

Child abuse potential: Correlates with child maltreatment rates and structural measures of neighborhoods

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ARTICLE INFO

Article history:

Received 22 August 2008

Received in revised form 9 April 2009

Accepted 14 April 2009

Available online 21 April 2009

Keywords:

Child abuse potential

Child maltreatment

Multi-level analysis

Neighborhoods

Hierarchical linear modeling

ABSTRACT

This community-based research investigates differential child maltreatment rates per 1000 same-age population within communities, and compares the rates to survey data that capture the potential for child abuse by a random sample of individuals in the same community in order to evaluate the impact of neighborhood conditions (e.g., maltreatment rates, child care burden, poverty) and individual factors (e.g., demographic and network support) on parents' potential for abuse. This study used a National Data Archive on Child Abuse and Neglect dataset comparing 20 census tracts and 400 cases of substantiated maltreatment claims. Data were analyzed with hierarchical linear models to account for the nested sampling design. The relationship between substantiated maltreatment in a given community and the potential to abuse was significant, and parents' potential for abuse increased when they were men, lived in impoverished communities, or were burdened by child care demands; abuse potential decreased when they were married (vs. single), working full time (vs. not working), had at least a high school diploma (vs. no diploma), enjoyed a higher income and when they had support from families and friends. Findings suggest that policymakers focus attention on increasing financial resources, educational opportunities, and relieving child care demands for families at risk of abuse.

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1. Introduction

Child abuse and neglect remains a salient social problem, thus warranting a continued evaluation of measurement tools used to assess child abuse potential. This paper investigates the impact of neighborhood structural factors on child abuse potential and substantiated child maltreatment rates within census tracts and block groups in a concentrated Cleveland, Ohio area. Particular attention is given to the examination of the relationship between child abuse potential and substantiated child maltreatment rates in these census tracts. Although two studies assess the etiology of child maltreatment using a comprehensive multi-level analysis, (Korbin & Coulton, 1996; Reppucci, Woolard, & Fried, 1999), many studies have shown a correlation between neighborhood structural factors and child abuse and neglect (Coulton, Korbin, & Su, 1999; Freisthler, Midanik, & Gruenewald, 2004; Hay, Fortson, Hollist, Altheimer, & Schaible, 2007; McWayne, McDermott, Fantuzzo, & Culhane, 2007).

Abusive and neglectful parental behavior is most often viewed solely as an individual level deficiency, however, behaviors displayed by parents and children are often impacted by environmental influences. This study joins the growing research that incorporates assessments of individuals and families in context using hierarchical linear modeling (HLM) in order to investigate the impact of nested

levels of data. Studying parents nested in neighborhoods allows for determining the relationship between parents with the potential to abuse children and the child maltreatment rates in their communities.

Typically, child maltreatment rates are measured by the prevalence of substantiated instances of child abuse and neglect. However, these data don't allow for a delineation of physical abuse and neglect because Ohio doesn't distinguish between the two in order to arrive at their child maltreatment rates. Alternatively, the potential of parents to abuse their children is measured by a widely used and validated instrument, the Child Abuse Potential Inventory (CAP), developed by Milner (1986, 1994). Of particular interest is determining whether the CAP instrument is capturing the potential for parents to abuse and neglect children as indicated and represented by the substantiated child maltreatment rates within these communities. Perhaps groups of families with relatively low potential to abuse their children live in concentrated neighborhood areas characterized by high-substantiated child maltreatment rates. One would expect CAP rates to be indicative of the substantiated maltreatment rates in similar communities, if not; this could be a systematic bias issue regarding child abuse reporting and social worker disposition decisions. Or possibly, the potential to abuse is not as positively correlated with actual incidences of maltreatment as would seem logical. This inquiry seeks to demarcate neighborhood characteristics in areas with higher rates of maltreatment than the potential to abuse (CAP) scores in those areas.

In addition to assessing the relationship between CAP scores and child maltreatment rates among neighborhoods, this study seeks to

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delineate individual level characteristics that may influence CAP scores within areas characterized by certain neighborhood structural measures. An assessment such as this will illuminate any connections between neighborhood rates of maltreatment and variables that demonstrate either a positive or negative relationship with the individual potential to abuse.

2. Study overview

This paper presents a secondary data analysis of a large dataset, entitled *Neighborhood and Household Factors in the Etiology of Child Maltreatment*, collected by Jill Korbin and Claudia Coulton (principal investigators) of Case Western University, in which the structural neighborhood and environmental factors were assessed in an effort to predict the potential for child abuse. Given that the dataset is quite extensive, specific attention will be given to assessing the association between child abuse potential due to neighborhood factors and actual substantiated rates of child abuse maltreatment within these neighborhoods. A line of inquiry centers on determining a possible relationship between community level mean CAP scores and community level substantiated maltreatment rates. Additionally, this paper inquires about how certain individual and community level factors relate to the CAP scores, and whether certain community level factors possibly moderate the relationships between individual level factors and CAP scores.

Cross-level interactions between the individual risk and/or protective factors and the neighborhood structural measures will be identified in order to assess the impact on child abuse potential scores. Investigating these interactions fits within an ecological framework, which assumes that there are multiple levels of explanation for child maltreatment, such as individual characteristics and socio-environmental factors. Based on previously studied components of the prevalence of child abuse and neglect, theoretical principles and the relationship between external environments and individual behavior, this study expects to find a moderate relationship between child maltreatment rates and child abuse potential (CAP) scores within neighborhoods. Further, it is expected that community level factors moderate certain relationships between the individual level factors and the potential to maltreat children.

