Published in final edited form as:

J Hum Behav Soc Environ. 2018 ; 28(5): 570–587. doi:10.1080/10911359.2018.1443866.

The effect of father's absence, parental adverse events, and neighborhood disadvantage on children's aggression and delinquency: A multi-analytic approach

Sage Kim^{a,*} and A. Elizabeth Glassgow^b

^aSchool of Public Health, University of Illinois at Chicago, Chicago, IL, USA;

^bCollege of Medicine, University of Illinois at Chicago, Chicago, IL, USA

Abstract

We applied multiple statistical approaches to address the co-varying nature of neighborhood, household context, and children's behavioral problems. The focal relationship under investigation was the effect of father presence on child's aggression. We take advantage of hybrid models to examine within-group fixed effects of time varying variables, while paying attention to household stable characteristics.

Findings demonstrate that the level of child aggression was influenced more by household and neighborhood level stable characteristics. Living in disadvantaged neighborhood had direct and indirect effects on child aggression, controlling for other variables. Fixed effects model showed no significant relationship between having a father in the household and aggression. However, hybrid models with between and within group differences in father absence indicated that the between individual difference was significantly associated with child aggression.

The findings suggest that contextual forces that precede the relationship between father absence and child aggression might determine who may be likely to live in households with characteristics that affect both father absence and aggression. When there are systematic selection biases, statistical methods suited for determining causal inference, such as fixed effects models, cannot fully tease out larger contextual and systemic forces that sort individuals into certain types of households and neighborhoods.

Introduction

Neighborhood Context and Inequality

The role of space in inequality and stratification has been studied since the early 1920s. For example, Chicago School human ecology understood that the neighborhood is the basis for elementary associations in the organization of city life (Park, Burgess, & McKenzie, 1925). They saw that local communities arise as a result of competition for land use and affordable housing. A neighborhood is a collection of people and institutions sharing a spatial area

*Corresponding Author: 1603 W. Taylor St. #781, Chicago IL 60612, skim49@uic.edu, Phone) 312-996-8350.

influenced by ecological, cultural, and political forces. Thus, characteristics of neighborhoods are not simply aggregates of individual characteristics. Influenced by Park and Burgess, Shaw and McKay (1942/1969) also documented how delinquency/crime rates are spatially distributed in urban areas and area level characteristics including economic status, racial composition, and residential mobility affect the level of social disorganization. Wilson (1987) argues that disadvantage is concentrated in class/racially segregated neighborhoods, and many social, economic, and health outcomes are also clustered in such areas. Poverty, social exclusion, housing discrimination, crime, and concentrated incarceration in these neighborhoods, in turn, further limit life chances of individuals who are already disadvantaged (Brody et al., 2001; Browning, Calder, Krivo, Kwan, & Peterson, 2006; Grodsky & Pager, 2001; Moore, 2003; Pougnet, Serbin, Stack, Ledingham, & Schwartzman, 2012; Ross & Mirowsky, 2001; Sampson, Sharkey, & Raudenbush, 2008).

Neighborhood social context, interactions, and organizational mechanisms may mediate macro level structures that produce inequality to local and individual level uneven outcomes (Lutfey & Freese, 2005; Reynolds, Ou, & Topitzes, 2004; Stockdale et al., 2007). The question of inequality, that is, who gets what and why, is closely linked to and mediated by who lives where, how decisions concerning where investments/divestments are made, and why. Examining inequality across neighborhood areas is to understand structural determinants and spatial processes that produce and reinforce racial and class inequality at the local level. Understanding the political economy of space thus can expand the scope of sociology of inequality and stratification. In particular, children who grow up in disadvantaged neighborhoods tend to show poorer academic achievements and more behavioral problems compared with those who live in affluent neighborhoods (Goebert et al., 2004; Gorman-Smith, Tolan, & Henry, 2000; Jeynes, 2007; Woolley & Grogan-Kaylor, 2006). Scholars have argued that the gap between children living in poverty and those living in wealthier areas begins before their schooling and continues to widen (Duncan, Morris, & Rodrigues, 2011; Lee & Burkam, 2002). One of the reasons for the disparity could be that children living in poverty are disproportionately exposed to social disorder, which may affect children's behavior (Evans, 2004).

Interaction between Household and Neighborhood Characteristics

Household characteristics often interact with neighborhood contexts (Gorman-Smith et al., 2000; Sampson, Raudenbush, & Earls, 1997; Sheidow, Gorman-Smith, Tolan, & Henry, 2001). Poor families tend to live in disadvantaged neighborhoods. But more importantly, studies have shown that the negative effects of family poverty and other adverse events are even more prominent in poorer neighborhoods (Lippman, Burns, & McArthur, 2004; Sampson et al., 1997; Wilson, 1987). Because neighborhood level psychosocial and economic stress constrain family functioning, families in these areas are more likely to experience household adversities such as substance use, incarceration, and violence (Patrick Tolan, Guerra, & Kendall, 1995). As such, families in disadvantaged neighborhoods are more likely to experience a greater level of challenges in raising children (Jeynes, 2007; Laniel, 2003; Roosa, Jones, Tein, & Cree, 2003; Sampson & Laub, 2008; Tolan, Gorman-Smith, & Henry, 2004).

For example, father's absence in households is known to affect child outcomes, including aggression, delinquency, depression, other mental health problems, educational and economic outcomes (Copping, Campbell, & Muncer, 2013; Hao & Xie, 2002; Harper & McLanahan, 2004; McLanahan, Tach, & Schneider, 2013; Pougnet et al., 2012). The effect of father's absence is, for the most part, mediated through an unstable family context. First, household conflict associated with a father's departure may affect children's emotional instability and delinquent behavior (Lansford, 2009; Mandara, Murray, & Joyner, 2005; Markowitz & Ryan, 2016; Single-Rushton & McLanahan, 2002). Children growing up in households with a high level of marital conflict may act out in response to the emotional disruption (Amato, 2005; Cummings, Goeke-Morey, & Papp, 2004; Lansford, 2009; Markowitz & Ryan, 2016). Studies have argued that exposure to marital conflict increases parent-child conflict and consequently, aggressive behavior in children (El-Sheikh & Elmore-Staton, 2004); and increases stress and anxiety in children, which leads to maladjustment (Cummings et al., 2004; Jenkins & Smith, 1991).

