

EXPOSURE TO VIOLENCE IN THE CONTEXT OF FAMILY STRUCTURE CHANGES, SOCIAL COHESION,
AND NEIGHBORHOOD CRIME

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ABSTRACT

Family structure changes may disrupt parents' ability to protect youth from dangerous situations, such as witnessing violence in high-crime neighborhoods, but strong networks of social support among neighbors may protect vulnerable youth. This study explored these associations by applying multilevel zero-inflated Poisson models to data on children, youth, and communities from the Project on Human Development in Chicago Neighborhoods. The results showed that family structure changes were associated with witnessing more violence among young people from later childhood through adolescence. Greater levels of social cohesion among neighbors appeared to buffer this association, but only in low-crime neighborhoods. Experiencing family structure changes in the neighborhoods high in both social cohesion and crime was associated with witnessing more violence.

KEYWORDS: exposure to violence; adolescent development; neighborhoods; crime; family instability

1. Introduction

The increasing family structure fluidity of young people in the U.S.—as their parents partner, break up, and repartner over time—tends to disrupt the family-based system of social control that can protect them from harm (Matsueda & Heimer, 1987; McLanahan, 2004). Yet, families do not live in a vacuum, so this family process might have severe consequences in one setting but be relatively harmless in another. Understanding the degree to which instability in the home increases the exposure of young people to potentially risky or dangerous situations outside the home, therefore, requires situating families within their community ecologies (Crosnoe & Leventhal, 2013). Some neighborhoods are characterized by tightly knit social networks of obligation and support among residents that can compensate for the disruptions of family dynamics surrounding parents' union formation and dissolution; some neighborhoods are characterized by high levels of criminal activity that increase the potential exposure of young people to harm regardless of what is going on in their families; and some communities—including many parts of Chicago—are characterized by both strong social ties and crime (Browning, Leventhal, & Brooks-Gunn, 2004; Sampson, 2012). Exploring variability in the links between family instability and exposure to violence across such diverse communities can shed light on the nature of both family and community ecologies of human development.

In this spirit, this study focuses on the interplay of family and neighborhood contexts of a key developmental risk facing many children and adolescents in urban environments: secondary exposure to violence (i.e., witnessing acts of violence in the community). Guided by a human ecology perspective, we use longitudinal multi-level data from children, families, and neighborhoods in the Project on Human Development in Chicago Neighborhoods (PHDCN) to consider how family structure changes are associated with secondary exposure to violence in the

community from late childhood into adolescence and how this association is moderated by levels of social cohesion among neighbors in communities with varying levels of violent crime.

Chicago in the late 1990s through early 2000s is a valuable context in which to examine these patterns. It was home to a socioeconomically and racially/ethnically diverse set of families living in close proximity, yet also far apart, in a city that is often considered to be emblematic of urban crime but also has a strong history of stable and strong community networks (Sampson, 2012).

This line of research is significant because it moves the rich literature on family instability into an extra-familial context with clear implications for public health and safety and because it emphasizes the multidimensionality of community settings that can simultaneously promote and interfere with the healthy development of youth in the United States.

1.1. Family Structure Change and Exposure to Violence

This project links two important issues of concern to social scientists, policymakers, and the public. First, family instability, or accumulating transitions across family structure statuses, is an increasingly common experience for youth. In the past two decades, fewer children live in a stably married family throughout childhood, and a majority of children experience at least one family structure transition before age 12 (Brown, Stykes, & Manning, 2016). While family structure (e.g. two married biological parents, a single parent, or a stepfamily) at any one time point can reflect the amount of financial and socioemotional resources parents can invest in their children, family structure changes represent another key dimension of children's developmental ecology. The movement of biological parents or parents' partners in and out of the home can introduce changes in parenting routines, socioeconomic resources, and extrafamilial contexts (e.g., schools, neighborhoods, and social networks) that are developmentally significant independent of family structure itself. Indeed, family instability has been linked to poorer social

adjustment (Cavanagh & Huston, 2008), more externalizing and problem behavior (Fomby & Cherlin, 2007; Osborne & McLanahan, 2007; Fomby & Sennott, 2013), earlier sexual initiation (Wu & Thomson, 2001) and romantic involvement (Cavanagh, Crissey, & Raley, 2008), and lower academic achievement (Cavanagh, Schiller, & Riegle-Crumb, 2007; Magnuson & Berger, 2009). Disadvantages in these developmental domains then lay the foundation for poorer outcomes in adulthood, thereby continuing to affect children throughout their life course.

Second, secondary exposure to violence is a strikingly common experience for youth, particularly as they transition into adolescence and especially in urban areas (Finkelhor, Turner, Ormrod, Hamby, & Kracke, 2009). It can take many forms, including witnessing someone getting beaten up, attacked with a weapon, or shot (see Selner-O'Hagan, Kindlon, Buka, Raudenbush, & Earls, 1998; Brennan, Molnar, & Earls 2007). Although some children recover from the potentially traumatic effects of witnessing violence, others experience deleterious consequences in both the short and long-term, including the development of post-traumatic stress disorder, aggression and conduct disorders, and drug use (Margolin & Gordis, 2000; Buka, Stichick, Birdthistle, & Earls, 2001; Flannery, Wester, & Singer, 2004; Cerdá, Sánchez, Tracy, & Galea, 2011; Kirk & Hardy, 2014). As such, secondary exposure to violence represents an important, yet understudied, aspect of youths' social and psychological functioning that can link adverse early experiences to long-term trajectories into adulthood.