2.1. Literature review and theoretical underpinnings

In order to apply context to this type of inquiry, the concept of a neighborhood needs to be highlighted and addressed as it influences micro level behavioral dynamics. Sampson, Morenoff, and Gannon-Rowley (2002) provide a succinct definition of neighborhood as “ecological units nested within successfully larger communities” (p.445). Moreover, Nicotera (2005) defines neighborhoods as “complex, multidimensional ecosystems that are shaped by forces from within and without” (p.220). Understanding the child and family within their context is an essential component of assessment and treatment planning. Family, community, societal, and political factors need to be taken into consideration when investigating child maltreatment in order to conduct a comprehensive evaluation (Garbarino, 1977; Belsky, 1980). Thorough best practice mandates addressing the causes, consequences and ensuing treatment formulations for abused children (US Dept. of Health and Human Services, 1997), while maintaining cognizance of contextual factors.

Seminal studies have noted a host of characteristics associated with child maltreating families, such as, single parenting, lack of social supports, low parental educational attainment, poor parent/child relationships, minority ethnicities, inadequate parenting, and those living in unstable and poverty stricken environments (Black, Heyman, & Slep, 2001; Chaffin, Kelleher, & Hollenberg, 1996). The following review of literature highlights the multi-level factors that impact the prevalence of child maltreatment. This section is couched in a

discussion of theoretical underpinnings appropriate for the study of child abuse and neglect. As such, the theoretical principles employed in this analysis incorporate components of social capital theory (Coleman, 1988) and family stress theory (Hill, 1949), which provide an analysis based on a comprehensive melding of deductive explanation. These theories represent instructive guidelines for an analysis appropriate for the nature of these multiple levels of data because they capture intricacies of familial relationships in the context of their outer environments. For instance, social capital theory can be appropriately applied as an explanation highlighting the importance of the predictor variables used in these analyses—support from family and friends.

Particularly analogous to multi-level studies is the ecological perspective, which recognizes that individuals and families are in dynamic transactions with the outer socioeconomic and political environments. Moreover, these fluid interactions are embedded within the cultural context (Germain & Gitterman, 1996). Child abuse and neglect does not occur in a vacuum, hence assessment and intervention methods should be guided by a comprehensive understanding of outer layers of influence. Individuals and families live in and interact with communities, and as such, neighborhood characteristics and processes should not be separated from the behaviors of those families. Whereas, the potential to abuse children is subject to environmental influences, similarly, the substantiation of child maltreatment is indirectly impacted by societal influences (Garbarino, 1995). There are complex interactions among individuals, families, and communities, all of which are either subject to individual and societal protective factors or risk factors for continued child abuse (Little & Kantor, 2002; Cox, 1997). Child abuse potential has been assessed as it relates to family functioning (Mollerstrom, Patchner, & Milner, 1992), gender differences (Perez-Albeniz & de Paul, 2004), intimate personal violence (Casanueva & Martin, 2007), and of particular interest, the validity of the CAP scale and challenges for reliable assessment (McNary & Black, 2003).

At an individual level, child maltreatment risk factors include parental substance abuse (Dore, Doris, & Wright, 1995; Chaffin et al., 1996), depression (Chaffin et al., 1996; Zuravin & DiBlasio, 1996; Kotch et al., 1995), maternal distress, parental history of physical abuse and corporal punishment as children (Mohr & Tulman, 2000), and intimate partner violence (Little & Kantor, 2002). Conversely, protective factors are indicated based on the child's age and developmental stage, parental coping abilities, intelligence, and available social supports (Garmezy, 1985). Family factors have been identified to include the dynamics of family interactions, family stressors, financial difficulties, chronic poverty, and unemployment. Further, at the community level, social isolation, job availability, access to community services, formal and informal social supports, and peer groups of family members influence the propensity for child maltreatment (Reppucci et al., 1999; Fegan & Bowes, 1999; Little & Kantor, 2002).

Parenting with consistently limited resources can be difficult and most often leads to neglect, as a form of child maltreatment (Gaudin, 1993). Social capital theory (Coleman, 1988) addresses this issue of resource availability and can be directly applied to families interfacing with the child welfare system, as 59% (AFCARS Report) of substantiated reports of child maltreatment are due to neglect. It is theorized that all individuals rely on social capital, measured by available resources and acceptable social networks (Garbarino & Abramowitz, 1992; Vinson, Baldry, & Hargreaves, 1996) in order to successfully manage our life trajectories. In addition to the impact of limited resources as a risk factor for child neglect, limited resources at the familial level are influenced by the available community resources. This supports a need to assess how social capital impacts multiple levels of analysis.

Kasarda and Janowitz (1974) posit a systemic model of community as a complex system of friendship and kinship networks, inclusive of formal and informal ties, encouraging social cohesion and social trust.