Second, household socioeconomic conditions affect the child's socialization (Dodge, Pettit, & Bates, 1994; Pffiffer, McBurnett, & Rathouz, 2001); and poor economic conditions due to father's absence may create environments in which children develop antisocial behavior (Brody et al., 2001; Russell & Odgers, 2015). In particular, households without a father present are more likely to be poor, and household poverty limits child life chances, which may increase antisocial behavior (Harper & McLanahan, 2004; Najman et al., 2010; Russell & Odgers, 2015). To be sure, poverty, family instability, marital conflict, and neighborhood disadvantage are often correlated, making it difficult to draw conclusive causal relations concerning children's academic/behavioral outcomes and their co-varying family/neighborhood characteristics.

Causal Inference and Analytic Limitations

Scholars often employ fixed effects models to control for unobservables (Halaby, 2004; Markowitz & Ryan, 2016; McLanahan et al., 2013). Fixed effects models are particularly helpful when examining stable characteristics of individual and neighborhood factors that are highly correlated, which may be confounders of child outcomes and multi-level predictors (Halaby, 2004). However, fixed effects models may not entirely solve the problem of selection bias. Diez-Roux (2007) argues that differences in stable individual level characteristics between individuals may contribute "non-exchangeability of individuals" between groups, even after controlling for potential confounders. It is because people do not randomly choose where they live. Thus fixed effects model which eliminates between individual variance by limiting analysis to within person change over time cannot account for a priori social organization of race that determines not only where one lives but also one's life trajectory.

This is particularly important concerning multi-level predictors of children's outcomes, because the causal relationship between child outcomes and time-varying predictors may differ by unmeasured child characteristics. If that is the case, within individual causal relationships established using fixed effects models cannot be entirely free of unobserved stable characteristics of individuals. Furthermore, these individual-level variables could

function not only as confounders, but also mediators (Duncan & Raudenbush, 1999). The issue of children's aggression and delinquency is an example of the problem of uncertainty due to complex relationships between unobservables and selection bias. For example, child's aggression may be influenced by neighborhood and family environment, but when child's social, economic, and physical environment, as well as perception and reactions to child's aggression vastly differ by child's race/ethnicity, within individual analysis fails to capture such systematic difference between groups. While it is not plausible to address all the limitations of different types of analytic tools, hybrid models may be an effective approach to examine time-varying variables as well as stable effects of stable characteristics (Allison, 2005). In this paper, we take advantage of the benefits of hybrid models to examine within-group fixed effects of time varying variables, father in a household, mother living with an adult male significant other, and income, while paying attention to stable characteristics, such as gender, race/ethnicity, neighborhood disadvantage, and parental adverse events. The focal relationship we will explore is the effect of father's presence in the household on children's aggression. We hypothesize that children whose father is living in the same household have a lower level of aggression. And, we further hypothesize that the effect of father in the household differs by the experience of parental adverse events and stable characteristics of children/family.

Methods

Dataset

We used an existing dataset entitled "SafeChildren" which includes 424 students living in disadvantaged neighborhoods in Chicago. Students were enrolled at the time of entering into first grade in seven Chicago Public Schools (CPS), from 96 census tracts, all of which were located in predominantly poor and racially segregated neighborhoods. Overall, 42% of the study participants were black and 58% were Hispanic students; and 49% were male and 51% were female students. Over the thirteen-year study period, students were followed up approximately every 12 months, totaling nine waves of repeated measures on time-varying variables and non-time-varying individual, family, and neighborhood characteristics. Two additional waves of data included various long-term outcomes, such as high school graduation, incarceration, mental health, substance use, and teen pregnancy.

Variables

Dependent variables: Children's aggression was measured by the Teacher Observations of Classroom Adaptation Revised (TOCA-R), a valid and reliable teacher-reported measure of children's behavior in the classroom (Tolan et al., 2004). We used the TOCA-R aggression subscale that includes 10 items, rated on 6-point scale (1 = almost never to 6 = almost always). TOCA-R items include whether a child is stubborn, breaking rules, harms/hurts others and property on purpose, takes others' property, fights, lies, trouble accepting authority, yells at others, and teases classmates (Petras, Chilcoat, Leaf, Ialongo, & Kellam, 2004; Tolan, Gorman-Smith, Henry, & Schoeny, 2016). The aggression score was standardized to have a mean of 0 and a standard deviation (SD) of 1. For this analysis, we used measures from six waves (Waves 1, 2, 4, 5, 6, and 8: Indices 1–6). Child's involvement with delinquency was measured by combining any school referrals due to any serious or

violent events, or record of arrest. Delinquency was measured at Waves 10 and 11, and we created a cumulative measure using both waves.

Independent variables: Several time varying and non-time varying sociodemographic variables were used. Non-time varying variables were race/ethnicity, gender, and the presence of parental adverse events. Race/ethnicity was a dichotomous variable including black and Hispanic (AfAm=1). Gender was also a dichotomous variable (Male=1). Parental adverse event variable was a dummy variable indicating whether parent(s) ever had problems with incarceration, substance use, and/or mental health issues. A primary caregiver completed the parental adversity survey questions. The items were dichotomous variables, measured as either yes or no.

