, and the scale was multiplied by 100 to avoid small coefficients.

**Covariates—**Caregiver-reported demographic and household characteristics collected at baseline were used for estimating propensity scores to be used in inverse probability weighting and included in regression models to increase the precision of the estimates. These variables included demographic information (cohort, treatment group, child age and gender, caregiver age and race/ethnicity), economic characteristics (education, hours worked per week, receipt of public assistance, current assets, family income-to-needs ratio), and dimensions of household (in)stability (having a partner, household size, number of moves in the previous year as self-reported). Family income-to-needs ratio was calculated based on yearly earnings and family size.

## Analytic Plan

Propensity scores were defined as the probability that families would move between baseline (preschool) and fifth grade as a function of included baseline covariates and were estimated using *psmatch2* in Stata 12 (Leuven & Sianesi, 2003). Final models were selected based on the balance of the means and standard deviations of each covariate. We control for propensity scores in the final regression equation using inverse probability weighting to estimate the average treatment effect. All movers received a weight equal to their estimated propensity score ($p$), and nonmovers received a weight equal to the inverse of their estimated propensity score ($1/p$). By reweighting movers and nonmovers to be more similar to one another (i.e., an "average treatment effect" approach), the full sample of participants could be included in the final set of analyses (see the online supplemental materials for additional details).

Author Manuscript
Author Manuscript
Author Manuscript



# Results

## Residential Mobility and Self-Regulation

Results from ordinary least squares regressions including analytic weights and the full set of covariates revealed that children who experienced a move had slower response latencies (indicating greater dysregulation) on the Hearts and Flowers task than children who did not move ($b$ = 36.20, $SE$ = 16.84, $p$ = .03), with movers responding 36.20 ms (or 0.22 standard deviations) slower on the task relative to those children who did not move (see Table 1, Model 1). Similarly, teachers reported greater dysregulation on the BIS-BRIEF among children who moved relative to those who did not ($b$ = 6.04, $SE$ = 3.04, $p$ = .05); children who moved were scored as being 6.04 points (or 0.24 standard deviations) higher in dysregulation than nonmovers (see Table 1, Model 3).

## Neighborhood Poverty as a Moderator

Neighborhood poverty at baseline and in fifth grade and their interactions with residential mobility were added to the models. The interaction between residential mobility and baseline neighborhood poverty was significantly related to children's Hearts and Flowers performance (see Table 1, Model 2). In addition, the interactions between residential mobility and baseline neighborhood poverty and residential mobility and fifth grade neighborhood poverty were significantly related to children's BIS-BRIEF ratings (see Table 1, Model 4). Interactions were graphed (see Figures 1–3), and simple slopes were tested to determine if they were different from 0. Moving out of a low poverty neighborhood was associated with a 189-ms (or a 1.17–standard deviation) increase in response time on the Hearts and Flowers task (A to B slope; $t$(288) = 2.59, $p$ = .01). In contrast, the shape of the interaction suggests that moving out of a high poverty neighborhood is related to reductions in response time on the Hearts and Flowers task; however, this simple slope was only marginally statistically significant (C to D slope; $t$(288) = −1.86, $p$ = .06). Similarly, moving of a low poverty neighborhood was associated with a 27.38-point (or a 1.08–standard deviation) increase in teacher-reported dysregulation (A to B slope; $t$(326) = 3.10, $p$ < .01), whereas moving out of a high poverty neighborhood was related to a 24.47-point (or 0.98–standard deviation) decrease in teacher-reported dysregulation (C to D slope; $t$(326) = −2.02, $p$ = .04). In comparison, moving into a low poverty neighborhood by fifth grade was associated with a 27.91-point (or a 1.12–standard deviation) decrease in teacher-reported dysregulation (A to B slope; $t$(326) = −2.34, $p$ = .02), whereas moving into a high poverty neighborhood by fifth grade was associated with a 30.82-point (or a 1.24–standard deviation) increase in teacher-reported dysregulation (C to D slope; $t$(326) = 3.53, $p$ < .01).

