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## Neighborhood and parenting both matter: The role of neighborhood collective efficacy and maternal spanking in early behavior problems

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### 1. Introduction

Research continues to underscore that while family and parenting are the primary sources of influence on early childhood outcomes, a multiplicity of contextual factors should also be taken into consideration within a developmental-ecological framework that highlights the reciprocal relationships between person and contexts (Bronfenbrenner, 1979; Leventhal & Brooks-Gunn, 2000; Lynch & Cicchetti, 1998). Relatedly, recent sociological and developmental perspectives have paid greater attention to extra-familial influences on child development. This body of research emphasizes the importance of neighborhood collective efficacy, which is a positive neighborhood social process that represents the degree to which neighbors intervene on behalf of the common good and form supportive relations, in shaping child outcomes (Galster, 2012; Ingoldsby et al., 2006; McDonell, Ben-Arieh, & Melton, 2015; Sampson, Morenoff, & Gannon-Rowley, 2002). At the family level, the literature identifies parenting process as one of the most significant influences on child development (Grusec & Davidov, 2007; Klebanov, Brooks-Gunn, Chase-Lansdale, & Gordon, 1997). Accumulating research reveals that coercive and punitive parenting, in the form of spanking, are associated with higher levels of negative child outcomes (Gershoff, 2002; Gershoff & Grogan-Kaylor, 2016). In addition to the direct influences of neighborhood and parenting processes on child outcomes, increasing evidence suggests that neighborhood factors may also influence children indirectly by way of their effects on parenting process. Several studies report that neighborhood disadvantage attenuates effective parenting, which in turn, has an influence on problematic outcomes in childhood (Church II, Jagers, & Taylor, 2012; Kohen, Leventhal, Dahinten, & McIntosh, 2008; Mrug & Windle, 2009).

A notable gap exists in understanding the direct effects of neighborhood and parenting on child development, because few studies have considered the concurrent influences of neighborhood and parenting processes on child outcomes (Eamon, 2002; Grogan-Kaylor, 2005b; Molnar, Buka, Brennan, Holton, & Earls, 2003). These studies found considerable evidence that both the lack of neighborhood collective efficacy and parental spanking are predictors of undesirable child behavior even after accounting for the effect of the other predictor. Yet, this research tends to focus on outcomes in middle childhood and adolescence. Thus, early behavioral issues remain largely unexplored in this stream of

research, despite the fact that early childhood is a critical window of optimal child development (Campbell, Shaw, & Gilliom, 2000). Extant literature has also been limited in illuminating the mediating role of parental spanking that may transmit neighborhood influences to early childhood outcomes (Church II et al., 2012; Kohen et al., 2008).

The present study adds to the existing knowledge base by utilizing multilevel models and data from a sample of national, urban families to investigate the direct associations of both low collective efficacy and maternal spanking with externalizing and internalizing behavior problems in early childhood, after accounting for relevant variances at the child, family, and neighborhood levels. This study also extends prior literature by examining an indirect pathway of maternal spanking through which the effect of low collective efficacy may influence early behavior problems.

### **1.1. Direct Association between Neighborhood Collective Efficacy and Early Behavior Problems**

The focus of recent neighborhood research shifted from structural neighborhood factors such as socioeconomic indicators of neighborhood to the impact of dynamic and informal neighborhood social processes such as collective efficacy on child well-being (Browning, Gardner, Maimon, & Brooks-Gunn, 2014; Coulton, Crampton, Irwin, Spilsbury, & Korbin, 2007; Leventhal & Brooks-Gunn, 2000; McDonnell et al., 2015; Molnar et al., 2016; Sampson et al., 2002). Collective efficacy is a social and institutional process that reflects the willingness of neighbors to effectively intervene on behalf of common values as well as the degree to which residents trust and support each other (Sampson, Raudenbush, & Earls, 1997). Collective efficacy theory posits that collective efficacy is a mechanism through which the structural characteristics of neighborhood such as economic disadvantage influence residents' outcomes including child behavior and adjustment (Burton & Jarrett, 2000; Sampson, 2008). Neighborhoods marked with high levels of collective efficacy share a common goal of maintaining social control and regulation. Thus, adults in these neighborhoods willingly intervene in social problems such as crime and delinquency in the community and provide trust and social support for their neighbors. An exploration of this theory suggests that the collective child rearing support and community resources for parents and mutual trust among neighbors in neighborhoods with high collective efficacy are likely to promote positive parenting practices and discourage undesirable child behaviors (Button, 2008; Freisthler & Maguire-Jack, 2015; Molnar et al., 2016).

Numerous empirical studies found a significant link between collective efficacy and child well-being such that higher levels of collective efficacy protect children against deviant behavior, exposure to violence, child maltreatment, as well as adverse behavioral outcomes including externalizing and internalizing problems (Browning et al., 2014; Ingoldsby et al., 2006; McDonnell et al., 2015; Molnar et al., 2016; Mrug & Windle, 2009; Odgers et al., 2009; Sampson et al., 1997; Xue, Leventhal, Brooks-Gunn, & Earls, 2005). Importantly, these studies found that the direct link between collective efficacy and child outcomes remains significant even after accounting for individual and family level attributes (Leventhal & Brooks-Gunn, 2000; Sampson et al., 2002). Existing literature tends to focus on neighborhood effects on outcomes in late childhood and adolescence, however, and early

childhood remains an understudied developmental period in extant neighborhood research. Thus, prior evidence on the association of collective efficacy with child behavior cautions the generalizability of these results to early childhood (Linver, Brooks-Gunn, & Kohen, 2002).

### **1.2. Direct Association between Maternal Spanking and Early Behavior Problems**

A multitude of studies have demonstrated the link between spanking—the most frequently used form of corporal punishment during early childhood (Gershoff, 2002)—on problematic developmental outcomes such as behavioral issues and cognitive deficits (Berlin et al., 2009; Gershoff, 2013; Grogan-Kaylor, 2005a; Maguire-Jack, Gromoske, & Berger, 2012; Straus & Paschall, 2009). Relatedly, the United Nations' Convention on the Rights of the Child (CRC) strongly advised to legally protect children from all forms of “cruel and degrading punishment” (United Nations Committee on the Rights of the Child, 2006, p. 3) that involves spanking. Notwithstanding the global movement against corporal punishment, the U.S. remains the only United Nations member state that has not ratified the CRC (Global Initiative to End All Corporal Punishment of Children, 2015). In fact, despite the recommendation of the American Academy of Pediatrics to use alternative methods of child discipline (American Academy of Pediatrics, 1998), spanking continues to be a widely legitimated strategy of child discipline among many families in the U.S. (Maguire-Jack et al., 2012; Straus, 2010). Parental spanking is a common experience in U.S. homes starting as early as infancy (Lee, Grogan-Kaylor, & Berger, 2014) and reaching its peak during toddlerhood (Berlin et al., 2009). Consequences of spanking in early childhood are particularly noteworthy of scholarly attention since the magnitude of the effects is presumably stronger for young children who generally experience it more frequently and consistently than older children (Gershoff, 2002).

