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CHANGES IN MOTHERS' CO-RESIDENTIAL PARTNERS AND CHILDREN'S RISK OF MALTREATMENT

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ABSTRACT

The increasing movement of their mothers' romantic partners in and out of the household has been linked to various negative child outcomes, but those implications likely differ based on who that partner is and where the family lives. Informed by family systems theory, this study extended that rich literature to the specific case of child maltreatment using data from the Project on Human Development in Chicago Neighborhoods ($n = 2,447$). The results of multi-level mixed effects models with conditionally relevant variables revealed lower odds of child maltreatment when the mother's partner was present in the household. That apparent protective effect, however, was conditional on the partner being the child's biological father. Child maltreatment was also more likely when the partner had criminal justice system involvement and perpetrated intimate partner violence (IPV) against the mother, with the IPV association weaker in neighborhoods with high levels of collective efficacy. This study moves forward research on family instability and child maltreatment by using a more causal modeling strategy, testing whether associations were conditional on men's characteristics, and incorporating neighborhood protective factors.

Due to vast changes in the timing and relationship contexts of U.S. fertility over the past 65 years, significantly fewer children live with both biological parents for the duration of their childhoods, instead witnessing break ups and new partners moving in and out of their households. This instability reflects rising rates of divorce, cohabitation, and nonmarital births, and other population-level trends in both union formation/dissolution and fertility that raise the risk that children will experience multiple family structure transitions as they grow up, especially in the most socially and economically disadvantaged groups in society (Cherlin 2010; Kennedy and Bumpass 2008; McLanahan 2004). As those dynamics have shifted, the men present in children's households also differ in the resources that they bring to the family (Parke 2013). These resources are likely to influence the more extreme aspects of developmental ecology, such as child maltreatment. For example, some evidence has suggested that child maltreatment is more common in single-parent households (Berger 2004; Stith et al. 2009), but the demographic changes outlined above suggest a more nuanced perspective on mothers' union transitions and their partners is necessary.

In this spirit, this study explores the connection between changes in mothers' co-residential romantic unions and children's risk of maltreatment, with special attention paid to who those partners are and where families live (see conceptual model presented in Figure 1). Mixed effects models investigated those associations with data from the Project on Human Development in Chicago Neighborhoods (PHDCN), a multi-level, community-based study of Chicago residents in the mid-1990s to early 2000s. Applying that statistical approach, this study's first aim was to test whether changes in mothers' co-residential unions were associated with changes in child maltreatment; the second was to test whether those main associations were

3

conditional on men's relational, economic, and behavioral characteristics; and, the third was to consider whether family-level associations between co-residential men and child maltreatment further varied by level of neighborhood collective efficacy, or the support and connectedness between neighbors (Sampson, Raudenbush, and Earls 1997). The PHDCN represents a specific and ideal context in which to pursue these aims because it followed racially and socioeconomically diverse families over time in a city made up of communities with limited structural resources but also strong social networks (Sampson 2012).

[Figure 1 about here]

This type of approach to the study of mothers' romantic unions and children's maltreatment is important because it moves beyond more static measures of single motherhood and paternal absence versus presence. The mixed effects models used here also respond to calls for more causal analyses of these questions (Guterman and Lee 2005). This study also builds on previous research using fixed effects models (see Schneider 2016) by incorporating the broader community in which a family is embedded. While accounting for neighborhood characteristics that can increase children's risk of maltreatment (e.g., concentrated disadvantage, residential instability; Coulton et al. 2007; Riina, Lippert, and Brooks-Gunn 2016), I consider how neighborhoods may protect children whose family dynamics might put them at risk. Taken together, this study aims to offer a more nuanced look into children's households and neighborhoods, identifying family-level risks as well as community-related points of resilience, which could inform policy and programming efforts given evidence that interventions aimed at preventing child maltreatment are especially effective at the community level (Daro and Dodge 2009; Melton 2014).

4

Mothers' Co-Residential Partners and Children's Risk of Maltreatment

As a starting point, there is no one cause of child maltreatment. Instead, it should be conceptualized as a problematic response by adults to circumstances that impair their ability to positively respond to children (Belsky 1993; Vasta 1982). Family systems theory orients this study's approach to such responses and circumstances by emphasizing that families are whole and ordered, hierarchical in structure, and adaptive in self-organization (Cox and Paley 2003; 1997). This study, therefore, considers the family as one unit consisting of multiple interconnected relationships between members (e.g., mother-partner, mother-child) that may change over time.

One relationship that is important to overall family functioning is that of the mother to her romantic partner, with this study focusing on mothers' male partners. Contemporary U.S. adults marry at later ages, live with romantic partners, dissolve unions, and have children outside of marriage at much higher rates than previous generations (Cherlin 2009), which means families are, on average, more dynamic and less stable. In 2009, 41% of children were born to unmarried parents (Kochanek et al. 2012), up from 34% of births in the late 1990s (Kennedy and Bumpass 2008). Compared to married parents, these parents were more likely to break up and form new cohabiting unions, which are especially unstable (Bumpass and Lu 2000; Kennedy and Bumpass 2008). As a result, the movement of biological and social fathers in and out of the household is an increasingly common childhood experience. In general, such family instability, or change in family structure, is associated with a host of negative outcomes for children's socioemotional, academic, behavioral, and health-related wellbeing (e.g., Bzostek and Beck 2011; Cavanagh 2008; Cavanagh and Huston 2006; Osborne and McLanahan 2007). Indeed, families with two

married biological families are often proposed to be the "gold standard" for child wellbeing (Brown 2010). The literature on father absence specifically suggests much of those negative effects are causal (McLanahan, Tach, and Schneider 2013).

The parent-child relationship is another important aspect of the family system. This study considers child maltreatment, a clear indicator of a compromised and problematic parent-child relationship, especially in its most severe form of physical abuse. An estimated one in eight children will experience some form of maltreatment before turning 18 (Wildeman et al. 2014) and, in turn, likely experience the associated negative medical, cognitive, emotional, and sociobehavioral consequences (see Guterman and Taylor 2005; Widom 2014). At its most extreme, physical abuse can result in physical health problems and, although much less frequently, death (Krugman and Lane 2014; Widom 2014), as well as impaired brain development and altered stress responses in the hypothalamic-pituitary-adrenal axis (Alink et al. 2012; Bernard, Lind, and Dozier 2014; Glaser 2014). Even corporal punishment has negative effects for children, such as increased aggression, internalizing and externalizing behaviors, and mental health problems (Gershoff and Grogan-Kaylor 2016). These consequences of child maltreatment are long lasting: relative to young adults, those who were maltreated as children are less likely to meet multiple resiliency criteria across the domains of high school completion, college attendance, income, incarceration, substance abuse, depression, and life satisfaction (Mersky and Topitzes 2010). Furthermore, child maltreatment has the potential to set in motion an intergenerational "cycle of violence" in which parents who were abused as children are at greater risk of maltreating their own children (Thornberry, Knight, and Lovegrove 2012).