Fewer networks and less social cohesion serve to negatively impact individuals living in poverty stricken communities. In order to address child maltreatment and the parents' potential to abuse at the community level, one must have a thorough understanding of the levels of social capital. Social networks of neglectful parents have been documented as smaller than those of non-neglecting parents (Gaudin, Polansky, Kilpatrick, & Shilton, 1996). Moreover, Cooley (1996) has found families with smaller networks to have less frequent contact with these networks, thus supporting higher levels of social isolation.

Poverty is an indicator of low levels of social capital and highly related to families interfacing with the child welfare system (Jack & Jordan, 1999), as documented by the leading causes of child removal – supervisory neglect and neglect of basic needs. Financial stability is a powerful protective factor for familial economic stressors that lead to unmet needs of children. Spearly and Lauderdale (1983) assessed county rates of child abuse and reported lower child maltreatment rates in counties with higher average welfare payments, even when controlling for county income, family structure and the number of children.

Whereas, there is greater potential for abusive behavior from parents who have low levels of education and limited knowledge of effective parenting, Drake and Pandey (1996) posit neglect is more often than not due to poverty, lack of resources, and child care burden. Cooley (1996) has documented neglecting moms receiving fewer instrumental and material resources. Moreover, other scholars have noted a strong positive association between economic stress and rates of neglect and abuse (Garbarino & Sherman, 1980; National Center on Child Abuse and Neglect, 1988; Coulton & Pandey, 1992; Durkin, Davidson, Kuhn, O'Connor, & Barlow, 1994; Chaffin et al., 1996).

In addition to poverty as an indicator of child maltreatment potential, single parenthood has also been documented to be positively associated with child abuse and neglect. Single parenthood places heightened stress on parenting responsibilities, and thus impacts the parent–child relationship. Family stress theory (Hill, 1949) provides a framework for understanding the impact of familial stressors on behavior. Stress is defined as the tension you feel when there are more demands than you can handle and stressors are anything seen as a problem or issue— events that cause an emotional or physical reaction. These concepts manifest as family stress when tension and pressure arise due to distress (too much discomforting stress) and not enough eustress (healthy stress that works to motivate one in a positive way) (Hill, 1949).

Family stress theory provides an explanation for many of the problems experienced by single parents; especially those who live in economically depressed neighborhoods. Research has documented other correlates of single parenthood, such as, low levels of income, social support, and resources, as well as increased child care burden. Everyday stressors, depressive symptoms, and abusive parenting style were noted in an analysis of psychosocial stressors among single parents (Lutenbacher, 2002). Conversely, other studies report the single parent status effect diminishing when other psychological variables are present, such as depression, anxiety, and substance abuse (Zuravin & DiBlasio, 1996). All of the above situational circumstances are prone to have either a negative or positive impact on parents' ability to reduce unhealthy stress and parent effectively.

The rates of child maltreatment have been found to vary across neighborhoods, however documented neighborhood differences on child abuse potential were small and explained mostly by structural factors (Coulton et al., 1999). Attributions are not only made about particular behavior, but inferences about communities are considered as well. The multidimensional factors among families and neighborhoods pose challenges in an accurate assessment and may lead to attribution errors regarding abuse and neglect. Moreover, based on these possible attribution errors, there may also be some surveillance inequities with regard to child abuse reporting practices, which is directly related to substantiating abuse allegations. For instance, Hampton and Newberger (1985) found that the poor were subjected to more surveillance.

Logically, more surveillance would lead to more reports, thus the opportunity for substantiating these reports.

As demonstrated by the above review of pertinent literature, determining child abuse potential and the relationship with neighborhood rates of child maltreatment requires a multi-layered assessment. Garbarino and Sherman (1980) captured the intricacies of familial/ neighborhood interactions and discovered communities with similar socioeconomic and racial profiles, however these communities had different reported rates of maltreatment. Other scholars conducting multi-level and social area analyses have suggested that levels of household income, the balance of stressors, levels of support, family stability, life cycle status, residential stability, density, ethnic heterogeneity, and home ownership impact successful functioning of families within communities (Belsky, 1993; Freisthler et al., 2004; Sampson et al., 2002). As demonstrated, this type of analysis requires an all-inclusive approach with the melding of explanatory theoretical underpinnings in order to identify appropriate interventions to address the propensity to abuse children and prevalence of substantiated child maltreatment.

3. Methods

The design employed presents a multi-level model, hierarchical linear modeling (HLM). HLM is appropriate for nested respondents in neighborhoods, in that it provides estimates of variance components and allows for modeling of the variation between and within neighborhoods using factors at both individual and neighborhood levels (Raudenbush & Bryk, 2002). Level one variables are modeled to explain differences among individuals and level two explanatory factors are modeled for between neighborhood variation. HLM is a specialized software that allows one to assess data that involves group effects on individuals and inquire about factors that cause variables at one level to influence variables at another level.

HLM allows for the most rigorous analyses of data in a nested structure, with multiple levels, thus enabling the researcher to explain variation at the individual level using group level variables (Raudenbush, Bryk, Cheong, & Congdon, 2004), and is particularly appropriate to capture the intricacies of possible correlates amongst individual families nested within neighborhoods. Moreover, HLM controls for intra-class correlation, which is measured as the ratio of the variance between neighborhoods to the total variance. The study analyses seek to explore a *main effect* assessing positive and negative correlations between rates of maltreatment at the neighborhood level and child abuse potential at the individual level. Thus answering the question, do areas with higher rates of maltreatment also have a higher individual potential to abuse?