Through the lens of the ecological framework (Bronfenbrenner, 1979), these two issues tap into key settings (or micro-systems) of the ecology of child and adolescent development: the home and the community. Of course, this theoretical perspective also emphasizes the transactions among settings at the mesosystem level, suggesting the need to understand how family structure change and secondary exposure to violence might be related to each other. A

more family-focused perspective thus can offer insight into why these two setting-level processes might be linked.

Specifically, the *instability and change* perspective (Wu & Martinson, 1993; Wu & Thomson, 2001; Cavanagh & Huston, 2008) suggests that disrupted family processes—created by social psychological strains on family members and their relationships as well as associated changes in their broader kin, community, and other settings—might increase youths’ vulnerability to witnessing violence. After all, family transitions strain parents’ ability to monitor, supervise, and engage with their children effectively, and such parenting practices have been linked to youths’ greater likelihood of witnessing violence (Gorman-Smith, Henry, & Tolan, 2004). Because two partnered parents are often better able to supervise and spend time with their children (McLanahan & Sandefur, 1994; Sandberg & Hofferth, 2001), transitions involving the exit of one parent from the household might be particularly consequential (Amato, 2000). The entry of a new household member, however, could also introduce new stressors into both parents’ and children’s lives, which may decrease the time and energy parents have to devote to quality parenting practices.

In addition to these interpersonal challenges, this perspective suggests that family structure change may engender changes in youths’ broader environments, such as moving to a new neighborhood and enrolling in a new school. In particular, families often experience downward socioeconomic mobility following a union dissolution (South, Crowder, & Trent 1998), which could mean moving into a more violent neighborhood. Transitions could also strain positive parenting and destabilize parent-child relationship qualities, such as the trust associated with disclosure of information, that are integral to a parent’s ability to implement social control with their children (Hair, Moore, Garrett, Ling, & Cleveland, 2008; Kerr, Stattin, & Burk, 2010).

These disruptions may become more consequential as youth navigate new environments and peer groups with increasing levels of independence.

The first aim of this study, therefore, is to examine the association between family structure transitions and youths' secondary exposure to violence.

1.2. Contextualizing Youth and Families in Neighborhood Contexts

The mesosystem level link between family structure change and secondary exposure to violence outside the home taps into what happens in the young person's immediate environment, but that link is embedded within a much broader social system characterized by both resources and risks. For example, neighborhoods differ sharply in the degree of social cohesion—the degree to which neighbors share values and trust one another. This neighborhood-level resource, in turn, has implications for individual-level wellbeing. Indeed, individuals tend to have lower rates of depression and post-traumatic stress disorder in neighborhoods characterized by higher levels of social cohesion (Aneshensel & Sucoff, 1996; Johns et al., 2012). In combination with informal social control, higher levels of social cohesion are associated with higher self-rated health (Browning & Cagney, 2002), higher birth weight (Morenoff, 2003), lower prevalence of asthma and other respiratory diseases (Cagney & Browning, 2004), and lower mortality (Browning, Burrington, Leventhal, & Brooks-Gunn, 2008). Hypothesized mechanisms by which neighborhood social cohesion promotes individual well-being include increasing neighbors' efficacy in regulating problem behavior, attracting health-promoting services, minimizing the physical hazards in a neighborhood, and offering psychological benefits associated with interacting in an environment characterized by trust and support (Browning & Cagney, 2002).

Neighborhood-level social cohesion may also have implications for family-level processes, potentially moderating the link between family structure change and youths' exposure

to violence (Elliott et al., 1996; Sampson, 1997; Sampson, Raudenbush, & Earls, 1997). Specifically, social cohesion—and the informal social control it facilitates—appears to enhance the regulatory and protective effects of family processes on youths' behavior. For example, high neighborhood social cohesion strengthens the protective association between family attachment and adolescent suicide attempts (Maimon, Browning, & Brooks-Gunn, 2010) as well as the protective association between authoritative parenting and adolescent delinquency (Simons, Simons, Burt, Brody, & Cutrona, 2005). Furthermore, prior research indicates that greater social connectedness in general buffers the adverse effects of parental stress on youth, especially in the context of family hardship (McLoyd, 1990; Elder Jr., Eccles, Ardel, & Lord, 1995). Similarly, evidence suggests that social cohesion promotes the efficacy of other neighborhood resources in regulating adolescent behavior when parents cannot adequately monitor their children due to increased stress (e.g., the stress arising from family structure changes) (Browning et al., 2004).

The second aim of this study, therefore, is to examine the degree to which the link between family structure change and exposure to violence weakens as neighborhood social cohesion increases. This aim gets at how neighborhood resources can counteract or buffer problems in the home.