Theoretical basis for the link between spanking and child behavior problems are found in social learning theory and attachment theory. Social learning theory proposes that parental spanking inadvertently models externalizing behavior to children and legitimizes the use of physical violence as socially accepted methods of correcting undesirable behavior (Bandura, 1971). Attachment theory posits that children who are spanked are more vulnerable to internalizing symptoms because parental spanking may disrupt the on-going trust and attachment in the parent-child relationship that is critical for healthy social and emotional development (Bowlby, 1982; Bretherton, 1985). Indeed, in a recent meta-analysis of 75 empirical studies that explicitly investigated the associations between spanking and child outcomes, Gershoff and Grogan-Kaylor (2016) found statistically significant associations between spanking and a range of detrimental outcomes, including externalizing and internalizing behavior problems.

### **1.3. Indirect Association between Neighborhood Collective Efficacy and Early Behavior Problems through Maternal Spanking**

A noteworthy finding in research concerning the effect of collective efficacy on child outcomes is that while direct neighborhood influences on child development are evident, the strength of this direct association is modest when family processes are considered in analytic models (Browning et al., 2014; Molnar et al., 2003; Proctor, 2006). Within a developmental-

ecological model that recognizes the confluence of proximal and distal contexts on child development, several empirical studies have found evidence on the indirect pathway of parenting through which neighborhood contexts influence child well-being (Church II et al., 2012; Galster, 2012; Kohen et al., 2008; Pachter, Auinger, Palmer, & Weitzman, 2006). This mediating role of parenting may be particularly salient for younger children who are more directly affected by familial factors than school-age children who are more strongly influenced by their extended social contexts (Bronfenbrenner & Morris, 1998).

Under economically challenging situations, parenting practices have been observed to be more coercive and less nurturing (Mistry, Vandewater, Huston, & McLoyd, 2002). Drawing from collective efficacy theory, existing studies predominantly report on the mediating role of negative and punitive parenting in the association of neighborhood disadvantage with negative child outcomes (Burton & Jarrett, 2000; Furstenberg, 1993). According to this perspective, higher levels of collective efficacy are expected to reduce dysfunctional parenting practices, including corporal punishment, since residents share the common goals of discouraging violence in communities as well as “behind closed doors” (Button, 2008, p. 132). For example, a study by Button (2008) that explored residents’ attitudes about family violence found that neighborhoods with low levels of collective efficacy viewed parental corporal punishment more favorably. With the exception of the aforementioned study, however, empirical evidence on the link between collective efficacy and spanking, the most common form of parental corporal punishment, remains very limited.

Theories of stress also provide a broad explanation for the link between disadvantaged neighborhood conditions and increased use of parental spanking. An extension of the family stress model suggests that economic hardship at the family or neighborhood level acts as a severe stressor in the family context and eventually, may easily impair parent functioning and deteriorate the parent-child relationship (Conger, Rueter, & Conger, 2000; Kohen et al., 2008; Simons, Johnson, Beaman, Conger, & Whitbeck, 1996). This family distress is likely to pose a risk for coercive and punitive parenting, which in turn, are associated with elevated levels of adverse child outcomes (Conger et al., 2002). For example, Kohen and colleagues (2008) found a significant indirect effect of neighborhood structural disadvantage on child behavioral outcomes that was mediated through neighborhood social cohesion, maternal depression, and punitive parenting based on a sample of children who were 4 to 5 years of age. Of note is the conceptual model of Kohen et al. (2008) that integrated the collective efficacy and family stress perspectives and discovered the significance of both neighborhood (e.g., neighborhood cohesion) and family processes (e.g., punitive parenting) on children. This line of inquiry suggests that the indirect neighborhood influence through parenting may be more prominent for young children whose interactions with social contexts outside of the family are controlled by parents, mainly due to their limited cognitive and socioemotional capacities compared to school-age children (Chase-Lansdale & Gordon, 1996; Kohen et al., 2008). Nonetheless, scant research to date has systematically investigated the effect of neighborhood collective efficacy that may affect early child behavior indirectly through their influence on parental spanking.

## 1.4. The Current Study

This study extends the current understanding of the associations between neighborhood collective efficacy, parental spanking, and early behavior problems. Notably, to explore the role of neighborhood and parenting on a comprehensive spectrum of child behavior problems, the present study examined both internalizing and externalizing behaviors as the outcomes. An important contribution of this study is the use of a direct measure of collective efficacy, which captures the dynamic processes of neighborhood effects on child development rather than a static structural dimension. In order to consider the ecological link between neighborhood and parent processes in child development, this study utilized multilevel models that examine the unique role of both collective efficacy (or the lack of it) and spanking on behavior problems that manifest in early childhood, a developmental period during which children's direct exposure to neighborhood is limited than later years.

On the basis of the theoretical and empirical literature, this study tested the hypotheses that both the lack of neighborhood collective efficacy and maternal spanking will have positive associations with externalizing and internalizing behavior problems of 5-year-old children. Because the current state of children's problematic behavior is directly determined by prior behavioral issues (Gray, Indurkha, & McCormick, 2004), all study models accounted for earlier behavior problem scores at age 3 (Finkel, 1995). Moreover, maternal spanking is expected to partially mediate the relationship between low levels of collective efficacy and externalizing and internalizing behavior problems, net of prior behavior problems, given the evidence that low collective efficacy increases parental use of physical discipline.

In view of child development research and parenting theory that recognize the unique role of parental warmth and depression in the relationship between spanking and child well-being (Berlin et al., 2009; Lee, Altschul, & Gershoff, 2013), these variables were included as covariates in the analyses. Additional covariates at the parent and family levels included race/ethnicity, mother's relationship status with child's father, mother's education and age, and annual household income, which were identified in the literature as being associated with the main predictors and the outcomes (Gershoff, 2002; Sampson & Raudenbush, 2004). At the neighborhood level, the models also controlled for the median income of respondent's neighborhood (i.e., census tract) based on prior findings that established the negative correlations between structural disadvantage and collective efficacy in neighborhoods (Kohen et al., 2008).