Data were obtained from a large dataset entitled *Neighborhood and Household Factors in the Etiology of Child Maltreatment*, collected by Jill Korbin and Claudia Coulton (principal investigators) of Case Western University. The principal investigators reported the following demographic characteristics in their final report (Korbin & Coulton, 1999). Neighborhoods were assessed in the city of Cleveland, a northern industrial city with high levels of poverty, and racial and economic segregation. The overall child maltreatment rate was 36.3 per 1000 children at the time of the study; however, there is considerable variation among neighborhoods on economic conditions, demographic characteristics, and the incidence of maltreatment. Variables were measured on individual respondents and the neighborhoods in which they lived.

A two stage sampling strategy was utilized: neighborhoods and respondents within those neighborhoods. A stratified sample of neighborhoods (residential census tracts in Cleveland, $n = 196$) was selected based on three factors at the census tract level: impoverishment, child care burden, and predominantly African-American, European-American, or mixed ethnicity neighborhoods. Further, they were dichotomized at the mean resulting in twenty (20) census tracts

Table 1
Descriptive statistics for variables.

Variable	Mean/ percentage	Std. dev.	Min.	Max.
<i>Level 1 individual</i>				
CAP score	109.8	80.05	2	419
Age	34.2	9.51	18	88
Marital status (1 = married)	45%	0.50	0	1
Gender (1 = male)	18%	0.39	0	1
Employment FT (1 = full time)	43%	0.50	0	1
Employment PT (1 = part time)	25%	0.44	0	1
Education (1 = HS diploma and above)	73%	0.45	0	1
Total family income (see Table 1)	2.85	1.71	1	7
African-American (1 = A-A)	52%	0.50	0	1
European-American/other (0 = E-A/Other)	38%	0.49	0	1
Latino (1 = Lat)	7%	0.26	0	1
Family support	4.0	1.16	1	5
Friends support	3.9	1.12	1	5
<i>Level 2 neighborhood</i>				
Mean CAP scores	110.4	19	61	151
Child maltreatment rates	38.0	18.24	7.52	76.73
Child care burden	−0.25	1.04	−3.74	1.03
Impoverishment	−0.06	0.87	−2.66	1.76
Instability	0.35	1.07	−2.15	2.11

randomly selected representing each strata (Coulton et al., 1999). One block group was randomly selected from each census tract and twenty (20) parents of children under the age 18 were selected from each block group to participate in the survey. Four hundred households met the inclusion criteria and completed interviews (Coulton et al., 1999).

Level one and two predictor variable descriptive statistics inclusive of percentages for those recoded variables can be found in Table 1. These variables were chosen for inclusion based on previous literature, theory and the appropriateness for addressing the questions of focus in this inquiry. As mentioned above, single parenthood, poverty levels, unemployment, and levels of education are all predictors of the potential to abuse and neglect children. At the neighborhood level, measures were included in order to capture community impoverishment, child care burden, and residential stability. A large percentage of the included sample were women (82%), just under half were married (44%) and under half were employed full time, all year long (43%). The education variable was dummy coded for ease of interpretation, thus 73% of respondents have at least a high school diploma. Family income falls along a continuum ranging from 1 to 7. The mean family income is just under 3, which is under \$30,000 per year.

3.1. Individual household level measures

Household level measures are as follows: *Neighborhood Environment for Children Rating Scales* (parents' perceptions of various characteristics of their neighborhoods); *Child Abuse Potential Inventory* (provided the outcome measure of parents' potential to perpetrate child maltreatment – abuse and neglect); *Conflict Tactics Scale* (used to measure child abuse in the family of origin, treated as an individual level control factor); *Multidimensional Scale of Perceived Social Support* (12-item self-report with three subscales— family, friends, and significant others; internal reliability for the total scale is .88 with a test–retest reliability of .85); *Demographic Questionnaire* (17-items collecting information on household demographic characteristics); and *Opinions about Child Maltreatment Questionnaire* (21-items collecting information on parents' attitudes and beliefs about child maltreatment). Table 2 below annotates the original coding and recoded measurements of the respondent level items.

The Child Abuse Potential Instrument (CAP) is used as the outcome variable at level one with marital status, education level, family income, ethnicity, and two subscales from the *Multidimensional Scale of Perceived Social Support* – support from friends and family as inde-

pendent variables. The CAP has split-half reliabilities ranging from .93 to .98 and Kuder Richardson 20 coefficients ranging from .85 to .96 have been reported for different gender, age, educational level, and ethnic groups (Milner, 1986). It also has high specificity and sensitivity in identifying those at risk for physical abuse (Milner, 1994). The Child Abuse Potential Inventory continues to be re-assessed and validated. The CAP scale has been deemed efficient in its predictive attributes for identifying those 'at risk,' as well as consistent in accurate classification rates in the 80%–90% range for physical abuse (Chaffin & Valle, 2003). A brief form of the scale, the Brief Child Abuse Potential Inventory (BCAP) was developed and validated with a focus on CAP variance and as related to child protective services reports and resulted in similarities with the CAP (Ondersma, Chaffin, Mullins, & LeBreton, 2005).

Given the previous discussion about the prevalence of neglect under the umbrella of child maltreatment, please note the modified version of the CAP instrument is inclusive of experimental neglect items. The individual level variables annotated in Table 1 were recoded as such for ease of interpretation based on the concepts of interest.