Notably, neighborhoods—even urban ones—differ sharply in their crime rates. Social cohesion as a neighborhood resource and crime as a neighborhood risk are likely to be intricately connected, with neighborhood disorder increasing fear, which reduces social cohesion, which, in turn, increases criminal activity (Markowitz, Bellair, Liska, & Liu, 2001; Ross & Mirowsky, 2009). Rather than being passive recipients of their neighborhood environment, however, individuals are agents in their own lives and can forge social ties despite a downward spiral of disorder, mistrust, and crime. For example, increasing levels of social cohesion reduce fears of

crime (Scarborough, Like-Haislip, Novak, Lucas, & Alarid, 2010), thereby breaking a negative feedback loop among disorder, distrust, and crime and reasserting a positive one among increased trust, social control, and decreased crime (Ross & Jang, 2000). Thus, even in communities characterized by high levels of crime, neighbors who are able to connect with one another may feel more empowered to implement informal social controls and intervene in the lives of young people at risk or in need (Messner & Sampson, 1991; Geis & Ross, 1998; Duncan, Duncan, Okut, Strycker, & Hix-Small, 2003). Consequently, the potentially buffering role of high levels of social cohesion among neighbors against the observed risks of family structure changes might be even more pronounced in the high-crime communities where failure to impose informal social controls might be the most dangerous.

The third aim of this study, therefore, is to examine whether the moderating role of neighborhood social cohesion in the association between family structure change and youths' exposure to violence is more pronounced in high-crime neighborhoods.

2. Methods

2.1. Data

This study used data from two separate components of the PHDCN to capture characteristics and processes at both the neighborhood and individual level. To begin, the Community Surveys were conducted in 1994 and 1995 and aimed to measure the economic, social, and cultural characteristics of neighborhoods through household interviews with neighborhood residents. In order to define neighborhoods, the PHDCN sampling design combined 847 census tracts in Chicago into 343 neighborhood clusters of approximately 8,000 residents each. These neighborhood clusters were drawn to be geographically contiguous and internally homogenous in terms of racial/ethnic and socioeconomic composition. Sampling then

proceeded in three stages: city blocks were sampled within each neighborhood cluster, dwelling units were sampled within blocks, and then one adult resident was interviewed per dwelling unit, resulting in 8,782 respondents. Respondents were asked about the characteristics of their neighborhoods and their relationships with neighbors. With this sampling structure, neighborhood-level variables could be measured by aggregating responses across a random sample of respondents within each neighborhood.

Next, the Longitudinal Cohort Study collected data on the characteristics, behaviors, and changing circumstances of children and their primary caregivers over three survey waves during a period of seven years (1994-1997, 1997-1999, and 2000-2001). Although located in the same neighborhood clusters, the respondents in the Longitudinal Cohort Study were selected independently of the respondents in the Community Survey. Again, the PHDCN sampling design had three stages. First, 80 of the 343 neighborhood clusters were selected using stratified probability sampling to represent all combinations of racial and socioeconomic compositions as equally as possible. Second, block groups were selected randomly within each neighborhood cluster. Finally, households with children within six months of birth, ages 3, 6, 9, 12, 15, and 18 were randomly selected to take part in the longitudinal individual-level data collection. Seventy-five percent of the 8,347 eligible participants identified through the initial screening completed an interview, resulting in a sample of 6,288 individuals.

The analytical sample for this study ($n = 2,201$) was limited to young people from Cohorts 6, 9, and 12 who participated in all three waves of the Longitudinal Cohort Study. These three cohorts were chosen so that young people's self-reports of secondary exposure to violence at Wave 3 occurred during adolescence, a time when they would be most likely to see violence. Youth were approximately ages 6, 9, and 12 at Wave 1 and then 12, 15, and 18, respectively, at

Wave 3. The sample was further limited to those whose primary caregivers at Wave 1 were their biological mothers.

2.2. Measures

2.2.1. Secondary exposure to violence

At Wave 3, nine items measuring how often youth had seen different types of violence in the past year: seeing someone chased, hit, attacked, shot, shot at, killed, and threatened, hearing a gun shot, and seeing an accident. Youth reported whether or not they had witnessed each type of violence and if so, how many times in the past year based on four categories: once, two or three, four to ten, or more than ten times. We then recoded these categorical responses into numbers representing frequencies of instances so that once = 1, two or three = 2.5, four to ten = 7, and more than ten = 11. Summing across all nine items then resulted in a scale with possible scores ranging from 0 to 99 (with an observed range of 0 to 90.5) counts of violent acts witnessed. The scale was top-coded at 25 or more because only 4% of respondents had scores greater than 25.

2.2.2. Family structure change

Family structure was measured with the Wave 1 reports of biological mothers, who were the primary caregivers of their children, regarding their union statuses. Responses were combined into a categorical variable with the following values: married to the child's biological father, cohabiting with the child's biological father, married to a different partner (married stepfamily), cohabiting with a different partner (cohabiting stepfamily), and single. We then used these categories to measure the number of maternal union status changes across the three waves with a set of mutually exclusive dummy variables: no change, one change in family structure, and two changes in family structure. A change was considered to have occurred when the mother's union status differed between Waves 1 and 2 and/or between Waves 2 and 3. For

example, if a mother's union status was different at Wave 1, Wave 2, and Wave 3, she received a 1 for "two family transitions" and a 0 for "one family transition" and "zero family transitions."