## 2. Method

### 2.1. Data and Participants

Analyses for this study used data from the Fragile Families and Child Wellbeing Study (FFCWS), a birth cohort study of 4,898 families. Mothers were recruited at hospitals in 20 large U.S. cities with populations over 200,000 between years 1998 to 2000 at the time of the focal child's birth. Children born to unmarried parents were purposely oversampled and constitute approximately three-quarters of the full FFCWS sample. This sampling design resulted in an overrepresentation of socioeconomically disadvantaged families in the FFCWS who were at greater risk of experiencing adverse socio-economic conditions such as

disadvantaged neighborhood conditions and greater use of physical discipline (Maguire-Jack et al., 2012).

Baseline mothers' and fathers' interviews were conducted in-person after the focal child's birth at hospitals and subsequent core interviews collected data via telephone surveys when the child was one year old (Wave 2), three (Wave 3), five (Wave 4), and nine (Wave 5) years of age. Additionally, mothers who participated in the Wave 3 and Wave 4 core interviews were invited to participate in the supplemental In-Home Longitudinal Study of Pre-School Aged Children (In-Home study hereafter) that collected information on child development, including Achenbach's Child Behavior Checklist and home environment when the children were 3 and 5 years.

Data for the current analyses were drawn from the Wave 4 core interview and the Wave 4 In-Home study that assessed neighborhood collective efficacy, maternal spanking, and behavioral measures when the children were 5-years-old. Additionally, child behavioral measures (CBCL scores) from the Wave 3 In-Home study were used as covariates to adequately control for pre-existing differences in behavior problems at age 3. The target sample included 2,488 mothers and their children who participated in both In-Home surveys at ages 3 and 5. The final analytic sample for this study is further limited to 2,472 respondents who had census tract information available.

## 2.2. Measures

**2.2.1. Dependent variables.**—Externalizing and internalizing behavior problems were measured during the In-Home interviews at Wave 3 (child age 3) and Wave 4 (child age 5) using Achenbach's Child Behavior Checklist (CBCL). The CBCL items asked mothers to rate their child's behavior during the past two months using a three-point scale (0 = *not true*, 1 = *somewhat or sometimes true*, 2 = *very true or often true*). Items in each subscale were averaged, with higher scores indicating more behavior problems.

**Externalizing behavior:** The Aggressive Behavior subscale from the CBCL/2–3 represented externalizing behavior at Wave 3 (child age 3) (Achenbach, 1992). Although the original instrument included the Aggressive Behavior and Destructive Behavior subscales, the current study excluded the latter subscale due to the fact that it was only administered in 18 cities. Aggressive behavior was measured using 15 items such as: “Child is defiant”, “Child hits others”, and “Child has angry moods” ( $\alpha = .86$ ).

Externalizing behavior at Wave 4 (child age 5) was measured using the CBCL/4–18 (Achenbach, 1991). The modifications between CBCL/2–3 and CBCL/4–18 reflect the developmental changes of children. Prior literature that examined the persistence of behavior problems between ages 3 and 5 using these two versions of CBCL found significant stability over time (Gray et al., 2004). Externalizing behavior at age 5 consisted of 30 items from the Aggressive Behavior and Delinquent Behavior subscales ( $\alpha = .86$ ). The Aggressive Behavior subscale for this older age group included 20 items such as: “Child argues a lot”, “Child is disobedient at home”, and “Child physically attacks people”. The Delinquent Behavior Subscales consisted of 10 items such as: “Child lies or cheats”, “Child runs away from home”, and “Child steals outside the home”.



**Internalizing behavior:** Internalizing behavior at Wave 3 (child age 3) was assessed using CBCL/2–3 (Achenbach, 1992). A total of 24 items from the Anxious-Depressed subscale and the Withdrawn subscale measured internalizing behavior ( $\alpha = .81$ ). Example items from the Anxious-Depressed subscale (10 items) were: “Child clings to adults or is too dependent”, “Child feelings are easily hurt”, and “Child is nervous, high strung, or tense”. Example items from the Withdrawn subscale (14 items) were: “Child avoids looking others in the eye”, “Child doesn’t answer when people talk to (him/her)”, and “Child seems unresponsive to affection”.

Internalizing behavior at Wave 4 (child age 5) was based on the total of 22 items from the CBCL/4–18 (Achenbach, 1991). The Anxious-Depressed subscale included 14 items such as: “Child complains of loneliness”, “Child feels or complains no one loves him/her”, and “Child is unhappy, sad, or depressed”. The Withdrawn subscale consisted of nine items such as: “Child would rather be alone than with others”, “Child refuses to talk”, and “Child is withdrawn, doesn’t get involve with others”. One item (“Child is unhappy, sad, or depressed”) was included in both subscales, yielding a total number of 22 items in the internalizing scale at Wave 4 ( $\alpha = .76$ ).

### 2.2.2. Independent variables.

**Neighborhood collective efficacy:** Collective efficacy was measured in the Wave 4 core mother interview (child age 5). Mothers’ perceived neighborhood collective efficacy were assessed using two 5-item subscales that were adapted from the Project on Human Development in Chicago Neighborhoods (PHDCN), a widely used measure for assessing neighborhood social process (Sampson et al., 1997): (1) Informal Social Control and (2) Social Cohesion and Trust. The Informal Social Control subscale asked the mothers about their perception of their neighbors’ willingness to intervene in the following scenarios: “If children were skipping school and hanging out on the street”, “If children were spray painting buildings with graffiti”, “If children were showing disrespect to an adult”, “If a fight broke out in front of the house”, and “If the fire station closest to the neighborhood was threatened and its budget was cut” (1 = *very unlikely*, 2 = *not likely*, 3 = *somewhat likely*, 4 = *very likely*). Internal consistency for this scale was .88. The Social Cohesion and Trust subscale included the following questions: “People around here are willing to help their neighbors”, “This is a close-knit neighborhood”, “People in this neighborhood do not share the same values”, “People in this neighborhood generally don’t get along with each other”, and “Gangs are a problem in this neighborhood” (1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, 4 = *strongly agree*). The last three items in this subscale that were negatively-keyed were reverse coded ( $\alpha = .76$ ). In order to assess the overall degree of collective efficacy, an average of the ten items from both subscales were computed such that higher scores indicate higher levels of neighborhood collective efficacy ( $\alpha = .86$ ).

**Maternal spanking:** During the Wave 4 core interview when the children were 5 years of age, mothers were asked the following two questions about how frequently they used spanking: “In past month, have you spanked [child] because he/she was misbehaving?” (1 = *yes*, 0 = *no*), and “How often did you spank [the child?]” (1 = *every day or nearly every day*, 2 = *a few times a week*, 3 = *a few times this past month*, 4 = *only once or twice this*

*past month*). In line with previous studies using these variables from the FFCWS (Lee et al., 2013; Taylor, Manganello, Lee, & Rice, 2010), these two variables were combined and recoded to an ordinal variable that indicates mother's frequency of spanking (0 = *never*, 1 = *only once or twice*, 2 = *a few times this past month*, 3 = *a few times a week or every day and nearly every day*).