Time varying variables included having father in the household, mother living with an adult male significant other, and household income. All time varying variables were also measured at Waves 1, 2, 4, 5, 6, and 8. Father in the household, which was a dichotomous variable (Yes vs. No), was included in the analysis. To tease out the effects of having an adult male in the household, mother living with an adult male significant other was measured at each wave (yes vs. no). We created a summary variable for some of the analysis, which was a dichotomous variable indicating father living with the child more than 75% of the time, which meant that the respondents answered yes to the father in household variable five out of six measures. Household income was an ordinal variable with six categories, from less than \$5,000 to more than \$50,000. The distribution of income category within wave showed that the midpoint of family income was around \$20,000, ranging from 37% to 64% of families had income less than \$20,000. We created a dichotomous variable indicating household income less than \$20,000, because only about 2.6% of households at each wave reported to have household income greater than \$50,000.

To calculate neighborhood disadvantage score, we performed a factor analysis using census tract level % poverty, % unemployed, % less than high school education, % female headed households with children, and median household income. The average crime rate at the beginning of the original data collection was also used in this analysis.

Analysis

Conceptual model: Overall, we conceptualized that living in disadvantaged neighborhoods negatively affects children's school achievement and behavioral outcomes. And, neighborhood environment influences family structure and functioning, while family characteristics, in part, mediate neighborhood effects on children's outcomes. On the other hand, household characteristics such as race and income may also partially determine type of neighborhood in which families reside. Figure 1 depicts our multi-level approach to children's outcomes, in particular, aggression and delinquency.

Analysis: As shown in Figure 1, complex multi-level factors influence children's aggression and delinquency. Many household characteristics are highly correlated with neighborhood characteristics, while the effects of neighborhood and family factors may be moderated by children's gender and race/ethnicity.

Descriptive statistics were used to characterize the sample. Black and Hispanic children were compared on key variables. Next, to minimize the problem of unobserved heterogeneity due to omitted variable(s), we take advantage of the current panel data. We performed a four-step analysis for this paper: First, we used multilevel models, individuals were nested within neighborhoods, to establish relationships between the outcome measures and the two level predictors. For the multi-level models, we used summary scores for all repeated measures of dependent and independent variables. Second, we used within group fixed effects models to draw more definite causal inferences between the outcome and explanatory variables, by washing out stable effects of stable characteristics of individuals. For the fixed effects models, we examined changes over time within individuals. Third, we ran a hybrid model to examine both time varying and stable characteristics of individuals. We calculated both the within individual difference at each wave from the individual mean, which represents fixed effects parameters, and between individual variation from the grand mean, which accounts for between individual differences. By using both within and between individual differences, the hybrid model allows both time varying and non-time varying variables in the model. Causal relationship between child outcomes and time-varying predictors may differ by unmeasured child characteristics. And, if this is the case, a within individual causal relationship established using fixed effects models cannot be entirely free of unobserved stable characteristics of individuals. Furthermore, these individual-level variables could function not only as confounders, but also mediators (Duncan & Raudenbush, 1999). For example, race/ethnicity intersects with neighborhood characteristics that affect child's aggression. However, when child's non-time varying variable, race/ethnicity, determines unobserved mechanisms, by fixing non-time varying characteristics may limit our understanding of what contributes to child's aggressive behavior. Finally, we constructed a structural equation model to examine the viability of our initial conceptual model in explaining aggression and delinquency.

Results

Descriptive Statistics

Over the study period, just over 50% of children were living with father in the same household, from 54% in Wave 1 to 52% in Wave 8. Mean aggression was much higher for children who lived with father in the same household compared with those who did not (Table 1). In addition, aggression score was consistently higher for male students (0.28) compared with females (0.03). Overall, black children had higher aggression scores (0.54) compared with Hispanic children (−0.13) for both male (0.72 vs. 0.01) and female (0.39 vs. −0.27) students (data not shown). Similarly, a significantly lower proportion of children whose father in household (9.1%), compared with children without father living in the same household (20.8%), was reported to have one or more delinquent incidences by the end of the study period (Waves 10 and 11).

As expected, there was no significant difference in gender of child by father presence in home. On the other hand, significantly higher proportion of black children were living without father in household. Only 15% of children whose father resided in the same household were black children. Children living with father in same household were

relatively better off economically, compared with those whose father was not in household: 45% of children who were living with father in same home were from household with annual income greater than \$20,000, compared with those whose father did not reside in same home (17%). Naturally, those living with father in same home were more likely to live with father or a male partner of mother (94% and 13%, respectively).

More than 41% of households without father present had one or more parental adverse events, including mental health or substance abuse problems or history of arrest/incarceration. Furthermore, children living without his/her father were also more likely to live in disadvantaged neighborhoods, with average concentrated disadvantage score of 0.40, compared with those living with his/her father (−0.47).

Multilevel Mixed Model

Equation 1 elaborates a two-level mixed model. At Level-1, children's aggression was regressed on male, black, household income greater than \$20,000, and having parental adverse event(s). At Level-2, census tract level disadvantage factor score was added to the model. Because there was no slope difference by disadvantage, we allowed only the intercept to vary. Table 2 summarizes the mixed model results. Black children compared with Hispanic children were more likely to have a higher level of aggression. Male children were more likely than females to show aggression. Having a father in the household was associated with lower level of aggression. Children living in disadvantaged neighborhoods were more likely to show a higher levels of aggression. Random effects parameters showed that census tract level residual was 0.92, and child level residual was 0.07.

Fixed Effects Model

Having a father in the household was one of the significant predictors of children's aggression. However, mixed effects models do not necessarily control for all unobservables. To examine further the causal inference between father's presence in the household and children's aggression, we utilized the within group fixed effects model. Within group fixed effects model examines change over time within individual, thus washes out unmeasured stable characteristics of individuals. Individual dummy variables and wave dummy variables were used. Non-time varying, stable characteristics of individuals and differences between individuals are dropped out of the model, leaving only the effects of within individual changes.