6

According to the family systems theory, the mother-partner relationship and the parent-child relationship are each meaningful in their own right but also in how they come together to shape the family as a whole. This study's mixed effects approach connects changes in mothers' co-residential partners to changes in children's risk of experiencing maltreatment perpetrated by an adult living in the household. This link could operate in one—or through a combination—of two ways: directly through men's maltreatment of children or indirectly through men's effects on mothers' likelihood of committing maltreatment. On the one hand, the presence of a co-residential man could increase the risk of child maltreatment. Compared to mothers, both biological and step or social fathers are overrepresented as perpetrators of maltreatment relative to the amount of time each parent (figure) spends with children (Guterman and Lee 2005; Lee, Bellamy, and Guterman 2009; Margolin 1992). Transitions in co-residential and dating relationships are also associated with increased stress and harsh parenting among mothers (Beck et al. 2010), suggesting the stress brought on by a change in partnership could increase mothers' maltreatment of children. On the other hand, a mother's co-residential romantic partner could decrease the risk of maltreatment. Children who live with fathers tend to do better across a number of indicators of wellbeing outlined above (e.g., McLanahan et al. 2013), and child maltreatment can be more common in single parent families because of lower quality caregiving (Berger 2004), suggesting that co-residential partners may support mothers by providing resources to overcome some of the challenges to positive parenting (Guterman and Lee 2005).

The first aim of this study, therefore, is to determine whether the presence of mothers' co-residential romantic partners in the household is associated with the risk of child maltreatment. Previous research considering child maltreatment committed by both mothers and

fathers has revealed different trends between parents. Limited evidence suggests that union

dissolution increases maternal abuse, and more evidence suggests that partnered fathers are more

likely to engage in maltreatment (Schneider 2016). This study thus presents competing

hypotheses: 1a) co-residential partners will increase children's risk of maltreatment, and 1b) co-

residential partners will lower that risk.

Who the Co-Residential Partner Is

Those competing hypotheses set the groundwork for additional questions brought to the

forefront by a family systems perspective. How the family system adapts and reorganizes in

response to the changes and challenges introduced by union transitions will depend on who that

man is. This study explores how relational, economic, and behavioral aspects of characteristics

of mothers' co-residential partners further shapes children's risk of maltreatment. Selection is a

common issue for research on the effects of family instability as well as studies of the causes and

consequences of child maltreatment (e.g., Fomby and Cherlin 2007). This study's mixed effects

approach zeroes in on what it is about co-residential men that matter for child maltreatment,

while accounting for time-invariant characteristics that commonly introduce such selection

problems or omitted variable bias, such as race/ethnicity or parents' own childhood histories.

First, institutional and sociobiological forces may be at work in the connection between

mothers' co-residential partners and child maltreatment. Although cohabitation and other non-

marital unions are growing in prevalence and normativity, marriage remains a strongly valued

institution that confers both explicit and implicit benefits to children and families (Cherlin 2004).

Indeed, in terms of involved and warm parenting, marriage advantages children regardless of

whether their mother is married to their biological father or a stepfather (Hofferth and Anderson

2003). Mothers also tend to hold similar levels of trust in their husbands (vs. cohabiting partners) when it comes to caring for children in their absence. Moreover, married men have been found to offer higher quality parenting than social fathers (Berger et al. 2008). The tie between co-residential partners and children also matters. Men tend to invest more resources and have stronger relationships when they are biologically related to children, as opposed to a stepfather or social father tie (Coohey and Zhang 2006; Hofferth and Anderson 2003; Killian 2004). Indirectly, too, mothers are more involved in children's education when they are partnered with the child's biological father, regardless of marital status (Ressler et al. 2016).

Second, economic forces are likely also at work, given that poverty and hardship are some of the strongest correlates of child maltreatment (Drake and Jonson-Reid 2014; Putnam-Hornstein and Needell 2011; Sabol, Coulton, and Plousky 2004). Whether it be marital or cohabiting, union dissolution has detrimental consequences for family income (Tach and Eads 2015), whereas unmarried mothers who repartner tend to do so with men of higher economic capabilities (Bzostek, McLanahan, and Carlson 2012). Moreover, fathers' unemployment and job loss are associated with the physical abuse of children due to the pressure of limited and/or lost resources as well as the potential loss of status within the family (Guterman and Lee 2005). As employment and earnings have declined among men who already face challenges and discrimination due to their race/ethnicity and socioeconomic status (Wilson 1987; 1996), the stress that comes with unemployment or job loss may cause them to lash out at the children in their households.

Third, co-residential partners' behavioral profiles shape their interactions with children, with harmful partner-child relationships among men who engage in non-normative behaviors. In

general, paternal co-residence reduces children's conduct problems, but that association reverses (i.e., children have more conduct problems) when men exhibit greater antisocial behaviors (Jaffee et al. 2003). The mass incarceration of young men of color over the past 40 years means that involvement with the criminal justice system has become a normative experience for this population, but it is one that conflicts with social norms. The negative economic and mental health consequences of paternal incarceration continue after an arrest or prison sentence and cascade throughout the family system to shape union dissolution, intimate partner violence (IPV), and children's behavior problems (Braman 2002; Wildeman and Western 2010). Specifically, paternal incarceration is associated with increased physical aggression by mothers against children (Turney 2014). Furthermore, IPV perpetrated against mothers by their romantic partners is another non-normative behavior that is an example of how the mother-partner relationship can have detrimental effects on the whole family system in general and on the parent-child relationship specifically. Current or past violence between parents is strongly tied to children's probability of being subjected to violence (including physical abuse and corporal punishment) themselves (Berger 2005; Guterman and Lee 2005; Taylor et al. 2010). Although distinct experiences, child maltreatment and IPV are commonly conceptualized as similar instances of violence and trauma within the family system (Foster and Brooks-Gunn 2009; Herrenkohl and Herrenkohl 2007; Morris 2009).

The second aim of this study, therefore, is to investigate whether the association between the co-residential presence of mothers' romantic partners and children's risk of maltreatment is conditional on men's characteristics. Synthesizing the above review of the literature on relational, economic, and non-normative characteristics, I hypothesize that the risk of child

maltreatment will be lower when mothers' partners are: married to her, the child's biological father, employed, not involved with the criminal justice system, and not perpetrators of IPV against the mother.

Where the Family Lives

To fully understand the parent-child relationships that can result in maltreatment, the family system must also be situated within broader contexts. The communities in which families are embedded present their own set of risk and protective factors that shape family functioning (Kohen et al. 2008: Leventhal and Brooks-Gunn 2000). For example, child maltreatment is more common—and resilience in the face of child maltreatment less common—in neighborhoods marked by social disorganization, as evidenced by poverty, child care burden, residential instability, and crime (Coulton et al. 2007; 1995; Jaffee et al. 2007; Molnar et al. 2003).

Even when those neighborhood-level risks are present, communities can also help families manage transitions and stress. One neighborhood resource, which has been studied extensively with the PHDCN data used in this study, is collective efficacy—the mutual trust, solidarity, and shared values as well as shared expectations and norms of community members (Bandura 1986; Sampson et al. 1997). Collective efficacy is linked to reduced neighborhood violence (Sampson et al. 1997), so it is worth exploring whether that protective power extends to violence against children within the home. Indeed, physical abuse is less common among families with more social support and extensive social networks (Molnar et al. 2003), and the link between physical abuse and internalizing behavior problems is weaker among children living in cohesive neighborhoods (Riina, Martin, and Brooks-Gunn 2014).

