Community and Individual Risk Factors for Physical Child Abuse and Child Neglect: Variations by Poverty Status

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Abstract

Families are impacted by a variety of risk and protective factors for maltreatment at multiple levels of the social ecology. Individual- and neighborhood-level poverty has consistently been shown to be associated with higher risk for child abuse and neglect. The current study sought to understand the ways in which individual- and neighborhood-level risk and protective factors affect physical child abuse and child neglect and whether these factors differed for families based on their individual poverty status. Specifically, we used a three-level hierarchical linear model (families nested within census tracts and nested within cities) to estimate the relationships between physical child abuse and child neglect and neighborhood structural factors, neighborhood processes, and individual characteristics. We compared these relationships between lower and higher income families in a sample of approximately 3,000 families from 50 cities in the State of California. We found that neighborhood-level disadvantage was especially detrimental for families in poverty and that neighborhood-level protective processes (social) were not associated with physical child abuse and child neglect for impoverished families, but that they had a protective effect for higher income families.

According to official maltreatment at least 13% of U.S. children will have experienced maltreatment at the hands of parents and caregivers before reaching adulthood (Wildeman et al., 2014). Maltreated children are disproportionately from low-income and racial minority families (Putnam-Hornstein, Needell, King, & Johnson-Motoyama, 2013; U.S. Department of Health and Human Services, 2015) and thus are also disproportionately residents of underresourced neighborhoods (Drake & Pandey, 1996). A relatively large body of research has examined associations of neighborhood poverty (and related characteristics) with child maltreatment (Coulton, Crampton, Irwin, Spilsbury, & Korbin, 2007; Coulton, Korbin, & Su, 1999; Drake & Pandey, 1996). Studies have also examined whether specific neighborhood-level processes influence child maltreatment (e.g., Coulton et al., 2007; Freisthler & Maguire-Jack, 2015; Molnar et al., 2016); however, the role of informal social control is not well established. Moreover, the influence of neighborhood structural disadvantage and the social processes of neighborhoods may be dependent on families' own risk factors. This study uses a large multicity data set to further elucidate the role of neighborhood processes in the etiology of child maltreatment and to examine whether associations of neighborhood disadvantage and neighborhood social processes with child maltreatment behaviors vary by family income.

Background

Neighborhood Disadvantage

The influence of neighborhoods' structural characteristics (the collective demographic characteristics of its residents including poverty, tenure within the neighborhood, race, etc.) on family functioning and individual well-being has been the focus of a large and growing body of research. Neighborhood disadvantage, which includes factors related to poverty, single headed households, racial segregation, and residential instability, has been widely studied in a variety of disciplines. Perhaps most prolifically, neighborhood disadvantage has been linked with increased rates of crime and delinquency (Morenoff, Sampson, & Raudenbush, 2001; Sampson, Raudenbush, & Earls, 1997). Other research has linked neighborhood disadvantage, to varying degrees, with worsened adult well-being

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(Ludwig et al., 2012), violence against women (Benson, Fox, DeMaris, & Wyk, 2003; Pinchevsky & Wright, 2012), and adverse child development (Leventhal & Brooks-Gunn, 2000).

Studies have further established that low-income neighborhoods have a higher rate of Child Protective Services (CPS) involvement (Drake & Pandey, 1996), which has led to a handful of multilevel studies linking neighborhood poverty with family-level CPS involvement and self-reported abuse and neglect (e.g., Coulton et al., 1999; Maguire-Jack & Font, 2017; Molnar et al., 2016). However, some studies have found no association between neighborhood poverty and abuse once family-specific conditions are controlled (Molnar, Buka, Brennan, Holton, & Earls, 2003). Other aspects of disadvantage have not been consistently linked with abuse or neglect, for example, residential instability and childcare burden, within the neighborhood (Maguire-Jack, 2014). Inconsistent findings across these studies suggest that associations between neighborhood disadvantage and maltreatment may be dependent on the characteristics of families or vary by type and subtype of maltreatment.

Aside from neighborhoods' material or economic disadvantages, scholars have also emphasized that the social contexts of neighborhoods shape (and are shaped by) the families who reside there. There are two bodies of neighborhood research that are relevant to our study. First, in studies of child maltreatment, there has been a significant emphasis on the aspects of neighborhoods that provide social support and prevent isolation. Early work focused on a general concept of social impoverishment, a term that referred to a set of environmental attributes that undermine family functioning and are conducive to suboptimal parenting. A key aspect of this concept was exchanges between neighbors—social interactions as well as more tangible exchanges of assistance. In comparing neighborhoods and communities with similar socioeconomic and racial profiles, but very different rates of child maltreatment, studies have shown that neighborhoods with higher rates of child abuse and neglect are distinguished by social impoverishment (Garbarino & Kostelny, 1992; Garbarino & Sherman, 1980). Molnar and colleagues (2016) found that the size of a parent's social network was protective against both abuse and neglect. Outside of studies focused on neighborhood attributes, it is well established that informal social support is a protective factor for both abuse and neglect (Stith et al., 2009). Access to informal supports can reduce the stress of parenting and enhance parents' mental state, which in turn reduces the risk of maltreatment (Thompson, 2015). Neighbors may serve as a source of informal support when parents experience reciprocated exchange with neighbors, meaning supportive interactions that involve both friendship and tangible help when needed. However, many parents rely on partners and family members for support rather than neighbors. Thus, reciprocated exchange between neighbors could be more important for parents whose personal resources, and those of their extended families, are more limited. In addition, studies have found that when a parent's social contacts are themselves deviant, or fail to challenge the parent's risk behaviors, maltreatment may be more likely to

occur (Freisthler, Holmes, & Wolf, 2014; Thompson, 2015). Thus, it is unclear whether reciprocated exchange would be more or less helpful in disadvantaged environments than in more advantaged neighborhoods.

