THE EFFECTS OF NEIGHBORHOOD DISORGANIZATION AND MATERNAL CORPORAL PUNISHMENT ON BEHAVIOR PROBLEMS IN EARLY CHILDHOOD

By

Julie Ma

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ABSTRACT

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AND MATERNAL CORPORAL PUNISHMENT
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A body of existing research addresses the influences of neighborhood disadvantage and negative parenting practices on child outcomes. A notable gap in extant literature, however, is the scarcity of research that encompasses the simultaneous effects of neighborhood and parenting processes on early childhood outcomes. Using data from the Fragile Families and Child Wellbeing Study (FFCWS), a longitudinal birth cohort study of nearly 5,000 children, this dissertation explores the effects of neighborhood disorganization (i.e., lack of collective efficacy) and maternal corporal punishment on early externalizing and internalizing behavior problems. Results from cross-sectional multilevel models demonstrate that both neighborhood disorganization and maternal corporal punishment are significant risk factors to behavior problems in early childhood. The indirect neighborhood effect on behavior problems through corporal punishment was not significant, suggesting that empirically, neighborhood collective efficacy and corporal punishment are distinct predictors of early behavior problems. Racial and ethnic differences in the direct effects of neighborhood and parenting processes on behavior problems were only apparent between Hispanic and white children such that the association between collective efficacy and internalizing problem were stronger among Hispanic children than white children. Longitudinal multilevel models indicate the prominence of neighborhood effects starting at early ages—child age was a significant moderator in the collective efficacy and internalizing behavior linkage. The effect of maternal corporal punishment on behavior problems in this sample were

not dependent on child age, suggesting the harmful influence of maternal corporal punishment is consistent throughout early childhood. The findings of this study provide substantive implications to social work practice by reinforcing the importance of community-based multilevel prevention and intervention programs that promote both neighborhood collective efficacy and alternatives to parental corporal punishment to prevent early behavior problems.

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This dissertation is dedicated to my family in the U.S. and Korea:
Thank you for all your love, support, and encouragement.

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CHAPTER ONE

INTRODUCTION

Children go through the process of significant biological, cognitive, social, and psychological growth in early childhood that occurs in the context of social and environmental influences (Bronfenbrenner, 1986; Wadsworth & Santiago, 2008). Theoretical and empirical literature on child development indicate that the interplay between numerous factors at the individual- and family-level, for example, parenting practices and parental socio-economic status (SES), have a profound impact on the physical and psychological development of young children (Bradley & Corwyn, 2002; Brody & Flor, 1998; McLoyd, 1998; Smith & Brooks-Gunn, 1997). In addition to the powerful parent and family influences over children's developmental trajectories, a growing body of scholarship underlines the significant role of contextual determinants, such as neighborhood characteristics, in determining child outcomes (Brooks-Gunn, Duncan, Klebanov, & Sealand, 1993; Chase-Lansdale & Gordon, 1996; Kohen, Brooks-Gunn, Leventhal, & Hertzman, 2002).

In particular, children growing up in low-SES and disadvantaged neighborhoods have been an increasing concern in recent literature, because both the absolute number and the proportion of children in poverty continues to rise across the globe (Cribb, Hood, Joyce, & Phillips, 2013; Kohen et al., 2002; Wight, Chau, & Aratani, 2011). With the emergence of the ecological framework, the focus of contemporary child development research shifted from individual- and family-level factors such as income and poverty to the impact of contextual characteristics of neighborhoods (e.g., neighborhood-level poverty rates) on child well-being (Jencks & Mayer, 1990; Kohen et al., 2002; McLoyd, 1998). In detail, existing literature identifies neighborhood disadvantage—marked by impoverished economic properties (e.g.,

neighborhood poverty and unemployment rates), neighborhood-level violence, deteriorated physical properties of neighborhood environments, and lack of positive neighborhood social processes—as significant predictors of a host of adverse child behavioral outcomes, including internalizing and externalizing behavior problems (Church II, Jaggers, & Taylor, 2012; Duncan, Brooks-Gunn, & Klebanov, 1994; Ingoldsby et al., 2006; McCulloch, 2006). Furthermore, extant research documents that this association remains significant even after accounting for individual- and family-level attributes (Bradley & Corwyn, 2002; Brooks-Gunn et al., 1993; Leventhal & Brooks-Gunn, 2000; Sampson, Morenoff, & Gannon-Rowley, 2002), although the remaining magnitude of neighborhood effect on individual outcomes is often weak (Coulton, Korbin, & Su, 1999; Elliott et al., 1996; Jencks & Mayer, 1990). The constellation of these negative outcomes in early childhood is a major public health concern as they are linked to long-term risk factors throughout the life span (Bradley & Corwyn, 2002; Cohen, Brook, Cohen, Velez, & Garcia, 1990; McLoyd, 1998), including low educational attainment (Chase-Lansdale & Gordon, 1996), higher rates of school dropouts (Baydar, Brooks-Gunn, & Furstenberg, 1993; Brooks-Gunn et al., 1993), delinquency and drug use (Moffitt, Caspi, Harrington, & Milne, 2002), and psychopathology (Campbell, 1995; Xue, Leventhal, Brooks-Gunn, & Earls, 2005).

At the family level, the most significant influence on child development is parental behavior. Parental influence is most salient in early childhood, during which children's development is predominantly dependent on their parents and their exposure to and interactions with social contexts outside the family are directly supervised by parents and/or caregivers. A large tradition of research reports that warm and supportive parenting, that nurtures trust and affection between parent and child, plays a significant role in preventing negative child outcomes (Barber, Stolz, Olsen, Collins, & Burchinal, 2005; Harper, Brown, Arias, & Brody, 2006;

Simons, Johnson, Beaman, Conger, & Whitbeck, 1996). On the contrary, parenting practices that are controlling and punitive (i.e., harsh parenting) are associated with higher levels of negative child outcomes (Gershoff, 2002; McKee et al., 2007; Smith & Brooks-Gunn, 1997).

Among harsh parenting practices, corporal punishment has received particular attention because of its high level of public support and widespread prevalence in U.S. families (Smith, Marsden, & Hout, 2013), despite mounting empirical evidence that it is a significant risk factor for child behavior problems and child maltreatment (Gershoff, 2002; Lee, Grogan-Kaylor, & Berger, 2014). While a number of widely respected international organizations take strong positions against corporal punishment (e.g., United Nations Committee on the Rights of the Child, 2006), it remains a widely endorsed and legitimated method of child discipline in the U.S. According to recent studies, a third of one-year-olds had been spanked in the past month with the rates increasing to two-thirds of 3-year-olds and to half of 5-year olds in the U.S. (Lee et al., 2014; MacKenzie, Nicklas, Waldfogel, & Brooks-Gunn, 2013; Taylor, Lee, Guterman, & Rice, 2010).

In addition to the direct influences of neighborhood and parenting on child behavior problems, a growing number of literature suggests that neighborhoods may also influence children indirectly by way of their effects on family processes—particularly, parenting practices such as the use of corporal punishment (Brooks-Gunn et al., 1993; Kim, Hetherington, & Reiss, 1999; Kohen, Leventhal, Dahinten, & McIntosh, 2008; Leventhal & Brooks-Gunn, 2000). Grounded in the ecological framework that underscores the transactional and reciprocal nature of social contexts (Bronfenbrenner, 1986), researchers following this perspective purport that the static and linear models that estimate the direct effects of neighborhood could block out the indirect mechanisms of neighborhood influence. These researchers also suggest that linear

models may fail to include relevant variance at the individual-, family-, and community-levels that may mediate this association (Chung & Steinberg, 2006; Rankin & Quane, 2002; Sampson et al., 2002). In a seminal review of neighborhood effects on child well-being, Leventhal and Brooks-Gunn (2000) provide a theoretical model that identifies parental influence as one of the three mediators of neighborhood effects. This study synthesized existing literature that underlines the mediating role of harsh parenting in the association between neighborhood disadvantage and negative child outcomes (Klebanov, Brooks-Gunn, & Duncan, 1994; McLoyd, 1990; Simons et al., 1996). Recent scholarship continues to report that neighborhood disorganization attenuates effective parenting, which in turn, has an influence on problematic outcomes in childhood (Church II et al., 2012; Church II, Wharton, & Taylor, 2009; Conger et al., 2002; Mrug & Windle, 2009; Odgers et al., 2012; Reising et al., 2013).

Theoretical Framework

The following sections discuss the theories that have provided a framework for the extant scholarship on child development in the contexts of neighborhood disorganization and parental corporal punishment. Reflecting on this review of theoretical perspectives, a conceptual framework that guides the current dissertation research is outlined.

The Ecology of Child Development

Research on the role of neighborhood and parenting in children's outcomes asserts that while family and parenting is the primary source of influence on children's outcomes, a multiplicity of domains should be taken into consideration (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 1998; Gonzales, Cauce, Friedman, & Mason, 1996; Grusec, 1992; Lynch & Cicchetti, 1998). Following this stream of scholarship, recent sociological and developmental perspectives paid greater attention to extra-familial influences on child

development and underlined the importance of understanding the potential neighborhood effects on child outcomes (Bronfenbrenner, 1986; Duncan, Connell, & Klebanov, 1997; Galster, 2012). The rise of this contextual framework brought greater scholarly attention to the reciprocal and interrelated relationships and the interactions between person and context (Bronfenbrenner, 1986; Chuang, Ennett, Bauman, & Foshee, 2005; Leventhal & Brooks-Gunn, 2000). In other words, empirical findings observed that child development and socialization occur in the context of multiple domains—such as family, parents, and neighborhood—and note the interdependence of these primary agents.