### 2.2.3. Control variables.

**Maternal warmth.** Maternal warmth at Wave 4 (child age 5) was the average of nine items that were assessed during the In-Home observations using items from the Early-Childhood HOME (EC-HOME) inventory for children aged 3 to 6 (Caldwell & Bradley, 1984). Example items included in this scale were: "Parent encourages child to contribute", "Parent caresses, kisses, or hugs child", and "Parent responds positively to praise of child" ( $\alpha = .81$ ).

**Mother's depression.** Maternal depression was measured at Wave 4 (child age 5) of the mother's core interview using the Composite International Diagnostic Interview-Short Form (CIDI-SF), Section A (Kessler, Andrews, Mroczek, Ustun, & Wittchen, 1998). Mothers were asked a diagnostic stem question: "In the past year, have you felt sad or depressed for two weeks or more in row?" (0 = *no*, 1 = *yes*). If respondents endorsed this stem question, additional seven questions on depressive symptoms (e.g., tired out/low on energy, trouble concentrating, trouble falling asleep, thought about death) were asked. Responses to these eight items were summed to indicate a probable depression case if the score is 3 or higher ( $\alpha = .98$ ).

**Child demographics.** Child sex and age were included as control variables. Child sex was coded 1 = *male* and 2 = *female*. Child age was a continuous variable that measured the focal child's age in months at the time of the mother's core interview.

**Mother's demographics.** In order to control for mother's demographic and socio-economic characteristics that might bias the analyses, the following variables, assessed at the baseline mother's core interview, were included: age in years, race/ethnicity (1 = *non-Hispanic White*, 2 = *non-Hispanic Black*, 3 = *Hispanic*, 4 = *other race/ethnicity*), and education (1 = *less than high school*, 2 = *high school degree or GED*, 3 = *some college/technical school*, 4 = *college degree or higher*). Relationship status with focal child's father (1 = *married*, 2 = *cohabiting*, 3 = *not married or cohabiting*) was assessed at Wave 4 (child age 5). Annual household income at Wave 4 was a continuous measure based on the following question: "Thinking about your income and the income of everyone else who lives with you, what was your total household income before taxes in the past 12 months?" Respondents were asked to provide an exact amount or a range if they could not provide the exact amount. Missing data on household income (10%) were imputed by FFCWS based on respondents' socio-demographic characteristics.

**Neighborhood demographics.** Prior research found support that census tracts closely overlap with resident's perceived neighborhood boundaries (Kohen et al., 2008; Sampson, 1997). As such, census tract-level indices from the 2000 U.S. Census were included to account for the economic conditions of the respondent's neighborhood and to properly



control for the clustering effect in the analyses. This study sample's respondents were residing in 1,847 census tracts with 22% of the 2,472 respondents living in the same tract with at least one other respondent. To account for this clustering of study participants, mother's census tract at Wave 4 was used as the grouping variable to identify respondents from the same neighborhood. Neighborhood income at Wave 4 was the median household income of the census tract.

### 2.3. Missing Data and Imputation

Externalizing and internalizing behavior at age 5, the outcome variables, were declared missing if more than 30% of the items included in the scale were missing. This resulted in 0.8% of cases deemed to be missing data on externalizing and internalizing behavior. The same criteria was applied to externalizing and internalizing behavior at age 3, which resulted in 0.9% cases missing of both of these scales. Collective efficacy and maternal spanking, the main predictors, were missing in 0.6% and 1.5% of the cases, respectively. Across control variables, data were missing for less than 0.5% of the analysis sample, except for maternal warmth that was missing in 18.4% of the cases. A high level of missing data observed in maternal warmth were mainly due to participants who only completed the In-Home survey over the phone ( $n = 430$ ). To maximize sample size and avoid missing data bias, cases that contain missing data were imputed using all study variables for the full analytic sample. Multiple Imputation through Chained Equations procedure (Royston & White, 2011) were repeated to impute 10 data sets for the analyses using the MI program in STATA 13 (StataCorp, 2013). Subsequent analyses were performed on each imputed data set to yield a single set of final estimates.

### 2.4. Analytic Strategy

Data for the current study had a hierarchical structure in which families are nested in neighborhoods. Therefore, it is possible that respondents' perceptions of collective efficacy are correlated with the perceptions of other residents within the same neighborhood. To effectively account for the shared variance in the same neighborhoods, this study employed multilevel models. Multilevel modeling is widely viewed as an optimal method of exploring the simultaneous effects of neighborhood and family characteristics on child development as it reflects the assumption that neighborhood conditions and effects are correlated in the same neighborhoods (Beyers, Bates, Pettit, & Dodge, 2003).

Descriptive statistics and bivariate correlation analyses are presented. Multilevel models examined the relationships between the main predictors and outcomes. In order to capture the unique role of neighborhood and parenting on children's behavior, a set of random intercept models were estimated that enter variables in blocks. The first model estimated the role of collective efficacy on behavior problems at age 5 while controlling for prior behavior problem scores at age 3 to allow each case to control for itself. Theoretically, the past behavior problem score strongly predicts the current behavior problem score (Gray et al., 2004). Adding the prior behavior problem score as an additional predictor in the model statistically represents this dynamic component in the outcome. This approach also allows stronger causal inferences than cross-sectional studies because it effectively controls for a host of omitted variables that may have shaped the prior assessment of the outcome (Keele

& Kelly, 2006). The second model added maternal spanking to the prior model. Finally, the third model is the full model that considered the complete set of predictors and covariates in the analysis. Intraclass correlation (ICC) were calculated for each of the models to estimate the proportion of variance between individuals within neighborhoods. Specification of the random intercept models can be expressed as follows:

$$\text{Externalizing or Internalizing Behavior} = \beta_0 + \beta_1(\text{Collective Efficacy})_{ij} + \beta_2(\text{Maternal Spanking})_{ij} + \beta_3(\text{Covariates})_{ij} + u_{0j} + e_{ij}$$

$\beta_0$  is the intercept for neighborhood  $j$

$\beta_1, \beta_2, \beta_3$  are the coefficients of predictors

$u_{0j}$  is the cluster-specific random intercept term for neighborhood  $j$

$e_{ij}$  is the error term for individual child  $i$  in neighborhood  $j$

To address the mediation hypothesis that maternal spanking mediates the collective efficacy and child behavior relationship, this study employed the following procedures outlined by Baron and Kenny (1986): (a) the association between the predictor and the outcome was examined; (b) the relationship between the predictor and the mediator variable was assessed; (c) the association between the mediator variable and the outcome was examined; (d) the effect of the predictor on outcome was investigated after accounting for the mediator variable. A complete mediation can be determined if the association between the predictor and the outcome is no longer significant after controlling for the mediator variable; partial mediation can be determined if the relationship between the predictor and the outcome diminishes but remains statistically significant (Holmbeck, 1997).