A second, larger body of research has focused on aspects of neighborhoods that correlate with lower rates of criminal activity. A common emphasis in this body of work is informal social control, which refers to shared expectations and norms that neighbors will act in the interests of the common good (Sampson, Morenoff, & Earls, 1999). Studies have commonly found that perceptions of neighbors' expectations and norms function as a powerful deterrent to criminal behavior (Armstrong, Katz, & Schnebly, 2015; Morenoff et al., 2001; Sampson et al., 1997). Child maltreatment is a form of deviant behavior that is, in some ways, analogous to crime; thus, it is plausible that informal social control could deter maltreatment as well. Only two known studies of child maltreatment have examined informal social control independently from other neighborhood processes. Emery, Trung, and Wu (2015) found that informal social control, as traditionally measured in studies of crime and delinquency, was not associated with lower rates of severe physical abuse. They argued that traditional measures of informal social control are inapplicable to maltreatment because most criminal acts constitute public behavior, whereas maltreatment is generally confined within the private sphere (Emery, Trung, & Wu, 2015). Similarly, Barnhart and Maguire-Jack (2016) did not find informal social control to be protective against abuse or neglect for low-income single mothers.

Family Poverty and Disadvantage

Poverty and material hardship are well-established risk factors for child maltreatment, beyond the influence of family structure and other parenting characteristics (Berger & Waldfogel, 2011; Drake & Jonson-Reid, 2013; Slack et al., 2011; Yang, 2014). And, although it is recognized that neighborhood structural factors and processes can inhibit positive parenting behaviors (Coulton et al., 2007; Freisthler, Merrit, & LaScala, 2006), it has not been determined whether these processes more strongly affect low-income families. We may expect that other forms of disadvantage, including neighborhood economic and social impoverishment, would more strongly affect the maltreatment behaviors of low-income families by compounding the strain of limited financial resources. Furthermore, the ability of families to overcome the limited opportunities or resources provided by the neighborhood may be dependent on their own financial resources. We know of only one study that has examined how impoverishment at the individual and neighborhood levels interact to influence the risk of child maltreatment. Maguire-Jack and Font (2017) examined whether the associations between neighborhood poverty and parent-reported maltreatment behaviors varied by the presence of individual material hardship. Their study found that neighborhood poverty strengthened the association between individual material hardship and physical neglect. However, their data were

limited to a single county and they did not examine neighborhood processes.

To extend on that work, the current study investigates the following research questions: (1) How do informal social control and reciprocal exchange influence the risk of child physical abuse and neglect, net of individual and neighborhood economic disadvantage? (2) Do associations of neighborhood disadvantage and neighborhood social processes with physical child abuse and neglect vary by family income? and (3) Are associations of neighborhood structural characteristics and processes with child maltreatment similar for physical abuse and neglect? We hypothesized that neighborhood structural characteristics including poverty, unemployment, and turnover would be especially detrimental to lower income families and that neighborhood social processes (informal social control and reciprocated exchange) would be protective against maltreatment regardless of family income. We also hypothesized that neighborhood disadvantage would be more strongly associated with physical neglect, consistent with prior work (Maguire-Jack & Font, 2017; Maguire-Jack & Showalter, 2016).

Method

Data

The data for this study come from a general population telephone survey funded by the National Institutes on Alcohol Abuse and Alcoholism Center Grant (P60-AA06282), under a project titled "The Social Mechanisms of Child Physical Abuse and Neglect" (Principal investigator Bridget Freisthler). Fifty California cities with populations between 50,000 and 500,000 were purposively sampled to maximize geography and ecology. Specifically, the researchers obtained a list of all 138 cities that fit into the desired population range. Cities were randomly selected from the list in an iterative process, wherein any new selection was disqualified if it was adjacent to or within one mile of a city that had already been selected. Once 50 qualifying cities were selected, address and telephone numbers were obtained from a variety of sources (credit cards, utility companies, and magazine subscriptions through a third-party vendor) to develop the sample for the study, which has been shown to be less biased than random-digit-dialing techniques (Brick, Waksberg, Kulp, & Starer, 1995). All individuals who were identified from the lists were sent a letter informing them about the study. After this initial letter, a survey firm called all potential respondents who had not opted out after the letter. The target population for the survey was parents aged 18 or older with a child aged 12 or younger who lived with the parent at least 50% of the time. In 2009, 3,023 respondents participated in a phone survey with a live interviewer. In addition, respondents completed a set of child maltreatment questions via computerized phone interview referred to as interactive voice response technology. This process was used to minimize social desirability bias that may arise when a survey respondent is asked by an individual about sensitive questions, such as those related to child abuse and neglect. The

overall response rate for the survey was 47.4%. Participants' street addresses were masked using adaptive spatial masking to assign the respondents pseudo x-, y-coordinates (used to identify the census tract of the respondent), allowing the survey group to maintain the confidentiality of participants' locations (Freisthler, Johnson-Motoyama, & Kepple, 2014)

Missing data. Missing data were generally low for all variables (<10% on all variables). The variables with between 5% and 10% missing were the maltreatment variables and the informal social control scale, all others had less than 5% missing. We used complete case observations only. We conducted a series of *t* tests to compare the sample of parents who completed the maltreatment questions to the sample of those who did not. There were statistically significant differences regarding race and education. Specifically, parents who were in the higher income group who answered the questions were more likely to be White and more likely to have more than a high school education. In the lower income group, the only significant difference between those who had complete data and those with missing data was that those with complete data were more likely to have more than a high school education.