Ecological Systems Perspective

Bronfenbrenner's (1979) ecological systems framework recognizes the confluence and interconnections of multiple social systems and their effects on individuals. According to this model, child development occurs in the context of several environmental systems, which includes the *microsystem* (relationships in which face-to-face interactions occur and that directly influence the child, such as family, school, and peer), *mesosystem* (bidirectional influences between microsystems containing the child, e.g., family experiences influencing child's school experiences), *exosystem* (environment that is not the developing child's immediate context, such as mother's experiences at work place indirectly influencing the child), *macrosystem* (cultural context in which the child's development takes place, such as SES, race and ethnicity, as well as broader policy context), and *chronosystem* (temporal changes and transitions over time within the child and the child's environment, such as divorce of parents). Brofenbrenner (1979) underscored the central importance of how neighborhood context (exosystem) affects children's individual outcomes (microsystem). Furthermore, in the second phase of his work, Bronfenbrenner expanded his theory by proposing the Process-Person-Context-Time model

(Bronfenbrenner, 2005; Bronfenbrenner & Evans, 2000) that highlighted the reciprocal and proximal processes between the child, as well as the interrelationship between contexts, based on the "person-in-context" perspective (Eamon, 2002; Tudge, Mokrova, Hatfield, & Karnik, 2009). This theoretical development has laid the foundation for contemporary research that attempts to integrate both contextual influences (e.g., neighborhood) and proximal factors (e.g., family, parents, and peers), and the reciprocity between children and these influences into conceptual models. The focus of this dissertation research will be the relationships between microsystem and mesosytem (the most proximal social environments that influence child development, mainly parents) as well as exosystem (the more distal context of child development such as neighborhood), and macrosystem (broader cultural context such as racial/ethnic differences in parenting), while fully accounting for the active role of the child who stands at the center of the multiple levels of mechanisms (Bronfenbrenner, 2005; Darling, 2007; Tudge et al., 2009). While Bronfenbrenner's work provides a conceptual framework for the interplay between individual-, family-, and neighborhood-level factors in shaping early childhood development, it does not demonstrate the causal pathway through which neighborhood and parent effects are transmitted on child development. As such, the following sections outline theories that explain the predictive role of neighborhood and parenting on child behavior problems.

Effects of Neighborhood and Parenting on Children's Behavior

Social Disorganization Theory

Discussions on the effects of neighborhood on children's outcomes have its origin in urban sociology, further conceptualized by Shaw and McKay's social disorganization theory (Shaw & McKay, 1942). To address the social problems associated with the rapid urbanization of the U.S. in the last century, Shaw and McKay (1942) explained that contextual factors (e.g.,

neighborhood poverty, residential instability, and racial heterogeneity) are closely linked to crime and delinquency of adolescents than individual factors (e.g., race, age, and gender) and held the breakdown of social institutions responsible for delinquency. Following this theory's perspective, Wilson (1987) further shifted the focus on individual and family poverty to neighborhood poverty by asserting that concentrated poverty in urban communities leads to social disorganization, which in turn explained spatial patterns of concentrated delinquency in urban communities (Leventhal & Brooks-Gunn, 2000). While these earlier studies focused mostly on adolescents' and adults' outcomes, contemporary researchers expanded the focus of research to children's developmental and socialization outcomes (e.g., Kohen et al., 2008; Leventhal & Brooks-Gunn, 2000; Sampson et al., 2002). Also, recent neighborhood scholarship moved beyond the traditional focus on structural contextual factors and explicitly highlighted process-oriented neighborhood mechanisms in order to outline the pathways of neighborhood influence on child well-being (Jencks & Mayer, 1990; Leventhal & Brooks-Gunn, 2000; Sampson, 1992; Sampson et al., 2002). Drawing heavily from the core tenets of social disorganization theory and the convergence of neighborhood mechanisms outlined by Jencks and Mayer (1990), Leventhal and Brooks-Gunn (2000), and Sampson (1992), this dissertation specifically concentrates on collective efficacy as an indicator of neighborhood (dis)organization.

According to social disorganization theory, collective efficacy is a formal and informal social process that reflects the willingness of neighbors to effectively and collectively organize and intervene on behalf of the common good, such as social control and crime. Collective efficacy is characterized by the presence of mutual trust, expectations, resources, and social cohesion in the community (Sampson, Raudenbush, & Earls, 1997; Shaw & McKay, 1942). Researchers following this perspective explained that collective efficacy is a mechanism through

which structural characteristics of neighborhood influence child behavior and adjustment (Morenoff, Sampson, & Raudenbush, 2001; Sampson, 2001; Sampson et al., 1997). In the context of parenting and neighborhoods, collective efficacy promotes support networks and social interactions among neighbors. Furthermore, in neighborhoods with high collective efficacy, parenting responsibilities such as supervision, intervention, and monitoring of child behaviors are shared and community-level efforts are made to model adequate behaviors, maintain social order, and discourage undesirable child behaviors (Kohen et al., 2008; Sampson et al., 1997). In turn, these collective child rearing support and community resources for parents reduce parental stress and encourage positive parenting practices (Klein, 2011; Kohen et al., 2008). Figure 1.1 describes the pathway through which social disorganization affects child behavior problems.

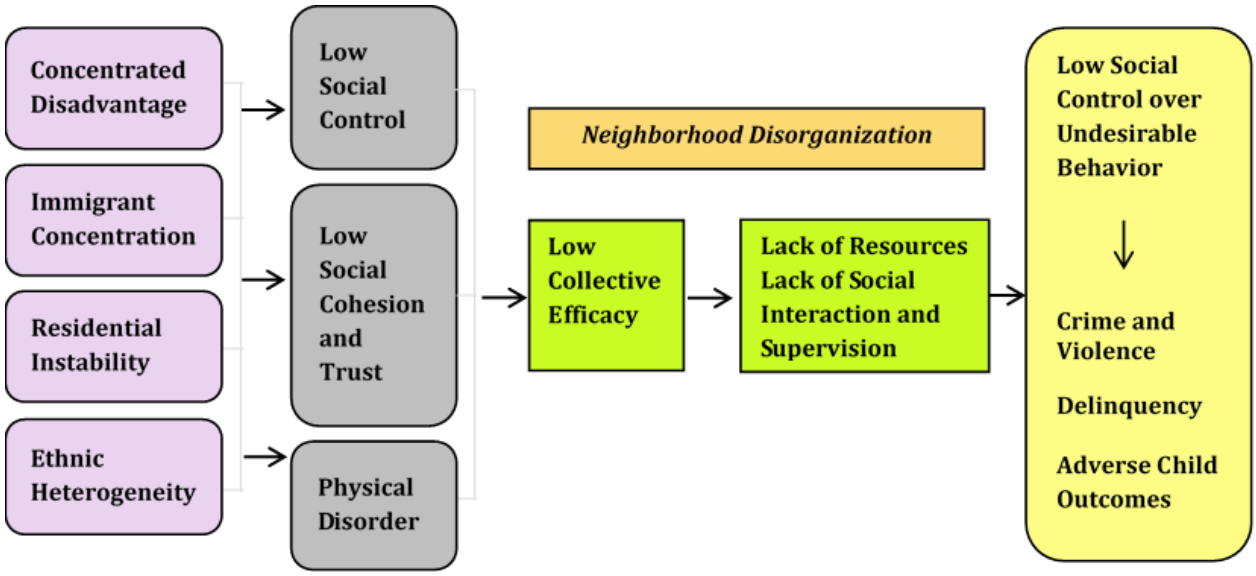


Figure 1.1. Social Disorganization Theory: Neighborhood Disadvantage and Adverse Child Outcomes.

Effects of Corporal Punishment on Children's Behavior

Social Learning Theory

The scholarly discussion on the significance of parenting in children's successful adaptation to society has been the centerpiece of child development and socialization research (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000). In line with behaviorism and psychoanalytic theories that dominated earlier research, parental influence on children's outcomes was considered to be inevitable and hereditary. Contemporary research, however, questions the deterministic emphasis on parental influence and demonstrates the interactive relationship between parenting and socialization of children (Collins et al., 2000; Lansford et al., 2011). Following this scholarship that underscores human responsiveness and the reciprocal nature of learning, social learning theory (Bandura, 1971; Bandura & Walters, 1959) provides a theoretical basis on how parental corporal punishment leads to adverse child outcomes. Bandura (1971) purported that social learning is an integration of cognitive and behavioral process during which the behavior, environment, and cognition are closely interrelated. The basic premise of this theory is that children learn through direct experience or by observing others' behavior and the consequences of these behaviors. Put another way, social learning theory suggests that parental use of corporal punishment on children models the use of physical force as a tool for achieving desired outcomes and unintentionally reinforces the legitimacy of violence in correcting undesirable behavior. In empirical research, externalizing behavior, including aggression, has been reported to be the foremost childhood misbehavior that elicits corporal punishment (Gershoff, 2002; Holden, Coleman, & Schmidt, 1995). However, by using corporal punishment to discourage aggression, parents are modeling the use of physical violence, the exact behavior that they intended to discourage in the child. Additionally, when children observe

the rewarding consequences of the use of physical force through their own compliance with corporal punishment, children may adopt violence as an effective and socially approved mean of resolving conflicts in their own social contexts including relationships with siblings and peers.

On the contrary, support for the positive influences of corporal punishment in that the use of physical discipline reinforces desirable behavior stems in behavioral theories (Larzelere & Kuhn, 2005). Central to this theory is that, punishment, including corporal punishment, can effectively correct children's misbehavior by increasing the probability of the child to immediately comply with the parent's disciplinary message. Researchers following behavioral theory contend that the use of more severe punishment, including corporal punishment, as a backup for children's resistance to mild disciplinary tactics such as time-outs may be particularly important to toddlers and preschoolers during which children less capable of making attributions in comparison to older children (Larzelere, 2000).

Attachment Theory

The scholarly discussion on corporal punishment as a determinant for children's internalizing behavior revolves predominantly around attachment theory. The main principles of attachment theory is that the deep and enduring emotional bond between the parent (or primary caregiver) and child, particularly in the early years of childhood, provides a feeling of safety and security for the child (Bowlby, 1982; Levy & Orlans, 2000). As actual experiences in the parent-child relationship develop the child's "internal working model of social and physical world" (Bretherton, 1985, p. 10), the negative experiences with the parent or primary caregiver is proposed to disrupt this exclusive and unique relationship. In turn, attachment theory asserts that children who fail to form a firm and secure relationship with their parent or caregivers are likely show signs of maladjustment (Levy & Orlans, 2000). In regards to the causal link between

corporal punishment and internalizing behavior problems, parental response to child's messages (e.g., need for attention or comfort) in forms of corporal punishment may inadvertently foster a feeling of rejection and unworthiness in the child's internal working model. As such, children who experience a continued pattern of corporal punishment are then expected to experience increased levels of avoidance, fear, and resentment in their relationship with their parent, ultimately becoming more vulnerable to internalizing symptoms including depression, withdrawal, and anxiety (Maguire-Jack, Gromoske, & Berger, 2012).