2.2.3. Neighborhood resources

Social cohesion was a neighborhood-level measure derived from the Community Survey (1994-1995) and is part of the broader measure of collective efficacy (Sampson et al., 1997; Browning, Feinberg, & Dietz, 2004). It was comprised of five items asking respondents how strongly they agreed on a five-point scale with the following statements: this is a close-knit neighborhood, people are willing to help neighbors, people in the neighborhood can be trusted, people do not get along, and people in the neighborhood do not share the same values (with reverse-coding for the last two items). The average of these items ranged from 2.51 to 4.35, with higher values indicate higher levels of social cohesion.

2.2.4. Neighborhood crime

The log homicide rate (log number of homicides per 1,000 residents) at Wave 1 was used to capture neighborhood level of crime because, compared to other forms of violent crime, homicide is the most reliably reported (Sampson, et al., 1997). The data for this measure came from the Chicago Police Department. We standardized the log homicide rate and grouped neighborhoods into three categories: neighborhoods with a log homicide rate larger than one standard deviation above the mean log homicide rate were considered "high crime," neighborhoods within one standard deviation were considered "average crime," and neighborhoods below one standard deviation were considered "low crime."

2.2.5. Child covariates

Variables tapping possible child-level confounds were all measured at Wave 1. They included gender (1 = female, 0 = male), race/ethnicity (dummy variables for White, Latino/a,

African-American, and some other race/ethnicity), and age (represented by the three cohort dummy variables representing respondents' age at Wave 1).

2.2.6. Family covariates

Variables tapping possible family-level confounds included a measure of Wave 2 socioeconomic status (a composite of primary caregiver's household income, educational attainment, and occupational prestige created by PHDCN Scientific Directors), the primary caregiver's age was measured in years at Wave 1 and divided by 10 for analytical purposes, and a binary indicator of prior family structure instability before Wave 1 (to ensure that our partner instability estimates were not confounded with instability experienced prior to the survey). Prior family structure instability indicated whether the primary caregiver had any romantic relationships with partners other than the child's biological father before Wave 1. To address the concern that youths' secondary exposure to violence was due solely to the violence introduced or removed by the movement of mothers' romantic partners in and out of the home, we included a binary measure of intimate partner violence. This variable was measured at Wave 2 and indicated whether or not the mother had been the victim of any of 13 types of violence perpetrated by her partner (e.g., been slapped, choked, beaten up).

2.2.7. Neighborhood covariates

Three variables tapping possible neighborhood-level confounds are commonly used in studies of neighborhood contexts with PHDCN data (Kirk & Papachristos, 2011; Browning & Jackson, 2013; Kirk, 2016). They were derived from the 1990 Census at the census tract level. Residential instability measured the proportion of residents living in the same house since 1985 and the proportion of residents owning their home. Immigrant population captured the percentage of Latino/a and foreign-born residents. Concentrated disadvantage was comprised of

neighborhood structural characteristics associated with concentrated poverty: the percentage of individuals living below the poverty line, of individuals receiving public assistance, of unemployed individuals, of female-headed families, of African-American residents, and of residents under age 18 (Sampson et al., 1997).

2.3. Plan of Analyses

Multivariate analyses used zero-inflated Poisson (ZIP) regressions, which was necessary because the dependent variable was a count variable with an overrepresentation of “zero” responses; nearly a quarter of youth were never exposed to any violence. ZIP regressions assume that there are two latent classes of individuals in the data: those whose outcomes will always take on the value of zero (in this case, people who will never witness violence) and those who may report values of zero or more (Milletich, Kelley, Doane, & Pearson, 2010). ZIP regressions combined those two latent classes and yielded two sets of estimates: the zero-inflated and the count portion. The zero-inflated portion models the likelihood of being in the zero-only class, i.e. the likelihood of never witnessing violence. When exponentiated, the coefficients in the zero-inflated model are interpreted as odds ratios in the same way as in a logistic regression model. The count portion models the association between family structure change and exposure to violence when the count of violent acts witnessed in the past year is zero or more. When exponentiated by e , the coefficients in the count model could be interpreted similarly to an ordinary least squares regression (Atkins & Gallop, 2007).

These ZIP regressions were conducted in four phases. First, youths’ secondary exposure to violence was predicted by the family structure change variables and all three sets of covariates. Second, social cohesion was added to investigate its main effect on exposure to violence. Third, social cohesion was interacted with the family structure change variables to test

how neighborhood resources moderated the links between family structure change and exposure to violence. Fourth, multiple group modeling tested whether these interactions between social cohesion and family structure change differed across neighborhoods characterized by varying levels of crime. Log likelihood ratio tests were used to assess whether constraining coefficients of interest across the three levels of neighborhood crime led to a significant decline in model fit compared to a model in which they were freely estimated in each level. Such declines in model fit indicated that unconstrained models best fit the data, suggesting significant differences in associations between neighborhoods based on their crime levels.