### 3. Results

#### 3.1. Descriptive Statistics and Bivariate Correlations

Table 1 presents the demographic characteristics for the study sample. The average age of children in this study was 61 months (range 57–71 months) and just over half (52%) were boys. The mean of behavior problem score at age 5 was 0.42 ( $SD = .25$ ) for externalizing behavior and 0.25 ( $SD = .20$ ) for internalizing behavior. At age 3, the average of both externalizing ( $M = 0.65$ ,  $SD = .39$ ) and internalizing ( $M = 0.40$ ,  $SD = .24$ ) behavior problem scale was higher than it was at age 5. In this study, half of the mothers had spanked their 5-year-old at least once or twice in the past month. The prevalence of maternal spanking in this sample was comparable to previous estimates on U.S. preschoolers and Kindergarteners, which are developmental periods during which spanking tends to reach its peak (Berlin et al., 2009).

Table 2 displays the correlation matrix of study variables. Collective efficacy demonstrated a small but significant, inverse relationship with externalizing ( $r = -.14$ ,  $p < .001$ ) and internalizing ( $r = -.13$ ,  $p < .001$ ) problems at age 5. Collective efficacy and maternal spanking had a significant inverse relationship, although the magnitude of the relationship

was very small ( $r = -.06, p < .01$ ). In this study, the largest pairwise correlation between independent variables exists between race/ethnicity and neighborhood income ( $r = -.38, p < .001$  for Blacks and  $r = .35, p < .001$  for whites), suggesting that multicollinearity will not threaten the analyses.

### 3.2. Multilevel Models

**3.2.1. Externalizing behavior problems.**—Consistent with the study hypothesis, Model 1 in Table 3 established an inverse association between collective efficacy and externalizing behavior at age 5, after accounting for externalizing behavior at age 3. The low intraclass correlation (ICC) of Model 1 (0.013) indicated that externalizing behavior differed far more between individual children than between neighborhoods. Nevertheless, the significant random intercept suggested that there were distinguishable differences in 5-year olds' externalizing behavior across neighborhoods when collective efficacy and externalizing behavior at age 3 is 0. Also, prior research suggests that even when ICC is close to 0, data with nested structure should employ multilevel modeling for more accurate estimates of standard errors (Chen, 2012; Nezlek, 2008). As such, the subsequent multilevel models demonstrated the family and individual level influences on externalizing behavior while accounting for the clustered nature of the data. In Model 2, both collective efficacy and mother's spanking, regardless of frequency, were significant predictors of externalizing behavior, even after accounting for prior externalizing behavior score. Relative to Model 1, the magnitude of the effect of collective efficacy reduced. The ICC for Model 2 was 0.006 and the random intercept was not significant, indicating that neighborhood level differences in externalizing behavior were minimal when maternal spanking entered the model.

In Model 3 that included the full set of covariates, all frequencies of spanking were met with increases in externalizing behavior ( $\beta = 0.035$  to  $0.108, p < .001$ ) at age 5 after controlling for collective efficacy and externalizing score at age 3. The effect of collective efficacy on externalizing behavior reduced both in magnitude and significance in comparison to the previous model ( $\beta = -0.013, p = .06$ ). Specifically, a unit increase in collective efficacy was associated with lower externalizing behavior by 0.013 points, although the estimated probability of this effect was marginally above the conventional significance level ( $p = .06$ ). These results suggest that neighborhood effects on externalizing behavior diminish to be statistically significant when spanking and demographic factors are simultaneously examined. Turning to the covariates, maternal warmth was significantly associated with lower externalizing behavior ( $\beta = -0.04, p < .05$ ), whereas maternal depression was related to higher externalizing behavior ( $\beta = 0.05, p < .001$ ). The low ICC of Model 3 (0.008) and the non-significant random intercept suggested that after considering parenting and demographics, there is no longer any significant neighborhood level variation in externalizing behavior. Joint tests of coefficients confirmed that the additional variables in Model 3 improved the model fit in comparison to the previous model.

**3.2.2. Internalizing behavior problems.**—As expected, Model 4 in Table 3 shows that increases in collective efficacy were met with decreases in internalizing behavior at age 5, even after accounting for prior internalizing score at age 3. The random intercept coefficient of Model 4 was significant. However, the ICC of Model 4, as well as the

ICC of subsequent models, was close to 0 and suggested that overall, there is relatively little variation in internalizing behavior between neighborhoods. Collective efficacy had a significant inverse relationship with internalizing behavior even when maternal spanking was added to the model and age 3 internalizing score was controlled (Model 5). Maternal spanking, regardless of frequency, was positively associated with higher internalizing behavior after accounting for collective efficacy and earlier internalizing score. The random intercept coefficient of this model was not significant.

Results of the full model (Model 6) show that collective efficacy and maternal spanking are significant indicators of internalizing behavior, net of other child and family level predictors. The magnitude of the effect of collective efficacy in Model 6 that included the full set of control variables was lower compared to the previous two models, whereas the effect of maternal spanking was higher in magnitude relative to the previous models. For a unit increase in collective efficacy, internalizing behavior reduced by 0.014 points ( $p < .05$ ), after holding all other study variables constant. On average, children who experienced infrequent spanking—“once or twice” in the past month—had 0.016 points higher internalizing behavior ( $p < .05$ ) in comparison to children who were “never” spanked in the past month. The effect of spanking on internalizing behavior was greater for more frequent use of spanking—“a few times this past month” was met with 0.035 points increase in internalizing behavior ( $p < .01$ ) and “a few times a week or more” of spanking resulted in 0.037 points increase in the outcome ( $p < .05$ ). Mother’s depression was a significant risk factor for higher internalizing behavior, whereas maternal warmth did not predict internalizing behavior. The random effects indicate that individual-level variance that was not explained by the predictors in the model was significant at the  $p < .001$  levels. Joint tests of coefficients confirmed that the current model improved model fit relative to the previous model.

### 3.3. Multilevel Mediation Models

Table 4 presents results from the mediation analysis that tested the hypothesis that maternal spanking partially explains the associations between neighborhood collective efficacy and children’s behavior problems. Contrary to the hypotheses, the results of bootstrapping revealed that the indirect effect of collective efficacy on externalizing and internalizing problems via maternal spanking were not significant, after accounting for a wide-ranging set of covariates at the child, mother, and neighborhood levels. These results indicate that spanking has minimal effects on the observed inverse relationships between collective efficacy and child behavior problems.