Effects of Neighborhood on Parental Use of Corporal Punishment

Family Stress Model

The link between neighborhood disadvantage and increased use of corporal punishment can be drawn from theories of stress. The family stress model of economic hardship proposed by Conger and colleagues (2000) suggests that economic hardship, for example, undergoing poverty and experiencing negative financial events, acts as a severe stressor in the family context and eventually, may have an adverse impact on the behaviors, emotions, or relationships of family members (Conger, Rueter, & Conger, 2000). From the perspective of the family stress model that is reformulated by Berkowitz' frustration-aggression hypothesis (1989), the pathway through which economic pressure on parents affects child outcomes is a two-step process. The initial process is the association between financial frustration and parental depression. The consequential step is parental depression that is likely to cause negative parental relationship marked by aggression and criticism. Finally, the disturbed parental relationship caused by family distress disrupts parenting practices, which in turn, are associated with increased levels of adverse child outcomes (Conger et al., 2000).

The family stress model has been widely supported by empirical research. Studies found evidence on the mediating role of family processes such as parenting practices in the association between economic stress and child's academic, social, and emotional competence (Conger et al., 2002; Simons et al., 1996). Nevertheless, consistent with the scholarly discussion on the strong emphasis on parent effects, a limitation of the family stress model is that the reciprocal nature of the parent-child relationship is not captured. Along these lines, Wadsworth and Santiago (2008) critiqued this model for regarding children as "passive recipients of parental problems" (p. 399). These scholars argue that although children are also strongly affected by economic stress, child-centered processes are not fully accounted for in the previous models. As such, an extension of the family stress model that incorporates both the child's and parents' experiences and perceptions of economic hardship and its interrelations is warranted in future research (Wadsworth & Santiago, 2008).

Theoretical and Conceptual Framework for Current Study

In this dissertation, ecological systems perspective provides the broad conceptual framework for the reciprocal relationships between the child, parents, and neighborhood. Theoretical basis for the direct effect of neighborhood disorganization builds on social disorganization theory. The discussion on corporal punishment and children's behavior problems is grounded in social learning theory and attachment theory. The mediation mechanism in which corporal punishment is hypothesized to mediate the effect of neighborhood disorganization on behavior problems incorporates elements of the family stress model. These theoretical perspectives are integrated to explain the pathway through which neighborhood effects are transmitted to children. First, greater levels of neighborhood disorganization manifested through the lack of collective efficacy as well as increased use of parental corporal

punishment are theorized to be risk factors for child behavior problems even after accounting for individual-, parent-, and neighborhood-level characteristics. Second, indirect effect of neighborhood transmitted through parental influence are particularly salient during young childhood when children's direct exposure to neighborhood disorganization is limited. Also, corporal punishment is likely to be more prevalent in disordered and unstable neighborhoods due to lack of community support and increased challenges for positive parenting. As such, parental corporal punishment is expected to mediate the associations between neighborhood disorganization and internalizing and externalizing behavior problems.

To better understand the ecologies of child development, the conceptual framework of this dissertation draws from the ecological framework, social disorganization theory, social learning theory, attachment theory, and the family stress model and existing scholarship, which is described in Figure 1.2.

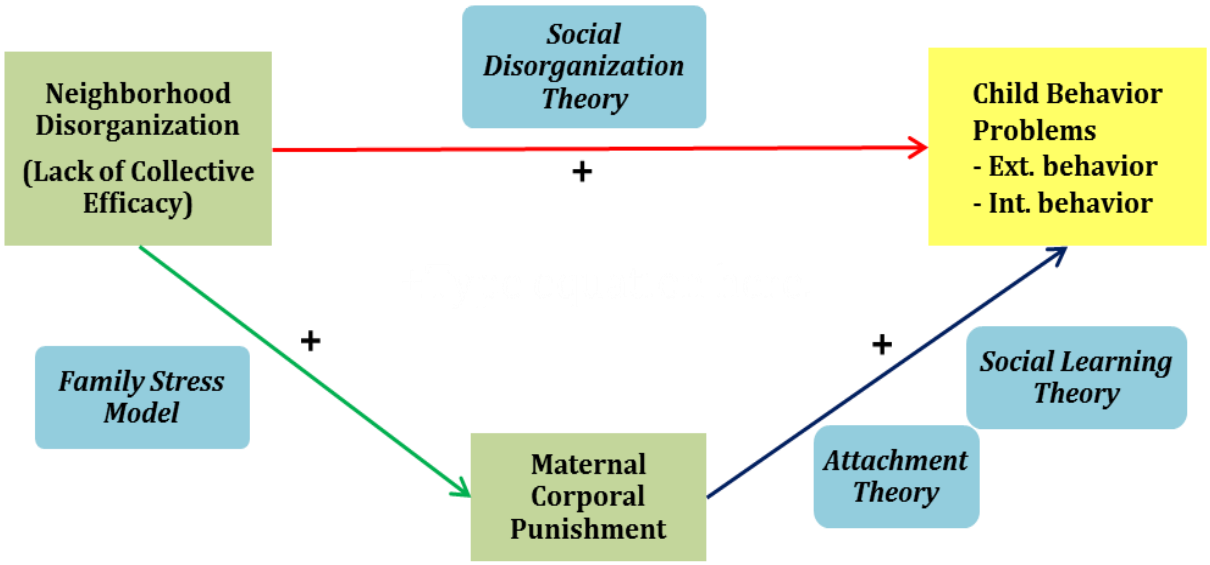


Figure 1.2. Conceptual Framework

Organization of Dissertation

This dissertation aims to examine the simultaneous effects of neighborhood disorganization (i.e., lack of collective efficacy) and corporal punishment on behavior problems in early childhood. Specifically, this dissertations entails three distinct empirical papers with introductory and concluding essays. All three empirical studies utilize data from the Fragile Families and Child Wellbeing Study (FFCWS), a longitudinal birth cohort study of children born in 20 large U.S. cities. The specific research goals of the three papers are detailed below.

The first paper (Chapter Two) examines the simultaneous direct effects of neighborhood disorganization and maternal corporal punishment on five-year-olds' externalizing and internalizing behavior problems. This study also explores the indirect neighborhood influence on child behavior by testing whether maternal corporal punishment is a significant mediator in the neighborhood disorganization and child behavior problems associations. Hypotheses are based on the aforementioned conceptual framework and prior literature on the roles of neighborhood- and parent-processes on child behavior.

The second paper (Chapter Three) builds on the conceptual and analytic models of the first paper. Drawing from the conceptual framework of the current dissertation and perspectives of the risk model (Spencer, 1990) and the group differences hypothesis (Garcia Coll, 1990), this chapter explores whether there are discernible differences in the effects of neighborhood disorganization and maternal corporal punishment on early behavioral issues by race and ethnicity. Findings of this study are expected to shed light on the intricate relationships between neighborhood-, parent-, and individual child-level processes with race and ethnicity.

The third paper (Chapter Four) investigates neighborhood and parent influences on the longitudinal patterns of behavior problems between the ages three to five. Of particular interest

in this chapter are: 1) the effects of neighborhood disorganization and maternal corporal punishment on between-child differences in initial behavior problems at the mean age of the study sample; 2) the effects of neighborhood disorganization and maternal corporal punishment on the average rates of change in behavior problems; and 3) whether child age moderates the effects neighborhood and parenting processes on behavior problems.

The final chapter (Chapter Five) of this dissertation provides a summary of the findings from the three empirical papers. Based on these findings, implications for social work practice and policy are discussed.

Significance of the Study

Although the literature has firmly established neighborhood disorganization and parental corporal punishment as determinants of adverse child outcomes, significant gaps remain in this body of scholarship. The foremost of these gaps is the scarcity of a robust, multi-dimensional measure that encompasses the dynamic processes of the neighborhood effects, as opposed to solely relying on structural indicators of neighborhood disadvantage such as poverty and unemployment rates (Sampson et al., 2002). In order to address this notable limitation in existing literature, this study uses neighborhood measures that represent core processes underlying neighborhood disadvantage (Kohen et al., 2008; Sampson et al., 2002; Xue et al., 2005), while adequately controlling for proximal factors such as individual, family, and parent characteristics. Examination of process-oriented neighborhood factors that are associated with childhood problems will provide valuable insight to social work practice by highlighting specific neighborhood-level constructs that should be targeted for intervention and prevention of adverse parenting and associated child behavior problems.

Another significant gap in extant research is the limited knowledge base on the effect of corporal punishment on child behavior problems in the contexts of neighborhoods. Guided by Bronfenbrenner (1979)'s contextual framework, the linkage between neighborhood, parenting, and child development received increased attention in recent social science research (Chuang et al., 2005; Leventhal & Brooks-Gunn, 2000). Nonetheless, empirical literature that concurrently explores the effect of corporal punishment and the broader ecological and contextual influences, such as neighborhood disorganization, on children remains very limited (Button, 2008; Fletcher, Darling, Steinberg, & Dornbusch, 1995; Molnar, Buka, Brennan, Holton, & Earls, 2003). A comprehensive exploration of the relationship between neighborhood and parenting on child development, as well as the role of parenting practices in this association, will better explain the mediating mechanism of parenting through which neighborhood influences early childhood outcomes.

Moreover, considering the growth of racial and ethnic minority populations that comprise approximately one third of the U.S. population (Centers for Disease Control and Prevention, 2013), there is a critical need to understand racial and ethnic differences in the effects of neighborhood disorganization and corporal punishment on children. Previous studies indicate that children from racial and ethnic minority populations may be more vulnerable to neighborhood risk and negative parenting based on more prevalent exposure to these negative influences (Brooks-Gunn et al., 1993; Chase-Lansdale & Gordon, 1996; Duncan et al., 1994; Gunnoe & Mariner, 1997). Yet, other studies suggest that these associations do not vary by race (Eamon, 2001; Grogan-Kaylor, 2005a). Additional research that examines whether or not the effects of neighborhood disorganization and parental corporal punishment on children's behavioral outcomes differs by race and ethnicity is warranted. The new knowledge generated

by this research can inform the cultural competency of social work practice with parents and children living in disadvantaged neighborhoods.