Measures

Outcomes. The outcomes of interest were child physical abuse and neglect. Outcomes were measured by parent self-report of maltreatment behaviors in reference to a focal child, which was identified as the child with the most recent birthday. Physical abuse was measured using 9 items from the physical assaults subscale of the Conflict Tactics Scale Parent-to-Child version (Straus, Hamby, Finkelhor, Moore, & Runyan, 1998) that were included in the survey. Respondents were asked to report the frequency (in ranges) they had used specific discipline/abuse in the past 12 months. Given the low rate of reported behaviors, we chose to dichotomize this scale (0 = *no behavior*, 1 = *at least one time in the past year*). We divided the physical abuse items into two scales: corporal punishment (2 items, e.g., "spanked on his/her bottom with your bare hand") and severe assault (7 items, e.g., "hit with a fist or kicked him/her").

For child neglect, the survey included a subset of questions from the Multidimensional Neglect Behavior Scale (MNBS; Kantor, Holt, & Straus, 2004). The MNBS is a unique tool created to assess a variety of subtypes of neglect with specific developmentally relevant questions that differ depending on the age of the focal child, with specific questions for children under the age of 5, age 5–10, and over 10 years of age. The survey included 28 of the MNBS questions, which were intended to measure supervision and physical needs neglect. For all items, the responses were coded as follows: 0 = *never*, 1 = *sometimes*, 2 = *often*, and 3 = *always*. Where applicable, responses were reverse coded such that higher numbers indicated more neglectful behaviors. We excluded 6 items from the total scale that had nonrandom skip patterns or did not follow the pattern of responses. For example, 1 item "In the past year, how often have you cared if your child got in trouble at school"

had a response option for "child did not get in trouble or not applicable" which was about 25% of responses. The 6 excluded items all related to supervision neglect. We split the full scale into two subscales, physical neglect and supervision neglect. The physical neglect subscale for children under age 5 included four questions, for example, "how often was the house warm enough when it was cold outside?" For children aged 5–9 and 10–12, this subscale included five questions, for example, "how often have you not had enough food in the house for the child?" The supervision neglect subscale for children under age 5 included 4 questions, for example, "how often did you feel comfortable with the person that you left your child with?" For children aged 5–9, the subscale included eight questions, for example, "how often were you not sure there was someone to take care of or check on your child when you weren't home?" Finally, for children aged 10–12, the subscale had seven questions, for example, "how often have you known where your child was going after school?" Given the low rate of reported behaviors, we chose to dichotomize this scale (0 = *no behavior*, 1 = at least one response of *sometimes*, *often*, or *always*).

Neighborhood-level structural characteristics. Our unit of "neighborhood" is operationalized as the census tract in which the participant resided. There were 3.32 individuals per tract, on average. Census tracts are typically bigger than the space an individual would consider to be his or her own neighborhood but are commonly used to proxy that geographical space due to the wide availability of data at the level from the U.S. census. The neighborhood structural characteristics included were the poverty rate, percentage of neighborhood population that moved in the past 5 years, unemployment rate, percentage of neighborhood population that was Black, and percentage of neighborhood population that was Hispanic (all data were obtained from the 2011–2015 American Community Survey). Neighborhood poverty was dichotomized at 20% because prior research has indicated important nonlinearities in the associations between neighborhood poverty and a range of social–behavioral outcomes (Maguire-Jack & Font, 2017; U.S. Department of Housing and Urban Development, 2011).

Neighborhood social processes. We considered two social process variables: reciprocated exchange and neighborhood informal social control. These two scales were created using modified scales created for the Project for Human Development in Chicago Neighborhoods (Sampson et al., 1997, 1999). For neighborhood informal social control, respondents were asked how likely it was that their neighbors would intervene if they saw four different scenarios of problematic behavior in the neighborhood: (1) neighborhood children were skipping school, (2) children were spray-painting graffiti on a local building, (3) a fight in the neighborhood, and (4) a child for showing disrespect to an adult. Responses were on a 5-point scale that ranged from *very unlikely* to *very likely*. Reciprocated exchange was measured by 3 items and refers to the frequency of social exchange by neighbors. Respondents were asked how often (1) they and their neighbors do favors for each other, (2) have

parties or get-togethers with other neighbors, and (3) visit each other's homes. Response options included "often," "sometimes," and "rarely." The internal reliabilities for these two neighborhood process scales were .79 for reciprocated exchange and .70 for informal social control. Notably, there is some variation in prior research as to whether neighborhood social processes are best constructed as neighborhood-level characteristics (based on the average of individual responses within a neighborhood) or individual perceptions. The items used to measure these social processes are subjective and people may experience their neighborhoods in different ways. Thus, we present models using both configurations.