The third aim of this study, therefore, is to test whether the influence of mothers' co-residential partners—conditional on those men's characteristics—further varies by the protective characteristics of neighborhoods. The final hypothesis proposes that, net of the main effects of neighborhood-level risk factors, collective efficacy will protect children from the maltreatment associated with the co-residential presence of certain types of men.

METHOD

Data and Sample

This study used several components from the longitudinal, multi-level PHDCN to investigate the connections among children's risk of maltreatment, mothers' co-residential partners, and neighborhood collective efficacy. First, the PHDCN Community Survey was conducted in 1994 and 1995 when respondents reported about the characteristics of their neighborhoods as well as their relationships with their neighbors. Sampling combined 847 census tracts in Chicago into 343 neighborhood clusters that were geographically contiguous and homogenous in terms of racial/ethnic and socioeconomic composition based on the 1990 Census. City blocks were then sampled within each of the 343 clusters, and households were sampled within blocks. A probability sample of one adult resident per selected household within those clusters resulted in a sample of 8,782 adult respondents. The data from this random sample of neighborhood residents could thus be generalized to describe each of the sampled neighborhoods that represented the racial/ethnic and socioeconomic diversity of Chicago in the mid-1990s. In addition to the data from resident interviews, PHDCN researchers linked the Community Survey to data from the 1990 U.S. Census and the Chicago Police Department, representing more

information about neighborhoods' demographic composition and crime rates in addition to the subjective information provided by residents.

Next, the PHDCN Longitudinal Cohort Study collected information about children and their primary caregivers. Stratified probability sampling selected 80 of the 343 neighborhood clusters from the Community Survey, meaning the Longitudinal Cohort Study children and caregivers resided in the same neighborhoods as the Community Survey respondents yet were independent individuals. Within each neighborhood cluster, city blocks were randomly sampled, and then households with children within six months of birth, ages 3, 6, 9, 12, 15, and 18 were randomly selected within each block. The resulting sample for the Longitudinal Cohort Study consisted of 6,228 participants across 21 strata of racial/ethnic groups and socioeconomic levels. Focal children and their caregivers were followed for three survey waves spanning seven years, with Wave 1 (W1) in 1994-1997, Wave 2 (W2) in 1997-1999, and Wave 3 (W3) in 2000-2001.

The analytical sample for this study included 2,447 respondents from Cohorts 3, 6, and 9 across all three waves of the Longitudinal Cohort Study. They were split in almost even thirds between each cohort (37% from Cohort 3, 35% from Cohort 6, and 28% from Cohort 9). Because cohort was defined as respondents' age at W1, the respondents in this study were ages 3, 6, and 9 at W1, around 6, 9, and 12 years old at W2, and around 9, 12, and 15 years old at W3. Because this study focuses on children's mothers' romantic partners, the analytical sample was restricted to respondents whose W1 primary caregivers were their biological mothers. Additionally, respondents were limited to Cohorts 3, 6, and 9 because they were the only ones with consistent data on child maltreatment across all three survey waves, an important requirement for this study's longitudinal approach. The children who made up the analytical

sample were representative of the diversity in Chicago that the PHDCN aimed to capture: only 57% of respondents' mothers had a high school education; 51% of children were boys and 49% were girls; and half of respondents were Latino/a, almost one third were Black, 14% were White, and 4% were some other race/ethnicity. Additionally, one third of children's mothers were not U.S. citizens, and their average age at W1 was 32 years old.

Measurement

 Child maltreatment. The outcome of child maltreatment was a time-varying binary indicator of whether the child ever experienced any of five types of maltreatment (pushed or grabbed; kicked, bit, or hit with a fist; hit with something; beat up; and burned or scalded) within the past year. Based on the physical assault subscale of the Conflict Tactics Scale for Parent and Child (CTSPC; Straus et al. 1998), those five items were selected and collapsed into a dichotomous variable to achieve consistent measurement across the three survey waves, which each measured child maltreatment slightly differently. At W1, primary caregivers reported whether they had ever engaged in a series of behaviors directed at the child and how frequently, whereas primary caregivers reported at W2 if the focal child had ever been subject to certain behaviors by any adult in the household; the W3 CTSPC also pertained to any co-residential adult but measured both prevalence and chronicity. Another small point of dissimilarity was the absence of the push/grab item at W3; however, similar items about shaking or pinching the child served as substitutes. Despite those differences, the dependent variable measured whether a child had ever experienced physical abuse, or maltreatment, at the hands of someone in their household during the past year, and it did so consistently across the three survey waves.

Mothers' co-residential romantic partners. At each survey wave, primary caregivers (i.e., biological mothers in this study) reported their marital status as single, separated, divorced, married, widowed, or cohabiting, as well as a separate report of whether they were currently living with a partner. A time-varying binary indicator of whether the mother had a romantic partner co-residing in the household was coded as 1 if she was married, cohabiting, or otherwise living with a partner, and it was coded as 0 if she did not have a co-residential partner.

A series of time-varying variables measured three aspects of mothers' partners' characteristics using conditionally relevant variables, which will be further explained in the analytical plan. First, two variables considered men's relational characteristics. Based on self-reported maternal marital status, men were categorized as being in cohabiting or marital unions with the child's mother. Mothers also reported whether their spouse or partner was the child's biological father, which resulted in the categories of biological father versus a stepfather or social father role. Next, men's economic characteristics were measured as his employment status, based on mothers' reports of whether her partner was currently working either part-time or full-time.

Last, mothers' co-residential partners were characterized by their non-normative behavior. At each survey wave, primary caregivers reported whether any family member had contact with the criminal justice system and, for each person with criminal justice involvement, their relation to the focal child. At W1, criminal justice involvement was reported as a family member ever experiencing "trouble with the police" or being arrested, whereas similar survey items at W2 and W3 pertained to a family member who had been "arrested, convicted of a crime, or put in jail" since the last interview (at W2) or within the past year (at W3). Reports across

15

numerous family members were then used to create a binary indicator of whether the mother's

romantic partner (based on their relation to the focal child, e.g., biological father, stepfather,

mother's partner) was the individual reported to have had contact with the criminal justice

system. Additionally, similar to the CTSPC for child maltreatment, IPV between mothers and

their co-residential partners used items based on the violence subscale of the Conflict Tactics

Scale (CTS; Straus 1979) for adult romantic partners. Mothers reported whether their co-

residential partners ever perpetrated six acts of violence (thrown something at them; pushed or

grabbed them; slapped them; kicked, bit, or hit them with a fist; beat them up; and used a knife

or fired a gun in their direction) against them within the past year, which was measured with a

binary indicator of recent IPV perpetration by the partner against the mother.