3.2. Neighborhood level measures

In addition to the neighborhood characteristics measured at the census tract level, respondent opinions regarding neighborhood items were addressed in an oral interview and child maltreatment items were answered in a self-administered format.

Structural measures were derived from 1990 census data through a factor analysis. The structural measures are as follows: *impoverishment* (family headship, poverty rate, unemployment rate, vacant housing, population loss, percent black), *instability* (movement, tenure under 10 years, recent movement), and *child care burden* (child/adult ratio, male/female ratio, elderly population). Rates of child maltreatment in census tracts were computed as substantiated and indicated reports of abuse and neglect to the Department of Family and Children's Services.

At the second level of analysis are census tract level variables – maltreatment rates, impoverishment, child care burden and neighborhood instability. The application of HLM to these data allows specific modeling based on the inquiry and provides a rigorous analysis in consideration of the multi-leveled variables.

3.3. Analysis

A HLM random coefficients regression model was employed, allowing for the intercepts of the level one model to vary across level two units (Luke, 2004). In this kind of analysis, level one intercepts

Table 2
Variable coding.

Variable	Original coding	Recoding
Child Abuse Potential score (CAP)	Continuous scale scores	Same
Age	Actual	Same
Marital status	Six categories	Married = 1 others = 0
Gender	Female = 1 male = 2	Male = 1 female = 0
Employment	Six categories	Full time/all year = 1 others = 0 Part time = 1 others = 0
Education	Fifteen categories	At least HS = 1 under HS = 0
Income	Eighteen categories	<10 K = 1 10,001 to 20 K = 2 21,001 to 30 K = 3 30,001 to 40 K = 4 40,001 to 50 K = 5 50,001 to 60 K = 6 >60 K = 7
Ethnicity	Six categories	A-A = 1 others = 0 Latino = 1 others = 0
Family support	Continuous scale scores	Same
Friends support	Continuous scale scores	Same

and slopes are modeled using level two predictors. HLM is appropriate for the nested structure in this dataset because oftentimes the independence assumption is violated with variables such as these, due to the possible collinearity of individuals nested within neighborhoods. Multi-leveled modeling allows for correlated error structures, thus relaxing the independence assumption (Luke, 2004). Of import with these analyses are the statistical parameters — fixed effects regression parameters and the variance components for the random effects. Analyses were based on 400 parent respondents at level one and 20 census tract defined neighborhood areas at level two. The final analyses were run with the deletion of data from one census tract (19 total), thus decreasing the respondent inclusion to 380. Individual level data in the missing tract was compared to the other tracts and it was determined that there were not significant differences between the existing census tracts and the missing tract. Individual scores were centered around each group's mean and as such results in an unadjusted mean for groups (e.g. the variance among the level two group means) resulting in an assessment of between group variation (Raudenbush & Bryk, 2002).

HLM predicts slopes as well as intercepts (means) allowing for output from cross-level interactions, whereby we can attempt to understand what explains differences in the relationship between level one variables and the outcome. The level one model is used to explain differences among respondents based on predictor variables. The level two model was employed in order to assess possible cross-level interactions between neighborhood characteristics and individual variables on CAP scores. For instance, a model such as this can determine a relationship between single parents living in impoverished communities on CAP scores. The level one slopes were treated as fixed in both models or rather common to each respondent and not necessarily different per community. The outcome variable (CAP scores) is predicted as a function of a linear combination of one or more individual (level one) variables. Child maltreatment rates are used as level two predictor variable because they are measured in the unit of level two variables and the dependent variable (CAP) needs to be at the same level as the lowest level of variables. Centering the individual level predictors around the group mean aids in assessing cross-level interactions. Group-mean centering allows for the within-community (level one) model to produce an estimate of the mean CAP score for a community, which is in turn used as an outcome in the between-community (level two) model. The level two model presents CAP means as a function of the community level variables, which highlights the relationship between community CAP means and maltreatment rates, holding the community level two predictors constant. Of note, HLM forces the treatment of CAP scores as the outcome variable in the between community model because information about maltreatment is not available at the individual level. Additionally, level one and level two models are combined and estimated using restricted maximum likelihood.

Based on the inquiry regarding the relationship between CAP scores and child maltreatment rates while considering neighborhood characteristics, the main effect should explicate positive and negative correlations between rates of child maltreatment at the neighborhood level and potential to abuse at the individual level. Further, this modeling can provide information on the possibility of child abuse rates mediating the relationship between neighborhood characteristics and child abuse potential.

4. Results

Prior to the hierarchical linear analyses including all level one and level two variables, preliminary analysis steps were taken in order to determine the relationship between individual CAP scores and neighborhood child maltreatment rates without the covariates. The cross-sectional nature of these data hinder the ability to determine which variables are dependent on others or not, so causality cannot be

assumed. These initial analyses were performed as an Ordinary Least Squares (OLS) regression, as well as HLM to assess the multi-level relationship between child abuse potential scores and community child maltreatment rates. After generating a variable defining the mean CAP scores for each neighborhood, as expected, the Pearson's correlation between these mean scores and the neighborhood rates of child maltreatment revealed a statistically significant positive linear relationship ($r = .48$, $p = 0.00$). Additionally, a linear regression demonstrated that neighborhood child maltreatment rates is a significant predictor of CAP scores ($\beta = .51$, $p = 0.00$), accounting for 23% of the variance in CAP scores (Fig. 1). These findings serve to validate community mean CAP scores as a measure of the extent of or likelihood of actual maltreatment in communities.

