Hypermobility, Destination Effects, and Delinquency

Specifying the Link between Residential Mobility and Offending

Vogel, Matt; Porter, LC; McCuddy, T

DOI
10.1093/sf/sow097

Publication date
2017

Document Version
Final published version

Published in
Social Forces

Citation (APA)
Vogel, M., Porter, LC., & McCuddy, T. (2017). Hypermobility, Destination Effects, and Delinquency: Specifying the Link between Residential Mobility and Offending. *Social Forces*, *95*(3), 1261-1284. https://doi.org/10.1093/sf/sow097

Hypermobility, Destination Effects, and Delinquency: Specifying the Link between Residential Mobility and Offending

Matt Vogel, *University of Missouri–St. Louis; TU Delft*
Lauren C. Porter, *University of Maryland*
Timothy McCuddy, *University of Missouri–St. Louis*

Residential mobility is often implicated as a risk factor for delinquency. While many scholars attribute this to causal processes spurred by moving, recent research suggests that much of the relationship is due to differences between mobile and non-mobile adolescents. However, studies in this area often operationalize mobility as a single move, limiting researchers to comparing outcomes between mobile and non-mobile adolescents. This approach is rather broad, considering heterogeneity in mobility frequency as well as variation in sending and receiving neighborhood characteristics. We propose a more nuanced framework to help anticipate how characteristics of mobility experiences may mitigate, exacerbate, or fail to influence adolescent behavior. Drawing on data from the National Longitudinal Study of Adolescent to Adult Health (Add Health) and the National Longitudinal Study of Youth 1997 (NLSY97), we demonstrate that "hypermobility" has detrimental behavioral consequences, increases in neighborhood disadvantage between sending and receiving neighborhoods are associated with reductions in self-reported offending, and long-distance moves reduce delinquency,

The authors would like to thank Reinout Kleinhans, Maarten Van Ham, and the attendees at the Netherlands Institute for the Study of Crime and Law Enforcement (NCSR) brownbag presentation for their feedback on an earlier draft of this project. They extend a special thanks to Jennifer Cassidy-Gilbert at the Bureau of Labor Statistics for her assistance with the NLSY97 restricted access files. The research leading to these results received funding from the European Research Council under the European Union's Seventh Framework Programme (FP/2007–2013)/ERC Grant Agreement no. 615159 (ERC Consolidator Grant DEPRIVEDHOODS, socio-spatial inequality, deprived neighbourhoods, and neighborhood effects). This project was also funded by the University of Missouri–St. Louis Office of International Studies and Programs. This research uses data from Add Health, a program project directed by Kathleen Mullan Harris and designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina–Chapel Hill, and funded by grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 23 other federal agencies and foundations. Special acknowledgment is due to Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Information on how to obtain the Add Health data files is available on the Add Health website (http://www.cpc.unc.edu/addhealth). No direct support was received from grant P01- HD31921 for this analysis. Please address correspondence concerning this article to Matt Vogel; e-mail: vogelma@umsl.edu.

Social Forces 1–24
doi: 10.1093/sf/sow097

but only among adolescents with prior behavioral problems. These results underscore the complex association between residential mobility and delinquency during adolescence.

Residential mobility can be a tumultuous experience in the lives of children and adolescents. Moving may force children to sever ties with their friends and navigate new social, cultural, and physical environments. Consistent with this view, a large body of literature suggests that moving may lead to detrimental psychosocial outcomes, including an increased likelihood of dropping out of school (Gasper, De Luca, and Estacion 2012; South, Haynie, and Bose 2007), diminished psychological well-being (Gilman et al. 2003), declining academic performance (Pribesh and Downey 1999), and elevated levels of delinquency (Haynie and South 2005). However, recent research suggests that these effects are likely spurious, as mobile adolescents face a host of risk factors that are associated with both maladaptive behavior and the likelihood of moving (Gasper, De Luca, and Estacion 2010; Porter and Vogel 2014). From this vantage, the well-documented effects of mobility may be best explained by the differential likelihood that an adolescent will experience a residential move—sometimes referred to as a selection artifact.

Much of the research to date takes a broad view on mobility, considering anyone who moves homes at least once during a given timeframe to be "residentially mobile," thereby comparing outcomes between mobile and non-mobile adolescents. As a result, the current state of knowledge may be best summarized as presenting minimal evidence that *single residential moves* have much, if any, influence on behavior once selection effects have been appropriately modeled. Yet, there is substantial variation *within* moving. For example, some adolescents may change homes just once, while others may continuously churn through residences. Some may move to homes relatively nearby, while others may move out of their town, county, or state. Finally, some movers may relocate to better neighborhoods, while others may experience declines in neighborhood quality. Despite variation in moving experiences, there is a relative dearth of research examining whether and how characteristics of residential moves influence behavioral outcomes.

We address these gaps by examining under what conditions and for whom residential mobility mitigates, exacerbates, or fails to influence adolescent behavior. We specifically examine three overarching research questions. First, is there a cumulative effect of moving on delinquency? That is, does the effect of moving vary by the frequency with which adolescents relocate? Second, is the association between mobility and delinquency contingent on neighborhood change? Specifically, we examine whether short- versus long-distance moves and changes in socioeconomic disadvantage between sending and receiving neighborhoods moderate the effect of moving on delinquency. Finally, we examine whether the effects of mobility experiences are more pronounced for relatively well-adjusted adolescents or for those who are already presenting problem behaviors. We address these questions by appending census data to

the individual records of respondents participating in two nationally representative longitudinal surveys—the National Longitudinal Study of Adolescent to Adult Health (Add Health) and the National Longitudinal Survey of Youth (1997) (NLSY97).

Residential Mobility and Delinquency

Classic perspectives on residential mobility suggest that relocating is detrimental for youth because it disrupts social ties and strains the relationships between parents and their children, their children's peers, and community members (Coleman 1988). These disruptions hamper parents' ability to monitor their children and recognize early warning signs of problem behavior. For example, caregivers may struggle to forge ties with neighbors who serve as valuable surveyors of community activity and are more knowledgeable about local youth. It may take more time to meet the parents of children's peers and to meet the peers themselves. Indeed, mobile parents are less likely to have met their child's best friend and report talking to fewer parents of their child's friends (South and Haynie 2004). In line with control perspectives on delinquency, disrupted social ties may weaken the social bonds purported to discourage offending (Hirschi 1969).

While mobility may diminish parents' ability to adequately monitor their children, it may also increase delinquent behavior among children by changing their social networks. For instance, mobile adolescents struggle to connect with prosocial peers, experience greater social isolation, and are embedded within less cohesive networks than their non-mobile counterparts (South and Haynie 2004). Mobility may also increase the risk of a child associating with underperforming and delinquent peers, as these groups may be more welcoming of outsiders (Haynie, South, and Bose 2006). Through standard learning mechanisms, delinquent associations may increase the likelihood that mobile adolescents will engage in delinquency (Akers 2009).