    Maternal resources. Multivariate analyses included a set of time-varying covariates

representing mothers' mental health and economic resources that could also change in

conjunction with the risk of child maltreatment and the presence of mothers' partners in the

household. At W1, primary caregivers reported whether anyone in the focal child's family had

ever suffered from depression, described in the survey as feeling "so low for a period of at least

two weeks that they hardly ate or slept, or couldn't work or do whatever they usually do."

Primary caregivers also reported the relation of each individual to the child, which was then used

to create a binary indicator of maternal depression for children with a family member suffering

from depression and listed as the mother, compared to children with another, non-mother family

member or no family members with depression. At W2 and W3, primary caregivers' (i.e.,

biological mothers in this study) mental health was assessed using an instrument from the World

Health Organization's World Mental Health Composite International Diagnostic Interview's

16

questions about depressive symptoms in the past year. To parallel the W1 measure, mothers were coded as depressed when they reported feeling depressed for two or more weeks in a row. Tying together socioemotional wellbeing and economic resources, maternal employment collapsed self-reported categories of current employment status (e.g., working part-time or full-time, keeping house, unemployed) into a binary indicator of mothers' current part-time or full-time employment. A continuous measure of the log household income per capita was based on total household earnings (in year 2000 dollars) and family size.

Neighborhood characteristics. Neighborhood-level data came from the Community Survey and corresponding linked data from the Census and Chicago law enforcement. The main variable of interest was collective efficacy, which was seminally defined by PHDCN primary investigators Sampson, Raudenbush, and Earls (1997) as a combination of informal social control and social cohesion. Informal social control was measured with respondents' reports on a five-point scale (1 = very unlikely to 5 = very likely) about the likelihood of neighbors intervening in five scenarios: children skipping school; children spray-painting graffiti; scolding a child who disrespected an adult; breaking up a fight; and organizing if the fire station was closed down. Social cohesion was also measured by respondents' agreement with five items on a five-point Likert scale (1 = strongly agree to 5 = strongly disagree): the neighborhood is close-knit (reverse-coded); people are willing to help their neighbors (reverse-coded); people generally don't get along; people don't share the same values; and people can be trusted (reverse-coded). Following convention, those two scales were combined in a single 10-item ordinal scale. That overall scale was then standardized and categorized neighborhoods as having levels of collective

efficacy that were low (more than one standard deviation below the mean), average (within one standard deviation of the mean), or high (more than one standard deviation above the mean).

Neighborhood covariates consisted of common PHDCN measures of neighborhood stratification using tract-level data from the 1990 Census. The result of factor analysis by Sampson and colleagues (1997), these standardized composites ranged from negative values, indicating neighborhoods were characterized by less to the construct, to positive values, indicating neighborhoods were characterized by more of the construct. Concentrated disadvantage included neighborhood characteristics commonly associated with poverty, the percent of neighborhood residents who: had a household income below the poverty line, received public assistance, lived in female-headed family, were unemployed, were minors, and were Black. Residential stability related to the mobility of neighbors and included the proportion of neighborhood residents who: lived in the same house in 1990 as they did five years earlier in 1985; and owned the house in which they lived. Additionally, neighborhood crime was included as a final neighborhood-level covariate. One of the most reliably reported measures of crime (Sampson et al. 1997), the log homicide rate in 1995 was the log number of homicides per 100,000 residents based on data from the Chicago Police Department.

Analytical Plan

Multivariate analyses were conducted in Stata using the *xtmelogit* command, which conducts mixed effects logistic regressions with binary outcomes that are clustered or have both fixed and random effects (Rabe-Hesketh and Skrondal 2012). The data in this study were clustered longitudinally over time, and they were a hierarchical combination of person-level fixed effects and neighborhood-level random effects; therefore, analyses commenced with the

18

xtset command that specified individual-level data clustered across three survey waves. The subsequent mixed effects models were especially useful for this study because they allowed for estimation of a child's risk of maltreatment using a fixed effects framework to incorporate longitudinal observations while also using a random effects framework to account for characteristics of the neighborhoods in which the child was nested. I focus on the fixed effects component, with the random effects component treated as a neighborhood-level adjustment. The fixed effects results thus represent coefficients of a within-child, difference-in-difference model (Allison 2009) and answer the question of whether a child's risk of maltreatment increases or decreases when her mother's romantic partner is present in the household compared to when he is not. The random effects results are not directly estimated but instead consist of standard deviations of the random intercept and coefficients (Rabe-Hesketh and Skrondal 2012), meaning the focal fixed effects associations are net of the survey design that nests a child within her neighborhood and the associated variation by neighborhood characteristics.

Multivariate analyses proceeded in two phases. In the first, multivariate mixed effects logistic regressions on the full sample predicted changes in a child's risk of experiencing maltreatment in the past year by the presence and characteristics of her mother's romantic partner. Model 1 began by estimating that association with whether the partner was present as well as various maternal resources. Models 2-4 added the variables representing mother's partner's characteristics, which were conditionally relevant variables because men's characteristics could only be measured if there was a co-residential man present in the first place. Model 2 added relationships (the man's union type with the mother and his biological tie to the

19

focal child); Model 3 added economic status (current employment); and Model 4 added non-normative behaviors (criminal justice involvement and IPV perpetration against the mother).

For example, Model 2 thus considered changes in a child's risk of maltreatment whether or not her mother's romantic partner co-resided in the household and further changes in that risk depending on whether the man was married to or cohabiting with her mother. Informed by previous method-building studies (Cohen 1968; Ross and Mirowsky 1992), Equation (1) shows a simplified form of the model where $\widehat{M}$ = estimated child maltreatment, C = the set of maternal resources covariates, U = union type (0 = cohabiting, 1 = married), and P = the presence of the mother's co-residential partner (0 = no partner present, 1 = partner present).

(1) $\widehat{M} = [b_0 + b_1 C] + [b_2 + b_3 U]P$

The first set of brackets in Equation (1) represents estimated maltreatment among children without a co-residing partner in the household because the second set of brackets is multiplied by $P = 0$. The resulting Equations (2) and (3) show estimated maltreatment for children whose mothers are single (i.e., no co-residential partner present).

(2) $\widehat{M}_{P\,=\,0} = [b_0 + b_1 C] + [b_2 + b_3 U](0)$

(3) $\widehat{M}_{P\,=\,0} = [b_0 + b_1 C]$

The second set of brackets in Equation (1) represents additional changes in estimated maltreatment among children co-residing with their mother's partner, with changes in b_3 based on union type. Estimated maltreatment for children co-residing with their mother's cohabiting partner is shown in Equations (4) and (5), and estimated maltreatment for children co-residing with their mother's married spouse is shown in Equations (6) and (7).

(4) $\widehat{M}_{P\,=\,1,\ U\,=\,0} = [b_0 + b_1 C] + [b_2 + b_3(0)](1)$

20

(5)　　$\widehat{M}_{P=1,\ U=0} = [b_0 + b_1 C] + [b_2]$

(6)　　$\widehat{M}_{P=1,\ U=1} = [b_0 + b_1 C] + [b_2 + b_3(1)](1)$

(7)　　$\widehat{M}_{P=1,\ U=1} = [b_0 + b_1 C] + [b_2 + b_3]$

Conceptually, b_3 is similar to an interaction in that it is multiplicative between P and U; however, in the case of conditionally relative variables, the main effects of each component of the interaction are not included in the model (here, only the main effect of P is included as represented with b_2). When respondents do not have a mother's co-residential partner, they are assigned a placeholder value for U so that they will be included in the overall model estimation, but that value drops out when multiplied by P equal to 0.