# Discussion

The current study extends past work on residential mobility by demonstrating that exposure to a move during early and middle childhood is related to low-income children's self-regulation in fifth grade. However, although we found that children who experienced a residential move had slower response times on the Hearts and Flowers assessment (indicating lower microlevel executive function) and more difficulty with regulating attention, cognition and behavior in a classroom setting (as reported by teachers) compared to their nonmobile peers, these relationships were moderated by rates of poverty in origin and destination neighborhoods. Specifically, children who moved out of low poverty neighborhoods had slower response times on the Hearts and Flowers task and higher teacher-reported dysregulation in fifth grade than did children who remained stable in low poverty neighborhoods. In addition, children who moved out of high poverty neighborhoods had lower teacher-reported dysregulation than did children who remained stable in high poverty neighborhoods. Importantly, we were also able to examine the role of neighborhood quality for families' "destination" neighborhoods. We found that children who moved and ended up in low poverty neighborhoods by fifth grade had lower teacher-reported dysregulation than did children who remained stable in low poverty neighborhoods. In contrast, children who moved and ended up in high poverty neighborhoods by fifth grade had higher teacher-reported dysregulation than did children who remained stable in high poverty neighborhoods.

In contrast with prior theories of instability and disruption, our results suggest that residential mobility influences children's outcomes by altering children's exposure to stressful neighborhood environments. Moves that take children out of low poverty neighborhoods or place them into higher poverty neighborhoods may increase children's cumulative exposure to neighborhood poverty. In contrast, moves out of high poverty or into lower poverty neighborhoods may result in long-term reductions in stress exposure. A recent reanalysis of Moving to Opportunity data provides support for this result by finding that positive program impacts on girls' mental health and behavior were related to length of time spent exposed to low poverty neighborhoods (Leventhal & Dupéré, 2011). These findings provide some empirical support for a key dimension of experiential canalization theory, namely that children's trajectories of self-regulation are environmentally modifiable in ways that may alternately reflect "insult" (as illustrated by children's lower regulation in the context of moves to worse neighborhoods) and "repair" (as reflected by moves to better neighborhoods, where the provision of supports and the reduction of risks may also offer points of protection and even remedy; Blair & Raver, 2012).

## Limitations and Future Directions

This study has several limitations. First, we chose to focus on only one dimension of mobility (i.e., whether families ever move across a 6-year period), ignoring the accumulation, timing, and psychological controllability of moves. Although this approach may not have allowed us to capture the full complexity of residential mobility, we chose to operationalize mobility as we did for two reasons. By considering exposure to any move across this period we were making a conservative estimate of the influence of any residential change on children's self-regulation. In addition, by calculating moves from address data, rather than subjective reports, we could capitalize on census data to assess the quality of origin and destination neighborhoods. Second, although this work moves beyond much of the prior research on residential mobility by using inverse probability weighting with propensity scores and inclusion of baseline self-regulation scores to improve causal inference, selection bias is still a concern given that it is unlikely that our models include all potential time-varying confounding variables. Moving forward, researchers need to continue to explore factors that motivate families' decisions to move and capitalize on methodological approaches that are robust to selection bias in order to strengthen causal claims.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

## References

Adam EK. Beyond quality: Parental and residential stability and children's adjustment. Current Directions in Psychological Science. 2004; 13:210–213. doi:10.1111/j.0963-7214.2004.00310.x.