Parent and family characteristics. We investigated individual poverty status, unemployment, and residential instability. To measure poverty, participants were asked to provide their annual income from a number of ranges beginning with less than "US$10,000" and ending with "more than US$150,000." We first took the midpoint of the range and then calculated the ratio of income to family size. Family size was determined by summing the number of children residing in the home with 1 if the respondent reported that he or she was not married and 2 if the respondent reported that he or she was married. We then determined whether the family's income would have fallen within 200% of the federal poverty guideline for 2009, and dummy coded the variable. Full-time work was a dichotomous measure, equal to 0 if the parent indicated working less than full time and 1 otherwise. Residential instability was a dichotomous measure equal to 1 if the parent had lived in the neighborhood for less than 5 years and 1 otherwise. This cut point was chosen to reflect the neighborhood-level instability measure available from the census.

Our covariates were respondent race, education level, number of children, marital status, social support, and focal child age. Respondents were asked to identify the primary and secondary racial or ethnic groups that describe their family of origin. Using the primary racial group reported, we assigned White as the reference group and coded dummy variables for Hispanic and other race (Black, Asian, or "other race"). Education level was equal to 1 if the respondent reported at least some college education and 0 otherwise. Marital status was equal to 1 if married and 0 otherwise. Child age and number of children were continuous variables. Lastly, social support was measured using 12 items (e.g., "If I wanted to have lunch with someone, I could easily find someone to join me") from the Interpersonal Support Evaluation List (Cohen, Mermelstein, Kamarck, & Hoberman, 1985). We first took the mean of these questions and then dichotomized the variable with those reporting "True" or "Definitely True," on average, as having a high level of social support.

Main Analysis

Analyses were completed using STATA 14 (StataCorp, 2015). Separate models were constructed for two groups of respondents: (1) families with incomes below 200% of the federal

Table 1. Sample Description.

Variables	Above 200% FPL M (SD)	Above 200% FPL Percentage	Under 200% FPL M (SD)	Under 200% FPL Percentage	Significance of Group Differences
Maltreatment measures					
Any corporal punishment		44.45		49.35	*
Any severe assault		19.48		22.67	†
Any physical neglect		55.55		61.14	**
Any supervision neglect		46.32		50.24	†
Parent and family attributes					
Work full time		51.96		31.85	***
In neighborhood < 5 years		38.69		49.93	***
White		70.40		34.35	***
Hispanic		14.22		51.08	***
Other race		15.38		14.68	
Some postsecondary education		90.32		55.24	***
Number of children	2.14 (0.87)		2.62 (1.16)		***
Married		91.10		67.00	***
Age of focal child	6.90 (3.54)		6.20 (3.68)		***
High social support		94.75		79.77	***
Neighborhood perception					
L1 reciprocated exchange	2.91 (0.76)		2.49 (0.86)		***
L1 social control	4.14 (0.71)		3.78 (0.91)		***
L2 reciprocated exchange	2.88 (0.46)		2.59 (0.54)		***
L2 social control	4.13 (0.42)		3.83 (0.57)		***
Neighborhood attributes					
High poverty (>20%)		8.85		31.99	***
Percentage moved in past 5 years	10.72 (6.06)		8.62 (6.22)		***
Unemployment (ages 16+)	6.78 (3.16)		9.59 (4.88)		***
Percentage of Black	7.78 (11.63)		7.78 (11.62)		
Percentage of Hispanic	44.27 (29.36)		40.27 (29.36)		**

Note. FPL = federal poverty line; SD = standard deviation; L1 = individual parents; L2 = nested within census tracts; L3 = and nested within cities.
*$p < .05$. **$p < .01$. ***$p < .001$. †$p < .10$.

poverty line (FPL) and (2) families with income greater than 200% of the FPL. We then tested for differences in coefficients between groups using Wald tests. We used three-level hierarchical logistic regression models with individual parents (L1), nested within census tracts (L2), and nested within cities (L3). Because the census tracts were nested within cities, our models accounted the correlation of errors (nonindependence of observations) for individuals and census tracts within the same city. However, because we were interested in the immediate community context of the parents, we did not include city-level variables in our models. For each of the outcome variables, we first regressed the outcome on neighborhood structural characteristics, individual perceptions of neighborhood social processes, and a set of covariates.

For all models, we standardized our input variables according to Gelman's (2008) approach, which calls for mean centering all variables and dividing quantitative variables by two standard deviations. This approach allows for direct comparison of coefficients for binary and quantitative variables. With this approach to standardization, the coefficient for a quantitative input variable x can be interpreted as effect of a change from the low to high end of the distribution of x.

In secondary models, we replaced the individual-level neighborhood social process variables with the census tract averages (meaning, we modeled informal social control and reciprocated exchange as Level 2 variables). In Online Supplementary Appendices, we provide the results of models using multilevel negative binomial regression to estimate the count of events for the physical abuse subtypes and multilevel linear regression to estimate the average level of the neglect subtypes.

Results

Sample Description

Table 1 shows the average demographics of the sample for the two income groups, those who were at or below 200% of the federal poverty level (hereafter referred to as the "lower income group") and those who were above 200% of the federal poverty level (hereafter referred to as the "higher income group"). There were many statistically significant ($p < .05$) differences between the two groups. The lower income group was more likely to report any corporal punishment (49% vs. 44%) and physical neglect (61% vs. 56%). The lower income group also had higher levels of severe assault (23% vs. 19%) and supervision neglect (50% vs. 46%), but these differences were only marginally significant ($p < .10$). In terms of family attributes, the higher income group was more likely to work

Table 2. Dichotomous Physical Abuse Models by Severity (Odds Ratios).