Fixed effects model findings for the whole sample and by race/ethnicity are presented in Table 3. Interestingly, father in household was no longer significant. To further explore potential reasons for the different findings between the mixed model and the fixed effects model, we subsetting the data by race and ran the models for each racial group. Father's presence in the household was not significant in all models.

Hybrid model

We propose that non time-varying characteristics, such as gender and race may moderate the effects of individual and neighborhood characteristics on aggression. Furthermore, instead of within individual differences, that is, change in the presence of father in household,

contextual factors may determine both the likelihood of having father in the household and aggression.

To examine stable characteristics while taking into account changes within individuals, we performed a hybrid model. In addition to the father in household variable, we added a variable indicating whether the mother was living with an adult male significant other. This decision was made because father in household could mean either the effect of having one's own father in the household or the effect of having a male adult in the household. So, introducing the status of mother living with an adult male significant other could help tease out the effects of father versus the presence of another adult male.

Table 4 summarizes the model. The first model using all cases showed that the between difference in father in the household was significant but that the within difference was not significant. Black children had a higher aggression level compared with Hispanic children. Male students, compared with female students, had a higher aggression level. Students living in more disadvantaged neighborhoods were more likely to show a higher level of aggression.

It is possible that the effect of a father in the household may be dependent on family functioning. Children whose parents are having problems with incarceration, substance use, and mental health, having father in the household could be a source of stress, especially if the father is having problems. To further examine the differential effects of having a father in the household, we ran hybrid models separately for those who reported parental adverse events and those who reported no parental adverse events. The second and the third models in Table 3 show the difference between the two groups. Overall, the amount of variance explained by the model was twice as high for children with no parental adverse events (16%) as for children who experienced parental adverse events (8%). For those who experienced parental adverse events, none of the time varying variables showed significant relationships with aggression. Being male and living in disadvantaged neighborhoods increased the level of children's aggression. Students with no parental adverse events showed a very different pattern. Those who had a father in the household had a lower level of aggression. Students whose mother had a partner other than the child's father had higher aggression, black children compared with Hispanic children, and male students, compared with female students had a higher level of aggression. Interestingly, neighborhood disadvantage did not seem to have a significant effect on children's aggression.

We then introduced two interaction terms: being male with father in household and being black with father in household. The interaction between male and father in household was significant only for those with parental adverse events. Figure 2 depicts the effects of the interactions. For black male children, having father in household was associated with lower aggression when there was no parental adverse events, while having father in household was associated with higher aggression when there were parental adverse events.

For black children living in households without parental adverse events, having father in household was associated with lower aggression only for male students. For Hispanic children living in households without parental adverse events, having father in household was associated with lower aggression for both male and female children.

For black children living in households with parental adverse events, having a father in the household was associated with lower aggression for female children but with higher aggression for male children. For Hispanic children, having father in household was associated with lower aggression for both male and female children. But for male children, the effect was very small.

Causal Paths

Finally, we ran structural equation models to explain aggression and delinquency (Figure 3). Children living in disadvantaged neighborhoods were more likely to experience parental adverse events, less likely to have a father in the household, and less likely to have his/her mother living with an adult male significant other. Black children were more likely to be affected by neighborhood disadvantage, not having a father in the household, and parental adverse events.

Total effects of factors for aggression and delinquency are summarized in Table 5. Overall, being male and living in disadvantaged neighborhoods was positively and having a father in the household was negatively associated with aggression. For delinquency, aggression and disadvantage were positively associated with delinquency.

Discussion

Our analysis demonstrates that neighborhood disadvantage directly affects children's aggression and also is mediated by family functioning. Using multiple approaches to explaining children's aggression, we found that children's aggression seems to be affected more by stable characteristics of individuals and neighborhoods. Living in disadvantaged neighborhood was shown to be significantly associated with a higher level of aggression, controlling for other relevant variables. This pattern is confirmed by the multilevel model, hybrid model, as well as structural equation model.

Neighborhood disadvantage also influenced the likelihood of experiencing parental adverse events such as parental incarceration, substance use, and mental health problems and father's absence in the household, which were shown to increase the level of aggression. These findings indicate that neighborhood disadvantage directly affects children's aggression and also is mediated by family structure and functioning.

Multilevel model findings indicate that being African American and being male are associated with a higher level of aggression. However, these relationships may be spurious. The hybrid model examining both changes within individuals and stable characteristics of individuals showed that race/ethnicity and gender effects may differ by household context. For children with parents who had adverse events, being African American and being male seem to be associated with an increased level of aggression. For those with parental adverse experiences, the parental adverse effect was smaller for African American children compared with Hispanic children. Furthermore, the interaction between being male and having a father in the household seemed to increase aggression for those with parents who had adverse events, but the main effect of gender was not significant. These results suggest that parental adverse events may affect males more than females. Interestingly, previous

studies have argued that females are influenced more by family problems and males are affected more by neighborhood context (Ehrmann & Massey, 2008). Scholars speculated that it might be because females tend to stay closer to homes and males tend to be “out” in the community, thus the source and the level of exposure to risks may differ by gender. Our findings seem to contradict previous studies, which might be because of the characteristics of the study sample. The study participants were African American and Hispanic children living in predominantly disadvantaged neighborhoods in Chicago, which is quite unique compared with previous studies that often compare whites and other minority students. Although this topic is beyond the aims of the current analysis, it would be worth further exploring in future research.

The effect of race/ethnicity needs further evaluation. African American children may experience unique challenges that are distinct from Hispanic children. African American families are more likely to live in neighborhoods that are disproportionately affected by concentrated incarceration, substance abuse, and other social and economic stress (Besbris, Faber, Rich, & Sharkey, 2015; Browning et al., 2006; Browning, Cagney, & Iveniuk, 2012; Bursik & Grasmick, 1993; Coulton & Irwin, 2009; Crowder, 2010). Because of the limitations of the data, we were unable to tease out African American children living in affluent neighborhoods which may differ from those in disadvantaged areas. But the findings seem to indicate that neighborhood disadvantage and family functioning are more important factors for determining aggression; and race/ethnicity may have different effects for children living in different family conditions.