Adam EK, Chase-Lansdale P. Home sweet home(s): Parental separations, residential moves, and adjustment problems in low-income adolescent girls. Developmental Psychology. 2002; 38:792–805. doi:10.1037/0012-1649.38.5.792. [PubMed: 12220056]

Astone NM, McLanahan SS. Family structure, residential mobility, and school dropout: A research note. Demography. 1994; 31:575–584. doi:10.2307/2061791. [PubMed: 7890092]

Badanes LS, Watamura SE, Hankin BL. Hypocortisolism as a potential marker of allostatic load in children: Associations with family risk and internalizing disorders. Development and Psychopathology. 2011; 23:881–896. doi:10.1017/S095457941100037X. [PubMed: 21756439]

Blair C. Stress and the development of self-regulation in context. Child Development Perspectives. 2010; 4:181–188. doi:10.1111/j.1750-8606.2010.00145.x. [PubMed: 21779305]

Blair C, Raver CC. Child development in the context of adversity: Experiential canalization of brain and behavior. American Psychologist. 2012; 67:309–318. doi:10.1037/a0027493. [PubMed: 22390355]

Blair C, Razza RP. Relating effortful control, executive function, and false belief understanding to emerging math and literacy ability in kindergarten. Child Development. 2007; 78:647–663. doi:10.1111/j.1467-8624.2007.01019.x. [PubMed: 17381795]

Brooks-Gunn, J.; Duncan, GJ.; Aber, JL. Neighborhood poverty: Context and consequences for children. Russell Sage Foundation; New York, NY: 1997.

Davidson MC, Amso D, Anderson LC, Diamond A. Development of cognitive control and executive functions from 4 to 13 years: Evidence from manipulations of memory, inhibition, and task switching. Neuropsychologia. 2006; 44:2037–2078. doi:10.1016/j.neuropsychologia.2006.02.006. [PubMed: 16580701]

ESRI. ArcGIS Desktop: Release 10. Environmental Systems Research Institute; Redlands, CA: 2011.

Gioia GA, Isquith PK, Guy SC, Kenworthy L. Behavior Rating Inventory of Executive Function. Child Neuropsychology. 2000; 6:235–238. doi:10.1076/chin.6.3.235.3152. [PubMed: 11419452]

Imbens GW. Nonparametric estimation of average treatment effects under exogeneity: A review. Review of Economics and Statistics. 2004; 86:4–29. doi:10.1162/003465304323023651.

Kaufman JE, Rosenbaum JE. The education and employment of low-income black youth in White suburbs. Educational Evaluation and Policy Analysis. 1992; 14:229–240. doi:10.3102/01623737014003229.

Kling JR, Liebman JB, Katz LF. Experimental analysis of neighborhood effects. Econometrica. 2007; 75:83–119. doi:10.1111/j.1468-0262.2007.00733.x.

Kurth T, Walker AM, Glynn RJ, Chan KA, Gaziano JM, Berger K, Robins JM. Results of multivariable logistic regression, propensity matching, propensity adjustment, and propensity-based weighting under conditions of nonuniform effect. American Journal of Epidemiology. 2006; 163:262–270. doi:10.1093/aje/kwj047. [PubMed: 16371515]

Leuven, E.; Sianesi, B. PSMATCH2: Stata Module to Perform Full Mahalanobis and Propensity Score Matching, Common Support Graphing, and Covariate Imbalance Testing [Computer software]. 2003. Retrieved from http://ideas.repec.org/c/boc/bocode/s432001.html

Leventhal T, Dupéré V. Moving to opportunity: Does long-term exposure to "low-poverty" neighborhoods make a difference for adolescents? Social Science & Medicine. 2011; 73:737–743. doi:10.1016/j.socscimed.2011.06.042. [PubMed: 21821323]

McCoy, DC.; Raver, CC. Household instability and child self-regulation: Evidence for a dose-response relationship in a low-income, urban sample. 2014. Manuscript submitted for publication

McCoy DC, Raver CC, Lowenstein AE, Tirado-Strayer N. Assessing self-regulation in the classroom: Validation of the BIS-11 and the BRIEF in low-income, ethnic minority school-aged children. Early Education and Development. 2011; 22:883–906. doi:10.1080/10409289.2010.508371.