These models were all estimated in MPlus 7.0 (Muthén & Muthén, 1998-2010) using full-information maximum likelihood (FIML) procedures to account for missing data and a multi-level modeling framework to account for the nested nature of the data. Such an approach was necessary because families were sampled within neighborhoods in the PHDCN, violating the assumption of independence of observations. Additionally, this approach allows us to estimate effects at both the individual and the neighborhood level.

3. Results

3.1. An Overview of Family Structure, Exposure to Violence, and Neighborhood Context

As Table 1 shows, approximately three-quarters of youth saw at least one count of violence, and youth on average witnessed seven counts of violence in the past year. Not surprisingly, fewer youth in low-crime neighborhoods witnessed any violence, but over 80% of youth in high-crime neighborhoods witnessed any violence in the past year. Similarly, youth in low-crime neighborhoods on average saw approximately five acts of violence in the past year, whereas youth in high-crime neighborhoods saw over eight acts of violence.

In the full sample, a little over a quarter of youth experienced at least one family transition during the five-year study window, but this proportion too differed by neighborhood crime. Approximately 21% of youth in low-crime neighborhoods experienced at least one family transition compared to 30% of youth in high-crime neighborhoods. Furthermore, white youth, youth living in married biological parent households, and youth living in households with a higher socioeconomic status were overrepresented in low-crime neighborhoods, while African-American youth, youth living with a single parent, and youth in households with lower socioeconomic status were overrepresented in the high-crime neighborhoods.

Turning now to the neighborhood-level variables, social cohesion was highest in low-crime neighborhoods and lowest in high-crime neighborhoods. Concentrated poverty had the opposite association with neighborhood crime; neighborhoods with more crime also had more concentrated poverty. Immigrant concentration was highest in average-crime neighborhoods, followed by low-crime and then high-crime neighborhoods. Average- and high-crime neighborhoods had less residential stability than low-crime neighborhoods.

3.2. The Interplay of Family Structure Change and Neighborhood Resources

To begin, we address the first aim of the study by laying out the basic association between family structure change and secondary exposure to violence. Table 2 shows the unstandardized coefficients of ZIP models in the full analytical sample to examine the association between family structure change and secondary exposure to violence as well as moderation of this association by neighborhood social cohesion. Starting with the zero-inflated portion of Model 1 in Table 2, family structure change was not significantly associated with the likelihood of having never witnessed violence. Moving to the count portion of Model 1, experiencing one family transition predicted that a young person witnessed 1.3 ($\beta = 0.262$,

$e^{.262}=1.3$) additional acts of violence compared to youth with no family structure change, net of all controls. Interestingly, those who experienced change across both waves reported no more violence than did those who experienced no change.

The second aim of this study was to test whether the association between family structure change and youths' exposure to violence was moderated by a key neighborhood resource linked with reductions in crime. Model 2 added the measure of social cohesion to examine its main effect on exposure to violence. The coefficient for social cohesion was not statistically significant, and the focal results remained largely unchanged. Family structure change did not significantly predict the likelihood of never experiencing violence. In the count portion, experiencing one family transition remained associated with witnessing 1.3 ($\beta = 0.262$, $e^{.262}=1.3$) additional acts of violence compared to experiencing no family transitions.

Finally, Model 3 added interactions between family structure change and social cohesion. None of the interactions reached statistical significance in any of the models in the zero-inflated portion or in the count portion of the model.

3.3. Variation by Neighborhood Crime

The third aim of this study was to test whether the moderation of the association between family structure change and secondary exposure to violence by neighborhood social cohesion differed across communities with varying levels of violent crime. Although our previous results did not show a significant interaction between social cohesion and family structure change in predicting youths' exposure to violence, in these models we test to see if there are significant social cohesion and family structure change interactions when looking at different neighborhood contexts separately. Table 3 presents the results of multiple group modeling by low, average, and high rates of homicide at Wave I.

Three of the interactions between family structure change and social cohesion were statistically significant when looking across the three levels of neighborhood crime. One of these interactions was in line with our expectation that social cohesion would buffer the risks of family structure change for secondary exposure to violence. In low-crime neighborhoods, the association between one family transition and higher counts of witnessed violence was significantly moderated by social cohesion in the community (Model 2a). More specifically, young people who experienced family structure change in neighborhoods marked by very low social cohesion witnessed significantly more violence than their counterparts in neighborhoods marked by higher levels of social cohesion. This interaction between family structure change and social cohesion in low-crime neighborhoods as well as patterns in average- and high-crime neighborhoods are depicted in Figure 1.