	Corporal Punishment				Severe Assault			
	Above 200% FPL (n = 2,304)		Under 200% FPL (n = 692)		Above 200% FPL (n = 2,304)		Under 200% FPL (n = 692)	
Variables	M1	M2	M1	M2	M1	M2	M1	M2
High-poverty neighborhood	0.88 (.15)	0.88 (.15)	**1.63*,ᵃ** (.34)	**1.65*,ᵃ** (.34)	0.84 (.18)	0.82 (.18)	1.29 (.31)	1.30 (.31)
Neighborhood perception								
L1 reciprocated exchange	1.12 (.12)		1.19 (.20)		0.96 (.12)		1.28 (.25)	
L1 social control	0.77* (.08)		0.98 (.14)		**0.78*** (.10)		0.99 (.17)	
L2 reciprocated exchange		0.97 (.11)		1.07 (.18)		0.97 (.14)		1.00 (.19)
L2 social control		0.88 (.10)		1.07 (.16)		0.99 (.14)		0.80 (.14)
Unemployment								
Parent working	0.99 (.09)	0.99 (.08)	1.12 (.20)	1.10 (.19)	0.92 (.10)	0.93 (.10)	1.05 (.21)	1.03 (.21)
Percentage of neighborhood residents unemployed	1.08 (.12)	1.06 (.12)	0.83 (.12)	0.83 (.12)	1.03 (.14)	1.05 (.15)	0.89 (.16)	0.85 (.15)
Residential stability								
Family in neighborhood < 5 years	0.98 (.09)	0.98 (.09)	**0.69*** (.16)	**0.67*** (.11)	0.97 (.11)	0.98 (.11)	0.97 (.19)	0.93 (.18)
Percentage of neighborhood residents moved in past 5 years	1.12 (.10)	1.10 (.10)	**1.43*** (.24)	**1.45*** (.25)	1.10 (.12)	1.08 (.12)	**1.51*** (.30)	**1.53*** (.30)

Note. Input variables are standardized using Gelman's (2008) approach. Standard errors are in parentheses. Models include the following covariates: parent race, neighborhood racial composition, parent education, age of focal child, parent marital status, number of children in household, and social support. FPL = federal poverty line; L1 = individual parents; L2 = nested within census tracts; L3 = and nested within cities.
The significant coefficients are in bold.
ᵃWald test of equal coefficients as compared with above 200% FPL group statistically significant at $p < .05$. *$p < .05$. **$p < .01$. ***$p < .001$. †$p < .10$.

full time (52% vs. 32%), be White (70% vs. 34%), have some postsecondary education (90% vs. 55%), be married (91% vs. 67%), and report high social support (95% vs. 80%). The lower income group was more likely to have lived in their neighborhood for less than 5 years (50% vs. 39%) and to be Hispanic (51% vs. 14%). Those in the lower income group tended to have more children (2.62 vs. 2.14) and have younger children (6.2 years vs. 6.9 years). In terms of the neighborhood perception variables, the lower income group reported lower levels of reciprocated exchange and informal social control, in both the individual perceptions and neighborhood average perceptions. Finally, regarding neighborhood demographics, the lower income group was much more likely to live in a neighborhood with more than 20% of the population living below the federal poverty level (32% vs. 9%), have a lower percentage of households who had moved in the past 5 years (9% vs. 11%), a higher rate of unemployment (10% vs. 7%), and a lower proportion of Hispanic residents (40% vs. 44%).

Multilevel Models

Although not shown in the tables the following control variables were included in all models: parent race, neighborhood racial composition, parent education, age of focal child, parent marital status, number of children in household, and social support. The results of the multilevel logistic regression models for the two physical aggression subscales (corporal punishment and severe assault) are provided in Table 2. Regarding corporal punishment, living in a high-poverty neighborhood was associated with greater odds of corporal punishment for the lower

income group only. A Wald test confirmed that the coefficients for high-poverty neighborhood significantly differed between the lower and higher income groups. A higher level of individually reported informal social control was associated with lower odds of corporal punishment in the higher income group, but this effect was no longer significant when using the average levels of neighborhood perceptions across the census tract. In the lower income group, living in the neighborhood for less than 5 years was associated with lower odds of corporal punishment, but living in a neighborhood with a higher percentage of residents who had moved in within the past 5 years was associated with greater odds of corporal punishment.

The results for corporal punishment and severe assault were similar. We found that informal social control was associated with lower odds of severe assault for the higher income group. This finding was not significant when examining aggregated perceptions across the census tract. As in the corporal punishment model, a higher level of neighborhood turnover was associated with greater odds of severe assault among the lower income group. We did not find an association between living in a high-poverty neighborhood and living in a neighborhood for less than 5 years with severe assault for the lower income group, but the findings were in the same direction as the corporal punishment models.

Table 3 shows the results of the physical and supervision neglect models. We found almost no significant predictors of physical neglect. In the low-income group, living in the neighborhood for less than 5 years was (marginally significant) associated with lower odds of physical neglect. This finding was nonsignificant in the second model, which used the aggregate

Table 3. Dichotomous Neglect Subtype Models (Odds Ratios).