McCoy, DC.; Raver, CC.; Sharkey, P. Child information processing and selective attention following exposure to chronic and acute neighborhood violence. 2014. Manuscript submitted for publication

McLanahan, S.; Sandefur, GD. Growing up with a single parent: What hurts, what helps. Harvard University Press; Cambridge, MA: 1994.

Patton JH, Stanford MS, Barratt ES. Factor structure of the Barratt Impulsiveness Scale. Journal of Clinical Psychology. 1995; 51:768–774. doi:10.1002/1097-4679(199511)51:6<768::AID-JCLP2270510607>3.0.CO;2-1. [PubMed: 8778124]

Raver CC, Blair C, Willoughby M. Poverty as a predictor of 4-year-olds' executive function: New perspectives on models of differential susceptibility. Developmental Psychology. 2013; 49:292–304. doi:10.1037/a0028343. [PubMed: 22563675]

Sharkey P, Sampson RJ. Destination effects: Residential mobility and trajectories of adolescent violence in a stratified metropolis. Criminology. 2010; 48:639–681. doi:10.1111/j.1745-9125.2010.00198.x. [PubMed: 21339847]

Smith-Donald R, Raver CC, Hayes T, Richardson B. Preliminary construct and concurrent validity of the Preschool Self-Regulation Assessment (PSRA) for field-based research. Early Childhood Research Quarterly. 2007; 22:173–187. doi:10.1016/j.ecresq.2007.01.002.

South SJ, Crowder KD, Trent K. Children's residential mobility and neighborhood environment following parental divorce and remarriage. Social Forces. 1998; 77:667–693. doi:10.1093/sf/77.2.667.

Votruba-Drzal E. Economic disparities in middle childhood development: Does income matter? Developmental Psychology. 2006; 42:1154–1167. doi:10.1037/0012-1649.42.6.1154. [PubMed: 17087549]

Zalewski M, Lengua LJ, Fisher PA, Trancik A, Bush NR, Meltzoff AN. Poverty and single parenting: Relations with preschoolers' cortisol and effortful control. Infant and Child Development. 2012; 21:537–554. doi:10.1002/icd.1759.

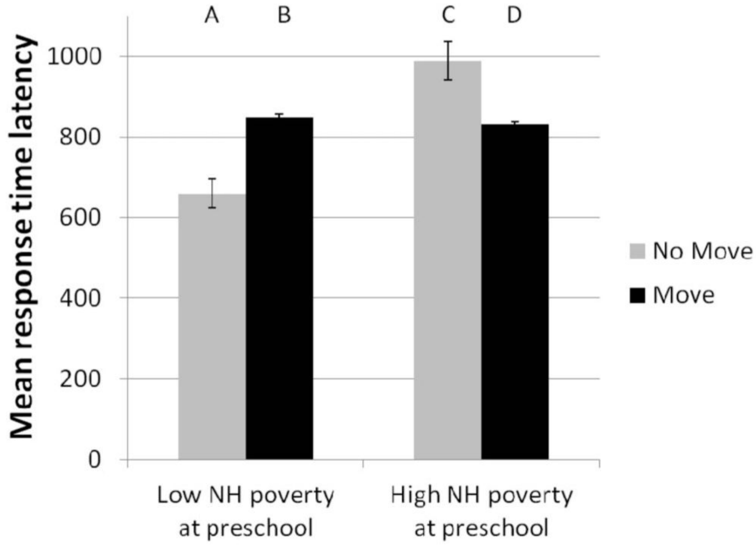


**Figure 1.**

Interaction between residential mobility and neighborhood poverty at preschool predicting Hearts and Flowers response time. The AB slope compares movers versus nonmovers living in low poverty neighborhoods at preschool. The CD slope compares movers versus nonmovers living in high poverty neighborhoods at preschool. Error bars represent standard errors. NH = neighborhood.