In the second phase of analyses, the fully saturated Model 4 was conducted separately by level of neighborhood collective efficacy. Coefficients from those three separate models (low, average, and high collective efficacy) were compared using tests of significant differences (Clogg, Petkova, and Haritou 1995). In all multivariate analyses, the minimal amount of missing data was addressed with multiple imputation using the *mi estimate* suite of commands with 10 imputed datasets.

RESULTS

Descriptive Overview of Children's Maltreatment and Mothers' Partners

Table 1 describes the analytical sample across W1-3. Overall, maltreatment was a fairly common experience among children in the analytical sample. At W1, half of children had experienced some type of maltreatment within the past year; however, that number was lower at subsequent waves, with 20% and 38% of children having recent maltreatment at W2 and W3, respectively. Turning to mothers' co-residential romantic partners, around 70% of children lived

with their mother's partner, but that figure dropped slightly over time. In terms of those men's relational characteristics: more than half of men were married to the child's mother and, over time, fewer were cohabiting; and most men were the child's biological father (62% of partners at W1). That proportion decreased over time, whereas the number of stepfathers increased from 8% at W1 to 11% at W3. Economically, men's employment decreased and unemployment increased over time, although most men were employed at a given wave. As far as non-normative behaviors over time, criminal involvement and IPV perpetration declined over time. At W1, 6% of children lived with a man with criminal justice involvement, whereas only 3% and 2% did so at W2 and W3, respectively. That difference could be due to W1 capturing any criminal involvement versus W2 and W3 capturing recent involvement. At W1, around 17% of children lived with a man who had recently perpetrated IPV against their mother, but only 7% lived with a violent mother's partner by W3.

[Table 1 about here]

The final aspect of individual-level circumstances, maternal resources also changed over time. About one in three mothers reported depressive symptoms at W2 and W3, almost double the number of depressed mothers at W1—an increase that could be due to how maternal depression was measured at W1 compared to W2-3. Maternal employment also increased from 47% at W1 to 66% at W3, and, similarly, log household income per capita increased slightly over time.

Turning to neighborhood-level measures, children were fairly evenly distributed across neighborhoods with various levels of collective efficacy. Over time, however, more children lived in neighborhoods with low levels of collective efficacy and slightly fewer children lived in

22

high collective efficacy neighborhoods. The standardized composite capturing concentrated disadvantage was close to zero and fairly consistent over time, and the residential stability composite was also close to zero but increased slightly over time. Neighborhood log homicide rate was also consistent over time at around 0.0003, or the equivalent of about 1 homicide per 100,000 residents.

Delving further into children's neighborhoods, Table 2 presents frequencies (based on person-waves) of child maltreatment and mothers' partners overall and by level of neighborhood collective efficacy. Across the three survey waves, around 38% of person-waves were marked by the occurrence of child maltreatment within the past year, which did not significantly differ across neighborhoods. The presence of mothers' co-residential romantic partners, however, was the least common in neighborhoods with low levels of collective efficacy (65%), followed by average collective efficacy neighborhoods (67%), and then significantly greater in high collective efficacy neighborhoods (76%).

[Table 2 about here]

There were also significant differences in those partners' characteristics across neighborhoods with varying levels of collective efficacy. Of the co-residential partners, significantly fewer men were married to the child's mother—and, conversely, significantly more men were cohabiting—in neighborhoods with low and average levels of collective efficacy (80% and 78%, respectively) compared to the 88% of married men in high collective efficacy neighborhoods. In relation to the focal child, almost nine in ten men in high collective efficacy neighborhoods were children's biological fathers (i.e., one in ten were stepfathers) compared to the significantly lower 84% of men in average neighborhoods. As noted earlier, the

23

overwhelming majority of mothers' partners were employed, yet that proportion was significantly smaller in low collective efficacy neighborhoods (88%) compared to those partners in neighborhoods with high levels of collective efficacy (94%). Men's involvement with the criminal justice system was around 6% of person-waves, and that incidence did not differ by level of neighborhood collective efficacy. Last, recent IPV perpetration against mothers by their co-residential partners occurred at 17% of person-waves; however, it was significantly lower at only 12% in high collective efficacy neighborhoods, compared to 19% and 20% in neighborhoods with low and average levels of collective efficacy, respectively.

In sum, these descriptive results offer initial evidence of change over time in patterns of child maltreatment as well as the characteristics of men living in children's households. Additionally, the occurrence of child maltreatment does not appear to fluctuate across neighborhoods with different levels of collective efficacy, yet the presence and characteristics of mothers' partners do.

Changes in Mothers' Co-Residential Partners and Children's Maltreatment

Mixed effects logistic regressions of the full analytical sample investigated whether changes in the co-residence of a mother's romantic partner was associated with a child's risk of maltreatment, with those results presented in Table 3. In a fixed effects framework, Model 1 predicted the odds of child maltreatment with the presence of the mother's partner and her socioemotional and financial resources, net of respondents' clustering within neighborhoods and the random effects of concentrated disadvantage, residential stability, and log homicide rates. Children had 24% significantly lower odds of experiencing maltreatment when their mother's romantic partner co-resided in the household compared to when their mother was single.

Children also had marginally greater odds of maltreatment when their mothers were depressed and as household income increased. Maternal employment was not statistically significantly associated with the odds of maltreatment.

[Table 3 about here]

Model 2 added relational characteristics of the mother's partner using conditionally relevant measures of the man's union with the mother and his biological tie to the focal child. The union type between the mother and her partner (i.e., married vs. cohabiting) was positively but not statistically significantly associated with the odds of child maltreatment. Children had 29% significantly lower odds of experiencing maltreatment, however, when their mother's partner was their biological father compared to when he was a stepfather. Importantly, with the inclusion of these relational variables in Model 2, the main effect of the presence of the mother's partner became positive and no longer statistically significant, suggesting the effect of a mother's co-residential partner on the risk of child maltreatment was dependent on that man's biological tie to the child. Additionally, the association between household income and child maltreatment shifted from a marginal level of statistical significance in Model 1 to a conventional level ($p <$ .05) in Model 2. Ancillary analyses estimated the risk of child maltreatment with maternal resources without measures of the mother's partner. Household income was not significantly associated with maltreatment even at the most marginal level of statistical significance, suggesting the income effects in Table 3 were likely linked to income the mother's partner introduced into the household and perhaps to his presence in the household in other ways.