	Physical Neglect				Supervision Neglect			
	Above 200% FPL (n = 2,268)		Under 200% FPL (n = 677)		Above 200% FPL (n = 2,183)		Under 200% FPL (n = 623)	
Variables	M1	M2	M1	M2	M1	M2	M1	M2
High-poverty neighborhood	0.82 (.16)	0.81 (.15)	0.83 (.19)	0.83 (.19)	0.86 (.16)	0.84 (.16)	1.11 (.27)	1.11 (.27)
Neighborhood perception								
L1 reciprocated exchange	1.04 (.12)		1.20 (.22)		1.10 (.13)		1.26 (.25)	
L1 social control	0.86 (.10)		0.82 (.14)		**0.78*** (.09)		**0.73**† (.13)	
L2 reciprocated exchange		0.86 (.11)		1.15 (.21)		1.13 (.13)		1.12 (.23)
L2 social control		0.87 (.12)		0.87 (.16)		**0.77*** (.10)		0.87 (.17)
Unemployment								
Parent working	0.89 (.09)	0.89 (.09)	1.18 (.23)	1.17 (.23)	1.10 (.10)	1.09 (.10)	1.03 (.21)	1.01 (.21)
Percentage of neighborhood residents unemployed	1.12 (.14)	1.07 (.14)	0.80^a (.13)	0.80 (.13)	1.19 (.15)	1.19 (.15)	.88 (.15)	.89 (.16)
Residential stability								
Family in neighborhood < 5 years	0.86 (.09)	0.86 (.09)	**0.72**† (.14)	0.72 (.14)	0.98 (.10)	0.98 (.10)	0.99 (.20)	0.97 (.19)
Percentage of neighborhood residents moved in past 5 years	1.09 (.12)	1.06 (.11)	0.96 (.19)	0.95 (.19)	1.02 (.10)	1.03 (.11)	**0.64*** (.14)	**0.63*** (.14)

Note. Input variables are standardized using Gelman's (2008) approach. Standard errors are in parentheses. Models include the following covariates: parent race, neighborhood racial composition, parent education, age of focal child, parent marital status, number of children in household, and social support. FPL = federal poverty line; L1 = individual parents; L2 = nested within census tracts; L3 = and nested within cities.
The significant coefficients are in bold.
^{a}Wald test of equal coefficients as compared with above 200% FPL group statistically significant at $p < .1$. $^*p < .05$. $^{**}p < .01$. $^{***}p < .001$. $^†p < .10$.

perceptions of neighborhood processes. Individual perception of informal social control was negatively associated with supervision neglect in both income groups, but the association was only marginally significant in the lower income group. The negative association between informal social control and supervision neglect remained statistically significant when aggregate measure was used for the higher income group. Finally, although neighborhood turnover was associated with greater odds of corporal punishment and physical abuse in the lower income group, it was associated with lower odds of supervision neglect in this same group. A Wald test confirmed that the coefficients for neighborhood turnover differed significantly between the two income groups.

Discussion

The current study expands scientific understanding of how neighborhood characteristics and processes are associated with child maltreatment. Specifically, we focused on whether these associations differ for families who are in or near poverty as compared with more financially secure families. We know of only one study that examines whether the role of neighborhood characteristics varies by family poverty (Maguire-Jack & Font, 2017). We modeled the odds of child maltreatment separately for those whose household incomes were at or below 200% of the FPL and those whose household incomes were above 200% of the FPL. We focused on two forms of physical aggression (corporal punishment and severe assault) and two forms of neglect (physical or basic needs neglect and supervision neglect). This is the first study to our knowledge to examine the moderating influence of family income on the associations of neighborhood attributes and processes with child maltreatment.

We found several differences for lower income and higher income families in how neighborhoods influence child maltreatment. First, we found a statistically significant difference in the associations between neighborhood poverty and corporal punishment for the two income groups. Residing in a high-poverty neighborhood was associated with higher odds of corporal punishment use among lower income families but not among higher income families. The trends for physical abuse were similar but not statistically significant. This finding was in line with our hypothesis that lower income families would be more negatively affected by living in an impoverished neighborhood. There is an abundance of prior work linking economic hardship with stress, and stress with the risk of harsh or physically aggressive parenting behavior (Crouch & Behl, 2001; Newland, Crnic, Cox, & Mills-Koonce, 2013; Warren & Font, 2015), consistent with the family stress model (Conger & Elder, 1994). Lower income families residing in a high-poverty neighborhood may experience more difficulties in accessing employment opportunities, affordable groceries, and other amenities that contribute to stress. Indeed, prior work suggests that the association between income and stress is explained by material hardships (Gershoff, Aber, Raver, & Lennon, 2007), and neighborhoods may exacerbate or mitigate families' difficulties in accessing resources.

We had also hypothesized that neighborhood turnover would be associated with increased maltreatment risk among all families but to a greater degree among lower income families. Consistent with that hypothesis, we found that

neighborhood turnover was associated with increased odds of corporal punishment and severe assault among lower income families. More transient neighborhoods may make it harder for families to make longer term connections with their neighbors, which could increase isolation. In addition, individuals who are in a neighborhood that is turning over regularly may feel a higher level of stress because, although their neighbors are able to move on, they are unable to do so. At the individual level, shorter neighborhood tenure was associated with lower odds of corporal punishment (trends for severe assault were similar but nonsignificant). This seems contradictory, but long-term residence in a neighborhood may only be beneficial if the qualities of the neighborhood itself are beneficial. Although surprising, the finding is in line with a prior study that found shorter neighborhood tenure to be related to lower levels of physical abuse and found that this effect was driven by individuals living for longer periods of time in neighborhoods with higher levels of disorder having higher levels of abuse (Freisthler & Maguire-Jack, 2015). Similarly, families who are new to a neighborhood may not be experiencing housing instability but rather have the ability to move when desired. In related prior work, researchers have found that internal locus of control is a key mediator between neighborhood factors and child maltreatment (Cao & Maguire-Jack, 2016; Guterman, Lee, Taylor, & Rathouz, 2009).