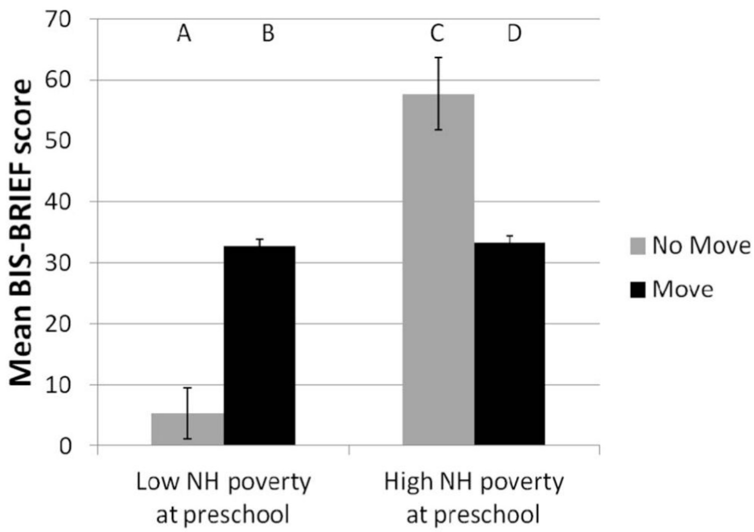


**Figure 2.**

Interaction between residential mobility and neighborhood poverty at preschool predicting teacher-reported BIS-BRIEF score. The AB slope compares movers versus nonmovers living in low poverty neighborhoods at preschool. The CD slope compares movers versus non-movers living in high poverty neighborhoods at preschool. Error bars represent standard errors. NH = neighborhood; BIS-BRIEF = composite of the Barratt Impulsiveness Scale, Version 11, and the Behavior Rating Inventory of Executive Function.

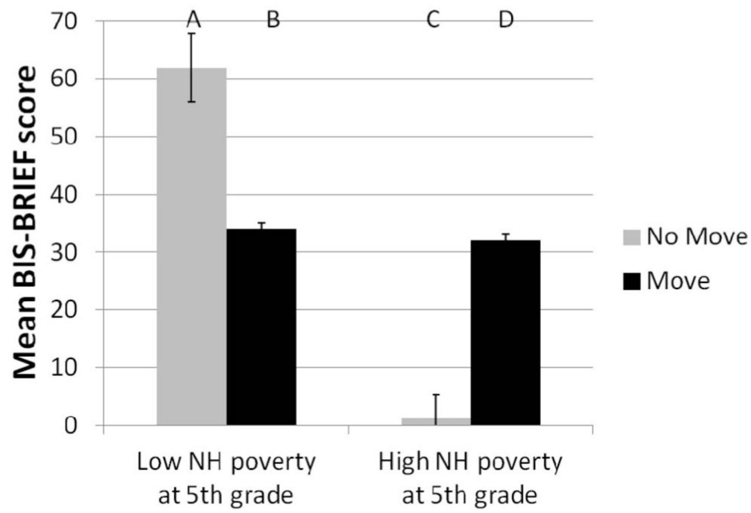


**Figure 3.**
Interaction between residential mobility and neighborhood poverty at fifth grade predicting teacher-reported BIS-BRIEF score. The AB slope compares movers versus nonmovers living in low poverty neighborhoods at fifth grade. The CD slope compares movers versus nonmovers living in high poverty neighborhoods at fifth grade. Error bars represent standard errors. NH = neighborhood; BIS-BRIEF = composite of the Barratt Impulsiveness Scale, Version 11, and the Behavior Rating Inventory of Executive Function.