Future research also would benefit from examining additional factors that may be affecting family structure. Further exploration is necessary to understand how the role and quality of parenting (e.g., emotional support, supervision, attention) by the mother and/or the father is associated with children’s aggression and whether it can moderate neighborhood context. The construct a parent present in the household must be expanded to measure the parent’s provision of care to meet the child’s need including biological/physical (e.g., nutrition, sleep, safe household conditions, exercise), psychological/social (e.g., nurturing, support, opportunity to play with others, guidance and discipline, educate), and financial (e.g., adequate shelter, healthcare, clothing). Better understanding of the role of adverse parental experiences on children’s aggression is needed, particularly how this experience is influencing his/her parenting and if the child also has experienced adversity.

We use teacher reports to identify child’s aggression. This measure is vulnerable to implicit bias of teachers in evaluating student’s behavior and consequently discipline. Studies have shown that teacher’s implicit bias results in disproportionately high number of black students being labeled and called out for misconduct, delinquency, and behavioral problems (Barden, Maddux, Petty, & Brewer, 2004; Gershenson, Holt, & Papageorge, 2016; Neckerman & Kirschenman, 1991; Staats, 2014; Weitzer & Tuch, 2005). Although there is no way of estimating teachers’ assessment of student behavior in this was biased based on student’s race/ethnicity, we could assume that there exists implicit bias against minority students. It is possible thus our study might have overestimated actual aggression among black students. However, it is potential limitation was minimized by utilizing fixed effects model that eliminates between individual variance. In addition, teacher’s implicit bias indeed

increases the likelihood of children being subject to real discipline and expulsion. More important implication of implicit bias affecting teacher's student evaluation perhaps is that biased teacher's assessment contributes to disproportionate arrest and incarceration in minority communities. In recent years, a disproportionately high number of poor minority students are funneled into the juvenile and adult criminal justice systems, as a result of zero tolerance policies. The "school to prison pipeline" phenomenon describes the increasing trends of students being sanctioned, expelled, which explains high rates of school dropout among poor minority schools (Darling-Hammond, 2007; Heitzeg, 2009). Skiba and Knesting (2001) argues that zero tolerance policies do not seem to improve school safety. Rather, such policies effectively push potentially troublesome students out of the school system (Advancement Project, 2005; Skiba & Knesting, 2001). The problem is that the "school to prison pipeline" does not affect all students equally. Between 1999 and 2007, the percent of black students being suspended has increased by 12%, while the percent has declined for white students during the same period (Hoffmann, Dickinson, & Dunn, 2007; Skiba, Eckes, & Brown, 2009). While black students make up 17% of students in the U.S., 37% of suspensions and expulsions were black students (Heitzeg, 2009). Skiba and Knesting (2001) argue that it is not because of differences in behavior, but because of differential enforcement of zero tolerance policies (Orfield, 2005). Thus our study findings concerning child's aggression needs to be contextualized within the school to pipeline environment where same level of aggression or behavioral problems would more likely to result in more severe discipline for minority students.

Having a father in the household was associated with a lower level of aggression in the mixed model. Interestingly however, the within group fixed effects model showed no significant relationship between having a father in the household and aggression within the individual. Hybrid models, with both between and within group differences in father's presence, indicated that it is not within individual variance but the between individual difference was the significant factor associated with aggression. It is quite difficult to conceptualize what this means, because if we accept that there is no causal relationship between a father in the household and aggression, we may not have reasons to further explore the effect of father in the household. But this finding also seems to suggest that some other contextual forces which precede the relationship between father absence and aggression may determine who may be likely to live in households with other characteristics that affect both father absence in household and aggression. These stable between individual differences are shown to be more important than change within individuals. When there are systematic selection biases, a statistical method that is suited for determining causal inference cannot fully tease out larger contextual and systemic forces that sort individuals into certain types of households and neighborhoods. Although currently we do not fully understand how neighborhood context influences individual outcomes, multiple methods can help explore different types of data in many different ways, which may contribute to current literature on inequality and neighborhood.

Conclusion

Neighborhood context influences children's outcomes, in part by affecting family structure. While race/ethnicity and gender may independently affect children's outcomes,

neighborhood effects may be moderated by race/ethnicity and gender as well. The complex interplay between race/ethnicity and neighborhood characteristics needs careful analysis. But decomposing the effects of intersecting factors using statistical methods may provide only limited knowledge. Because individuals do not randomly reside in certain neighborhoods, simply accounting for similarities between individuals within neighborhood does not eliminate all statistical biases. Likewise, controlling for stable characteristics of individuals cannot address systemic differences in contextual variance between individuals. But statistical methods are not designed to address all biases in the first place. Each statistical approach provides unique strengths and weaknesses, and collectively, we will be able to better understand causal relationships between where we live and how it may affect our life chances, and hopefully find ways to mitigate negative effects and outcomes of inequality.

Author bios:

Sage Kim, PhD is Associate Professor, School of Public Health, Department of Health Policy and Administration.

Elizabeth Glassgow, PhD is Assistant Professor, College of Medicine, Department of Pediatrics.