With regard to neighborhood processes, we found that perceived informal social control at the individual level decreased the odds of corporal punishment and physical abuse among higher income families only. The finding that social control was protective for the higher income group only may explain why prior work that has focused predominantly on economically disadvantaged families has not found a protective role for social control (Barnhart & Maguire-Jack, 2016). Thus, despite arguments that maltreatment is a private behavior and that traditionally conceptualized informal social control relate only to more public acts (Emery et al., 2015), informal social control may be protective against physically aggressive parenting. Notably, when the individual perceptions of neighborhood processes were aggregated and averaged across the census tract, there were no associations between informal social control and either form of physical aggression. Although it is argued that the aggregate measure is more likely to capture a true neighborhood mechanism (Sampson, Morenoff, & Gannon-Rowley, 2002), our findings suggest that individuals' perceptions may not match the average perception of residents, but that those perceptions are nevertheless relevant to their behavior. That is, informal social control can only impact an individual if that parent perceives it to exist. As a result, neighbors' willingness to intervene in problematic behaviors may only be affect behavior when parents perceive that they are likely to do so. Therefore, it stands to reason that individual perceptions would be predictive of behavior whereas an aggregated perception may not. At the same time, we cannot be as confident that informal social control is relevant as a true neighborhood process.

We found no statistically significant associations between reciprocated exchange and maltreatment, for any of the types.

This finding is contrary to our hypothesis that reciprocated exchange would be protective for both groups. The finding may reflect that interactions with neighbors are a less important form of informal support than extended family and kin networks, or friends outside of the neighborhood. People may interact with their neighbors due to the convenience of their company but not rely on them in ways that would be supportive of parenting. This finding is in opposition to prior work from Freisthler and Maguire-Jack (2015) who, using the same sample, found that collective efficacy (which included reciprocated exchange) was protective against physical abuse. Because the current study examined social control and reciprocated exchange separately and found that social control was protective against physical abuse in the higher income group, the findings in the prior study may have been driven by social control among those in the higher income group. Future research may consider the sources of support that parents rely upon most heavily, to determine whether, and for whom, neighbors may be significant.

None of our individual or neighborhood socioeconomic measures were significantly predictive of physical neglect, which was surprising given that socioeconomic attributes are typically more strongly associated with neglect than with abuse (Berger, Font, Slack, & Waldfogel, 2017; Drake & Jonson-Reid, 2013; Drake & Pandey, 1996). Yet, while these prior studies have found family income to be related to neglect, other individual or neighborhood socioeconomic attributes appear to play a limited role within income groups. Our finding that informal social control was not protective against physical neglect may suggest that physical neglect is primarily driven by ability, rather than willingness, of parents to provide for their children's basic needs. Regardless of whether a parent perceives that their neighbors are likely to intervene when a child's basic needs are unmet, when poverty is the driving factor, the parent has limited ability to make a change. Thus, to the extent that neglectful parenting in poor families is primarily due to a lack of resources, informal social control cannot be expected to have an effect. Higher income families, who have at least marginally greater resources at their disposal, may be better equipped to alter their behavior to meet the child's needs to avoid having their neighbors intervene.

Turning to supervision neglect, the only predictive socioeconomic attribute was neighborhood turnover, which was associated with lower odds of supervision neglect among lower income families only. Although we expected that neighborhood turnover would increase supervision neglect by limiting parents' childcare resources and potentially increasing stress levels, it may be that when neighbors are less known, parents keep a closer eye on their children. That is, parents may increase their supervision of their children or pay more attention to their activities in an effort to counteract neighborhood risks, whereas parents in more stable, safe neighborhoods may be less concerned about leaving their children unattended. Informal social control predicted lower odds of supervision neglect among higher income families only. This may suggest that higher income families are more attuned or sensitive to the expectations of their neighbors. However, as with physical

neglect, some aspects of supervision are heavily resource-driven, such as access to quality childcare, and thus there may be an inability among some lower income families to adjust their supervision in response to neighborhood expectations. Notably, for both physical and supervision neglect, we used a low-threshold measure, such that at least half of the sample was indicated for neglect. Prior studies have also used dichotomous indicators of neglect subtypes constructed from parent-report items (Berger et al., 2017; Font & Berger, 2015; Maguire-Jack & Font, 2017; Warren & Font, 2015). Because endorsement of at least one neglectful behavior was very common, many of these studies identified thresholds (e.g., 90th or 75th percentile) to create narrower constructs. Yet, there is no clear standard for identifying a threshold and such decisions may result in arbitrary distinctions. Indeed, when investigating associations between maltreatment types and children's socioemotional and cognitive development, there were no differences in findings when using a higher versus lower threshold for maltreatment (Font & Berger, 2015). Moreover, Maguire-Jack and Font (2017) found similar or somewhat stronger associations of individual and neighborhood poverty with neglect when using a measure of "any neglect" versus a 90th percentile threshold for neglectful behaviors. It is possible that associations between neighborhood characteristics and neglect would differ for higher versus lower threshold neglect measures, but prior research would not lead to such an expectation.