The first step in determining whether HLM is an appropriate method of analyses for these nested data requires an assessment of the variance components for the initial random effects, thus explaining the percentage of variation between individual CAP scores and neighborhood child maltreatment rates. The degree to which neighborhoods vary in their mean child abuse potential scores was investigated using HLM to compute a one-way random effect ANOVA, an unconditional means model (baseline model). Based on the variance components, the intra-class correlation is .01, indicating the portion of the total variance in individual CAP scores that occurs between neighborhoods (Table 3).

In order to assess whether neighborhoods with high child maltreatment rates also have high CAP scores or understand why there is a neighborhood difference on CAP scores, an HLM model was implemented also known as a regression with means as outcomes. The variance component representing the variation between neighborhoods decreases greatly from the previous unconditional means model (from 74.455 to .593), which indicates that maltreatment rates explain a large portion of the variation in neighborhood mean CAP scores. Computations based on these variance components indicate the proportion of variance in the mean CAP scores explained by the maltreatment rates is .99. In other words, 99% of the explainable variation in the neighborhood mean CAP scores can be explained by the maltreatment rates. Consequent computations of variance components demonstrated significant variation in neighborhoods regarding age, marital status, part-time employment, and income. Interpreting the results of these HLM analyses, a significant R^2 indicates that after controlling for the variable, the variation among neighborhood mean CAP scores still needs to be explained (Table 3). The amount of unexplained variation among the predictor variables suggests the importance of assessing CAP scores in relation to maltreatment rates in this modeling process.

Correlations between CAP scores and the covariates, as well as neighborhood child maltreatment rates and the covariates were

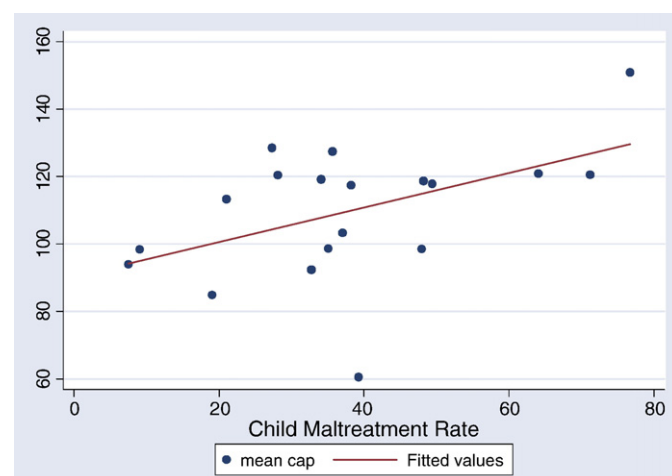


Fig. 1. Correlation with regression line: mean cap scores and maltreatment rates.

Table 3

Variation between neighborhoods: child abuse potential scores, maltreatment rates and predictors.

	Coefficient	Standard error	p
Intercept	109.787	4.417	0.00
Random effect variance component			74.46
Maltreatment rates	0.511	0.159	0.01
Random effect variance component			0.59
<i>Proportion of variance explained – R²</i>			
By CAP scores			0.01
By maltreatment rates			0.99
By age			0.98
By family support*			–4.66
By friends support*			–1.68
By marital status (married)			–8.73
By African-American*			–19.10
By Latino*			–45.04
By gender (male)*			–15.63
By full-time employment*			–22.03
By part-time employment			–7.32
By education*			–13.69
By income			–0.72

Note: Dependent variable is CAP score. Only maltreatment rates were included as an explanatory variable. Negative R^2 in HLM analyses is a function of decreasing variance explained at the second level, indicating the variable has almost no variation at one of the levels (Roberts & Monaco, 2006).

* $p < 0.05$.

assessed in order to highlight singular relationships that may impact the results of the full model HLM. Pearson's correlation reveals the following predictor variables as significantly correlated with individual CAP scores: maltreatment rates ($r = 0.12$, $p = 0.02$), family support ($r = -0.41$, $p = 0.00$), friends support ($r = -0.33$, $p = 0.00$), married ($r = -0.23$, $p = 0.00$), full time employment ($r = -0.12$, $p = 0.02$), education ($r = -0.29$, $p = 0.00$), income ($r = -0.29$, $p = 0.00$), and impoverishment ($r = 0.13$, $p = 0.02$). The following predictor variables are significantly correlated with neighborhood maltreatment rates: African-American ($r = 0.20$, $p = 0.00$), Latino ($r = -0.13$, $p = 0.01$), education ($r = -0.17$, $p = 0.00$), income ($r = -0.04$, $p = 0.48$), child care burden ($r = 0.31$, $p = 0.00$), impoverishment ($r = 0.16$, $p = 0.00$), and instability ($r = -0.12$, $p = 0.02$).