References

- Advancement Project. (2005). Education on lockdown: The schoolhouse to jailhouse track. Retrieved from Washington, DC: <http://www.advancementproject.org/resources/entry/education-on-lockdown-the-schoolhouse-to-jailhouse-track>
- Allison P (2005). Fixed Effects Regression Methods for Longitudinal Data Using SAS Fixed Effects Regression Methods for Longitudinal Data Using SAS (pp. 1–19). Cary, NC: SAS Institute, Inc.
- Amato P (2005). The Impact of Family Formation Change on the Cognitive, Social, and Emotional Well-Being of the Next Generation. *The Future of Children*, 15(2), 75–96. [PubMed: 16158731]
- Barden J, Maddux WW, Petty RE, & Brewer MB (2004). Contextual Moderation of Racial Bias: The Impact of Social Roles on Controlled and Automatically Activated Attitudes. *Journal of Personality and Social Psychology*, no. 1(pp. 5–22).
- Besbris M, Faber JW, Rich P, & Sharkey P (2015). Effect of neighborhood stigma on economic transactions. *Proceedings of the National Academy of Sciences of the United States of America*, 112(16), 4994–4998. doi:10.1073/pnas.1414139112 [PubMed: 25848041]
- Brody G, Ge X, Conger R, Gibbons F, Murry VM, Gerrard M, & Simons R (2001). The Influence of Neighborhood Disadvantage, Collective Socialization, and Parenting on African American Children's Affiliation with Deviant Peers. *Child Development*, 72(4), 1231–1246. [PubMed: 11480944]
- Browning C, Calder C, Krivo L, Kwan M-P, & Peterson R (2006). Neighborhood disadvantage and the concentration of criminogenic physical ecologies. Paper presented at the American Society of Criminology.
- Browning C, Cagney KA, & Iveniuk J (2012). Neighborhood stressors and cardiovascular health: Crime and C-reactive protein in Dallas, USA. *Social Science and Medicine*, 75(7), 1271–1279. doi: 10.1016/j.socscimed.2012.03.027 [PubMed: 22766311]
- Bursik R, & Grasmick H (1993). *Neighborhoods and crime: The dimensions of effective community control*. New York, NY Lexington Books.
- Copping L, Campbell A, & Muncer S (2013). Violence, Teenage Pregnancy, and Life History: Ecological Factors and Their Impact on Strategy-Driven Behavior. *Human Nature*, 24(2), 137–157. [PubMed: 23653372]

- Coulton C, & Irwin M (2009). Parental and community level correlates of participation in out-of-school activities among children living in low income neighborhoods. *Children and Youth Services Review*, 31(3), 300–308. doi:DOI:10.1016/j.childyouth.2008.08.003
- Crowder KD, Liam. (2010). Inter-neighborhood Migration, Race, and Environmental Hazards: Modeling Microlevel Processes of Environmental Inequality. *American Journal of Sociology*, 115(4), 1110–1149.
- Cummings EM, Goeke-Morey M, & Papp L (2004). Everyday marital conflict and child aggression. *Journal of Abnormal Child Psychology*, 32(2), 191–202. [PubMed: 15164860]
- Darling-Hammond L (2007). Race, inequality, and educational accountability: The irony of “No Child Left Behind”. *Race, Ethnicity, and Education*, 10(3), 245–260.
- Diez-Roux A (2007). Neighborhoods and health: where are we and where do we go from here? *Rev Epidemiol Sante Publique*, 55(1), 13–21. [PubMed: 17320330]
- Dodge K, Pettit G, & Bates J (1994). Socialization Mediators of the Relation between Socioeconomic Status and Child Conduct Problems. *Children and Poverty*, 65(2), 649–665.
- Duncan G, Morris P, & Rodrigues C (2011). Does money really matter? Estimating impacts of family income on young children’s achievement with data from random-assignment experiments. *Developmental Psychology*, 47(5), 1263–1279. [PubMed: 21688900]
- Duncan G, & Raudenbush S (1999). Assessing the effects of context in studies of child and youth development. *Educational Psychologist*, 34, 29–41.
- Ehrmann N, & Massey D (2008). Gender-specific effects of ecological conditions on college achievement 220–238, 37(1), 220–238.
- El-Sheikh M, & Elmore-Staton L (2004). The link between marital conflict and child adjustment: Parent-child conflict and perceived attachments as mediators, potentiators, and mitigators of risk. *Development and Psychopathology*, 16(3), 631–648. [PubMed: 15605629]
- Evans G (2004). The environment of childhood poverty. *American Psychologist*, 59(2), 77–92. [PubMed: 14992634]
- Gershenson S, Holt S, & Papageorge N (2016). Who believes in me? The effect of student–teacher demographic match on teacher expectations. *Economics of Education Review*, 52, 209–224.
- Goebert D, Bell C, Hishinuma E, Nahulu L, Johnson R, Foster J, ... Andrade N (2004). Influence of family adversity on school-related behavioural problems among multi-ethnic high school students. *School Psychology International*, 25(2), 193–206.
- Gorman-Smith D, Tolan P, & Henry D (2000). A developmental-ecological model of the relation of family functioning to patterns of delinquency. *Journal of Quantitative Criminology*, 16(2), 169–198.
- Grodsky E, & Pager D (2001). The Structure of Disadvantage: Individual and Occupational Determinants of the Black-White Wage Gap. *American Sociological Review*, 66(4), 542–567.
- Halaby C (2004). Panel Models in Sociological Research: Theory into Practice. *Annual Review of Sociology of Education*, 30, 507–544.
- Hao L, & Xie G (2002). The Complexity and Endogeneity of Family Structure in Explaining Children’s Misbehavior. *Social Science Research*, 31(1), 1–28.
- Harper C, & McLanahan S (2004). Father absence and youth incarceration. *Journal of Research on Adolescence*, 14(3), 369–397.
- Heitzeg N (2009). Education or Incarceration: Zero Tolerance Policies and the School to Prison Pipeline Retrieved from St. Paul, MN: <http://files.eric.ed.gov/fulltext/EJ870076.pdf>
- Hoffmann HC, Dickinson GE, & Dunn CL (2007). Communication Policy Changes in State Adult Correctional Facilities From 1971 to 2005. *Criminal Justice Review*, no. 1 (pp. 47–64).
- Jenkins J, & Smith M (1991). Marital Disharmony and Children’s Behaviour Problems: Aspects of a Poor Marriage that Affect Children Adversely. *Journal of Child Psychology and Psychiatry*, 32(5), 793–810. [PubMed: 1918229]
- Jeynes W (2007). The relationship between parental involvement and urban secondary school student academic achievement: A meta-analysis. *Urban Education*, 42(1), 82–110.
- Laniel L (2003). Drugs and Criminality: A Brief Exploration of the Relation between the Social Sciences and Anti-Drug Policy in the United States. *Sociologica*, no. 51(pp. 247–278), 4.