No significant interactions were identified among those living in neighborhoods marked by average levels of neighborhood crime. The other two significant interactions were identified among those in neighborhoods marked by high levels of neighborhood crime. Interestingly, these associations—between family structure change and social cohesion predicting any exposure to violence in high-crime neighborhoods and between family structure change and social cohesion predicting the count of exposure to violence in high-crime neighborhoods—were in unexpected directions (see Figure 1). In high-crime neighborhoods, one family structure change was associated with a reduced likelihood of never experiencing violence (i.e., a greater likelihood of witnessing any violence), but greater social cohesion combined with family structure change reduced this association. Thus, in high-crime neighborhoods characterized by high levels of social cohesion, youth who experienced one family structure change were *less* likely to see any violence than their peers who experienced no family structure changes. Moving to the count

portion, one family structure change was associated with seeing fewer acts of violence, net of all other factors (Model 1c), but the interaction between social cohesion and one family structure change predicted greater exposure to violence as the level of social cohesion increases (Model 2c). In other words, children experiencing one family structure change in high-crime neighborhoods were less likely to be exposed to violence but saw more violence than their peers from stable families when social cohesion in the neighborhood was higher. Log likelihood ratio tests suggested that constraining focal coefficients to be equal across the three neighborhoods resulted in a significant decline in model fit ($p < .001$) as compared to unconstrained models, meaning that the effects of family structure change, social cohesion, and the interactions between the two differed significantly across the three neighborhood types.

Overall, exposure to violence was lower in the context of stable families and greater social cohesion across all neighborhoods. In addition, youth in low-crime neighborhoods witnessed less violence when there were higher levels of social cohesion in the neighborhood, regardless of whether they experienced family change. In high-crime neighborhoods, however, social cohesion combined with family structure changes increased the amount of violence witnessed by youth, suggesting that social cohesion was generally protective except in the presence of both crime and family instability.

4. Discussion and Conclusion

Secondary exposure to violence is a common yet understudied experience that poses numerous risks to adolescents' positive development. In our PHDCN sample, over three-fourths of youth witnessed any violence, and they saw on average nearly seven acts of violence in the past year, but what about the familial and neighborhood contexts in which they witnessed such violence? To address this question, we connected the literatures on family instability and

neighborhood effects to explore how home and community ecologies interact to increase or decrease both the likelihood of seeing violence and the amount of violence seen. On one hand, family structure change might destabilize parent-child relationships and youths' external environments so as to increase their risk of violence. On the other hand, social ties and mutual trust among neighbors may work to protect vulnerable youth. Varying levels of criminal activity across neighborhoods may increase youths' chances of witnessing violence regardless of what occurs in their families; by the same token, social cohesion might be a particularly valuable resource in reducing youths' exposure to violence in these environments.

Our hypothesis that family change would be associated with greater exposure to violence among youth was partially supported. Family structure change was not associated with whether or not youth saw any violence at all, but was associated with witnessing a greater amount of violence. The second hypothesis that neighborhood social cohesion would moderate the association between family structure change and exposure to violence for the full sample was not supported. Although social cohesion did not moderate the association between family structure change and exposure to violence in general, it did in certain types of neighborhoods. Our third hypothesis anticipated that social cohesion would matter the most in high-crime neighborhoods. This hypothesis received partial support. In neighborhoods characterized by both high crime and high social cohesion, youth who experienced family structure changes were less likely to be exposed to any violence compared to their counterparts in neighborhoods with similar crime levels but less social cohesion and/or experiencing no family structure change. However, in high-crime neighborhoods greater levels of social cohesion were also associated with seeing more acts of violence for youth who experience family structure change. Interestingly, social cohesion did

diminish the strength of the association between family structure change and exposure to violence in low-crime neighborhoods. These findings point to three main themes.

First, secondary exposure to violence can be added to the list of developmental risks associated with family structure change. Even though family structure change was not associated with increased exposure to violence, it was associated with a greater “dosage” of that exposure. Notably, our measurement of family structure change likely undercounted the amount of family instability that youth experienced, which suggests a possible underestimation of its implications for secondary exposure to violence. Because our measurement of family structure change depended on changes recorded at three discrete time points, we could not capture changes happening within a given survey wave. For example, if a child’s mother cohabited with the child’s biological father at Wave 1, broke up, and then reunited with the biological father by Wave 2, no family structure change would have been recorded. Thus, our estimates of the association between family structure change and exposure to violence should be viewed as conservative. In addition, we did not distinguish between types of family structure change, such as a divorce or a remarriage. Future research could consider whether an entrance or an exit of a partner, or the relationship of the partner to the child (biological parent or not), may be more consequential for youths’ exposure to violence. Lastly, this study did not explicitly consider the mechanisms linking family structure change affects to youths’ exposure to violence. We hypothesized that family structure change set in motion changes in parenting practices, family relationships, and external environments that produced stress and strained parents’ ability to monitor and engage with their children. Future research needs to directly test these mechanisms.

Second, neighborhood social cohesion may buffer the link between family structure change and youths’ exposure to violence in some limited circumstances. Specifically, in low-

crime neighborhoods, greater social cohesion was associated with a lower amount of violence seen by youth who experienced family structure change. This pattern can be interpreted as social cohesion serving as a protective resource in safer communities. Perhaps in these communities more so than others, other adults feel comfortable intervening in the lives of youth to offer additional support and supervision. In addition, parents or youth may have additional resources to draw on, such as supportive friendship groups and prosocial organizations, to buffer the stress associated with family structure change and temper the associated increase in the risk of youths' exposure to violence. Some caution is warranted in interpreting these observed neighborhood effects, however, because neighborhood from the Community Survey and data on youths' neighborhood of residence from the Longitudinal Cohort Study both preceded the measurement of secondary exposure to violence by several years.