The above preliminary analyses support the appropriateness of implementing HLM to address this inquiry. HLM analysis results can be found in Table 4. Results from the model are reported inclusive of the coefficient, standard error and significant p -values. Given the complexity of the analysis, a goodness of fit test was applied using Raos' chi-square test. Based on this test, chi-square was not significant; generating a p -value of .99, thus indicating the full model (level two) is no better suited than the restricted model (level one).

The first model investigated respondent characteristics (level one) and neighborhood characteristics, inclusive of maltreatment rates as main effects. The level two model examined the cross-level relationships. Annotated in Table 4 are the main effects of level one variables listed (labeled in column one) as intercepts of the respondent characteristics. Level two variables presented as moderating the level one intercept (CAP scores) are presented as main effects (labeled in column two). Results of model one are presented in column three and significant findings from model two will be highlighted below. Statistically significant p -values are annotated accordingly.

Model one results annotated in Table 4 indicate the following eight significant findings related to child abuse potential (CAP) scores within the census defined neighborhoods:

- Those with more child care burden ($\beta = 12.73$, $p = 0.00$) have significantly higher CAP scores.
- Those living in impoverished communities ($\beta = 21.05$, $p = 0.00$) have significantly higher CAP scores.

- Respondents with higher levels of family support ($\beta = -19.27$, $p = 0.02$) are likely to have lower CAP scores.
- Respondents with higher levels of support from friends ($\beta = -9.35$, $p = 0.00$) are likely to have lower CAP scores.
- Married people ($\beta = -18.33$, $p = 0.02$) have significantly lower CAP scores.
- Men ($\beta = 25.23$, $p = 0.00$) have significantly higher CAP scores.
- Having at least a high school diploma ($\beta = -33.63$, $p = 0.00$) indicates lower CAP scores.
- Higher levels of income ($\beta = -6.16$, $p = 0.02$) have significantly lower CAP scores.

A second model was run including all level two variables interacting with all level one variables (not displayed). Higher levels of child care burden ($p = 0.04$) and impoverishment ($p = 0.01$) are directly related to higher child abuse potential scores. However, the impact of child care burden is far less when considering the moderating effect of neighborhood characteristics than in the first model ($p = 0.00$). Only one significant interaction between individual and neighborhood level variables, indicating neighborhood characteristic moderating effects was found in one of the modeled relationships: those employed part time. Respondents working at least part time have lower CAP scores within neighborhoods with more residential stability ($p = 0.04$).

Additionally, an assessment of child maltreatment rate interactions with other neighborhood characteristics (e.g. rates \times child care burden) was conducted in order to illuminate any relationships between neighborhood rates of maltreatment and variables that demonstrate either a positive or negative relationship with individual child abuse potential. For example, in areas with high child care burden and high rates of maltreatment, are levels of child abuse potential higher or lower? None of the interactions generated significant relationships, hence these analyses were inconclusive.

5. Discussion

As would logically be expected, the mean CAP scores for communities as a measure of the potential to maltreat children is significantly positively related to community child maltreatment rates. However, with the introduction of covariates both at the individual level and community level, the relationship dissolves. This

Table 4

Hierarchical linear model analysis of child abuse potential scale.

Respondent characteristics (level 1)	Neighborhood characteristics (level 2)	Model 1		
		Coefficient	Standard error	p
Intercept	Intercept	110.19	3.58	0.00
	Child maltreatment rate	0.16	0.15	0.30
	% Child care burden	12.73*	3.12	0.00
	% Impoverishment	21.05*	4.86	0.00
	% Instability	3.76	2.71	0.19
Age	Intercept	–0.14	0.30	0.64
Family support	Intercept	–19.27*	4.27	0.00
Friends support	Intercept	–9.35*	4.03	0.02
Married	Intercept	–18.33*	7.68	0.02
Full time employment	Intercept	–10.62	8.92	0.24
Part time employment	Intercept	–9.74	10.01	0.33
African-American	Intercept	15.17	10.62	0.15
Latino	Intercept	–3.19	15.42	0.84
Male	Intercept	25.23*	8.23	0.00
High school diploma and above	Intercept	–33.63*	10.99	0.00
Income	Intercept	–6.16*	2.53	0.02
Likelihood function		–2.009880		
df		14		

Note: each predictor is centered around its group mean.

* $p < 0.05$.

lends to the proposed suggestion that certain community level factors moderate the relationship between child maltreatment rates and CAP scores. Given the choice of included variables was based on predictors of parents who abuse, not solely those with the potential to abuse, one would expect the actual rates of maltreatment in these neighborhood areas to follow suit and be correlated. The major findings generated from this study—higher levels of support, and lower levels of poverty and child care burden are indicative of decreased child abuse potential scores—are aligned with previous findings in studies assessing correlates of child maltreating families. Support from family and friends, poverty, and child care burden can be viewed as external to parental deficiencies, hence the appropriateness of analyzing abusive parents in context. Moreover, *Coulton et al. (1999)* have noted that context plays an important role because child abuse potential scores are more evenly distributed across communities than actual maltreatment rates.

The results of the model presented based on the impact of the level one independent variables are not surprising given the literature. According to previous literature, the primary factors associated with child maltreating families present as both personal characteristics (e.g. depression, low parenting skills, low educational attainment) and environmental/situational circumstances (e.g. social support and networks, single parenthood, low income, unstable and impoverished communities). This study represents a departure from previous studies regarding CAP scores and child maltreating families, with the inclusion of multi-level modeling, however the main findings are closely aligned and provide further validation of key predictors—at both individual and community levels—of abusive parents.