Next, Model 3 added economic characteristics. Whether the mother's partner was employed was not statistically significantly associated with the odds of child maltreatment and

25

did not substantively alter the associations found in Model 2. Last, Model 4 introduced measures of the mother's partner's non-normative behaviors, including involvement with the criminal justice system and recent IPV perpetration against the mother. Similar to earlier models, children were at a significantly lower risk of maltreatment when they lived with a biological father compared to when they lived with a stepfather. Each of the non-normative behaviors, however, was significantly positively associated with child maltreatment. Children had 77% higher odds of experiencing maltreatment when their mother's partner had involvement with the criminal justice system compared to when he did not. Men's IPV perpetration was also strongly associated with child maltreatment in both the level of statistical significance ($p < .001$) and the magnitude of the effect size: children had more than three times greater odds of experiencing maltreatment when their mother's partner was violent with her compared to when he was not.

Taken together, this phase of the multivariate analyses revealed that children had lower odds of maltreatment when their mother's co-residential partner was present in the household. That association, however, was conditional on the partner being the child's biological father, with lower odds of maltreatment when children lived with biological fathers compared to when they lived with stepfathers. Additionally, living with a mother's partner who recently perpetrated IPV was the greatest predictor of child maltreatment.

Potential Moderation by Neighborhood Collective Efficacy

The final phase of analyses compared the fully saturated model across neighborhoods using three separate models based on low, average, and high levels of collective efficacy (see Table 4). In neighborhoods with low levels of collective efficacy, the odds of child maltreatment were significantly greater when household income was higher and when the mother's partner had

recently perpetrated IPV against her compared to when he had not. Similarly, in neighborhoods

with average levels of collective efficacy, household income and the partner's IPV perpetration

were also significantly positively associated with child maltreatment. Additionally, children in

such neighborhoods had 34% significantly lower odds of maltreatment when their mother's

partner was their biological father compared to when the partner was a stepfather, and they had

80% significantly higher odds of maltreatment when he had criminal justice involvement

compared to when he did not. In high collective efficacy neighborhoods, only non-normative

behaviors were significantly associated with maltreatment: children's odds of maltreatment were

twice as high when their mother's partner had criminal justice involvement (compared to none)

and when he recently perpetrated IPV against the mother (compared to when he had not).

[Table 4 about here]

Although the results in Table 4 suggested moderation by level of neighborhood collective

efficacy, formal tests were necessary to assess for statistically significant differences between

coefficients. Those empirical tests revealed only two instances of significantly different

coefficients ($p < .05$), noted with superscripts next to standard errors in Table 4. First, the

positive association between the employment of a mother's partner and child maltreatment in

neighborhoods with high levels of collective efficacy significantly differed from the negative

associations for the man's employment in low and average collective efficacy neighborhoods (z

= -2.216, $p = .013$ for low vs. high collective efficacy neighborhoods; z = -1.719, $p = .043$ for

average vs. high collective efficacy neighborhoods). Associations between employment and

maltreatment were not significant even at marginal levels of statistical significance in any

neighborhood context.

Second, although the association between recent IPV perpetration and child maltreatment was statistically significant in each neighborhood context, those odds were significantly lower in neighborhoods with high levels of collective efficacy compared to low and average collective efficacy neighborhoods ($z = 1.851$, $p = .032$ for low vs. high collective efficacy neighborhoods; $z = 1.977$, $p = .024$ for average vs. high collective efficacy neighborhoods). Children in neighborhoods with low or average levels of collective efficacy had 3.5 and 3.4 higher odds, respectively, of experiencing maltreatment when their mother's partner had recently perpetrated IPV against her compared to when he had not. Children in high collective efficacy neighborhoods, on the other hand, also had greater odds of maltreatment when their mother's partner was violent with her (OR = 2.0), but those odds were significantly smaller in magnitude than they were in other neighborhood contexts.

Even though several predictors and estimates of child maltreatment (household income, the mother's partner's biological tie to the child, his criminal justice involvement, his IPV perpetration) appeared to vary by the level of neighborhood collective efficacy, therefore, most of those differences were only suggestive and did not represent statistically significant evidence. One exception concerned significant differences across neighborhoods in the magnitude of associations between IPV perpetration and child maltreatment.

DISCUSSION

As a result of changes in family formation and greater instability in adults' romantic unions (Cherlin 2010), children's family lives are increasingly dynamic and marked by movement of their mothers' partners in and out of the household. A strong body of research has documented the negative consequences of such family instability for a variety of child outcomes,

especially socioemotional wellbeing and behavior problems (Cavanagh and Huston 2008; Osborne and McLanahan 2007). A new direction extends that literature to child maltreatment, a particularly extreme risk within children's developmental system, revealing certain types of partnership changes can increase parents' likelihood of maltreating children (Schneider 2016). Informed by family systems theory, this study also considered how changes in mothers' co-residential unions matter for children's risk of maltreatment, and it moved research forward by considering who those male partners were and where the family lives. Mixed effects modeling techniques applied to the longitudinal, multi-level PHDCN tested whether the co-residential presence of mothers' partners was conditional on men's relational, economic, and behavior characteristics and further varied by level of neighborhood collective efficacy. Findings differentiated between the general implications of partner co-residence and the added risks certain types of men introduce, and they also proposed ways in which neighborhoods can buffer some of those risks.

In general, child maltreatment declined over time but was nevertheless an all too common experience for about half of children at W1. The presence of mothers' romantic partners in the household, on the other hand, was consistent for about 70% of children at each of the three survey waves, but those men's characteristics changed over time. Initial multivariate analyses connecting maltreatment and co-residence suggested that children had significantly lower risks of maltreatment when there was a co-residential man present compared to when there was not. That effect, however, was conditional on the man being the child's biological father compared to a stepfather or social father figure. Additionally, the odds of maltreatment were significantly higher when mothers' partners had involvement with the criminal justice system and when they

29

had recently perpetrated IPV against her. Multiple group comparisons revealed little evidence of moderation by neighborhood collective efficacy. Throughout those descriptive, multivariate, and multiple group analyses, three themes emerged.

First, the biological tie of mothers' partners to the focal child was behind the general trend of whether their presence mattered for children's risk of maltreatment. The initial protective effect of a co-residential partner in the household existed only for children's biological fathers. Moreover, all multivariate results were estimated while controlling for maternal resources, meaning all change-in-change associations of partners and their characteristics with child maltreatment were net of concurrent changes in maternal depression, maternal employment status, and household income. These findings echo those of a prospective study that found child abuse reports to social services were twice as likely when social fathers entered the home compared to when there was a biological father or no man present (Radhakrishna et al. 2001). The importance of that biological tie suggests men are more invested in and have more positive relationships with their biological children than social or stepfathers (Coohey and Zhang 2006; Hofferth and Anderson 200), a protective advantage that only a little over half of this study's analytical sample had by W3. To be sure, step and social fathers are also involved in the parenting of children to whom they are not biologically related (Berger et al. 2008; Bzostek 2008), but perhaps the ambiguity of stepfamilies (Sweeney 2010) may mean they are more likely to take violent measures in attempts to correct or manage children's behavior. Another aspect of this biological tie theme was the lack of a marriage effect, which parallels other studies that emphasize biological ties between father and child rather than marital unions between father and mother (see Guterman et al. 2009; Jaffee et al. 2003; Ressler et al. 2016). The so-called "gold

30

standard" of married biological parents (Brown 2010), therefore, does not seem to completely apply to child maltreatment.