Finally, despite the extensive literature on the confluence of neighborhood characteristics and parenting practices on negative outcomes during adolescence (Church II et al., 2012; Dornbusch, Ritter, & Steinberg, 1991; Halpern-Felsher et al., 1997; Han & Grogan-Kaylor, 2013), there is a paucity of research on how neighborhoods affect pre-adolescent children (for exceptions see Brooks-Gunn, Klebanov, & Liaw, 1995; Chase-Lansdale & Gordon, 1996; Grogan-Kaylor, 2005b; Kohen et al., 2008; Odgers et al., 2012). The concentration on adolescents' outcomes in previous neighborhood research could be attributed to the perception that younger children are less affected by extra-familial factors compared to adolescents who are more exposed to immediate neighborhood influences. To help address this gap in extant literature, the current study focuses on the effects of neighborhood disorganization and maternal corporal punishment on the patterns of child behavioral outcomes during the first five years of life. Identifying risk factors in early childhood is particularly critical for social work practice, as problematic behavior that emerges during these earlier years of life may be more amenable to early intervention than problems that are allowed to persist into adolescence or adulthood before being addressed (Church II et al., 2012; Harden & Klein, 2011; Linver, Brooks-Gunn, & Kohen, 2002; Yates, Egeland, & Sroufe, 2003).

CHAPTER TWO

EXTERNALIZING AND INTERNALIZING BEHAVIORS IN EARLY CHILDHOOD: THE INFLUENCES OF NEIGHBORHOOD DISORGANIZATION AND MATERNAL CORPORAL PUNISHMENT

Abstract

This chapter aims to address the scarcity of prior research that explored the simultaneous roles of parenting- and neighborhood-processes on problematic behaviors in early childhood with the following objectives: 1) to explore the simultaneous effects of neighborhood disorganization (represented by low levels of collective efficacy) and maternal corporal punishment on five-year-olds' behavior problems; and 2) to test whether maternal corporal punishment mediates the effect of neighborhood disorganization on child behavior problems. The sample comprised of 2,472 families in the Fragile Families and Child Wellbeing Study (FFCWS). The outcome variables were externalizing and internalizing behavior problems at child age five. The main predictor variables were neighborhood collective efficacy and frequency of maternal corporal punishment. Covariates included individual child-, parent-, and neighborhood-level variables. Multilevel models were employed to investigate the concurrent effects of the predictors on the outcomes while accounting for the possible clustering of individuals in neighborhoods. The mediation hypothesis was tested using the product of coefficients approach and bootstrapped confidence intervals for total and specific indirect effects. Maternal corporal punishment, regardless of its frequency, was a significant predictor of higher levels of both externalizing and internalizing behavior problems, even after controlling for the effects of collective efficacy, earlier behavior problem scores, and covariates. The protective influence of collective efficacy on internalizing problems was statistically significant, whereas its effect on externalizing problems was marginally significant, net of other predictors. Bootstrapping replications reveal that the indirect

effects of collective efficacy on behavior problems through maternal corporal punishment was not significant, after accounting for the covariates. These findings demonstrate the importance of multilevel prevention and intervention that reduce both neighborhood disorganization and maternal use of corporal punishment for more desirable child outcomes.

Literature Review

Externalizing and internalizing behavior problems are the most frequently reported child behavioral outcomes in the field of developmental psychology and child psychopathology (Achenbach & Edelbrock, 1978; Hinshaw, 1987). Early manifestations of behavioral problems have lasting implications for more serious problems throughout childhood, and even into adulthood (Bradley & Corwyn, 2002; Campbell, Shaw, & Gilliom, 2000; Moffitt, 1993; Xue et al., 2005). Specifically, externalizing behavior problems in early childhood are likely to persist in later years (Denham et al., 2000; Mesman & Koot, 2001) and are potential indicators of more long-term risk factors including academic problems (Baydar et al., 1993; Chase-Lansdale & Gordon, 1996); adolescent delinquency and drug use (King, Iacono, & McGue, 2004; Loeber & Hay, 1997); and adult criminality (Huesmann & Eron, 1992; Loeber & Hay, 1997; Moffitt et al., 2002). Early internalizing behavior have been linked to continued behavior problems in later childhood (Bornstein, Hahn, & Haynes, 2010; Fischer, Rolf, Hasazi, & Cummings, 1984; Mesman & Koot, 2001); and mental health problems in adulthood (Pihlakoski et al., 2006; Zahn-Waxler, Klimes-Dougan, & Slattery, 2000). Therefore, understanding the processes that drive these early indicators of maladjustment is particularly important for early prevention and intervention efforts that aim to prevent a number of undesirable child and adult outcomes.

There are disparities, however, in detecting and treating early manifestations of behavior problems across residential areas. For example, children residing in disadvantaged neighborhoods are likely to receive limited clinical attention before school entry compared to children in more affluent neighborhoods (Campbell et al., 2000). Thus, it is critical that we understand the social processes that drive early behavioral problems and provide preventive intervention strategies for child well-being at the earliest stage of life.

Externalizing and Internalizing Behavior Problems

Externalizing behavior problems encompass all behavioral issues of childhood that are manifested through under-controlled behavior and directed toward the child's outside world (Cole, Zahn-Waxler, Fox, Usher, & Welsh, 1996; Liu, 2004). Attention deficiency/hyperactivity and conduct problems/aggression (Roeser, Eccles, & Strobel, 1998), antisocial behaviors, peer problems (Grogan-Kaylor, 2005a), and delinquent behaviors (Hinshaw, 1992) are specific behavioral issues that are included in externalizing problems.

In contrast to externalizing behavior problems which are "manifested in children's outward behavior" (Liu, 2004, p. 93) and directed at others, internalizing behaviors are directed at self and disturb the psychological functioning of the child (Barber et al., 2005). Liu (2004, p. 94) describes internalizing behavior problems as "problems that more centrally affect the child's internal psychological environment rather than the external world". Examples of internalizing behavior problems include depressive symptoms such as withdrawn, anxious, fearful, and inhibited behaviors (Barber et al., 2005; Hinshaw, 1992; Roeser et al., 1998).

Xue and colleagues (2005) note that empirical evidence regarding the predictors of children's internalizing behavior is limited compared to the predictors of externalizing behavior. Scholars attribute this scarcity to the methodological challenges of assessing "pure" internalizing problems in young children as well as the substantial coexistence of internalizing and externalizing behavior (Campbell, 1995; Kessler, Avenevoli, & Merikangas, 2001; Wiesner & Kim, 2006). Consequentially, the dichotomy between early internalizing and externalizing problem behaviors is not absolute and symptom reports on internalizing behavior by parents, teachers, and children are likely to be inconsistent (Kessler et al., 2001). The limited research

base on early internalizing problems and the comorbidity between the two behavioral symptoms point to the importance of investigating both externalizing and internalizing problems.

The current study attempts to expand on the limited literature in regards to precursors of behavior problems in early childhood by using data from the Fragile Families and Child Wellbeing Study (FFCWS) to examine individual-, parent-, and neighborhood-level predictors of early externalizing and internalizing behavior problems. This study uses a conceptual framework that integrates theoretical perspectives from the ecological systems theory, social disorganization theory, social learning theory, attachment theory, and the family stress model.

Direct Neighborhood Effects on Behavior Problems in Early Childhood

Several studies link disadvantaged neighborhood features to higher risk for child behavior problems (Campbell, Shaw, & Gilliom, 2000; Duncan et al., 1994; Ingoldsby et al., 2006; Ingoldsby & Shaw, 2002; McLoyd, 1998). Neighborhood disadvantage is frequently measured using structural indicators such as neighborhood poverty and unemployment rates (Beyers, Bates, Pettit, & Dodge, 2003; Elliott et al., 1996; Mrug & Windle, 2009), deteriorated physical properties of neighborhood environments (Kohen et al., 2002), violence and crime rates (Attar, Guerra, & Tolan, 1994; Pinderhughes, Nix, Foster, & Jones, 2007), and ethnic heterogeneity (Elliott et al., 1996). More recently, neighborhood research on child outcomes is shifting its focus from structural indicators of neighborhood functioning to social and institutional processes representing the levels of neighborhood ties, cohesion, and mutual trust (Sampson et al., 2002). Of particular note, a seminal review of existing neighborhood studies by Sampson and colleagues (2002) highlighted the prominence of process-oriented neighborhood mechanisms that help account for individual child and family well-being. Relatedly, empirical research links a lack of positive neighborhood social processes to increased exposure to crime,

deviant behavior, and negative peer group influences, as well as adverse child behavioral outcomes including externalizing and internalizing problems (Church II et al., 2012; Ingoldsby et al., 2006; McLeod & Nonnemaker, 2000; Mrug & Windle, 2009; Odgers et al., 2009; Pachter, Auinger, Palmer, & Weitzman, 2006; Pinderhughes et al., 2007; Roosa et al., 2010). This literature tends to focus on neighborhood effects on outcomes in late childhood and adolescence (Campbell et al., 2000), however. The current study addresses the more limited availability of research on neighborhood effects on early childhood outcomes by focusing on the influences of neighborhood disorganization, namely, collective efficacy (or the lack of it), on behavior problems that manifest before the age of entry to public school.

Collective Efficacy

Collective efficacy is defined as "social cohesion among neighbors combined with their willingness to intervene on behalf of the common good" (Sampson et al., 1997, p. 918). Collective efficacy combines informal social control, which represents residents' willingness to intervene for social order, with social cohesion and trust, which indicates the level of neighbors' capacity to collectively bond for common values (Sampson, 1997). In the context of child development, emerging evidence demonstrates that collective efficacy at the neighborhood level is positively related to effective family functioning and desirable child behavioral outcomes (Deng et al., 2006; Elliott et al., 1996; Sampson et al., 2002; Sampson, Raudenbush, & Earls, 1997; Xue et al., 2005). Neighborhoods marked with high levels of collective efficacy may share a common goal of maintaining social control and regulation. Thus, adults in these neighborhoods willingly intervene in social problems and provide trust and social support for their neighbors, which in turn, is thought to promote effective and positive parenting and child development.

In Elliot and colleagues' (1996) multilevel study using hierarchical linear models that included samples from 33 neighborhoods in Denver (n = 820) and 59 tracts in Chicago (n = 887), informal social control predicted neighborhood social functioning and was inversely associated with externalizing problems (delinquent behavior and drug use) among adolescents residents, albeit effect sizes were small.

Xue and colleagues' (2005) multilevel, longitudinal study of 2,805 children (ages 5-11) in 80 Chicago neighborhoods found that neighborhood collective efficacy and children's internalizing behavior problems had a significant inverse association after controlling for individual and family characteristics as well as structural disadvantage in neighborhoods. Also, this study indicates that collective efficacy accounted for 35% of the effect of neighborhood poverty on children's internalizing behavior, suggesting that collective efficacy plays a protective role for children in otherwise disadvantaged neighborhoods (Xue et al., 2005).

Direct Parent Effects on Behavior Problems in Early Childhood

In addition to the aforementioned line of research that underscores the protective role of neighborhood collective efficacy in early childhood development, a host of empirical studies discuss the powerful influences of parenting processes in shaping child outcomes, in particular, the influence of corporal punishment on undesirable child behavioral outcomes.