Selection into Moving

Theory and research suggest that adolescents who move should be more delinquent than those who remain in the same residence. However, there is limited discussion as to the forces that predict moving to begin with and the differences in mobility experiences within those who move. Indeed, a handful of studies indicate that the association between mobility and delinquency could be due to selection, rather than causal processes associated with relocation. Adolescent moves result mainly from circumstances affecting parents, such as changes in family structure (e.g., divorce, remarriage, death) or employment status (e.g., job loss, change, or promotion) (Lee, Oropesa, and Kanan 1994; South, Crowder, and Trent 1998; Vandersmissen et al. 2009). Likewise, decisions to relocate are largely influenced by the characteristics of current neighborhoods (e.g., racial composition, crime, economic status) (South and Crowder 1997; Xie and McDowall 2008), and the availability of alternative housing nearby

(Van Ham and Feijten 2008). On the whole, research indicates that mobility is not a random process; rather, there are a number of individual, familial, and ecological factors that influence the risk of mobility during adolescence.

Importantly, several determinants of mobility are also implicated as predictors of delinquency, and the failure to properly account for these "unobserved" factors may lead to incorrect conclusions about the relationship between residential mobility and delinquency. For instance, Gasper, DeLuca, and Estacion (2010) analyzed the impact of residential and school mobility on delinquency and substance use. Their results indicate that moving had no discernible influence on offending once selection bias was addressed. Similarly, Porter and Vogel (2014) applied propensity score methods to parse out selection bias in the moving-delinquency relationship. The authors detected no differences in self-reported delinquency or violence when comparing mobile adolescents with non-mobile adolescents who had similar propensities to move, suggesting that the relationship between mobility and delinquency could be attributed to pre-existing differences between groups. These two studies suggest that the oft-observed detrimental effects of residential mobility may be attributed primarily to differential likelihoods of moving.

Reconsidering Mobility

To be sure, much of the prior scholarship on mobility and delinquency overlooks selection into moving. However, even research considering these forces conceptualizes and operationalizes moving broadly: a single residential move from somewhere to somewhere else. This approach may mask substantial variation in the frequency and quality of mobility experiences. This is an important omission for several reasons. First, the focus on single moves provides little leverage in examining the timing, duration, and cumulative effects of residential mobility on later outcomes. Second, much of this research has been confined to residential moves either (1) outside a city or county (e.g., Gasper, DeLuca, and Estacion 2010; Sharkey and Sampson 2010) or (2) between census tracts (e.g., Porter and Vogel 2014). Less is known about whether and how the distance between sending and receiving neighborhoods influences behavioral outcomes. Third, research has treated all mobility experiences as qualitatively equivalent; there has been little consideration of changes in neighborhood conditions associated with residential moves. Therefore, we know little about how moving to or away from deprived neighborhoods influences behavior. In the following sections, we hypothesize how mobility frequency, distance between sending and receiving neighborhoods, and changes in neighborhood quality may exert varying effects on delinquency.

Hypermobility

Residential mobility is a fairly normative experience during childhood and adolescence. Recent data from the US Census indicates that 12 percent of American households change residences on an annual basis (Ihrke and Faber 2012). This figure is even higher for families with young children in the home. Accordingly,

residential mobility can be viewed as part of the standard developmental process. While residential moves may be disruptive initially, children adjust, and any behavioral changes may be ephemeral as children grow accustomed to their new surroundings. Thus, single moves may have little influence on behavior. *Hypermobility*, defined here as moving frequently in a relatively short period of time, may have a more pronounced effect. Adolescents who churn through homes may have little chance to forge friendships, develop prosocial attachments, and adjust to their new surroundings. The mobility process may be further compounded among adolescents who move often, as their parents have less time to connect with neighbors, teachers, and the parents of their children's peers, thus decreasing informal support networks that may assist in behavioral monitoring. As a result, mobility frequency, rather than the act of moving itself, may increase maladaptive behaviors.

Indeed, health scholars are increasingly pointing to the importance of frequent mobility as a determinant of poor health, psychological duress, and risky behavior (Brown et al. 2012; Rumbold et al. 2012). Likewise, it appears that effects of hypermobility endure well beyond adolescence, as frequent movers are more likely to drop out of high school, experience early parenthood, report lower incomes during adulthood, and experience a heightened risk for early mortality (Oishi 2010; Tønnessen, Telle, and Syse 2016). However, other disciplines have been slow to examine the effect of mobility frequency on offending, and it remains unclear whether hypermobility also affects delinquent conduct.

Given the link between residential mobility and peer-group composition (Haynie, South, and Bose 2006; South and Haynie 2004), it bears to reason that the relationship between moving frequency and offending is curvilinear, as adolescents with the highest levels of mobility over relatively short periods will have little ability to form any relationships, either positive or negative. In this sense, highly mobile adolescents may spend a large portion of their time on the periphery of social networks, where they will experience limited exposure to negative peer influence. Thus, we might anticipate a threshold, after which point additional moves will have diminishing effects on offending.

A Change in Scenery: Distance and Neighborhood Change

Insofar as the mechanisms linking mobility and delinquency involve disrupted social ties and changes in peer group composition, short-distance moves should have relatively little effect on behavior. Those who experience long-distance moves, on the other hand, may be more likely to confront difficulties adjusting to new social and physical environments. For instance, they have to break into social networks and re-establish the social capital they had in their previous community. Likewise, adolescents who move greater distances may be more susceptible to negative peer influence as they struggle to form prosocial ties that discourage maladaptive behavior (e.g., Haynie and South 2005). This hypothesis has been raised by other scholars, each of whom predict that long-distance moves should be more harmful since such moves are associated with greater disruptions in education and family life compared to shorter-distance moves

(Haynie, South, and Bose 2006; South and Haynie 2004; South, Haynie, and Bose 2007).

Although most scholars predict that long-distance moves should be more harmful, a handful of studies suggest the opposite. Drawing on data from the Project on Human Development in Chicago Neighborhoods, Sharkey and Sampson (2010) reported that adolescents who moved within Chicago had an increased risk of violence, whereas those who moved outside the city exhibited reductions in offending. Although their aim was primarily to distinguish between moves to suburbs from those within the city, their results can also be interpreted as a test of distance between sending and receiving neighborhoods. Similarly, Tucker and colleagues (1998) found that children who moved more than 50 miles from their last residence had better school performance than those who moved less than 50 miles.

Here, we also consider another possibility. Arguably, the effect of distance between sending and receiving neighborhoods is complicated by the types of relationships adolescents hold prior to moving. For instance, long-distance moves may be protective for delinquent adolescents, as they help sever ties with delinquent peer networks and provide the opportunity for a fresh start in a new community that is distant, both geographically and socially, from their prior home. For non-delinquent youth, long-distance moves may prove detrimental, as positive sources of social capital will be diminished (such as relationships with prosocial peers and teachers).

Moreover, moving often entails a change in neighborhood quality, and few studies have analyzed how these "destination effects" influence behavior. For instance, declines in neighborhood quality may increase delinquency by exposing adolescents to pro-deviant models of behavior, as delinquent peers are plentiful in disadvantaged neighborhoods (Zimmerman and Messner 2011). Likewise, youth who move to socially disorganized neighborhoods may be exposed to fewer agents of informal social control. Insofar as downward mobility equates to increases in social disorganization, adolescents may find themselves in communities that are less able to self-regulate due to high levels of residential mobility, poverty, and racial heterogeneity (Shaw and McKay 1942). In addition, these neighborhoods tend to be characterized by low levels of collective efficacy, or social cohesion and a willingness to intervene among neighbors—conditions that can make it easier for adolescents to offend without recourse (Sampson, Raudenbush, and Earls 1997).