Based on these results, the odds of maltreatment clearly seem to be significantly lower when children live with biological fathers compared to social fathers, but one study limitation is that the perpetrator of the maltreatment is unknown. Whereas mothers reported their own maltreatment of children at W1, similar survey items at W2 and W3 referred to maltreatment committed by any adult living in the household. That limitation is important to consider given that union transitions can have different implications for child maltreatment based on the parent considered (e.g., maternal vs. paternal abuse; Schneider 2016). Such information might be necessary to inform prevention and intervention efforts despite the fact that maltreatment has negative consequences for children regardless of who perpetrated it. Programs and policies might take different approaches if they aim to target social fathers' greater likelihood of committing child maltreatment as opposed to a goal of leveraging the ways in which biological fathers support mothers' positive and protective parenting (e.g., shared responsibilities, less stress). Child maltreatment does, however, tend to be concordant between parents, with perpetration by both parents more common than maltreatment by either parent alone (Lee et al. 2013; Taylor et al. 2010). Future research should thus specify the perpetrators of maltreatment, including mothers and fathers as well as other household members.

Second, in addition to the conditionally relevant association of co-residential men's biological ties with children and child maltreatment, this study also showed the overwhelming link between IPV and children's experiences of maltreatment. In the overall multivariate models, IPV perpetrated against the mother by her co-residential partner had the largest effect on the

31

odds of child maltreatment. These two aspects of family violence seem to co-occur through what has been described as an abusive household gender regime, in which male partners coerce and entrap household members through different yet interrelated types of abuse that make it difficult to leave (Morris 2009). Of course, child maltreatment and IPV represent unique experiences that should not be completely equated with one another (Herrenkohl and Herrenkohl 2007). Furthermore, IPV was a significant predictor of maltreatment across all neighborhood contexts but to a lesser extent in neighborhoods with high levels of collective efficacy (OR = 2.0 with high levels vs. OR = 3.5 and 3.4 with low and average level, respectively). Moreover, descriptive trends showed the incidence of IPV was similar (20%) in neighborhoods with low or average levels of collective efficacy; in high collective efficacy neighborhoods, on the other hand, only 12% of families had recent IPV. An important and strong predictor, IPV was thus less common and less associated with the risk of child maltreatment in neighborhoods where community members greatly supported and trusted one another. The importance of high collective efficacy may be due to the fact that neighbors are more willing to report, and perhaps to intervene, when they are less fearful of retaliation (Korbin and Coulton 1996).

Relevant to this large and consistent association between IPV and child maltreatment is one key study limitation, which is that it captures only one aspect of the interpersonal relationship between mothers and their co-residential partners. In addition to whether men have perpetrated physical violence against children's mothers within the past year, additional information is necessary to better understand the mother-partner relationship, such as relationship quality, satisfaction, commitment, and attachment, as reported by both the mother and her romantic partner. Given findings from a meta-analysis that parent anger, high family

conflict, and low family cohesion were the strongest correlates of physical child abuse (Stith et al. 2009), targeting those processes that likely co-occur with—or even precede—IPV could help prevent child maltreatment. In clinical settings (e.g., hospitals, domestic violence shelters) across a variety of community contexts, for example, the presence of IPV could be treated as a risk factor warranting assessment for child maltreatment, and vice versa. This study thus underscores the importance of using a family systems model to understand the adult-child relationship as interconnected with the mother-partner relationship, as well as the family as a whole in order to achieve positive and healthy family functioning.

Third, there was limited evidence of variation in the link between changes in mothers' co-residential partners and children's maltreatment by neighborhood collective efficacy. Descriptively, partners' presence in the household and their characteristics differed across neighborhoods, but the incidence of child maltreatment did not. In separate multivariate models by level of collective efficacy, the only substantively meaningful finding was for IPV, as discussed in the section above. Past PHDCN studies have outlined the importance of collective efficacy in other neighborhood processes and aspects of the parent-child relationship (e.g., Browning et al. 2006; Browning, Leventhal, and Brooks-Gunn 2005; Fagan, Wright, and Pinchevsky 2014), but those on child maltreatment specifically are more mixed. For example, in one study, Molnar and colleagues found that neither collective efficacy nor its individual components were significantly associated with parent-to-child physical aggression as reported by parents (Molnar et al. 2003), yet in another study they found that collective efficacy was a significant predictor of neighborhood rates of four different types of child maltreatment as substantiated by family services (Molnar et al. 2016).

One explanation behind the complexity of this connection between the family system and the neighborhood is that how connected mothers and their children are to the community likely matters. Mothers' perceptions of and involvement in the neighborhood are associated with their psychological aggression toward and physical assault of their children (Kim and Maguire-Jack 2015), so it might not be collective efficacy per se that moderates the partner-maltreatment link but rather how it is shaped by mothers' experiences of the neighborhoods in which they live. In one example from the literature, parents' perceptions of the neighborhood affect the risk of child physical abuse indirectly via the amount of stress and personal control they feel (Guterman et al. 2009). Just as families' access to neighborhood buffers may differ, so too might the resources that families themselves bring to those interactions. Neighborhood residential instability, for example, can undermine the quality of parent-child relationships but family support offers an additional layer of protection (Riina et al. 2016). Therefore, despite this study's lack of findings for moderation by collective efficacy, neighborhoods remain important contexts in which family systems are embedded. Indeed, the random intercepts of concentrated disadvantage and residential stability mean that there is unexplained neighborhood-level variation in child maltreatment, which should be investigated in future research.

This study aimed to discover whether changes in mothers' co-residential partners were associated with the risk of child maltreatment, with special attention paid to who those partners were and what type of neighborhood in which the family lives. As demographic trends in family formation and change continue to increase, especially in disadvantaged communities like the Chicago neighborhoods explored in this study, this potentially dangerous connection should remain at the forefront of research on family instability and child wellbeing. This study has

34

contributed and spoken to large bodies of research on family-level (see Black; Heyman, and Slep 2001; Korbin and Krugman 2014; Stith et al. 2009) and neighborhood-level (see Freisthler, Merritt, and LaScala 2009) risk factors for child maltreatment. Additional work will be critical, however, to identify similarly extensive information about neighborhood-level protective factors that can encourage resiliency or even prevent maltreatment. Neighborhoods can be galvanized to effectively counteract child maltreatment (Daro and Dodge 2009), but first the difficult tasks remains of determining neighborhood buffers and how to promote them.