Parental Use of Corporal Punishment

In this literature, corporal punishment is defined as "the use of physical force with the intention of causing a child to experience pain but not injury for the purposes of correction or control of the child's behavior" (Straus, 1994, p. 4). Following this definition, corporal punishment in empirical studies has been operationalized to include spanking, slapping, striking, hitting with an object, and physical punishment (Gershoff, 2002). While these constructs are not

mutually exclusive, the body of research on corporal punishment of young children have mostly focused on spanking—the most frequently used form of corporal punishment during early childhood (Gershoff, 2002; Wissow, 2001). Spanking can be defined as the parental act of hitting children on their bottom or extremities with an open hand for disciplinary purposes (Berlin et al., 2009).

A large volume of literature continues to highlight the harmful consequences of spanking and other types of corporal punishment on child development including externalizing and internalizing behavior problems (Gershoff, 2013; Grogan-Kaylor, 2005a; MacKenzie et al., 2013; Maguire-Jack et al., 2012; Ma, Han, Grogan-Kaylor, Delva, & Castillo, 2012; Straus, Sugarman, & Giles-Sims, 1997). 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 including corporal 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. (along with Somalia) remains one of the two nations that has not ratified the Convention on the Rights of the Child (Global Initiative to End All Corporal Punishment of Children, 2015; United Nations Children's Fund, 2006).

In fact, despite the recommendation of the American Academy of Pediatrics to use alternative methods of child discipline (American Academy of Pediatrics, 1998; Healthy Children, 2010), corporal punishment continues to be widely used in U.S. homes and is a culturally legitimated parenting practice (Lee, Altschul, & Gershoff, 2013; MacKenzie, Nicklas, Waldfogel, & Brooks-Gunn, 2012). Indeed, corporal punishment is a common experience in the U.S. starting as infancy (Lee et al., 2014; Maguire-Jack et al., 2012; Zolotor, Robinson, Runyan, Barr, & Murphy, 2011) and reaching its peak during toddlerhood (Berlin et al., 2009; Gershoff,

2002). Specifically, Maguire-Jack and colleagues (2012) found that prevalence of parental spanking was approximately 30% at child age one, 56% at child age three, and 50% at child age five. Consequences of corporal punishment during these early years are particularly noteworthy of researcher's 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 corporal punishment and externalizing behavior problems are found in social learning theory, which asserts that parental use of corporal punishment models aggressive behavior to children and legitimizes the use of physical force as socially accepted methods of correcting undesirable behavior (Bandura, 1971; Bandura & McClelland, 1977). The associations between corporal punishment and internalizing problems are supported by attachment theory (Bowlby, 1982), which underscores the importance of a positive bond and attachment between parent and child for healthy social and emotional development over the life course. Attachment theory posits that parental use of corporal punishment disrupts the on-going trust in the child's relationship with his or her parent and arouses negative emotions (e.g., fear and withdrawal) in the child, which may result in internalizing problems.

A comprehensive review by Gershoff (2002) synthesizes 88 empirical studies that explicitly investigated the associations between corporal punishment and childhood behaviors. This meta-analysis found aggression to be the most frequently reported child outcome among a constellation of adverse developmental outcomes positively associated with corporal punishment. Specifically, it found moderate effect sizes for the association between corporal punishment and mental health (–0.49) and externalizing behavior that included aggression (0.36)

and anti-social behavior (0.42). Consistent with the results of studies in this meta-analyses, voluminous literature points to the significant positive association between corporal punishment and behavior problems in early childhood using the Child Behavior Checklist (CBCL) (Achenbach & Edelbrock, 1978) or Behavior Problem Index (BPI) (Berlin et al., 2009; Deater-Deckard, Ivy, & Petrill, 2006; MacKenzie et al., 2012; Maguire-Jack et al., 2012; Slade & Wissow, 2004). Significant findings were reported for the comprehensive measurement encompassing both internalizing and externalizing problems (McLoyd & Smith, 2002; Slade & Wissow, 2004) as well as for the externalizing and internalizing behavior subscales (Berlin et al., 2009; Deater-Deckard et al., 2006; Maguire-Jack et al., 2012).

Research on Corporal Punishment Using the Fragile Families and Child Wellbeing Study

A number of studies have conducted longitudinal analyses using data from the Fragile Families and Child Wellbeing Study (FFCWS) on the effects of parental corporal punishment on child behavior. They demonstrate that corporal punishment at age 3 predicts increased externalizing behavior at age 5 (Lee, Taylor, Altschul, & Rice, 2013; MacKenzie et al., 2012; Taylor, Manganello, Lee, & Rice, 2010). Furthermore, Lee and colleagues (2013) report that maternal corporal punishment at ages 1 and 3 are associated with higher levels of aggression at ages 3 and 5, respectively. Maternal warmth, defined as the reciprocity and trust between parent and child, has also been tested as a moderator in this relationship, but was not statistically significant (Lee et al., 2013). FFCWS studies also document longer-term consequences of corporal punishment experienced during early childhood. Parental corporal punishment at ages 3 and 5 are associated with higher externalizing problems at age 9 (MacKenzie et al., 2013). These studies only focus on aggression or externalizing problems, however. Only one FFCWS study to date by Maguire-Jack and colleagues (2012) reports on both externalizing and internalizing

behaviors as outcomes of corporal punishment. Findings from this study support the positive link between maternal use of corporal punishment at ages 1 and 3 with both subsequent externalizing and internalizing behavior at ages 3 and 5. The concentration on externalizing behavior as the dependent variable in corporal punishment research, including the FFCWS studies, is a notable limitation in extant literature. To address this limitation and to explore the impact of corporal punishment on a comprehensive spectrum of child behavior problems, the current study examines both internalizing and externalizing behaviors as the outcomes.

Indirect Effects of Neighborhood Disorganization on Child Behavior Problems through Maternal Corporal Punishment

A noteworthy finding in research concerning the direct effects of neighborhood disorganization on child outcomes is that while neighborhood influences on children's development are evident, a considerable number of empirical studies found that the strength of this direct association is modest, or even ceases to be significant when social processes and parenting variables are included in analytic models (Bradley & Corwyn, 2002; Chung & Steinberg, 2006; McCulloch, 2006; Molnar et al., 2003; Rankin & Quane, 2002; Sampson et al., 2002; Sharkey & Elwert, 2011). The following section of the current study will review empirical findings that examined the indirect pathways through which neighborhood contexts influence child well-being (Chung & Steinberg, 2006; Conger, Ge, Elder, Lorenz, & Simons, 1994; Galster, 2012; Klebanov et al., 1994; McLoyd, 1998; Mrug & Windle, 2009).

Under economically challenging situations, parenting practices have been observed to be more "parent-centered, rejecting and inconsistent" and less "child-centered" and nurturing (Mistry, Vandewater, Huston, & McLoyd, 2002, p. 935). Consequently, drawing from a social disorganization framework, existing studies predominantly report on the mediating role of harsh

and negative parenting (Burton & Jarrett, 2000; Furstenberg, 1993) on the associations between neighborhood disadvantage and adverse child outcomes.

According to social disorganization theory, higher levels of collective efficacy 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). A study by Button (1998) that explored residents' attitudes about family violence shows that neighborhoods with low levels of collective efficacy viewed parental corporal punishment more favorably. This study asserts that the increased use of negative and extreme parenting practices is possibly due to the parental fear of losing control over their children in disordered environments (Button, 2008). Based on a Canadian sample of 3,528 children aged 4 and 5 years, Kohen and colleagues (2008) observe a significant indirect effect of neighborhood structural disadvantage on children's behavioral outcomes that was mediated through neighborhood social cohesion, maternal depression, and punitive parenting. The conceptual model of this study is noteworthy as it is based on an integration of social disorganization and family stress perspectives and discovered the significance of both social- (e.g., neighborhood cohesion) and family-processes (e.g., punitive parenting) in neighborhood effects on children (Kohen et al., 2008).

Moreover, the indirect effects of living in a socio-economically disadvantaged community on delinquency through parenting (Larzelere & Patterson, 1990) has been empirically tested using path models in a recent study by Church and colleagues (2012) based on data from the FFCWS. Church and colleagues' (2012) study reveals the direct linkage between neighborhood disadvantage (reflected by the level of physical disorder in the neighborhood) and children's negative behavior. This study also documents an indirect path between these macro

and micro contexts through aggravation in parenting, a construct that represented "the inability to parent in accordance with the norms of society" (p. 1040).

Interestingly, another line of research that focuses on the interaction between neighborhood disadvantage and corporal punishment contends that corporal punishment may act as a protective factor in problematic neighborhoods (Eamon, 2002; Earls, McGuire, & Shay, 1994; Furstenberg, 1993). This stream of research highlights parenting practices as moderators of neighborhood influences on child well-being. These studies suggest that harsh and punitive parenting are potentially less harmful in disadvantaged neighborhoods, and may be a protective parenting response to the dangerous and detrimental conditions in impoverished neighborhoods. In support of this theory, results based on a longitudinal study of 963 pre-adolescents (ages 10-12 years) from the National Longitudinal Survey of Youth (NLSY) indicate that harsh and controlling parenting practices, including corporal punishment, predict lower levels of externalizing behavior in disadvantaged neighborhoods (Eamon, 2002). Neighborhood disadvantage in this study was represented by a composite measure of neighborhood problems such as crime and social disorder.

Contrary to this finding, Grogan-Kaylor's study (2005b) on nearly 2,000 mother-child (ages 4 to 14) pairs in NLSY found a significant association between corporal punishment and externalizing behavior regardless of the neighborhood quality, a measure that included neighborhood crime and collective efficacy. Also, Simons and colleagues (2002) found that the relationship between corporal punishment and behavior problems did not differ by the level of neighborhood crime. The use of stronger statistical controls in the analyses of these studies may explain the inconsistent findings from Eamon's study. Although Grogan-Kaylor (2005b) and Simons and colleagues (2002) tested the interaction of neighborhood disadvantage and corporal

punishment rather than using mediation models, their results provide noteworthy implications for this dissertation on the dynamics between neighborhood and parenting processes.