Downward mobility may also reflect negative changes in family circumstances, such as job loss, divorce, or death, and it may be accompanied by feelings of strain or injustice that lead to externalizing behavior problems (Agnew 1992). In this sense, it is not the act of moving, but the more proximate events preceding residential disruption, that contribute to behavioral change. Upwardly mobile adolescents, on the other hand, may move to neighborhoods characterized by a greater number of prosocial peers and a greater degree of social control. As such, residential moves characterized by decreases in neighborhood quality may be more detrimental, as they amplify criminogenic influences (both internally and externally).

Consistent with this perspective, Sharkey and Sampson (2010) reported that much of the reduction in violence observed among adolescents who moved outside Chicago was due to changes in the racial and economic composition of receiving neighborhoods as well as improvements in school context. Similarly, Wright et al. (2014) found that youths who moved to more affluent neighborhoods experienced less strain, translating into lower levels of delinquency. Roy, McCoy, and Raver (2014) report that while residential mobility had adverse effects on psychological well-being among a sample of grade-school children, moving from high-poverty to low-poverty neighborhoods was beneficial. Collectively, these studies suggest that moving to "better" neighborhoods may decrease problematic behavior by reducing criminogenic influences.

Findings from the Moving to Opportunity study—a randomized control experiment examining the effects of moving families out of impoverished neighborhoods—are less optimistic. Youth who moved to less impoverished neighborhoods did not fare any better than those who remained in their neighborhoods—although some improvements were evidenced among females (Kling, Liebman, and Katz 2007). These findings may be due to the fact that destination neighborhoods were still relatively disadvantaged—even if they represented an improvement from prior locales (Sciandra et al. 2013). Thus, neighborhood change was really "*one of degree, not kind*" (Sampson 2012, 269, emphasis in original).

Finally, an alternative perspective emerges from the literature: moving to more impoverished neighborhoods may actually *reduce* delinquency, whereas moving to more affluent neighborhoods may *increase* delinquency. Adolescents who experience upward mobility may find themselves at odds with their new surroundings (Cole and Omari 2003). Relative deprivation theory posits that adolescents interpret their economic circumstances by comparing themselves to others. From this perspective, it is not the absolute poverty of the family or neighborhood that matters, but rather the adolescent's situation compared to those around him. When unfavorable comparisons occur, adolescents may respond with increased delinquency. Indeed, recent research suggests that economic disadvantage is a stronger predictor of delinquency when adolescents live in close proximity to relative affluence, rather than concentrated disadvantage (Vogel and South 2016).

From this vantage, adolescents whose families are able to escape distressed communities may have had the luxury of feeling comparatively well off in their old neighborhood, and may now feel relatively lower, economically speaking, from their new peers. This process may increase feelings of relative deprivation, leading to frustration at their current situation and hostility toward those perceived as having "more" (Testa and Major 1990). Deprivation may inhibit the formation of social capital, reducing the positive influence of upward mobility (Briggs 1997). In this context, mobile adolescents may be especially susceptible to peer influences, as delinquent peer groups will be inviting, and the ability to break into prosocial cliques may be more difficult.

Consistent with this hypothesis, we may simultaneously expect the parents of downwardly mobile adolescents to insulate their children from their new environments. Drawing from research on socioeconomic mobility more generally, downward mobility may generate insecurity, increasing feelings of status consciousness, ultimately leading parents to cling to their prior social identities (e.g., Blau 1956; Newman 1988). From this standpoint, downwardly mobile parents may encourage their children to adhere to behavioral norms of their prior social position, or they may diligently attempt to shield their children from potentially negative influences, insulating them from risk factors in their new communities (Rankin and Quane 2002). In this alternative scenario, upward changes in neighborhood quality may be more likely to lead to problematic behaviors than downward transitions.

Current Study

To reiterate, prior research on residential mobility and delinquency has relied on rather broad conceptualizations of "moving," often focusing on single residential moves in a given period of time, thus limiting researchers to comparing outcomes between "mobile" and "non-mobile" adolescents. Much of the work in this area relied on regression-based designs, controlled for a handful of covariates presumably associated with mobility and delinquency, and reported that mobile adolescents fared worse on a variety of psychosocial outcomes than their residentially stable counterparts. Recent evidence suggests that mobile and non-mobile adolescents differ on a variety of domains, both observable and unobservable. Once these differences have been appropriately modeled, it seems that moving has little bearing on subsequent behaviors.

We contend that the focus on single residential moves characteristic of much prior research is problematic, as it likely obscures meaningful variation in mobility experiences. In sum, mobile adolescents may move frequently or rarely. Some may move to "better" neighborhoods and others to comparatively "worse" neighborhoods. Some may even move within their neighborhoods, while some may move to a different neighborhood, a different county, or a different state. These experiences have different implications for the mechanisms proposed to link mobility and delinquency, namely, changes in peer group composition, parental monitoring, and strain. In this study, we assess whether and how hypermobility, short- versus long-distance moves, and characteristics of receiving neighborhoods affect delinquency. Guided by the recognition that the detrimental effects of mobility may be particularly pronounced among prosocial youth, we examine models separately for youth who presented delinquent behaviors *prior to* moving from those who abstained altogether. In doing so, we heed the advice of Gasper, DeLuca, and Estacion (2010) and Porter and Vogel (2014), and adjust our estimates for selection effects that may generate misleading evidence as to the nature of the relationship between residential mobility and delinquency.

Methods

Data

In an effort to directly engage prior scholarship, our analyses draw on the two data sources used most frequently in the mobility effects research, as well as the emerging work on selection bias—Add Health and the NLSY97. Add Health is a nationally representative survey of adolescents enrolled in high school during the 1993–94 academic year and followed through early adulthood (with data collection ongoing). The original design included a sample of 80 high schools and 52 middle schools from the United States with an unequal probability of selection, ensuring representativeness with respect to region of country, urbanicity, school size, school type, and ethnicity. In the first phase of data collection, a brief questionnaire was administered to all youth enrolled in grades 7–12 in each of the 132 schools, with no make-up given for absent students.

From the initial in-school survey, over 20,000 students were selected to participate in the longitudinal follow-up study. Respondents' home addresses were geocoded, and geographic information from the 1990 census was provided for each respondent. During the following year (1995–96), respondents who were still in high school completed a second wave of questionnaires. Home addresses were also geocoded at the time of the Wave 2 interview, allowing researchers to discern whether the respondent had moved residences between the two waves.

The NLYS97 consists of a nationally representative sample of approximately 9,000 youth who were between the ages of 12 and 16 as of December 31, 1996. The first round of surveys was administered during 1997. At this time both the eligible youth and one of the youth's caregivers participated in an hour-long interview. Youth respondents have been interviewed on an annual basis since 1997 (with data collection ongoing). The NLSY contains a host of information on respondents' backgrounds, education, employment histories, and self-reported criminal conduct. We appended tract-level data from the 2000 decennial censuses to the NLSY97 individual records to capture residential neighborhood characteristics of the neighborhoods in which respondents resided at each of the first six waves of the survey. We limit our analyses to respondents 18 years and younger at each of the survey waves, as the mechanisms driving mobility experiences likely change once individuals graduate high school and transition to higher education and the labor market.