## 4. Discussion

This study tested the hypothesis that both the lack of neighborhood collective efficacy and maternal spanking would predict increased behavior problems among a sample of 5-year-olds. Results demonstrated the direct influences of both predictors on behavior problems, even after taking earlier behavior problems, mothers’ parenting contexts and demographics, and neighborhood demographics into account. However, the indirect effect of low collective efficacy on behavior problems through spanking was not supported. These

findings contribute to the literature regarding the neighborhood and parenting processes that affect early behavioral outcomes, building on existing scholarship that weaves the ideas of collective efficacy, family stress, social learning, and attachment theories. It furthers this research by encompassing the dynamic social processes of neighborhood effects on child development and examining the direct effects of both neighborhood and parenting processes on early outcomes.

In this study, both the lack of neighborhood collective efficacy and maternal spanking predicted increased behavior problems in early childhood, a finding that underscores the joint prominence of community and parent level influences in early development. These unique, yet simultaneous influences of neighborhood and parent processes on behavior problems underscore the need to consider both proximal and distal contexts of the child in research that surround patterns of early behavior problems. As hypothesized, results from multilevel models support the tenets of collective efficacy theory such that the presence of a community's capacity to maintain social control and promote supportive relationships among neighbors is likely to protect children against behavioral issues. This finding adds support to the growing literature that established the protective role of collective efficacy on adverse child outcomes, including behavior problems (Odgers et al., 2009; Sampson et al., 2002; Xue et al., 2005). It also extends prior research, which has concentrated on outcomes of older children, by providing empirical evidence that children in early childhood are also significantly affected by neighborhood level process. Findings should be interpreted in view of the significant developmental and social transitions around the age of 5, the average age of children in this study. Interactions with social contexts outside the family during early childhood tend to be more supervised by parents and/or caregivers, which leaves young children with little direct exposure to neighborhood conditions than children in middle and late childhood (Bronfenbrenner & Morris, 1998; Valentine & McKendrick, 1997). In addition, toddlers and preschoolers are less capable of perceiving the neighborhood factors they observe than school-age children (Chase-Lansdale, Gordon, Brooks-Gunn, & Klebanov, 1997). Nonetheless, with the growing cognitive and social capabilities and public school entry, children's social contexts expand around age 5. The increased exposure to adults, peers, and older children in the neighborhood and awareness of neighborhood conditions during the early school-age period are likely to lead to more direct neighborhood effects.

The present results suggest that collective efficacy serves as a protective factor with respect to adverse behavioral outcomes, even after economic properties of the neighborhood are considered. Although neighborhood disadvantage is generally predictive of low levels of collective efficacy (Ross & Jang, 2000), the current results suggest that strong ties to community values and common goals as well as cohesion and trust among neighbors would support positive child development even after controlling for neighborhood income (Browning et al., 2014; Maimon & Browning, 2010; Odgers et al., 2009). This finding highlights collective efficacy as a neighborhood level construct that has substantive implications for child outcomes; and unlike neighborhood structure, collective efficacy may be potentially more malleable to intervention in shorter time periods. For example, evaluation results from Strong Communities for Children, a community-based initiative in South Carolina, found noticeable improvements in neighborhood collective efficacy and child well-being outcomes in their target communities. This initiative implemented activities

such as strengthening community norms and supporting families that spanned approximately 2 years. Findings from the Strong Communities for Children initiative suggest that increased collective efficacy can indeed shift shared norms so that child well-being becomes a common value in the community (McDonnell et al., 2015).

In terms of parent influences on child behavior problems, the current findings were consistent with the study hypothesis such that maternal spanking was positively associated with behavior problems. These associations held true irrespective of the frequency of spanking. The significant effect of infrequent spanking (once or twice in the past month) on externalizing and internalizing problem scores found in this study joins the extensive body of evidence that documents the adverse effect of corporal punishment even if it happens occasionally (e.g., MacKenzie et al., 2012; Ma et al., 2012). The evident link between spanking and internalizing behavior further extends previous research concerning the effect of spanking on a wide spectrum of behavior problems (Gershoff, 2002). Consequently, the present results provide theoretical implications on a wide array of child behavioral outcomes associated with spanking and complements the current focus on social learning theory by adding support to the attachment hypothesis that spanking leads to higher internalizing symptoms (Maguire-Jack et al., 2012; Mulvaney & Mebert, 2007).

Contrary to the hypothesis, the associations of low collective efficacy with externalizing and internalizing problems were not mediated by maternal spanking. While the strength of the direct relations between the lack of collective efficacy and behavior problems were noticeably reduced when maternal spanking entered the models, the non-significant mediation coefficients suggest that spanking does not explain the pathway through which neighborhood processes are transmitted to child outcomes. This null effect informs theory development regarding the pathways by which neighborhood collective efficacy affects early child behavior. Findings of this study are in contrast to the family stress theory and a group of studies that suggest that neighborhood and parenting processes may be linked (Burton & Jarrett, 2000; Conger et al., 2000). This study suggests that the lack of collective efficacy and parental spanking are empirically separate domains when a wide range of child, family, and neighborhood level covariates are controlled for, yet they jointly have significant direct influences on early child behavior problems. This finding substantiates the importance of a multilevel approach in intervention that aims to facilitate simultaneous improvements in the neighborhood and parent contexts for healthier child development. Nevertheless, most existing programs for families with young children have yet to consider the risk of negative neighborhood process that predict early behavioral issues (Trickett & Beehler, 2013).

The non-significant mediation in this study could be attributed to the fact that more complex conceptual models with multiple mediators are necessary to ascertain whether the effect of low collective efficacy on adverse child outcomes would operate through parenting processes. Prior studies that found a significant indirect effect of neighborhood disadvantage on behavior problems through parents included a more comprehensive set of parenting constructs such as consistent parenting behaviors, cognitive stimulation in the home, punitive behaviors (Kohen et al., 2008), parental stress, parental mastery, and aggravation in parenting (Church II et al., 2012). Additionally, the expanded social contexts of children in late preschool years and early school-age may suggest that there are other pathways



such as social relationships (e.g., peers) and institutional resources (e.g., schools) through which the influences of collective efficacy are transmitted on child behavior (Leventhal & Brooks-Gunn, 2000). Future research should examine a more comprehensive array of possible mediating pathways that may mediate the low collective efficacy and child behavior relationship.