In addition, several studies investigated the links between neighborhood characteristics and harsh/negative parenting practices, and how this connection might affect child outcomes using the family and parent mediational model. These studies tested the hypothesis that the effects of children's neighborhood is manifested through more proximal and immediate experiences, such as parent's behaviors towards the child (Brooks-Gunn et al., 1993; Brooks-Gunn, Duncan, & Maritato, 1997; Conger et al., 1992; Grant et al., 2003, 2005, 2006; McLoyd, 1990; Reising et al., 2013; Repetti, Wang, & Saxbe, 2009). In a recent study of children between the ages 9 to 15 years, Reising and colleagues (2013) examined parenting practices related to economic variables both at the family- and neighborhood-level. These researchers found that the associations of both neighborhood economic disadvantage and parental depression with children's externalizing and internalizing behavior were accounted for by disrupted parenting, a composite measure of parental withdrawal and intrusiveness that was reported by both the parent and the child.

To recapitulate, evidence on the mediating role of corporal punishment in the link between neighborhood disadvantage and child behavior problems has been found in a number of studies. Nonetheless, the focus on outcomes of middle childhood or adolescence cautions the generalizability of these results to early childhood (Linver et al., 2002). To expand the existing conceptual models and to better understand the comprehensive mechanisms of neighborhood effects during children's early years, the current study explores the unique roles of neighborhood and family processes as well as the interplay between these constructs more carefully.

Parental Warmth and Depression as Covariates

Child development research and parenting theory place strong emphasis on the broader context of parenting in which certain parenting practices such as corporal punishment are used. Based on existing literature that recognizes the unique roles of parental warmth and depression in the relationship between corporal punishment and child well-being, these variables will be included as covariates in this study.

Parental Warmth

Parental warmth involves parenting practices that nurture affection and support with the goal of positively reinforcing socialization and adaptation of children (Dallaire et al., 2006; Pettit, Bates, & Dodge, 1997). Unlike harsh parenting practices including corporal punishment, parental warmth focuses on fostering mutual trust in the parent-child relationship (Darling & Steinberg, 1993). This mutual trust and reciprocity promote desirable child behaviors and conversely, discourage problematic behaviors (Harper et al., 2006; Stormshak, Bierman, McMahon, & Lengua, 2000). However, it should be noted that warm and harsh parenting practices are not mutually exclusive; rather, they should be simultaneously considered in the broader context of parenting. Stated differently, parental corporal punishment and parental warmth are likely to co-occur (Deater-Deckard et al., 2011; Lee, Altschul, & Gershoff, 2013; Smith & Brooks-Gunn, 1997) although the degree to which parenting practices will be used both in frequency and degree will vary by each parent and child dyad. Children's experiences of corporal punishment are assumed to have different meanings and impacts depending on the overall parenting environment. For instance, corporal punishment that was employed in the context of low parental warmth and support would be more deleterious than it would be in a loving and supportive environment (Lansford, 2010).

However, empirical evidence on the protective role of parental warmth in reducing the deleterious effects of corporal punishment on child behavior problems is mixed. Several studies find that parental warmth moderates the association between corporal punishment and child behavior problems (Deater-Deckard et al., 2006; Lansford, 2010; Ma et al., 2012; McKee et al., 2007; McLoyd & Smith, 2002; Simons, Wu, Lin, Gordon, & Conger, 2000), while in other studies, this relationship was not dependent on the level of maternal warmth (Berlin et al., 2009; Lee et al., 2013; MacKenzie et al., 2012; Stacks, Oshio, Gerard, & Roe, 2009). Of particular note is Lee and colleagues' (2013) study of 3,279 mother-child dyads from the FFCWS that examined whether maternal warmth moderates the transactional associations between corporal punishment and child aggression in early childhood (ages 1, 3, and 5) using cross-lagged path models. These researchers found that maternal warmth is not a significant moderator in this relationship, indicating that the adverse effects of corporal punishment are present even in the context of warm parenting. Despite conflicting evidence in extant literature on the supportive influence of parental warmth in the corporal punishment and behavior problem linkage, the current study controlled for maternal warmth to effectively account for the parenting environment in which child development takes place.

Parental Depression

Belsky's ecological model of parenting presumes parental characteristics including psychological functioning as influential determinants of nurturing parenting behavior and parent-child relationship (Belsky, 1984). Accordingly, a host of studies recognize the positive association between parents' depressive symptomatology and increased use of corporal punishment (Berlin et al., 2009; Goodman et al., 2011; Jackson, Gyamfi, Brooks-Gunn, & Blake, 1998; McLoyd, Jayaratne, Ceballo, & Borquez, 1994; Mulvaney & Mebert, 2007; Smith &

Brooks-Gunn, 1997; Wissow, 2001). Furthermore, based on the tenet that parental depression interferes with parent's capability to provide a nurturing, child-centered, and interactive family environment, the adverse effect of parental depression on optimal child development is well established. A recent meta-analytic review of 193 studies on the effects of maternal depression on child psychopathology indicates significant, positive associations between maternal depression and increased levels of externalizing and internalizing behavior problems in children with an overall mean age of seven years (Goodman et al., 2011). The magnitude of this relationship however, was small (effect size for internalizing problems was .23 while it was .21 for externalizing problems). Since the extant literature underscores both linkages concerning parental depression and corporal punishment as well as parental depression and adverse behavioral outcomes, it is particularly important to consider the level of parental depression in examining the corporal punishment and child behavior connection.

Child, Family, and Neighborhood Characteristics

Analyses in the current study also accounted for a variety of demographic factors at the individual child-, family-, and neighborhood-levels that existing literature identifies as predictors of child behavior problems, corporal punishment, and neighborhood disorganization. Individual child factors included child age and sex. Previous studies found that neighborhood effects on problem behaviors are stronger among older children and for male children (Elliott et al., 1996). Corporal punishment is most prevalent during preschool years with the rates dropping off as children enter school age (Gershoff, 2002). Boys experience more corporal punishment than girls, mainly because boys tend to exhibit more externalizing problems that elicit corporal punishment (Bongers, Koot, Van der Ende, & Verhulst, 2003; Gershoff, 2002).

Covariates at the family and parent levels included race/ethnicity, mother's relationship status with child's father, mother's education, mother's age, and annual household income, which were identified in the literature as being associated with the main predictors (Gershoff, 2002; Sampson & Raudenbush, 2004). For instance, prior research suggested that neighborhood effects are stronger for racial/ethnic minority families (Ingoldsby et al., 2006; Pinderhughes et al., 2007; Sampson & Raudenbush, 2004). Furthermore, corporal punishment has been found to be more common in minority families and in disadvantaged families with low SES (Berlin et al., 2009; Wissow, 2001).

Finally, neighborhood demographics included average income of respondent's neighborhood (i.e., census tract) to represent the structural conditions of neighborhoods. Prior findings established the significant negative correlations between structural factors such as neighborhood income and social disorganization in neighborhoods (Kohen et al., 2008; Pinderhughes et al., 2007).

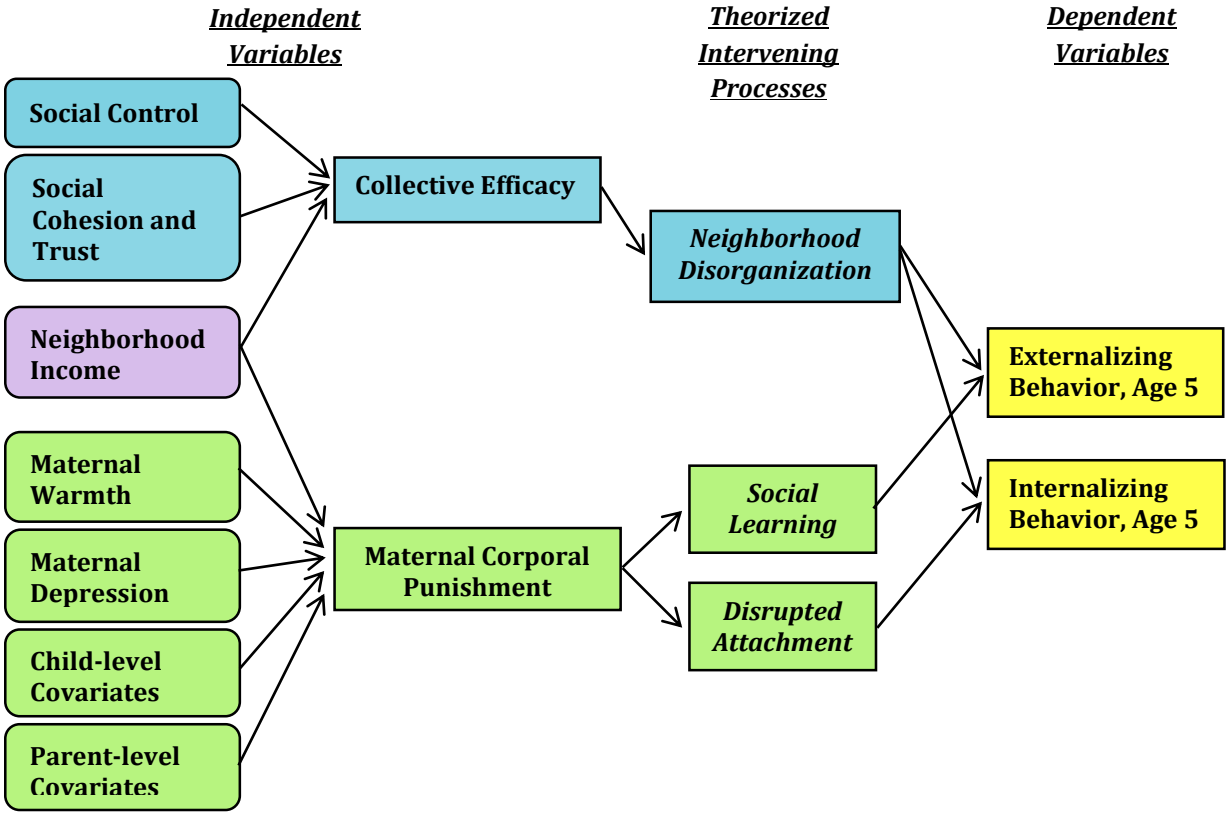
Research Questions and Hypotheses, and Conceptual Models of Current Study

Based on prior literature and a comprehensive theoretical perspective that draws from the ecological framework, social disorganization theory, social learning theory, attachment theory and the family stress model, this study aims to address the following research questions.

- Research question 1a: What is the relationship between neighborhood collective efficacy and externalizing behavior problems in children at age 5?
    - Hypothesis 1a: Neighborhood collective efficacy will have an inverse association with externalizing behavior problems in children at age 5.
- Research question 1b: What is the relationship between maternal corporal punishment and externalizing behavior problems in children at age 5?