It is important to note several trade-offs between Add Health and the NLSY97. Add Health includes a variety of individual, family, and community variables that allow researchers to control for observable characteristics related to both mobility and delinquency. Add Health also includes relatively precise, georeferenced home address data, allowing researchers to examine residential moves occurring within census blocks, tracts, and beyond. One drawback of the Add Health data is the inability to examine sending and receiving neighborhood characteristics at geographic units smaller than the census block group (thus limiting the ability to examine the changes in neighborhood quality over small distances). The NLSY97 is a repeated panel study that allows researchers to

employ fixed effects models, thereby controlling on unobservable factors associated with mobility and delinquency. Unfortunately, detailed information on the frequency of short-distance moves is not available for respondents who changed homes but did so within their county of residence. With these trade-offs in mind, we leverage the complementary strengths of the two surveys to address the research questions at hand. Specifically, we limit our analysis of short- versus long-distance moves to respondents participating in the Add Health study, and our analysis of sending and receiving neighborhood characteristics to respondents participating the NLSY97. We examine the effect of moving frequency on delinquency among respondents in both samples.

Measures

Self-Reported Delinquency

The dependent variable in both samples is self-reported delinquency. We measure delinquency in the Add Health sample as a count-based measure of the number of the delinquent acts the respondent engaged in during the 12 months prior to the Wave 2 interview. These acts included fighting, burglary, selling drugs, shoplifting, larceny, vandalism, and robbery. Due to differences in the question response categories, we combined these questions into a variety scale, demarcating the number of different acts respondents endorsed at the W2 interview. NLSY97 respondents were asked to report whether and how often they engaged in eight different types of delinquent behavior—for example, robbery, burglary, selling drugs, getting in fights, destroying property, and major and minor theft at each of the first six waves. We created a general delinquency scale by summing together the frequency in which respondents reported engaging in each of these behaviors. To remove extreme observations, we trimmed this variable, removing the top 1 percent of respondents.[1]

Mobility

In both the Add Health and NLYS97 datasets, residential mobility is measured by comparing the geocoded residential home addresses of respondents at each interview with their home addresses at earlier waves. In the case of the Add Health data, residential moves are considered *any* change of physical address between the Wave 1 and Wave 2 interview. Due to confidentiality issues, the measure of mobility for NLSY respondents is based on whether respondents change residential census tracts between waves.

Moving Frequency

Moving frequency captures the number of moves a respondent reported in the period between survey waves. In the Add Health data, this measure is constructed from a questionnaire item in which respondents were asked to self-report the number of times they moved residences since the Wave 1 interview. NLSY97 respondents were asked to report how many different addresses they

had lived at for more than one month between survey waves, thus presenting a slightly less refined measure of mobility frequency as the Add Health study.

Short- vs. Long-Distance Moves

We examine the effects of short- and long-distance moves by comparing differences in outcomes between respondents who moved within their county of residence to respondents who moved outside their counties and states. Given the aforementioned questionnaire error in the NLYS97 survey, we limit our analyses of long-distance moves to Add Health respondents.

Neighborhood Disadvantage

Our index of neighborhood disadvantage combines five common indicators: the percent of families below the poverty line, the percent of households receiving public assistance, the percent of households headed by women, the percent of the population that is unemployed, and the percent of the population over the age of 25 lacking a high school diploma. These variables are highly intercorrelated, and all load on a single factor (alpha = 0.924). We combined the variables into a single scale using a weighted factor regression score such that high scores indicate high levels of neighborhood disadvantage.

Analytic Strategy

The empirical analyses rely on two common counterfactual techniques that have been employed in prior mobility studies—propensity score analysis and fixed effects regression. Propensity score methods use a vector of observed covariates to generate the predicted probability of a respondent experiencing a residential move between waves. The propensity score is then used to adjust the comparison between mobile and non-mobile adolescents, through matching, weighting, or covariate adjustment. Fixed effects methods address selection by treating each case as its own control. Both approaches have their relative appeals and drawbacks. For instance, propensity score methods are distribution free but assume that all observable characteristics have been incorporated into the selection model. Fixed effects methods reduce selection bias attributed to time-stable covariates, but are sensitive to the omission of time-varying covariates. We briefly describe our applications below, but refer the reader to Guo and Fraser (2014) and Allison (2009) for a more technical discussion of propensity score analysis and fixed effects regression, respectively.

Propensity Score Analysis

The propensity score analysis unfolds in three steps. First, following Porter and Vogel (2014), we estimated a probit model to determine the likelihood a respondent experienced a residential move between the first two waves of the Add Health Survey. Propensity score methods are sensitive to omitted variable bias and thus necessitate that all observable characteristics that may explain why some respondents move and others do not need to be incorporated into the

empirical models. The probit regression therefore includes a host of individual-, parental-, and neighborhood-level predictors of mobility implicated in prior work. For sake of parsimony, descriptive statistics for these additional covariates and the parameter estimates from the probit model are presented in online supplement B. Our method departs slightly from Porter and Vogel (2014), as we consider *any* residential move as indicative of mobility (whereas they focused on inter-tract moves and beyond), a necessary adjustment to compare the relative effects of short- versus long-distance moves. As a sensitivity analysis, we employed several propensity score algorithms on our measure of mobility and arrived at the same conclusion—once selection bias has been adjusted, there is no effect of residential mobility on self-reported delinquency.[22]

We next included the propensity score as a covariate in our negative binomial regression models to examine how contingencies in mobility experiences affect delinquency, a relatively common technique in this type of research (e.g., Porter 2014; Wiley, Slocum, and Esbensen 2013). In these models, the coefficients for hypermobility and distance between sending and receiving neighborhoods are interpreted in relation to residentially stable adolescents. The propensity score is treated as a control variable accounting for the unequal probability that an adolescent has changed residences, providing a less biased comparison between mobile and non-mobile adolescents.[3]

In the last stage of the analyses, we split the sample into two groups—delinquency abstainers and non-abstainers. Respondents who endorsed *no* delinquent activity at the time of the Wave 1 interview were coded as abstainers, and those who reported engaging in at least one act of delinquency as non-abstainers. The models were then re-estimated on these subsamples to examine differences in mobility experiences between groups. This final analysis allows us to address whether certain types of mobility experiences are beneficial for adolescents already exhibiting problem behaviors.

Fixed Effects Negative Binomial Regression Models

We utilize a series of fixed effects negative binomial regression models, sometimes referred to as conditional negative binomial regression models, to analyze the associations between mobility characteristics and delinquency among NLSY97 participants. These models examine the effect of within-individual mobility experiences on changes in self-reported delinquency over survey waves. Following Gasper, DeLuca, and Estacion (2010), our models incorporate a number of time-varying covariates that may confound the association between mobility and delinquency. These include an indicator for whether respondents lived with their parents, an indicator for whether respondents resided in an urban area, the number of other people living in the residential home at each wave, and census-based measures of neighborhood turnover and racial heterogeneity. Our models depart slightly from Gasper and colleagues, as we are more concerned with within individual change over time rather than differences between respondents. Our rationale here was twofold. First, the fixed effects portion of the analysis provides the "causal" estimate on which they base the

conclusion that moving has no effect on delinquency. Second, there is growing consensus that the estimates derived from hybrid categorical regression models can produce downwardly biased estimates of the fixed effects component of the equation, providing inconclusive evidence of the effects in which we are most interested (Allison 2014).