Consistent with prior research, this study found that the effect of maternal spanking remained significant even after controlling for maternal warmth (Berlin et al., 2009; Lee et al., 2013; Ma et al., 2012). This highlights the potentially deleterious influence of spanking on children even in the presence of a positive parent-child relationship (Ma et al., 2012). Maternal depression was also a significant risk for behavior problems in this study (Goodman et al., 2011). Existing research identified maternal depression as a risk factor for increased use of spanking (MacKenzie, Nicklas, Brooks-Gunn, & Waldfogel, 2011), which in turn predicts higher rates of maltreatment (Lee et al., 2014). This substantiates the importance of social support for mothers suffering from depression as well as for their children. Finally, it should be noted that by controlling for the prior assessments of the outcomes—behavior problems at age 3—in the analyses, the current results strengthen the causal argument that child behavior problems are driven by neighborhood and parent influences rather than by the child (Finkel, 1995; Mulvaney & Mebert, 2007).

#### 4.1. Limitations and Future Directions

Findings of this study should be considered in light of several limitations. First, issues concerning measurement of key variables should be noted. With the exception of maternal warmth and neighborhood income, the measurement of variables in this study is solely based on mothers' self-report. As such, responses on neighborhood collective efficacy and maternal spanking were susceptible to self-desirability bias. Mothers may have had a tendency to understate their neighborhood problems as well as their use of spanking. In addition, reliance on self-definitions of spanking may have biased the results if mothers' interpreted spanking to include more severe forms of corporal punishment such as hitting the child with an object (Gershoff, 2002). To overcome these limitations, studies that utilize additional sources of information beyond parent self-report such as observational data on neighborhood and parent processes and family dynamics are necessary. Another shortcoming is that by including maternal parenting behaviors only, the parenting role of fathers or other caregivers were not considered in the analyses. This calls for the use of multi-informant measures that include fathers and other caregivers in future research. In addition, the use of an administratively defined unit (i.e., census tract) as the proxy for neighborhood in the present analyses may not adequately represent study participants' perceived neighborhood boundaries (Coulton, Korbin, Chan, & Su, 2001). An important direction for future neighborhood studies is to utilize resident-defined neighborhood measurements for more valid and relevant representation of the neighborhood construct. Finally, although this study controlled for the preceding levels of behavior problems, the suggested causal directions between neighborhood and parenting and child behaviors cannot be fully established and should be discussed with caution. Therefore, analytic models with stronger statistical control, such as fixed effects modeling that also considers unobserved

background variables that jointly have an effect on neighborhood, parent-child interactions, and the developmental trajectory of children are warranted in future research.

## 5. Implications and Conclusion

The present multilevel models provide evidence on the direct relations between the lack of neighborhood collective efficacy and 5-year-olds' behavior problems even after controlling for maternal spanking and earlier behavior problem scores. Results also indicate the direct associations between maternal spanking and early behavior problems, net of neighborhood conditions. These findings shed light on a multilevel framework in practice and policy that aims to promote positive social processes at multiple levels that affect child behavior (Kimbrough-Melton & Melton, 2015; Trickett & Beehler, 2013). That is, both promoting collective efficacy and reducing spanking would lead to more desirable child behavior. At the neighborhood level, resource allocation should give priority to the most impoverished neighborhoods considering the protective role of collective efficacy in reducing social disorder and promoting positive relationships. Community-based initiatives might target community building such as neighborhood watch and community conferencing to build and reinforce social norms. Likewise, community-based programs such as parent support groups and children's play groups that allow residents to form positive social connections may help develop and strengthen social cohesion and trust. In turn, these community engagement efforts may support healthier child development by reducing both internalizing and externalizing behavior problems.

Furthermore, policy should strongly advocate for the use of evidence-based parental education and parent training programs that promote positive parenting practices, including the use of nonviolent discipline, in the communities. These programs should offer practical information on alternative disciplinary strategies to spanking to reduce the use of negative and punitive parenting practices and to increase parental warmth, all of which are parenting practices that the literature identifies as protective factors for child behavior problems (Menting, Orobio de Castro, & Matthys, 2013; Sanders, 2008). Finally, thoughtful public education campaigns are needed to inform parents about the harmful consequences of spanking on child development and help shift public opinion in the U.S. about its appropriateness as a disciplinary strategy.

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**Table 1.**Demographic Characteristics & Missing Data, Wave 4 ( $N = 2,472$ )

Variable	%	Mean (SD)	Range	n	Missing
<i>Child outcomes</i>					
Externalizing behavior, age 5		0.42 (0.25)	0–1.47	2,453	0.8%
Internalizing behavior, age 5		0.25 (0.20)	0–1.38	2,452	0.8%
Externalizing behavior, age 3		0.65 (0.39)	0–2	2,449	0.9%
Internalizing behavior, age 3		0.40 (0.24)	0–1.50	2,449	0.9%
<i>Neighborhood process</i>					
Collective efficacy		3.10 (0.65)	1–4	2,458	0.6%
<i>Mother's spanking (%)</i>					
Never	49.8			1,214	
Only once or twice	31.6			769	
A few times this past month	13.1			318	
A few times a week or more	5.5			135	
<i>Mother's depression (%)</i>					
Yes	17.2	0.17 (0.38)	0–1	2,470	0.1%
No	82.8				
Mother's warmth		0.76 (0.28)	0–1	2,018	18.4%
<i>Child demographics</i>					
Age (months)		61.11 (2.42)	57–71	2,472	0%
Sex of focal child (% male)	52.1			2,472	0%
<i>Mother's demographics</i>					
Age (years)		30.21 (6.01)	20–50	2,472	0%
<i>Race/Ethnicity (%)</i>					
White, non-Hispanic	21.9			540	
Black, non-Hispanic	51.3			1,264	
Hispanic	23.7			584	
Other	3.1			75	
<i>Education (%)</i>					
Less than high school	32.9			813	
High school degree or GED	30.4			750	
Some college/technical school	25.8			638	
College degree or higher	10.9			268	
Household income (\$)		36,690 (44,057)	0–80,000	2,472	
<i>Relationship status (%)</i>					
Married	30.4			750	
Cohabiting	13.0			320	
Not married or cohabiting	56.7			1,400	
<i>Neighborhood demographics</i>					
Neighborhood income (\$)		37,806 (18,937)	6,913–157,559	2,471	0%

Table 2.