- Hypothesis 1b: Maternal corporal punishment will have a positive association with externalizing behavior problems in children at age 5.

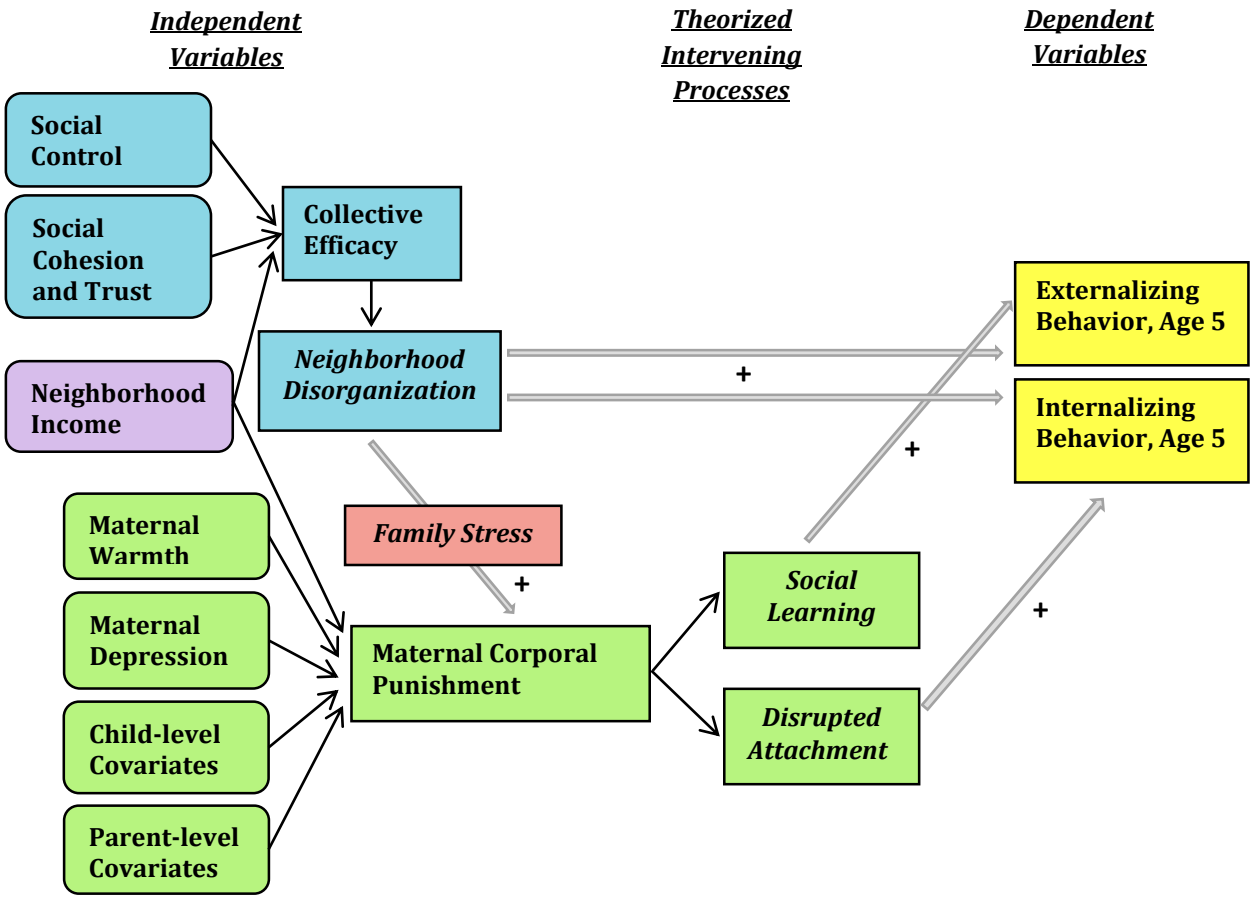
- Research question 1c: What is the relationship between neighborhood collective efficacy and internalizing behavior problems in children at age 5?
  - Hypothesis 1c: Neighborhood collective efficacy will have an inverse association with internalizing behavior problems in children at age 5.
- Research question 1d: What is the relationship between maternal corporal punishment and internalizing behavior problems in children at age 5?
  - Hypothesis 1d: Maternal corporal punishment will have a positive association with internalizing behavior problems in children at age 5.



Note: Child-level covariates: externalizing behavior age 3, internalizing behavior age 3, age, gender
Parent-level covariates: age, race/ethnicity, education, family income, relationship status

Figure 2.1. Conceptual Model of Research Questions 1a through 1d.

- Research question 2a: Does maternal corporal punishment mediate the relationship between neighborhood collective efficacy and externalizing behavior problems at age 5?
    - Hypothesis 2a: Maternal corporal punishment will partially mediate the relationship between neighborhood collective efficacy and externalizing behavior at age 5.
- Research question 2b: Does maternal corporal punishment mediate the relationship between neighborhood collective efficacy and internalizing behavior problems at age 5?
    - Hypothesis 2b: Maternal corporal punishment will partially mediate the relationship between neighborhood collective efficacy and internalizing behavior at age 5.



Note: Child-level covariates: externalizing behavior age 3, internalizing behavior age 3, age, gender
Parent-level covariates: age, race/ethnicity, education, family income, relationship status

Figure 2.2. Conceptual Model of Research Questions 2a and 2b.

Method

Analyses for the current study used data from the Fragile Families and Child Wellbeing Study (FFCWS). Prior to implementing this study, the Institutional Review Board (IRB) at Michigan State University approved this study as "exempt research", meaning that as a study that uses secondary data in which respondents cannot be identified, this study is determined exempt from federal regulations governing the ethical conduct of research on human subjects. Following IRB approval, application for the Contract Data License that granted access to neighborhood and contextual variables in the study (e.g., census tract information, neighborhood income) was approved by the Center for Research on Child Wellbeing at Princeton University.

Data

The FFCWS is a birth cohort study of 4,898 families conducted in 20 large U.S. cities with populations over 200,000. Of these 20 cities, 16 were selected from stratified random sampling based on stratification by policy environments and labor market conditions while the remaining four cities were included because they were of special interest to the funding organization (Reichman, Teitler, Garfinkel, & McLanahan, 2001). Mothers were recruited at hospitals in these 20 cities between years 1998 to 2000 at the time of the focal child's birth. Biological fathers were also recruited either at the hospital when their child was born or by telephone. Children born to unmarried parents (about 3,700 children) were purposely oversampled and constitute approximately three-quarters of the full FFCWS sample. This sampling design approach was designed to yield an overrepresentation of socioeconomically disadvantaged families. These "fragile families" and their children were likely to be at greater risk of experiencing adverse socio-economic conditions such as poverty, unstable marital

relationships, as well as disadvantaged neighborhood conditions and harsh parenting practices including corporal punishment (Maguire-Jack et al., 2012).

The core study consisted of mothers' and fathers' interviews at focal child's birth (baseline) and were followed up when the child was one year old (Wave 2), three (Wave 3), five (Wave 4), and nine (Wave 5) years of age. Baseline interviews were conducted in-person right after the child's birth at hospitals and subsequent core studies collected data via telephone surveys. Rich information on subjects' characteristics and experiences at the child-, parent-, family-, and neighborhood-level were acquired, including demographic characteristics, neighborhood, and parenting behavior that are pertinent to the current study.

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* that collected information on child development and home environment when the children were three and five years of age. This supplemental in-home study collected data via parent interview and an activity booklet. The parent interview covered multiple domains of information on child's health, nutrition, behavior including Achenbach's Child Behavior Checklist (CBCL)—the outcome measures of this study—, parenting behavior, discipline, and neighborhood characteristics. Most of the questions in the parent interview were reported by the parent or primary caregiver while the remaining questions were interviewer observations about the home environment, child's appearance, and parent-child interaction.

The activity booklet in the in-home study was used to collect information on both mothers' and children's anthropometric measurements (i.e., height and weight measurements), cognitive outcomes, and also to code the interviewer observations about the child's home environment, appearance, and interaction with parent. Approximately 79% of the respondents

from the Wave 3 core mother study participated in the three-year in-home interview (N = 3,288), of which 78% completed both the parent interview and activity booklet during the home visit (n = 2,596). Most of the remaining respondents only participated in the parent interview that was conducted over the phone (n = 692) because they refused the home visit or could not be contacted mainly due to relocation. In terms of the Wave 4 in-home interview, about 91% of the respondents from the Wave 4 mother study were contacted to participate. Of those, approximately 81% completed the survey (N = 3,001), and of these respondents, about 78% completed both components of the survey (n = 2,366), while most of the remaining respondents completed only the parent interview over the phone (n = 635).

Participants

The current study assessed the relationship between neighborhood disorganization and corporal punishment on behavior problems when the children were 5-years-old, using data from Wave 4 (child age 5) of the core study and the supplemental in-home survey at age 5. Additionally, behavioral measures (CBCL scores) from the Wave 3 in-home survey 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 age 3 and 5. The final analytic sample for this study is further limited to 2,472 respondents who had census tract information available.

Power Analysis

A post-hoc power analysis was conducted using Optimal Design Software Version 3.0 (Raudenbush et al., 2011) to determine whether the analytic sample in this study is sufficient to detect a small effect size as outlined by Cohen (2013). Following common assumptions, the desired level of statistical significance is .05 and the desired statistical power to detect an effect

is .80. Based upon the review of the literature, the estimated effects in this study is expected to be small to moderate with Cohen's d effect size of .3 (Gershoff, 2002; Leventhal & Brooks-Gunn, 2000). Under these assumptions, the required sample size for the current study is 350 in a simple random model. As this study is a two-stage sample, the design effect, the factor by which the total sample size has to be multiplied to obtain the same standard error, needs to be multiplied to the simple random sample size (Cochran, 1977). As such, the proposed sample size for this study is 700 after multiplying the design effect of 2 to the simple random sample size. Therefore, with an analysis sample of 2,472, this study has sufficient power to detect the proposed effect size.

Measures

Dependent variables. Externalizing and internalizing behavior problems, the dependent variables of this study, 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) (Achenbach, 1991, 1992). The CBCL is offered in a variety of forms depending on the child's age. It is a widely used standardized measure for assessing children's problem behaviors that has been normed across many populations and multicultural contexts with high test-retest reliability (Achenbach, 2010; Achenbach & Rescorla, 2007; Greenbaum & Dedrick, 1998; Spiker, Kraemer, Constantine, & Bryant, 1992). Particularly, based on an analysis of 44 countries, Achenbach found support for the CBCL as a reliable assessment of child psychopathology in multicultural research (Achenbach, 2010).