Results

Descriptive Statistics

Table 1a presents the descriptive statistics for the Add Health respondents. Roughly 6 percent of respondents were recorded as moving between the two waves, with two-thirds of the movers relocating within their county and the remaining one-third moving outside their county of residence. The average mover experienced 1.5 moves during this time frame. On average, Add Health respondents endorsed 0.9 delinquency items at the time of the Wave 2 interview and 42 percent were identified as abstainers at the first wave.

Table 1b presents the overall and panel-specific descriptive statistics for respondents in NLSY97 sample. On average, 22 percent of participants experienced at least one residential move during the study period, with an average number of moves of 0.38. Participants reported an overall average of 1.14 acts of delinquency across all waves. Perhaps not surprisingly, mobility rates held relatively constant across waves, while levels of delinquency and the proportion of respondents living in the parental home declined. Generally speaking, respondents experienced slight declines in neighborhood disadvantage over time, but few differences in the racial composition or level of residential turnover in their neighborhoods.

Propensity Score Analysis

Table 2 presents the survey-adjusted negative binomial regression models of self-reported delinquency regressed on mobility characteristics among the Add Health respondents. The coefficients in the models are log-odds. An exponential

Table 1a. Descriptive Statistics Add Health ($N = 11,387$)

	Mean	SD	Min	Max
Mover	.06	–	0	1
Moving frequency	.16	.55	0	8
Move within county	.04	–	0	1
Move outside of county	.02	–	0	1
Self-reported delinquency (W2)	.91	1.5	0	9
Delinquency abstainer (W1)	.42	–	0	1

Source: Add Health.
Note: SD = standard deviation; W1 = Wave 1; W2 = Wave 2.

Table 1b. Descriptive Statistics NLSY1997 (*N* = 3,154)

	W1	W2	W3	W4	W5	W6	Overall mean	Overall SD	Between SD	Within SD
Mover	–	.22	.19	.22	.26	.25	.22	(.42)	(.21)	(.31)
Moving frequency	–	.39	.33	.38	.39	.50	.38	(.70)	(.57)	(.51)
Urbanicity	.73	.73	.73	.72	.74	.74	.72	(.41)	(.41)	(.17)
Parental home	.96	.94	.91	.89	.86	.81	.91	(.29)	(.22)	(.21)
Household size	4.55	4.42	4.33	4.25	4.22	4.17	4.38	(1.60)	(1.37)	(.85)
Neighborhood disadvantage	.38	.35	.28	.26	.24	.23	.31	(1.98)	(1.87)	(.68)
Neighborhood turnover	55.76	55.73	55.50	55.41	55.03	55.89	55.50	(11.48)	(10.35)	(5.19)
Neighborhood heterogeneity	.32	.31	.31	.32	.32	.32	.32	(.20)	(.19)	(.07)
Delinquency	1.32	1.12	1.15	1.11	.96	.86	1.14	(4.04)	(3.08)	(3.19)

Source: NLSY97 and the 2000 Decennial Census.
Note: SD = standard deviation; W1—W6 = Wave 1 = Wave 6.

Table 2. Negative Binomial Regression of Hypermobility and Distance on Self-Reported Delinquency ($N = 11,387$)

	Model 1		Model 2	
	β	Se	β	Se
Intercept	–.22***	(.03)	–.21***	(.03)
Moved within county	–.05	(.11)	–.06	(.14)
Moved outside county	–.25*	(.12)	–.32**	(.12)
Moving frequency	.07*	(.03)	.18*	(.05)
Moving frequency^2	–	–	–.02*	(.01)

Source: Add Health.

Note: Se = standard error. Models control for mobility propensity.

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

transformation of these coefficients yields the incident rate ratio (IRR), which can be interpreted as the expected change in the rate of self-reported delinquency for a one-unit change in the predictor variable. The first model presents the main effects of short- versus long-distance moves and moving frequency. The results demonstrate that relative to residentially stable respondents, those who moved outside their county of residence experienced a 22.2 percent reduction in their expected rate of self-reported delinquency. Each additional residential move experienced in this timeframe was associated with a 6.8 percent increase in the expected rate of delinquency. Model 2 introduces a polynomial term to assess the possibility that the association between moving frequency and delinquency is curvilinear. Consistent with the expectation that adolescents with the highest levels of mobility in relatively short periods of time will have little opportunity to form relationships, either positive or negative, our models indicate a threshold, after which the effect of additional moves has decreasing influence on self-reported offending. Figure 1 presents a graphic illustration of the curvilinear relationship between number of moves and self-reported delinquency. As evidenced in this figure, the incremental increase in the incident rate ratio levels off between four and five moves, and begins to decline among respondents who reported six or more moves.

Table 3 presents the results of the negative binomial regression models separately for respondents with prior histories of self-reported delinquency and those who reported no prior offenses. The first model in table 3 presents the results of the negative binomial regression model among respondents who endorsed no delinquency items during the Wave 1 interview, referred to here as "abstainers." The results indicate that moving frequency has a pronounced effect among this group of respondents—the coefficient is almost triple the magnitude of that reported in the full sample. These models also provide evidence of a threshold, such that the effect of subsequent moves on delinquency increases only to a certain point, after which the additive effect of each subsequent move begins to diminish. The second model presents the results for respondents already displaying problematic behaviors. For previously delinquent adolescents, it appears

Figure 1. Relationship between number of residential moves and self-reported delinquency, Add Health

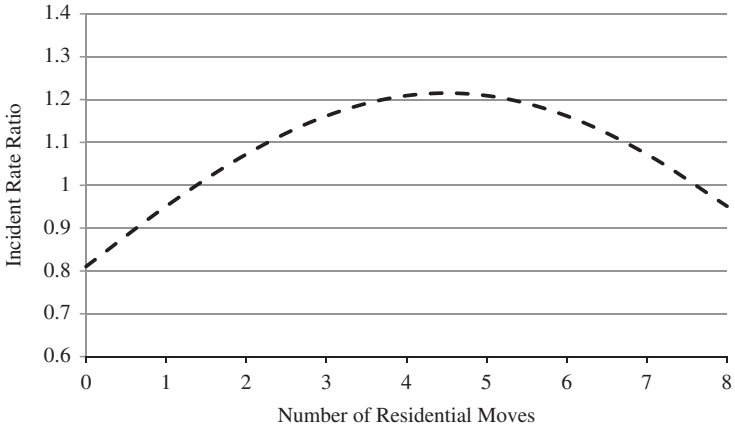

Table 3. Negative Binomial Regression of Hypermobility and Distance on Self-Reported Delinquency, Abstainers vs. Delinquents

	Abstainers ($N = 4,843$)		Prior delinquents ($N = 6,544$)	
	β	Se	β	Se
Intercept	–1.33***	(.03)	.26***	(.04)
In-county	–.15	(.38)	–.08	(.11)
Out-county	–.36	(.43)	–.35**	(.10)
Moving frequency	.58*	(.25)	.08	(.09)
Hypermobility squared	–.11*	(.05)	–.01	(.02)

Source: Add Health.
Note: Se = standard error. Models control for mobility propensity.
* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

that long-distance moves have a protective influence, potentially knifing off ties with delinquent peers or providing the opportunity for these youth to start fresh in new communities. Moving frequency, on the other hand, appears to have no influence on behavior among respondents with previous histories of delinquency. Collectively, these models provide evidence that not only do contingencies in mobility experiences exert differential effects on self-reported offending, but these effects are contingent on individual characteristics as well.