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Table 1. Sample Description by Survey Wave (*N* = 2,447)

	Frequency, %, or Mean (SD)		
	Wave 1	Wave 2	Wave 3
Child Maltreatment in Past Year	50.91%	20.23%	37.80%
Mother's Co-Residential Partner			
Present in household	69.98%	69.52%	67.52%
Relationships			
Union type with mother			
Cohabiting	13.69%	12.64%	10.52%
Married	56.29%	56.88%	57.00%
No man present	30.02%	30.48%	32.48%
Biological tie to child			
Social/stepfather	7.55%	10.53%	11.29%
Biological father	62.09%	57.41%	53.84%
No man present	30.36%	32.07%	34.87%
Economic status			
Employment			
Unemployed	5.03%	5.98%	7.96%
Employed	64.19%	63.27%	57.67%
No man present	30.78%	30.75%	34.37%
Non-normative behaviors			
Criminal justice system involvement			
No criminal involvement	63.63%	62.46%	61.85%
Criminal justice involvement	5.94%	3.04%	2.30%
No man present	30.43%	34.50%	35.85%
Intimate partner violence			
No recent IPV perpetration	51.99%	58.99%	57.86%
Recent IPV perpetration	16.80%	8.12%	7.23%
No man present	31.20%	32.89%	34.91%
Maternal Resources			
Mother is depressed	14.73%	33.18%	29.88%
Mother is employed	46.67%	57.28%	66.19%
Log household income per capita	8.34 (0.06)	8.44 (0.05)	8.55 (0.05)
Neighborhood Level Measures			
Collective efficacy			
Low	27.38%	33.42%	32.40%
Average	40.95%	37.80%	37.80%
High	31.67%	28.78%	29.79%
Concentrated disadvantage	-0.04 (0.8)	-0.04 (0.1)	-0.03 (0.1)
Residential stability	-0.10 (0.1)	-0.03 (0.1)	0.06 (0.1)
Log homicide rate	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)

Note: Data were clustered by neighborhood ID.

Table 2. Frequencies Overall and by Neighborhood Collective Efficacy

		Neighborhood Collective Efficacy		
	Overall	Low	Average	High
Child Maltreatment in Past Year	37.51%	36.94%	38.42%	36.90%
Mother's Partner Present	69.16%	65.27%	67.28%	75.55% [a, b]
Mother's Partner's Characteristics				
Union type with mother				
Cohabiting	18.05%	20.27%	21.88%	11.69% [a, b]
Married	81.95%	79.73%	78.12%	88.31% [a, b]
Biological tie to child				
Social/stepfather	13.98%	15.07%	15.86%	10.84% [b]
Biological father	86.02%	84.93%	84.14%	89.16% [b]
Employment status				
Unemployed	8.97%	11.83%	9.26%	6.11% [a]
Employed	91.03%	88.17%	90.74%	93.89% [a]
Criminal justice involvement				
No criminal involvement	93.60%	94.35%	93.83%	93.58%
Criminal justice involvement	6.10%	5.65%	6.17%	6.42%
Intimate partner violence				
No recent IPV perpetration	82.95%	81.35%	79.78%	87.97% [a, b]
Recent IPV perpetration	17.05%	18.65%	20.22%	12.03% [a, b]
Observations (person-waves)	5,999	1,837	2,350	1,812

Note: Data were clustered by neighborhood ID.

Pearson's chi-square significantly different ($p < .05$) from neighborhoods with: [a] low and [b] average levels of collective efficacy.

Table 3. Mixed Effects Logistic Regressions Predicting Child Maltreatment

	Odds Ratio (Standard Error)			
	(1)	(2)	(3)	(4)
Mother's Co-residential Partner Present	0.757***	1.092	1.228	0.745
	(0.051)	(0.128)	(0.194)	(0.135)
Maternal Resources				
Mother is depressed	1.144†	1.124	1.117	1.053
	(0.087)	(0.087)	(0.087)	(0.087)
Mother is employed	0.919	0.895†	0.890†	0.881†
	(0.058)	(0.057)	(0.057)	(0.060)
Log household income per capita	1.065†	1.085*	1.093*	1.139***
	(0.036)	(0.037)	(0.038)	(0.042)
Mother's Partner's Characteristics				
Relationships				
Married to mother (ref: cohabiting)		0.909	0.910	1.083
		(0.092)	(0.093)	(0.123)
Biological father of child (ref: step)		0.713**	0.716**	0.724*
		(0.079)	(0.081)	(0.091)
Economic status				
Currently employed			0.862	0.928
			(0.114)	(0.136)
Non-normative behaviors				
Criminal justice involvement				1.770***
				(0.294)
Recent IPV perpetration				3.099***
				(0.322)
Constant	0.430**	0.380***	0.360***	0.270***
	(0.118)	(0.105)	(0.102)	(0.079)
Neighborhood Random Effects				
Concentrated disadvantage	0.211*	0.225*	0.222*	0.147
	(0.167)	(0.155)	(0.157)	(0.189)
Residential stability	0.178**	0.162**	0.150*	0.123*
	(0.118)	(0.113)	(0.117)	(0.121)
Log homicide rate	0.000	0.000	0.000	0.000
	(2258.60)	(4036.66)	(846.24)	(743.96)
Constant	0.269**	0.238**	0.247**	0.253***
	(0.110)	(0.110)	(0.106)	(0.088)
Observations (person-waves)	5,423	5,273	5,192	4,830
Groups (neighborhood-waves)	274	273	272	262

Note: *** $p < .001$, ** $p < .01$, * $p < .05$, † $p < .1$.

Table 4. Logistic Mixed Effects Regressions by Neighborhood Collective Efficacy (NCE)

	Odds Ratio (Standard Error)		
	Low NCE	Average NCE	High NCE
Mother's Co-Residential Partner Present	0.885	0.761	0.523
	(0.288)	(0.211)	(0.208)
Maternal Resources			
Mother is depressed	0.874	1.152	1.198
	(0.124)	(0.146)	(0.196)
Mother is employed	0.838	0.877	0.962
	(0.103)	(0.094)	(0.127)
Log household income per capita	1.200**	1.127*	1.117
	(0.082)	(0.065)	(0.087)
Mother's Partner's Characteristics			
Relationships			
Married to mother (ref: cohabiting)	1.132	1.234	0.834
	(0.232)	(0.212)	(0.199)
Biological father of child (ref: step)	0.673†	0.645*	0.944
	(0.157)	(0.126)	(0.232)
Economic status			
Currently employed	0.684	0.866	1.757
	(0.171)	(0.194)	(0.606) [a, b]
Non-normative behaviors			
Criminal justice involvement	1.438	1.823*	2.134*
	(0.473)	(0.471)	(0.640)
Recent IPV perpetration	3.484***	3.425***	2.037***
	(0.692)	(0.537)	(0.430) [a, b]
Constant	0.205**	0.297**	0.220*
	(0.110)	(0.135)	(0.144)
Neighborhood Random Effects			
Concentrated disadvantage	0.000	0.179	0.000
	(8.940)	(0.343)	(7.526)
Residential stability	0.000	0.000	0.269***
	(3.507)	(35.281)	(0.104)
Log homicide rate	0.000	0.000	1830.661***
	(1191.709)	(1354.199)	(674.775)
Constant	0.551†	0.308**	0.000
	(0.183)	(0.115)	(0.852)
Observations (person-waves)	1,474	1,918	1,438
Groups (neighborhood-waves)	101	90	81

Note: *** $p < .001$, ** $p < .01$, * $p < .05$, † $p < .1$. Coefficient significantly different ($p < .05$) from [a] low and [b] average levels of collective efficacy.

Figure 1. Conceptual Model of Mother's Co-Residential Partners Predicting Child Maltreatment

Mother's Partner's Characteristics