- Lansford J (2009). Parental Divorce and Children's Adjustment. *Perspectives on Psychological Science*, 4(2), 140–152. [PubMed: 26158941]
- Lee V, & Burkam D (2002). Inequality at the starting gate: Social background differences in achievement as children begin school. Retrieved from <http://www.epinet.org/content.cfm?id=617#exec>
- Lippman L, Burns S, & McArthur E (2004). *Urban schools: The challenge of location and poverty*. Washington D.C.: DIANE Publishing.
- Lutfey K, & Freese J (2005). Toward some Fundamentals of Fundamental Causality: Socioeconomic Status and Health in the Routine Clinic Visit for Diabetes. *American Journal of Sociology*, 110(5), 1326–1372.
- Mandara J, Murray C, & Joyner T (2005). The Impact of Fathers' Absence on African American Adolescents' Gender Role Development. *Sex Roles*, 53(3–4), 207–220.
- Markowitz A, & Ryan R (2016). Father Absence and Adolescent Depression and Delinquency: A Comparison of Siblings Approach. *Journal of Marriage and Family*, 78(5), 1300–1314. [PubMed: 27795578]
- McLanahan S, Tach L, & Schneider D (2013). The causal effects of father absence. *Annual Review of Sociology*, 39, 399–427.
- Moore M (2003). Socially isolated? How parents and neighbourhood adults influence youth behaviour in disadvantaged communities. *Ethnic and Racial Studies*, 26 (6), 988–1005.
- Najman J, Clavarino A, McGee T, Bor W, Williams G, & Hayatbakhsh M (2010). Timing and Chronicity of Family Poverty and Development of Unhealthy Behaviors in Children: A Longitudinal Study. *Journal of Adolescent Health*, 46(6), 538–544. [PubMed: 20472210]
- Neckerman KM, & Kirschenman J (1991). Hiring Strategies, Racial Bias, and Inner-City Workers. *Social Problems*, 38, 433–447.
- Orfield GC, Lee. (2005). *Why Segregation Matters: Poverty and Educational Inequality*. Retrieved from Cambridge, MA:
- Park R, Burgess E, & McKenzie R (1925). *The city*. Chicago, Illinois: The University of Chicago Press.
- Petras H, Chilcoat H, Leaf P, Ialongo N, & Kellam S (2004). Utility of TOCA-R Scores During the Elementary School Years in Identifying Later Violence Among Adolescent Males. *J. Am. Acad. Child Adolesc. Psychiatry*, 43(1), 88–96. [PubMed: 14691364]
- Pfiffner L, McBurnett K, & Rathouz P (2001). Father absence and familial antisocial characteristics. *Journal of Abnormal Child Psychology*, 29(5), 357–367.
- Pougnnet E, Serbin L, Stack D, Ledingham J, & Schwartzman A (2012). The Intergenerational Continuity of Fathers' Absence in a Socioeconomically Disadvantaged Sample. *Journal of Marriage and Family*, 74(3), 540–555.
- Reynolds AJ, Ou S-R, & Topitzes JW (2004). Paths of Effects of Early Childhood Intervention on Educational Attainment and Delinquency: A Confirmatory Analysis of the Chicago Child-Parent Centers. *Child Development*, 75(5), 1299–1328. [PubMed: 15369516]
- Roosa M, Jones S, Tein J.-y., & Cree W (2003). Prevention Science and Neighborhood Influences on Low-Income Children's Development: Theoretical and Methodological Issues *American Journal of Community Psychology*, 31(1–2), 55–72. [PubMed: 12741689]
- Ross C, & Mirowsky J (2001). Neighborhood Disadvantage, Disorder, and Health. *Journal of Health and Social Behavior*, 42(3), 258–276. [PubMed: 11668773]
- Russell M, & Odgers C (2015). Antisocial Behavior among Children in Poverty: Understanding Environmental Effects in Daily Life In Pietz C & Mattson C (Eds.), *Violent Offenders: Understanding and Assessment* (pp. 19–49). New York, NY: Oxford University Press.
- Sampson R, & Laub J (2008). Urban Poverty and the Family Context of Delinquency: A New Look at Structure and Process in a Classic Study. *Child Development*, 65(2), 523–540.
- Sampson R, Raudenbush S, & Earls F (1997). Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science*, 277(15), 918–924. [PubMed: 9252316]
- Sampson R, Sharkey P, & Raudenbush S (2008). Durable effects of concentrated disadvantage on verbal ability among African-American children. *Proceedings of the National Academy of Sciences*, 105(3), 845–852.