Fixed Effects Regression

The results of the fixed effects regression models are presented in table 4. The first column presents the log-odds, and the second column presents the incident-rate

ratio. Unlike the previous models, the coefficients here reflect the expected change in self-reported delinquency for a one-unit change in the predictor variable *within* respondents over time. The first panel presents the results of a baseline model, predicting self-reported delinquency regressed on the bivariate measure of mobility status and the time-varying covariates. Consistent with the work of Gasper, DeLuca, and Estacion (2010), this model indicates that moves between waves of the NLSY97 are not associated with changes in self-reported delinquency. The measure of household composition emerged as statistically significant in this model, indicating that moves back into the parental home increase the expected rate of offending almost twofold. The second model substitutes the measure of moving frequency for the dichotomous measure of mobility status and incorporates the measures of neighborhood context. Consistent with the results from the Add Health sample, each additional move a respondent reported between waves was associated with a 9.4 percent increase in the expected rate of self-reported delinquency. Interestingly, increases in disadvantage between sending and receiving neighborhoods diminished levels of delinquency—in this

Table 4. Fixed Effects Negative Binomial Regression of Self-Reported Delinquency on Neighborhood Disadvantage among Residentially Mobile NLSY97 Participants Before Age 18 (*N* = 3,154)

	Model 1			Model 2			Model 3		
	β	IRR	Se	β	IRR	Se	β	IRR	Se
Intercept	–1.33***	.26	(.07)	–1.35***	.26	(.07)	–1.35***	.26	(.07)
Any move	.01	1.01	(.04)	–.01	.99	(.04)	–.01	.99	(.04)
Urban = 1	.01	1.01	(.10)	.01	1.01	(.06)	.01	1.01	(.06)
Live in parental home = 1	.28***	1.32	(.06)	.31***	1.36	(.06)	.75***	2.11	(.08)
Household size	–.02	.98	(.05)	–.02	.98	(.05)	– .02	.98	(.05)
Moving frequency	–	–	–	.09***	1.09	(.02)	.12***	1.13	(.04)
Number of moves^2	–	–	–	–	–	–	<.00	1.00	(<.00)
Neighborhood turnover	–	–	–	.01	1.00	(.01)	.01	1.01	(.01)
Neighborhood disadvantage	–	–	–	–.03*	.97	(.01)	–.03*	.97	(.01)
Neighborhood racial heterogeneity	–	–	–	–.18	1.00	(.12)	.17	1.00	(.18)

Source: NLSY97, US Census.

Note: Se = standard error; IRR = incident rate ratio.

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

case, a one-standard-deviation increase in the index of neighborhood disadvantage was associated with 3 percent decrease in the rate of self-reported delinquency. Changes in neighborhood racial composition and turnover had no effect on changes in self-reported delinquency over time. Model 3 introduces the polynomial term for moving frequency. Departing from the Add Health models, we detected no evidence of a curvilinear relationship between mobility frequency and offending.

Discussion

Residential mobility has been consistently linked to delinquency among adolescents. Much of the research to date has attributed these effects to causal processes spurred by moving, such as increased psychological strain, diminished social capital, and changes in peer-group composition (Haynie and South 2005). More recently, scholars have proposed that the "mobility effect" can be attributed to factors that predict both moving and delinquency—suggesting that when appropriately modeled the association between mobility and delinquency is effectively zero. We contend that the conclusion of a non-effect is premature given the broad conceptualization of mobility employed in the empirical literature. Rather than focusing on the effect of single residential moves, we argue that serious consideration be given to the variation within moving experiences, such as mobility frequency, distance between sending and receiving neighborhoods, and changes in neighborhood conditions. To this end, we provide a middle ground between the large body of literature identifying adverse effects of mobility, on the one hand, and studies claiming selection bias, on the other. We examined the relationship between mobility experiences and delinquency among respondents in the two nationally representative data sources used most frequently in prior research, while employing the same counterfactual methods from which others have concluded that mobility is irrelevant. The results are striking.

Using similar methods as Porter and Vogel (2014) and Gasper, DeLuca, and Estacion (2010), we arrived at the same general conclusion—single residential moves have no discernable effect on self-reported delinquency once selection bias has been addressed. These results underscore the importance of accounting for selection when examining the association between mobility and delinquency and provide further reason for scholars to be skeptical of the wealth of literature suggesting mobility to be unequivocally negative. Moving beyond prior work, we next considered whether and how contingencies in mobility experiences moderate the association between residential mobility and delinquency. We first examined whether moving frequency was associated with elevated levels of delinquency. Consistent with our hypothesis, we found that each additional move a respondent experienced increased the risk of delinquent behavior. Notably, the magnitude of this effect was similar among respondents participating in both studies, indicating a rather robust effect across modeling strategies and samples. Indeed, some adolescents in our samples move at high rates year-to-year, and we argue that this phenomenon of "hypermobility" is particularly likely to lead to delinquency.

We next speculated that the association between hypermobility and delinquency would exhibit a threshold effect, as youths who move with the greatest frequency would have little ability to forge any ties, either positive or negative. To test for this possibility, we examined whether a polynomial term provided a better fit for the association between mobility frequency and delinquency than the linear term. The results were decidedly mixed. In the Add Health sample, we uncovered a significant, negative coefficient for the polynomial, suggesting that after a certain point each additional move became redundant and thus supporting the hypothesized presence of a threshold. However, we detected no curvilinear effect among NLSY97 respondents. If we assume the Add Health finding is accurate, then the lack of a threshold in the NLSY97 sample may be attributable to the truncated nature of the hypermobility measure. Recall that NLSY respondents were asked to report how many homes they resided in for one month or longer, while Add Health respondents reported how many homes they lived in overall. If question wording is driving the differences across samples, it seems that part of the hypermobility finding may reflect the effect of short tenures in any given residence.

To examine differences in short- versus long-distance moves and changes in neighborhood quality, we leveraged the unique characteristics of each data source, rendering further comparisons between the two samples difficult. Turning to the Add Health data, we found that relative to residentially stable adolescents, those who relocated outside their county reported lower levels of delinquency. There were no differences in delinquency between respondents who stayed within their homes and those who moved within their counties. These findings implicate distance as an important contingency in the mobility-delinquency association. The protective effect of longer-distance moves may be attributed to a knifing off of negative ties in respondents' prior environments and the potential for adolescents to start fresh in new communities.

We next examined whether changes in neighborhood quality influenced delinquency. The results suggest that improvements in neighborhood socioeconomic status between sending and receiving neighborhoods increase delinquency. We postulate that one of two complementary processes may be at play here. First, adolescents whose families had the ability to move to more affluent areas may find themselves out of place in their new communities. Peer groups may be less inviting, and feelings of relative deprivation may emerge as youths compare their current circumstances to those around them. At the other end of the spectrum, parents who move to more impoverished areas may become hypervigilant, shielding their children from criminogenic influences in their new environments, thus decreasing the ability for adolescents to form ties with potentially negative influences.