## Table 1

Residential Mobility and Neighborhood Poverty Predicting Child Dysregulation

| | Hearts and Flowers task | | | | BIS-BRIEF | | | |
|---|---|---|---|---|---|---|---|---|
| | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
| **Variable** | ***B*** | ***SE*** | ***B*** | ***SE*** | ***B*** | ***SE*** | ***B*** | ***SE*** |
| Constant | 814.84 | 41.65** | 832.13 | 43.14** | 14.95 | 6.83* | 18.84 | 7.19** |
| Residential mobility | 36.20 | 16.84* | 15.80 | 20.40 | 6.04 | 3.04* | 1.45 | 3.49 |
| Hearts only latency | 0.88 | 0.14** | 0.86 | 0.14** | — | — | — | — |
| Preschool self-regulation | −33.52 | 13.27* | −32.82 | 13.07* | −2.35 | 1.92 | −3.09 | 1.94 |
| Cohort | −17.45 | 21.17 | −10.76 | 21.06 | 0.41 | 3.73 | 0.76 | 3.81 |
| CSRP treatment | 6.50 | 18.50 | 6.12 | 18.50 | 4.72 | 3.05 | 4.08 | 3.09 |
| Child is male | −47.25 | 18.00** | −51.47 | 18.04** | 15.48 | 2.98** | 14.32 | 3.01 |
| Child age (months) | −20.36 | 11.43† | −23.80 | 11.37* | −4.40 | 1.89* | −4.44 | 1.96* |
| Child is African American | −10.34 | 35.83 | −6.81 | 37.48 | 4.53 | 5.00 | 5.74 | 5.15 |
| Child is Latino | −41.11 | 36.39 | −50.18 | 38.43 | −4.37 | 5.42 | −5.21 | 5.65 |
| Caregiver age | −10.94 | 12.17 | −11.57 | 12.56 | −1.74 | 1.69 | −1.95 | 1.70 |
| Caregiver < high school education | 57.45 | 18.59** | 59.29 | 19.22** | 1.34 | 3.57 | 2.40 | 3.57 |
| Caregiver weekly hr worked | 3.04 | 5.89 | 2.63 | 5.84 | 1.13 | 0.92 | 1.38 | 0.93 |
| Caregiver has partner | 28.92 | 18.26 | 30.87 | 18.19† | 1.25 | 3.14 | 1.31 | 3.15 |
| Household assets/savings | 21.74 | 11.66† | 20.99 | 11.87† | 1.99 | 2.00 | 1.38 | 2.02 |
| Household public assistance | 11.34 | 5.70* | 11.10 | 5.84† | 0.89 | 1.19 | 0.66 | 1.20 |
| Household income-to-needs | 20.57 | 18.60 | 24.83 | 18.35 | −8.00 | 3.13* | −7.73 | 3.14* |
| Household size | 0.44 | 5.93 | 0.28 | 6.00 | −0.63 | 0.99 | −0.76 | 0.99 |
| Moves in yr prior to preschool | 2.96 | 17.81 | 3.41 | 18.04 | 2.52 | 2.77 | 2.19 | 2.72 |
| Missing any move | −42.11 | 25.17† | −30.33 | 24.26 | −4.69 | 4.81 | −1.64 | 4.83 |
| Missing any covariate | 36.20 | 18.89† | 34.02 | 18.69† | −3.37 | 3.17 | −3.05 | 3.17 |
| NH poverty at preschool | 4.43 | 4.68 | 10.09 | 5.05* | −0.77 | 0.73 | 1.59 | 0.58** |
| RM by NH poverty at preschool | | | −10.65 | 5.11* | | | −1.57 | 0.61* |
| NH poverty at fifth grade | | | −8.89 | 5.06† | | | −1.78 | 0.56** |
| RM by NH poverty at fifth grade | | | 8.70 | 5.10† | | | 1.72 | 0.58** |

*Note*. All models include inverse probability weights based on propensity scores. BIS-BRIEF = composite of the Barratt Impulsiveness Scale, Version 11, and the Behavior Rating Inventory of Executive Function; CSRP = Chicago School Readiness Project; NH = neighborhood; RM = residential mobility.

† $p < .10$.

* $p < .05$.

** $p < .01$.