- Shaw C, & McKay H (1942/1969). Juvenile delinquency and urban areas. Chicago, IL: University of Chicago Press.
- Sheidow A, Gorman-Smith D, Tolan P, & Henry D (2001). Family and community characteristics: Risk factors for violence exposure in inner-city youth. *Journal of Community Psychology*, 29(3), 345–360.
- Single-Rushton W, & McLanahan S (2002). Father absence and child well-being: A critical review. Retrieved from
- Skiba R, Eckes S, & Brown K (2009). African American Disproportionality in School Discipline: The Divide Between Best Evidence and Legal Remedy. Retrieved from Bloomton, IN: <http://www.indiana.edu/~equity/docs/Skiba%20et%20al%2054%204.pdf>
- Skiba R, & Knesting K (2001). Zero tolerance, zero evidence: An analysis of school disciplinary practice. *New Directions for Student Leadership*, 2001(92), 17–43.
- Staats C (2014). Implicit racial bias and school discipline disparities. Retrieved from Columbus, OH: <http://kirwaninstitute.osu.edu/wp-content/uploads/2014/05/ki-ib-argument-piece03.pdf>
- Stockdale S, Wells K, Tang L, Belen T, Zhang L, & Sherbourne C (2007). The importance of social context: neighbourhood stressors, stress-buffering mechanisms, and alcohol, drug and mental health disorders. *Social Science & Medicine*, 65(9), 1867–1881. [PubMed: 17614176]
- Tolan P, Gorman-Smith D, & Henry D (2004). Supporting families in a high-risk setting: Proximal effects of the SAFEChildren preventive intervention. *Journal of Consulting and Clinical Psychology*, 72(5), 855–869. [PubMed: 15482043]
- Tolan P, Gorman-Smith D, Henry D, & Schoeny M (2016). Schools and Families Educating (SAFE) Children Study [Chicago, IL]: 1997–2008. Retrieved from <http://www.icpsr.umich.edu/icpsrweb/NAHDAP/studies/34368>
- Tolan P, Guerra N, & Kendall P (1995). A developmental-ecological perspective on antisocial behavior in children and adolescents: Toward a unified risk and intervention framework. *Journal of Consulting and Clinical Psychology*, 63(4), 579–584. [PubMed: 7673535]
- Weitzer R, & Tuch S (2005). Racially biased policing: Determinants of citizen perceptions. *Social Forces*, 83, 1009–1030.
- Wilson WJ (1987). *The truly disadvantaged: The inner city, the underclass, and public policy* (Vol. 111). Chicago: University of Chicago Press.
- Woolley ME, & Grogan-Kaylor A (2006). Protective Family Factors in the Context of Neighborhood: Promoting Positive School Outcomes. *Family Relations*, 55(1), 93–104.

Figure 1.
Conceptual Model

Figure 2.
Mean aggression score difference between children whose father was living in the household, by Race/Ethnicity, Gender, and parental adverse events

Figure 3.
Path explaining aggression and delinquency

Table 1.

Descriptive Characteristics of Children, by Live with Father in the Same Household

	Father in household	Father not in household	p
Mean aggression of waves 1–8	0.17	0.42	<.01
Delinquency waves 10–11	9.1	20.8	<.01
Male	47.9	49.6	n.s.
African American	14.7	65.7	<.01
Income higher than \$20,000	45.0	17.0	<.01
Mother's partner in household	94.4	13.1	<.01
Parental adverse events	16.9	41.8	<.01
Mean neighborhood disadvantage	−0.47	0.40	<.01

Note: Waves 1–8 include six measures (waves 1, 2, 3, 4, 6 & 8)

Table 2.

Two-Level Mixed Effects Model Predicting Children's Aggression

	Coef	SE	p
Fixed effects			
Level 1			
Intercept	0.04	0.10	n.s.
African American	0.30	0.13	<.05
Male	0.27	0.08	<.01
Father in household	−0.25	0.10	<.01
Income higher than \$20,000	−0.04	0.08	n.s.
Parental Adverse events	0.02	0.09	n.s.
Level 2			
Disadvantage	−0.11	0.05	<.01
Random effects			
Level 1 residual	0.07	0.05	
Level 2 residual	0.92	0.07	
LL: −466.38 (Chi2 = 0.0000)			

Table 3.

Within-Group Fixed Effects Model Predicting Children's Aggression

	Total	African American	Hispanic
Father in household			
Coeff	0.07	0.09	0.02
SE	0.08	0.13	0.10
p	0.41	0.50	0.83

Table 4.

Hybrid Model Predicting Children's Aggression with Interaction Terms

	All	Parental adverse events subset			
		Yes	No	Yes	No
Intercept	0.04	0.07	0.04	0.29	0.04
Father in HH between	-0.52 ^{**}	-0.22	-0.58 ^{**}	-0.85 ^{**}	-0.55 ^{**}
Father in HH within	-0.07	0.04	-0.15	0.34	0.30
Income between	0.01	0.07	-0.06 ^{**}	0.06	-0.07
Income within	0.02	0.08	0.002	0.08	0.002
Partner living with between	0.10	-0.23	0.31 [*]	-0.14	0.30 [*]
Partner living with within	-0.001	-0.14	0.11	-0.13	0.11
Wave	0.01	0.04	0.01	0.04	0.01
African American	0.27 ^{**}	-0.24	0.71 ^{**}	-0.39 [*]	0.66 ^{**}
Male	0.29 ^{**}	0.44 ^{**}	0.27 ^{**}	0.23	0.34 ^{**}
Parental adverse events	-0.02	-	-	-	-
AA*Father in HH between	-	-	-	0.42	0.20
Male*Father in HH between	-	-	-	0.68 ^{**}	-0.12
Disadvantage	0.15 ^{**}	0.27 ^{**}	0.02	0.26 ^{**}	0.004
R²	0.13	0.08	0.16	0.09	0.16

Note:HH: household

AA: African American

^{*}
p<.05;^{**}
p<.01

Table 5.

Total Effects on Aggression and Delinquency

	Aggression		Delinquency	
	Coef	p	Coef	p
African American	.24	n.s.	-.001	n.s.
Male	.28	<.01	.06	n.s.
Father in household	-.47	<.01	-.08	n.s.
Mother's partner in household	.11	n.s.	-.07	n.s.
Parental adverse events	.13	n.s.	-.05	n.s.
Disadvantage	.33	<.01	.06	<.01
Aggression	-	-	.10	<.01