Guided by the assumption that the effect of mobility may be contingent on prior delinquency, we examined whether the influence of moving frequency and distance between sending and receiving neighborhoods varied for youth with previous behavioral problems relative to those who were recorded as abstainers at the first point of observation. Due to differences in modeling strategy, we limited these analyses to the Add Health respondents. Two interesting trends emerged from these models. First, the effect of hypermobility was particularly

harmful among the abstainers but non-significant for youth with prior histories of misbehavior. Perhaps moving, and moreover, moving often, is a shock for well-adjusted youth. If this is indeed the case, the stronger effect of hypermobility among this group may be attributed to the more proximate events motivating families to relocate frequently or to the inability of these youth to establish prosocial ties in their new environments. Second, and consistent with expectation, we found that long-distance moves serve a protective function for youth already displaying problematic behaviors, but have no effect on delinquency among abstainers. In this sense, long-distance moves may be beneficial for youth with histories of misconduct as they serve to effectively separate adolescents from the criminogenic influences in their prior communities.

Although this study advances our understanding of residential mobility on offending, we acknowledge several limitations of our analysis. First, our ability to empirically model this more nuanced theoretical framework is limited by the availability of pertinent variables. Our hypotheses and the interpretation of our models rest on the assumption that the effect of contingencies in mobility experiences on self-reported delinquency can be attributed to changes in strain, parental monitoring of youth behavior, and peer group composition. While the results seem consistent with our expectations, neither the Add Health study nor NLSY97 include measures to directly examine these mediating mechanisms.

Second, our dependent variable relies on self-reports of criminal offending that occurred in the 12 months prior to each interview round. As with most survey-based research on adolescent behavior, an issue with this approach is that respondents may inadvertently report on events that occurred outside the recall period. In the present context, respondents may report criminal conduct that occurred in their prior residential neighborhoods, thus biasing the estimates presented here. However, moving is a salient event in the lives of many adolescents, and it bears to reason that residential moves provide a clear break in retrospective accounts of life histories. From this vantage, we might expect movers to be able to differentiate criminal acts that occurred in their prior neighborhoods from those that occurred in their current neighborhoods, thus alleviating the threats posed by telescoping.

Finally, our measures of neighborhood context are based on point-in-time measures—where respondents were living at each wave they were interviewed. We view our lack of complete residential histories as an important omission, especially among respondents who experienced multiple moves, as we know little about the types of places in which they lived between waves. A more complete test of the ideas presented here would require a representative, longitudinal, self-report survey of adolescents containing full residential histories, community information, and a host of measures to assess mediating mechanisms. To our knowledge, no such study exists. Thus, rather than critical limitations, we feel these are areas that will need to be addressed in future research, as requisite data become available.

On a more general note, counterfactual models are often treated as a panacea for selection-related issues in social science research. As demonstrated here, such models rest on rather strong assumptions about "treatment effects"' above and

beyond the well-documented issues with omitted variable bias, balance, and time-varying covariates. Insofar as "treatments"—in this case residential mobility—reflect crude measures of relatively heterogeneous experiences, counterfactual methods are likely to provide inaccurate information as to the nature, direction, and extent of bias in traditional regression models. We caution researchers against interpreting estimates derived from such models as irrefutable "proof" of causal effects without first considering the conceptualization and operation of the "treatment" in question. In the case of the present analysis, it seems that mobility, per se, has little effect on delinquency once selection has been appropriately modeled; however, certain type of moves, for certain adolescents, indeed matter. These results highlight the value in moving beyond static comparisons of risk factors across adolescent samples and instead considering under what conditions and for whom these risk factors are associated with delinquency.

Notes

1. A limitation with frequency-based measures is that respondents who engage in relatively high levels of minor delinquency are considered more delinquent than respondents who engage in serious delinquency at comparatively low rates. As a sensitivity analysis, we re-estimated our regression models by substituting an offending variety scale for the frequency score. The general findings from these supplemental models are consistent with the results presented below (online supplement A).
2. We employed a matching algorithm with a 0.001 bandwidth. After generating the propensity score, we assessed balance by comparing means and standard deviations between the matched and unmatched samples. Standard bias statistics and comparisons of higher-order moments suggest that the matching algorithm substantially reduced the differences between the matched and unmatched samples. The results of 1:1 and 3:1 nearest neighbor matching and kernel density matching revealed no differences in self-reported delinquency between movers and non-movers. The results of these subsequent analyses are available upon request.
3. To assess the robustness of the results presented here, we re-estimated these models within a matched sample of respondents. The results of these supplemental models comport with those presented here and are available by request from the corresponding author.

About the Authors

Matt Vogel is an Assistant Professor of Criminology and Criminal Justice at the University of Missouri–St. Louis and a researcher at OTB–Research for the Built Environment, Technological University of Delft. His research examines contextual influences on adolescent behavior and the relationship between population dynamics and crime. His research has recently appeared in *Criminology* and *Journal of Quantitative Criminology*.

Lauren C. Porter is an Assistant Professor of Criminology and Criminal Justice at University of Maryland. Her work examines the causes and consequences of mass incarceration, punishment and inequality, and the relationship between

crime and place. Her work has recently been published in *Criminology* and *Journal of Quantitative Criminology*.

Timothy McCuddy is a doctoral candidate in the Department of Criminology and Criminal Justice at the University of Missouri–St. Louis. His research interests include juvenile delinquency, peer influence, and the relationship between technology and crime. His recent research has appeared in *Journal of Research in Crime and Delinquency* and *Journal of Youth and Adolescence*.

Supplementary Material

Supplementary material is available at *Social Forces* online, http://sf.oxfordjournals.org/.

References

Agnew, Robert. 1992. "Foundation for a General Strain Theory of Crime and Delinquency." *Criminology* 30:47–87.

Akers, Ronald L. 2009. *Social Learning and Social Structure: A General Theory of Crime and Deviance*. New Brunswick, NJ: Transaction Publishers.

Allison, Paul D. 2009. *Fixed Effects Regression Models,* vol. 160. Thousand Oaks, CA: Sage Publications.

———. 2014. "Problems with the Hybrid Method." http://statisticalhorizons.com/problems-with-the-hybrid-method

Blau, Peter M. 1956. "Social Mobility and Interpersonal Relations." American Sociological Rev*iew* 21: 290–95.

Briggs, Xavier de Souza. 1997. "Moving Up versus Moving Out: Neighborhood Effects in Housing Mobility Programs." *Housing Policy Debate* 8:195–234.

Brown, D., M. Benzeval, V. Gayle, S. Macintyre, D. O'Reilly, and A. H. Leyland. 2012. "Childhood Residential Mobility and Health in Late Adolescence and Adulthood: Findings from the West of Scotland Twenty-07 Study." Journal of Epidemiology and Community *Health* 66(10):942–50.

Cole, Elizabeth R., and Safiya R. Omari. 2003. "Race, Class, and the Dilemmas of Upward Mobility for African Americans." *Journal of Social Issues* 59:785–802.

Coleman, James S. 1988. "Social Capital in the Creation of Human Capital." American Journal of *Sociology* 94:S95–S120.