Third, the association between social cohesion and exposure to violence likely depends on both the neighborhood level of crime *and* the presence of family structure change. Whereas social cohesion attenuated the association between family structure change and exposure to violence in low-crime neighborhoods, it appeared to increase the amount of violence witnessed by youth experiencing family structure change high-crime neighborhoods. This finding highlights the possibility that social cohesion could have different meanings across different types of neighborhoods. After all, social ties can be deployed for both positive and negative ends (Browning et al., 2004); a community characterized by high social cohesion could also be characterized by extensive, intertwined criminal networks. Children experiencing family instability may be particularly vulnerable to witnessing violence that occurs in neighborhoods characterized both by high crime and high social cohesion, particularly if this combination of these traits indicates extensive opportunities for youth to become involved in peer groups that

increase their exposure to violence. At the same time, we also found that higher social cohesion was associated with a reduced likelihood of ever witnessing violence among youth experiencing family structure change in high-crime neighborhoods. In this case, social cohesion might facilitate integration into networks that increase exposure to violence, but family structure change might disrupt this integration; for example, if youth often moved residences or changed schools due to family transitions.

This study, however, did not consider the mechanisms by which social cohesion operates differentially across neighborhoods. Future research should explore factors that potentially mediate the association between family structure change and youths' exposure to violence, such as parental stress, density of service organizations, and intergenerational closure, and how such mediation varies across different kinds of neighborhoods. Our measurement of crime may also be a potential source of bias in our results. Not only is crime underreported to the police, it is also differentially underreported across neighborhoods (Gutierrez & Kirk, 2015). Importantly, we attempted to minimize this potential source of bias by including controls for neighborhood structural characteristics and using homicide rates, which are relatively more reliably measured than other crimes (Sampson et al., 1997), to capture our neighborhood level of crime.

To close, we should reemphasize the value of studying these questions in Chicago during the focal time period. As a research site, Chicago boasts characteristics that make it “both unique and broadly representative” (Sampson, 2012: 77). Within its neighborhoods, one can find incredible racial/ethnic and socioeconomic variation that can be difficult to capture even in nationally representative samples. At the same time, Chicago exemplifies many of the dangers and tragedies of modern U.S. life: violence, racial segregation, inequality, and deadly natural disasters. The social processes underlying racial stratification, neighborhood disorganization, and

the stability of spatial disadvantage may be particularly on display in Chicago, but they are not necessarily unique to the city (Sampson, 2012). Chicago youths' exposure to violence might be distinctly high compared to youth across the country; however, the stability of processes linking family and neighborhood contexts to adolescents' exposure to violence likely do not differ radically from one city to the next. Future research using other datasets can test if our conclusions hold true across different settings in the United States.

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Table 1. Descriptive Statistics for Full Sample and by Neighborhood Level of Crime

	Frequency (%) or Mean (Standard Deviations)			
	By Neighborhood Crime Rate (Homicide)			
	Total sample	Low	Average	High
Individual variables				
Exposure to violence				
Mean	6.71 (7.42)	4.86 (6.11)	6.85 (7.23)	8.65 (8.35)
Never	24.72%	30.18%	23.13%	19.93%
Female	49.89%	49.16%	52.30%	48.64%
Race				
White	14.88%	31.02%	8.56%	1.91%
Hispanic	49.64%	50.90%	61.65%	37.84%
Black	31.94%	13.29%	27.42%	57.10%
Other	3.55%	4.79%	2.38%	3.14%
Age cohort				
Cohort 6	38.39%	38.52%	37.56%	38.96%
Cohort 9	31.85%	32.54%	31.06%	31.74%
Cohort 12	29.76%	28.95%	31.38%	29.29%
Family variables				
Family structure change				
No family transitions	73.98%	78.81%	71.75%	70.00%
One family transition	20.05%	17.27%	22.56%	21.25%
Two family transitions	5.97%	3.92%	5.69%	8.75%
Family structure				
Married biological parents	52.00%	63.86%	53.29%	37.29%
Cohabiting biological parents	6.25%	5.78%	6.74%	6.35%
Married step parents	5.01%	4.22%	5.14%	5.80%
Cohabiting step parents	6.06%	4.22%	7.06%	7.32%
Single parent	30.68%	21.93%	27.77%	43.23%
Prior instability	21.58%	20.34%	21.57%	22.99%

Table 1 continued on next page

Table 1 continued

	Frequency (%) or Mean (Standard Deviations)			
	By Neighborhood Crime Rate (Homicide)			
	Total sample	Low	Average	High
Age of primary caregiver	34.69 (6.29)	35.58 (6.30)	34.58 (6.13)	33.78 (6.28)
Household socioeconomic status	-0.27 (1.39)	0.09 (1.53)	-0.42 (1.32)	-0.59 (1.15)
Interpersonal violence	9.70%	7.58%	9.24%	12.64%
Neighborhood variables				
Concentrated poverty	-0.03 (0.68)	-0.44 (0.64)	-0.09 (0.42)	0.49 (0.55)
Immigrant concentration	0.52 (1.03)	0.54 (0.82)	0.62 (1.01)	0.39 (1.22)
Residential stability	-0.08 (0.93)	0.01 (0.97)	-0.20 (0.96)	-0.09 (0.85)
Social cohesion	3.33 (0.29)	3.45 (0.33)	3.30 (0.25)	3.23 (0.21)
Log homicide rate 1995	.0003 (.0003)	0.00002 (.00004)	0.0003 (.00009)	0.0007 (.0002)
<i>N</i>	2201	836	631	734

Note: Descriptive results were clustered by neighborhood.