Limitations and Implications for Future Research

With regard to design, data are drawn from a cross-sectional survey that sampled within a single state and only included cities with populations between 50,000 and 500,000. Thus, we are unable to establish causality in the relationships examined and our findings may not be generalizable to other states or neighborhoods outside of midsize urban settings. In addition, the original survey from which the sample for this study achieved a response rate of 47%, and it is probable that those who selected into the survey differ from those who did not respond. In addition, the sample was limited to those with landline phones and parents whose children lived with them at least half of the time. In 2009, when the data were collected, 20% of children and adults lived in homes with only cellular phones; the nonelderly (those most likely of parenting age), those in poverty, Latinos, and those who do not own their homes are least likely to have landlines (Blumberg & Luke, 2015). Parents whose children do not live with them at least half time are likely to be fathers who were not partnered with the mothers. We were not able to adjust for nonresponse bias, and our estimates may be affected by the sample exclusion criteria. To the extent that parents without landline phones and parents who do not mostly reside with their children are relatively more disadvantaged groups, their exclusion from the study should result in an undersample of socioeconomically disadvantaged families and reduced variation in the characteristics of the sample of socioeconomically disadvantaged parents. As a result, the lower income study sample may include a

select sample of individuals who are more likely to have landline phones and their children in their homes. To the extent that this group is not representative of low-income families more generally, the findings from this sample may not generalize beyond the study sample. Future research should attempt to validate our findings with longitudinal data and with data from more diverse geographic contexts.

Turning to measurement concerns, we are reliant on parent-reported maltreatment, and parents are likely to underreport their maltreatment behaviors. Observed differences between those who are identified as having perpetrated maltreatment and those who were not may be distorted by the underreporting. Notably, however, alternative approaches to measurement, such as CPS substantiations, may be equally biased and subject to undercounting (Font & Maguire-Jack, 2015). Our measures of neighborhood conditions also rely on parents' self-report. There are likely unobserved parent attributes that influence both their perceptions of neighborhoods and the probability of perpetrating maltreatment, which may overstate the association between neighborhood processes and maltreatment. Additionally, it should be noted that the measure of reciprocated exchange relates to neighbors getting together informally for events and relying on each other for small favors and does not specifically ask about receiving help caring for children. The lack of specificity related to children may explain the lack of findings related to reciprocated exchange. We were also unable to measure an important aspect of neighborhoods—social cohesion, which relates to the feelings of trust between neighbors and the ability to rely on neighbors to help out in times of need. Overall, it would be beneficial to develop measures of neighborhood processes that are more specific to childcare or parenting, in order to better capture processes that may protect against child maltreatment. Lastly, any binary measure of income is necessarily crude and may be disregarding important variation within groups.

Implications for Policy and Programming

Overall, neighborhood-level interventions to prevent or reduce child maltreatment are rare, and there has been little evaluation of their potential. Our study highlights that the role of neighborhoods is complex and varies as a function of family income. Given our finding that residing in a high-poverty neighborhood increases the odds of physically aggressive parenting for lower income families suggests that neighborhood-level interventions may be an important avenue for prevention. From the moving to opportunities experiment, there is evidence of causal influences of residing in high-poverty neighborhoods on the stress and well-being of lower income parents (Ludwig et al., 2012). Although that experiment did not focus on maltreatment, consistent linkages between stress and maltreatment suggest that providing opportunities for families to move to lower poverty neighborhoods may be a strategy for preventing physical abuse. However, there is little evidence that the informal social control mechanisms commonly used to explain the adverse effects of residing in high-poverty neighborhoods apply to

maltreatment behaviors among lower income families (e.g., Barnhart & Maguire-Jack, 2016). This suggests that, instead of moving lower income families into lower poverty neighborhoods, addressing the stressors of high-poverty neighborhoods may be a more promising strategy.

Additionally, the lack of neighborhood influences on physical neglect suggests that neglect prevention efforts may be more successful if they are focused on enhancing economic resources and opportunities of lower income families rather than neighborhood processes. Addressing structural contributors to family poverty, such as the declining value of the minimum wage (Bernstein & Shapiro, 2006) and limited access to many of the country's antipoverty programs (Floyd, Pavetti, & Schott, 2015) may be a better approach to addressing physical neglect than focusing on neighborhood attributes or processes.

Although informal social control played no role for lower income families, it was protective against physically aggressive parenting and supervision neglect among higher income families. The perception of informal social control may be influenced by actual bystander behaviors. There is extensive research that supports bystander interventions as a prevention strategy for sexual assault, bullying, and other phenomenon; however, evidence that such approaches would work with child maltreatment are less clear (Saunders & Goddard, 2002). It is possible that targeted information campaigns that educate community members on how to identify and respond to suspected maltreatment may serve to increase informal social control.

Conclusion

Although communities matter for child maltreatment, important differences exist in the experiences of families related to their family's income. Parents who are struggling to make ends meet individually may be more impacted by neighborhood-level disadvantage and may be less able to be positively impacted by the informal processes that exist within neighborhoods. The current study suggests that strategies to reduce community-level disadvantage may be more successful in reducing maltreatment for families in poverty compared to strategies that are targeted at increasing neighborhood-level social capital.

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