Gasper, Joseph, Stefanie DeLuca, and Angela Estacion. 2010. "Coming and Going: Explaining the Effects of Residential and School Mobility on Adolescent Delinquency." *Social Science Research* 39:459–76.

———. 2012. "Switching Schools: Revisiting the Relationship between School Mobility and High School Dropout." *American Educational Research Journal* 49:487–51.

Gilman, Stephen, Ichiro Kawachi, Garret M. Fitzmaurice, and Stephen L. Buka. 2003. "Socio-Economic Status, Family Disruption, and Residential Stability in Childhood: Relation to Onset, Recurrence, and Remission of Major Depression." *Psychological Medicine* 33:1341–55.

Guo, Shenyang, and Mark W. Fraser. 2014. *Propensity Score Analysis: Statistical Methods and Applications*. Thousand Oaks, CA: Sage Publications.

Haynie, Dana L., and Scott J. South. 2005. "Residential Mobility and Adolescent Violence." *Social Forces* 84:361–74.

Haynie, Dana L., Scott J. South, Sunita Bose. 2006. "The Company You Keep: Adolescent Mobility and Peer Behavior." *Sociological Inquiry* 76:397–426.

Hirschi, T. 1969. *Causes of delinquency*. Berkeley: University of California Press.

Ihrke, David K., and Carol S. Faber. 2012. "Geographic Mobility: 2005–2010." Current Population Reports, P20-567. US Census Bureau, Washington, DC.

Kling, Jeffrey R., Jeffrey B. Liebman, and Lawrence F. Katz. 2007. "Experimental Analysis of Neighborhood Effects." *Econometrica* 75:83–119.

Lee, Barret A., R. Salvador Oropesa, and James W. Kanan. 1994. "Neighborhood Context and Residential Mobility." *Demography* 3:249–70.

Newman, Katherine S. 1988. *Falling from Grace: Downward Mobility in the Age of Affluence*. Berkley: University of California Press.

Oishi, S. 2010. "The Psychology of Residential Mobility Implications for the Self, Social Relationships, and Well-Being." *Perspectives on Psychological Science* 5(1):5–21.

Porter, Lauren C. 2014. "Incarceration and Post-Release Health Behavior." *Journal of Health and Social Behavior* 55:234–49.

Porter, Lauren, and Matt Vogel. 2014. "Residential Mobility and Delinquency Revisited: Causation or Selection?" *Journal of Quantitative Criminology* 30:187–214.

Pribesh, Shana, and Douglas B. Downey. 1999. "Why Are Residential and School Moves Associated with Poor School Performance?" *Demography* 36:521–34.

Rankin, Bruce H., and James M. Quane. 2002. "Social Contexts and Urban Adolescent Outcomes: The Interrelated Effects of Neighborhoods, Families, and Peers on African American Youth." *Social Problems* 49:79–100.

Roy, Amanda L., Dana C. McCoy, and C. Cybele Raver. 2014. "Instability versus Quality: Residential Mobility, Neighborhood Poverty, and Children's Self-Regulation." *Developmental Psychology* 50: 1891–96.

Rumbold, A. R., L. C. Giles, M. J. Whitrow, E. J. Steele, C. E. Davies, M. J. Davies, and V. M. Moore. 2012. "The Effects of House Moves during Early Childhood on Child Mental Health at Age 9 Years." *BMC Public Health* 12(1):1.

Sampson, R. J. 2012. *Great American City: Chicago and the Enduring Neighborhood Effect*. Chicago: University of Chicago Press.

Sampson, R. J., S. W. Raudenbush, and F. Earls. 1997. "Neighborhoods and Violent Crime: A Multilevel Study of Collective Efficacy." *Science* 277(5328):918–24.

Sciandra, Matthew, Lisa Sanbonmatsu, Greg J. Duncan, Lisa A. Gennetian, Lawrence F. Katz, Ronald C. Kessler, Jeffrey R. Kling, and Jens Ludwig. 2013. "Long-Term Effects of the Moving to Opportunity Residential Mobility Experiment on Crime and Delinquency." *Journal of Experimental Criminology* 9: 451–89.

Sharkey, Patrick, and Robert J. Sampson. 2010. "Destination Effects: Residential Mobility and Trajectories of Adolescent Violence in a Stratified Metropolis." *Criminology* 48:639–81.

Shaw, C. R., and H. D. McKay. 1942. *Juvenile* Delinquency and Urban Areas. Chicago: University of Chicago Press.

South, Scott J., and Kyle D. Crowder. 1997. "Escaping Distressed Neighborhoods: Individual, Community, and Metropolitan Influences." *American Journal of Sociology* 103:1040–84.

South, S. J., K. D. Crowder, and K. Trent. 1998. "Children's Residential Mobility and Neighborhood Environment Following Parental Divorce and Remarriage." *Social Forces* 77:667–93.

South, Scott J., and Dana L. Haynie. 2004. "Friendship Networks of Mobile Adolescents." *Social Forces* 83:315–50.

South, Scott J., Dana L. Haynie, and Sunita Bose. 2007. "Student Mobility and School Dropout." *Social Science Research* 36:68–94.

Testa, Maria, and Brenda Major. 1990. "The Impact of Social Comparisons after Failure: The Moderating Effects of Perceived Control." *Basic and Applied Social Psychology* 11:205–18.

Tønnessen, Marianne, Kjetil Telle, and Astri Syse. 2016. "Childhood Residential Mobility and Long-Term Outcomes." *Acta Sociologica* 59(2):113–29.

Tucker, C. Jack, Jonathan Marx, and Larry Long. 1998. "Moving on": Residential mobility and children's school lives. *Sociology of Education*, 111–29.

Vandersmissen, Marie H., Anne M. Séguin, Marius Thériault, and Christophe Claramunt. 2009. "Modeling Propensity to Move after Job Change Using Event History Analysis and Temporal GIS." *Journal of Geographical Systems* 11:37–65.

Van Ham, M., and P. Feijten. 2008. "Who Wants to Leave the Neighbourhood? The Effect of Being Different from the Neighbourhood Population on Wishes to Move." *Environment and Planning A* 40(5): 1151–70.

Vogel, Matt, and Scott J. South. 2016. "Spatial Dimensions of the Effect of Neighborhood Disadvantage on Delinquency." *Criminology* 54:434–58.

Wiley, Stephanie A., Lee A. Slocum, and Finn-Aage Esbensen. 2013. "The Unintended Consequences of Being Stopped or Arrested: An Exploration of the Labeling Mechanisms through Which Police Contact Leads to Subsequent Delinquency." *Criminology* 51:927–66.

Wright, Kevin A., Byungbae Kim, Laurie Chassin, Sandra H. Losoya, and Alex R. Piquero. 2014. "Ecological Context, Concentrated Disadvantage, and Youth Reoffending: Identifying the Social Mechanisms in a Sample of Serious Adolescent Offenders." *Journal of Youth and Adolescence* 43:1781–99.

Xie, Min, and David McDowall. 2008. "Escaping Crime: The Effects of Direct and Indirect Victimization on Moving." *Criminology* 46:809–40.

Zimmerman, Gregory M., and Steven F. Messner. 2011. "Neighborhood Context and Nonlinear Peer Effects on Adolescent Violent Crime." *Criminology* 49:873–903.