These findings demonstrate an intrinsic correlation between the potential to abuse and substantiated instances of maltreatment at the community level given neighborhood rates of maltreatment are related to CAP scores. Parents living in neighborhoods characterized by the abovementioned neighborhood level risk factors for abusive behavior coupled with high maltreatment rates would be expected to have higher CAP scores. The complexity of this issue warrants further study focused on distinguishing between parents who are likely to abuse and those who actually abuse, as one would expect these characteristics to be similar.

A nested model such as this allows for an assessment of the impact of neighborhood structural factors on individual factors. It is clear that living in an impoverished neighborhood and having child care burden remain large indicators of higher child abuse potential scores. The previous discussion regarding the impact of poverty is supported by these findings, as is the impact of family stress due to child care burden (*Jack & Jordan, 1999; Drake & Pandey, 1996*). Moreover, these results make sense in light of the large proportion of children who have substantiated reports of maltreatment based on neglect alone. Poverty prevents families from meeting their basic needs and child care burden generally equates to lack of supervision, a form of neglect.

This study is similar to previous literature reporting that single parenthood status is highly correlated with maltreating parents (*Black et al., 2001; Chaffin et al., 1996; Lutenbacher, 2002*). Given the majority of single parents are women, results from this study are thus supported by the significant relationship between being married and low CAP scores. Perhaps female single parenthood status is more closely aligned with substantiated child maltreatment rates, but the male gender alone is more predictive of the potential to abuse.

Noting the large sample of women, because of their primary role in caretaking, it is interesting that the small number of men have significantly higher CAP scores. Perhaps this is explained by the more aggressive nature in men. However, this might be different if there were separate measurements of abuse and neglect.

Results from this study indicate high levels of support from family and friends have a significant negative association with CAP scores. Both measures of support have relatively high mean scores and literature posits that high levels of support should lower stress and

decrease the risk for child maltreatment (*Reppucci et al., 1999; Fegan & Bowes, 1999; Gaudin et al., 1996*), thus acting as a buffer and protective factor for distressed families. Further research needs to be conducted in order to delineate the relationship between social support and the potential to abuse versus actual child maltreatment rates.

Based on the primary tenets of social capital theory, these results support continued investigation of parent–child relations in the context of external social networks of family and friends. Social support may manifest in ways that have not been considered as a salient protective factor and component of child abuse prevention. Moreover, support from family, friends, and marital spouses potentially decreases familial stress, enhances coping mechanisms (*Hill, 1949*), and is closely related to available resources (*Garbarino & Abramowitz, 1992*).

Those charged with substantiating reports of child abuse and implementing interventions would benefit from incorporating an assessment of social capital available to families. Addressing the impact of one's social network can provide utility in evaluation and treatment planning. As mentioned above, families may have informal and formal ties that serve to increase access to resources and services, inclusive of provisions of basic needs and child care. Given this support is an extension of the family, it can also be assessed at the community level and suggests intervention planning from an ecosystems perspective.

These findings have implications for intervention and policy in that, there appears to be a disconnect between characteristics of those with a high likelihood to abuse and characteristics deemed predictive of child maltreatment. Perhaps these issues can be addressed by studying patterns of surveillance within communities in order to accurately measure and compare maltreatment rates with the residents' potential to abuse within neighborhoods. *Sampson and Raudenbush (2004)* have completed a study addressing the differences in perceptions of disorder. They have suggested that people's perceptions are reliant on social meanings that perpetuate discrimination (*Sampson & Raudenbush, 2004*). A study such as this, applied to child maltreatment, would provide further clarification regarding the perception of abusive behavior from the perspective of parents and child protective service workers. Moreover, perhaps examining the perceptions of parents, those reporting child abuse and those making dispositions will provide further insight regarding the relationship between maltreatment rates and child abuse potential within neighborhoods.

The importance of moving towards incorporating a multi-faceted assessment of families in their environmental context is ever salient. Human behavior and the dynamics between individuals and their surroundings are as important as understanding how decisions made about people are also impacted by outer layers of influence. Scholars should continue to tease out the intricacies of multiple levels of interactions, thus adding texture to our understanding of social problems and encouraging comprehensive interventions.

This study was hindered in the capacity to directly compare the differences between CAP scores and child maltreatment rates due to the different levels of measurement, however, it does allow for an analysis of individual characteristics that are correlated with the CAP scores and how these findings change in neighborhoods with particular characteristics (inclusive of maltreatment rates). It is of import to note that actual abuse rates are derived from reported allegations, yet the potential to abuse is not reportable. Due to the limiting parameters of secondary data analysis of a cross-sectional nature, I am unable to assess rates of maltreatment from those who have not been reported for abuse. Further, an inherent, yet unavoidable limitation is that there is no information on an individual's CAP score prior to data collection or prior to the abuse occurring. Neighborhood effects were tested on an appropriately sized sample (20) of neighborhoods (*Coulton et al., 1999*). However, these results

suggest a focus for future larger scaled studies, as well as guide variable selection differentiated by potential to abuse versus parents with substantiated reports of abuse. This paper has demonstrated that the potential for maltreating children and substantiated incidences of child abuse should be assessed as multilevel phenomena.

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