Correlation Matrix for Study Variables

Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
1. Externalizing behavior, age 5	—																					
2. Internalizing behavior, age 5	.52*	—																				
3. Externalizing behavior, age 3	.55*	.39*	—																			
4. Internalizing behavior, age 3	.40*	.45*	.70*	—																		
5. Collective efficacy	-.14*	-.13*	-.14*	-.16*	—																	
6. Mother's spanking	.25*	.10*	.21*	.10*	-.06*	—																
7. Maternal warmth	-.10*	-.06*	-.07*	-.10*	.11*	-.03*	—															
8. Maternal depression	.18*	.18*	.17*	.15*	-.08*	.09*	-.03*	—														
9. Child age	-.03*	.03*	.01*	.05*	-.03*	-.04*	-.04*	.01*	—													
10. Child sex	-.07*	-.03*	-.05*	-.03*	-.01*	-.07*	.03*	-.02*	.01*	—												
11. Mother's age	-.13*	-.09*	-.12*	-.12*	.08*	-.14*	.13*	-.04*	-.06*	.00*	—											
12. Race/Ethnicity: White	-.04*	-.08*	-.07*	-.13*	.17*	.02*	.15*	.03*	-.17*	-.01*	.19*	—										
13. Race/Ethnicity: Black	.05*	-.06*	.05*	.05*	-.12*	.09*	-.14*	.03*	.09*	-.01*	-.14*	-.54*	—									
14. Race/Ethnicity: Hispanic	-.02*	.13*	-.01*	.06*	-.03*	-.12*	.03*	-.07*	.07*	.02*	-.04*	-.30*	-.57*	—								
15. Race/Ethnicity: Other	.00	.02	.02	.02	.00	-.02	-.03	.01	-.03	-.02	.04	-.09	-.18	-.10	—							
16. Education	-.15*	-.17*	-.15*	-.27*	.17*	-.02*	.18*	-.03*	-.12*	-.01*	.40*	.31*	-.13*	-.19*	.09*	—						
17. Relationship: Married	-.15*	-.10*	-.12*	-.14*	.16*	-.04*	.13*	-.07*	-.10*	-.01*	.30*	.28*	-.32*	.06*	.09*	.34*	—					
18. Relationship: Cohabiting	-.01*	.04*	.00*	.03*	-.04*	-.04*	-.01*	-.06*	-.01*	.03*	-.06*	-.06*	-.02*	.09*	-.01*	-.11*	-.26*	—				
19. Relationship: Neither	.15*	.07*	.11*	.11*	-.11*	.06*	-.12*	.10*	.10*	-.01*	-.24*	-.22*	.31*	-.12*	-.07*	-.24*	-.76*	-.44*	—			
20. Household income	-.13*	-.14*	-.14*	-.22*	.18*	-.01*	.14*	-.08*	-.10*	-.01*	.21*	.25*	-.19*	-.05*	.08*	.42*	.36*	.00*	-.33*	—		
21. Neighborhood income	-.11*	-.08*	-.13*	-.17*	.25*	-.05*	.07*	-.03*	-.06*	.00*	.18*	.35*	-.38*	.06*	.11*	.33*	.33*	-.06*	-.26*	.30*	—	

Note:

\*  $p < .05$  (or lower).

**Table 3.**

Multilevel Regression Models on Behavior Problems at Age 5 ( $N = 2,472$ )

	Externalizing Behavior			Internalizing Behavior		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>Fixed Effects</i>						
Collective efficacy	-0.023*** (0.007)	-0.021** (0.007)	-0.013 <sup>†</sup> (0.007)	-0.019*** (0.006)	-0.018** (0.006)	-0.014* (0.006)
Behavior problem score, age 3	0.345*** (0.011)	0.326*** (0.011)	0.307*** (0.011)	0.370*** (0.015)	0.366*** (0.015)	0.336*** (0.016)
<i>Mother's spanking: never</i>						
Only once or twice		0.037*** (0.010)	0.035*** (0.010)	0.012 (0.008)	0.016* (0.008)	0.035** (0.011)
A few times this past month		0.081*** (0.013)	0.076*** (0.013)	0.030** (0.012)	0.032* (0.016)	0.037* (0.016)
A few times a week or more		0.116*** (0.019)	0.108*** (0.019)	-0.040* (0.018)	-0.005 (0.016)	0.060*** (0.010)
<i>Maternal warmth</i>						
Mother's depression		0.050*** (0.011)				
<i>Child demographics</i>						
Age of child (months)		-0.004* (0.002)				
Sex of child: female		-0.016 <sup>†</sup> (0.008)				
<i>Mother's demographics</i>						
Age of mother (years)		-0.000 (0.001)				

	<i>Externalizing Behavior</i>			<i>Internalizing Behavior</i>		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Race/ethnicity: White, non-Hispanic						
Black, non-Hispanic			-0.025*			-0.018 (0.011)
Hispanic			-0.014			0.048*** (0.011)
Other			-0.007 (0.026)			0.025 (0.022)
Education: less than high school						
High school degree or GED			-0.009 (0.011)			0.002 (0.010)
Some college/technical school			-0.025*			-0.016 (0.010)
College degree or higher			-0.037*			0.012 (0.016)
Relationship Status: married						
Cohabiting			0.018 (0.015)			0.026* (0.013)
Not married or cohabiting			0.040***			0.016 (0.010)
Logged annual household income			-0.001 (0.003)			-0.003 (0.003)
Logged neighborhood income			-0.004 (0.010)			0.000 (0.010)
Constant	0.270*** (0.023)	0.247*** (0.023)	0.608*** (0.156)	0.163*** (0.020)	0.152*** (0.020)	0.146 (0.133)
Random Effects						
Level-2 variance ( $u_{0j}$ )	0.024**	0.016	0.018	0.000	0.000***	0.000

	Externalizing Behavior			Internalizing Behavior		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Level-1 variance ( $e_{ij}$ )	0.210*** (0.004)	0.208*** (0.004)	0.204*** (0.004)	0.179*** (0.003)	0.179*** (0.003)	0.175*** (0.002)

Note:

†  $p < 0.07$ ;

\*  $p < 0.05$ ;

\*\*  $p < 0.01$ ;

\*\*\*  $p < 0.001$ ; Standard errors in parentheses

Indirect Effect of Collective Efficacy on Child Behavior Problems through Maternal Spanking

Table 4.

	Observed Coefficient	Bootstrap S.E.	z	p	Percentile 95% CI	
					Lower	Upper
Model summary for externalizing behavior						
Indirect effect	-0.002	0.001	-1.46	0.145	-0.005	0.001
Direct effect	-0.015	0.010	-1.61	0.108	-0.041	-0.004
Total effect	-0.017	0.010	-1.78	0.076	-0.043	-0.005
Model summary for internalizing behavior						
Indirect effect	-0.001	0.001	-1.36	0.174	-0.003	0.000
Direct effect	-0.017	0.007	-2.41	0.016	-0.030	-0.003
Total effect	-0.018	0.007	-2.54	0.011	-0.031	-0.004

Note: Percentile confidence interval based on 2,000 bootstrap samples