Table 2. Zero-Inflated Poisson Model of Secondary Exposure to Violence by Family Structure Change and Social Cohesion

	Unstandardized β Coefficient (Standard Error)		
	(1)	(2)	(3)
Zero-Inflated Portion			
Family Structure Change (Ref: No Change)			
One family transition	-0.033 (0.190)	-0.039 (0.189)	1.593 (4.731)
Two family transitions	-0.419 (0.299)	-0.417 (0.301)	-2.439 (10.746)
Neighborhood Social Cohesion		0.409 (0.320)	0.513 (0.491)
Social Cohesion x Family Structure Change Interactions (Ref: Social Cohesion x No Change)			
Neighborhood social cohesion x one transition			-0.493 (1.412)
Neighborhood social cohesion x two transitions			0.599 (3.198)
Count Portion			
Family Structure Change (Ref: No Change)			
One family transition	0.262** (0.085)	0.263** (0.086)	1.132 (1.884)
Two family transitions	0.129 (0.112)	0.131 (0.112)	-0.803 (6.272)
Neighborhood Social Cohesion		-0.068 (0.124)	-0.003 (0.285)
Social Cohesion x Family Structure Change Interactions (Ref: Social Cohesion x No Change)			
Neighborhood social cohesion x one transition			-0.292 (0.571)
Neighborhood social cohesion x two transitions			0.265 (1.902)

Note: Model controlled for family structure at W1, age of primary caregiver, household SES at W2, child race/ethnicity, child gender, child age/cohort, pre-Wave 1 family instability, domestic violence, neighborhood log homicide rate, neighborhood poverty, neighborhood immigrant population, and residential stability; = + $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3. Zero-Inflated Poisson Model of Secondary Exposure to Violence Predicted by Family Structure Change and Social Cohesion, by Neighborhood Homicide Rate

	Unstandardized β Coefficient (Standard Error)					
	By Neighborhood Crime Rate (Homicide)					
	Low		Average		High	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Zero-Inflated Portion						
Family Structure Change (Ref: No Change)						
One family transition	-0.039 (0.334)	1.196 (1.312)	-0.437 (0.273)	-2.135 (5.576)	0.310 (0.304)	-2.816** (1.021)
Two family transitions	-0.847 (0.595)	-2.905 (2.011)	-0.283 (0.633)	-2.194 (12.792)	-0.192 (0.388)	0.253 (4.461)
Neighborhood Social Cohesion	0.388 (0.320)	0.394 (0.355)	0.388 (0.320)	0.394 (0.355)	0.388 (0.320)	0.394 (0.355)
Social Cohesion x Family Change Interactions (Ref: Social Cohesion x No Change)						
Neighborhood social cohesion x one transition		-0.355 (0.403)		0.501 (1.668)		0.941** (0.342)
Neighborhood social cohesion x two transitions		0.610 (0.629)		0.571 (3.787)		-0.145 (1.359)
Count Portion						
Family Structure Change (Ref: No Change)						
One family transition	0.144 (0.187)	1.480** (0.547)	0.084 (0.237)	-1.181 (1.671)	0.400*** (0.108)	-1.027** (0.379)
Two family transitions	-0.101 (0.321)	-1.014 (0.847)	-0.168 (0.412)	-1.335 (4.098)	0.235+ (0.125)	0.633 (1.589)
Neighborhood Social Cohesion	-0.082 (0.124)	-0.095 (0.136)	-0.082 (0.124)	-0.095 (0.136)	-0.082 (0.124)	-0.095 (0.136)

Table 3 continued on next page

Table 3 (continued)

	Unstandardized β Coefficient (Standard Error)					
	By Neighborhood Crime Rate (Homicide)					
	Low		Average		High	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Count Portion						
Social Cohesion x Family Change Interactions (Ref: Social Cohesion x No Change)						
Neighborhood social cohesion x one transition		-0.417*		0.368		0.405***
		(0.162)		(0.507)		(0.109)
Neighborhood social cohesion x two transitions		0.286		0.362		-0.145
		(0.273)		(1.178)		(0.486)

Note: Model controlled for family structure at W1, age of primary caregiver, household SES at W2, child race/ethnicity, child gender, child age/cohort, pre-Wave 1 family instability, domestic violence, neighborhood poverty, neighborhood immigrant population, and residential stability; = + $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 1. Associations between Social Cohesion and One Family Structure Change, by Neighborhood Crime Rate (Homicide)