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. A subset of the Child Behavior Checklist CBCL/2-3 was used to measure externalizing behavior at child age 3 (Achenbach, 1992). Although the original instrument included the Aggressive Behavior and Destructive Behavior subscales, this current study excludes 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 is easily frustrated", "Child gets in many fights", "Child hits others", and "Child has angry moods". Internal consistency for this 15-item Aggressive Behavior subscale at Wave 3 (child age 3) was .86.

Externalizing behavior at age 5 was measured using the Child Behavior Checklist CBCL/4-18 (Achenbach, 1991). Externalizing behavior at age 5 consisted of both subscales—Aggressive Behavior and Delinquent Behavior. The Aggressive Behavior subscale for this older age group included 20 items such as: "Child argues a lot", "Child is cruel, bullies and shows meanness to others", "Child destroys his/her own things", "Child is disobedient at home", and "Child physically attacks people". The Delinquent Behavior Subscale consists of 10 items such as: "Child hangs around with others who get in trouble", "Child lies or cheats", "Child runs away from home", "Child steals at home", and "Child steals outside the home". Cronbach's alpha for this 30-item Externalizing Behavior scale at Wave 4 (child age 5) was .86.

Internalizing behavior. Internalizing problem behavior at 3 years of age was assessed using Child Behavior Checklist CBCL/2-3 (Achenbach, 1992). A total of 24 items, 10 items from the Anxious-Depressed subscale and 14 items from the Withdrawn subscale, were included to measure internalizing behavior. Examples of items from the Anxious-Depressed subscale

were: “Child clings to adults or is too dependent”, “Child feelings are easily hurt”, “Child gets too upset when separated from parents”, “Child looks unhappy without good reason”, and “Child is nervous, high strung, or tense” (α =.66). Examples of items from the Withdrawn subscale were: “Child avoids looking others in the eye”, “Child doesn't answer when people talk to (him/her)”, “Child doesn't know how to have fun, or he/she acts like little adult”, “Child seems unresponsive to affection”, and “Child shows little interest in things around (him/her)” (α = .74). Cronbach’s alpha for the 24-item Internalizing Behavior scale at Wave 3 (child age 3) was .81.

Internalizing behavior at age 5 was based on the total of 22 items from the Child Behavior Checklist CBCL/4-18 (Achenbach, 1991). The Anxious-Depressed subscale includes 14 items such as: “Child complains of loneliness”, “Child fears s/he might think/do something wrong”, “Child feels or complains no one loves him/her”, “Child is nervous, high strung, or tense”, and “Child is unhappy, sad, or depressed” (α = .69). The Withdrawn subscale consists of nine items such as: “Child would rather be alone than with others”, “Child refuses to talk”, “Child is secretive, keeps things to self”, “Child is underactive, slow moving, lacks energy”, and “Child is withdrawn, doesn't get involve w others” (α = .60). One item (“Child is unhappy, sad, or depressed”) was included in both Anxious-Depressed and Withdrawn subscales, yielding a total number of 22 items in the internalizing scale at Wave 4 (child age 5) with an internal consistency of .76.

Independent variables.

Neighborhood (dis)organization. This study focused on collective efficacy as an indicator of neighborhood (dis)organization. This construct was measured in the Wave 4 core mother interview when the children were 5 years of age.

Mothers' perceptions of the degree of collective efficacy in their neighborhoods were assessed using two 5-item subscales from the Project on Human Development in Chicago Neighborhoods (PHDCN) that are widely used in neighborhood research for measuring neighborhood processes with consistent and strong validity (Odgers et al., 2009; Sampson, Morenoff, & Gannon-Rowley, 2002; Sampson et al., 1997). These two subscales measured: (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". A 4-point option was used (1 = *very likely*, 2 = *somewhat likely*, 3 = *not likely*, 4 = *very unlikely*). 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" with a 4-point response option (1 = *strongly agree*, 2 = *agree*, 3 = *disagree*, 4 = *strongly disagree*). 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 the Informal Social Control and Social Cohesion and Trust subscales were computed. The collective efficacy scale is reverse-coded so that *higher values of collective efficacy indicate*

decreased levels of neighborhood disorganization. Internal consistency of this ten-item collective efficacy scale at Wave 4 (child age 5) was .86.

Maternal corporal punishment. During the Wave 4 core interview when the children were approximately 5 years of age, mothers were asked two questions about how frequently they used corporal punishment, specifically spanking, with the following questions: "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 et al., 2010), these two variables were combined and recoded to an ordinal variable that indicates mother's frequency of corporal punishment (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*).

Control variables.

Maternal warmth. The Home Observation for Measurement of the Environment (HOME) is a systematic measurement of the caring environment in which the child is being raised (Caldwell & Bradley, 1984). Maternal warmth at Wave 4 (child age 5) were assessed during the in-home observations using items that were derived from the Early-Childhood HOME (EC-HOME) inventory for children aged 3 to 6. The EC-HOME inventory has good predictive validity and moderate to high stability resulting in its use in numerous studies including studies with samples from high-risk populations (Caldwell & Bradley, 1984; Totsika & Sylva, 2004). Consistent psychometric properties of this scale were also observed in studies that involved different racial and ethnic groups (Bradley, Corwyn, McAdoo, & García Coll, 2001; Bradley, Corwyn, & Whiteside-Mansell, 1996; Pachter et al., 2006).

The measure of maternal warmth at Wave 4 (child age 5) was the average of nine items using the parental warmth subscale from the EC-HOME inventory. Example items included in this scale were: “Parent encourages child to contribute”, “Parent mentions skill of child”, “Parent uses diminutive for child's name”, “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 core study using the Composite International Diagnostic Interview-Short Form (CIDI-SF), Section A (Kessler, Andrews, Mroczek, Ustun, & Wittchen, 1998). The CIDI questions are consistent with the criteria in Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition (American Psychiatric Association, 2000). CIDI-SF is well-recognized in extant literature for international and cross-cultural studies to measure the probability of being positively diagnosed with depression if given the full CIDI interview with good reliability and validity (Sajatovic & Ramirez, 2012).

Respondents are asked the following eight items with a dichotomous response option: “In the past year, have you felt sad or depressed for two weeks or more in row?”, “In those two weeks, did you lose interest in things that give you pleasure?”, “In past year, have you lost interest in things that give pleasure for two weeks or more in row?”, “Thinking about same two weeks, did you feel more tired out/low on energy than usual?”, “Did you have more trouble than usual falling asleep during those two weeks?”, “During those two weeks, did you have a lot more trouble concentrating than usual?”, “During those two weeks, did you feel down on yourself, no good, or worthless?”, and “Did you think about death-either own, someone else's, or in general during those two weeks?”. Responses to these items were summed to indicate a probable

depression case if the score is 3 or higher (0 = *no*, 1 = *yes*). Internal consistency of maternal depression was .98 at Wave 4.

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 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 (10%) was imputed by FFCWS based on respondents' relationship status (mother's report), age, race/ethnicity, immigrant status, employed last year, earnings, total adults in the household, and welfare receipt.

Neighborhood demographics. Census tracts are described to be "as homogeneous as possible with respect to population characteristics, economic status and living conditions" (U.S. Bureau of the Census, 2000, pp. 10–11) and 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. As such, 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.

Data Analysis Plan

Data for the current study had a hierarchical structure in which families are nested in neighborhoods. Therefore, it is possible that individuals' perceptions of collective efficacy are correlated with perceptions of other residents within the same neighborhood. To effectively account for the shared variance in the same neighborhoods, this study employed cross-sectional multilevel models. Multilevel modeling is widely viewed as an optimal method of exploring the simultaneous effects of neighborhood and family characteristics on child development (Beyers et al., 2003) as it provides more efficient estimates than traditional statistical tests such as ordinary least squares regression by reflecting the assumption that neighborhood conditions and effects are correlated in the same neighborhoods.

Missing Data and Imputation

The dependent variables in this study—externalizing and internalizing behavior at age 5—were declared missing in this present study 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 children's externalizing behavior 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 corporal punishment, the main predictors, were missing in 0.6% and 1.5% of the cases, respectively.

Across control variables, data was missing for less than 0.5% of the analysis sample, except for maternal warmth that was missing in 18.4% of the cases. Maternal warmth was assessed based on interviewer observations using the HOME scale during in-home interviews. A high level of missing data observed in maternal warmth was mainly due to participants who only completed the parent interview of 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 for the full analytic sample using multiple imputations. Multiple imputations uses data from non-missing cases to predict the values of missing data with the assumption that data are missing at random (MAR). In this study, multiple Imputation through Chained Equations procedure (Royston, 2004; Royston & White, 2011) were repeated to impute 10 data sets for the analyses using the MI program in STATA 13 (Graham, Olchowski, & Gilreath, 2007; StataCorp, 2013). Subsequent analyses were performed on each imputed data set to yield a single set of final estimates.

Analytic Strategy

Descriptive statistics and bivariate correlation analyses are presented to describe the characteristics of the study population and the relationships between variables in the study. Cross-sectional multilevel models are employed to examine the relationships between collective efficacy and children's externalizing and internalizing behavior as well as between maternal corporal punishment and externalizing and internalizing behavior, while effectively accounting for the hierarchical nature of the data in which families are nested in neighborhoods. Multilevel modeling separately estimated the variance in behavior problems both across individual children

and across neighborhoods. That is, Level 1 included information that is unique to the individual mother and child while Level 2 included neighborhood-level variables. In order to capture the unique roles of neighborhood and parenting on children's behavior, a set of random intercept models were estimated that enter variables in blocks. Specifically, the model building proceeded in the following order. The first model estimated the role of collective efficacy on children's externalizing or internalizing behavior while controlling for externalizing or internalizing behavior at age 3 to properly account for within child differences in the relationship between collective efficacy and child behavior at age 5. The second model added maternal corporal punishment as an additional predictor to the first model to compare the explanatory power between these models. Finally, the third model is the full model that considered the complete set of predictors and control variables in the analysis. Variables that were included in each of the three models are delineated in Table 2.1. Intraclass correlation (ICC) were calculated for each models to estimate the proportion of variance between individuals within neighborhoods. Specification of the random intercept models for this study can be expressed as follows:

$$Ext.\,or\ Int.\,Behavior = \beta_0 + \beta_1(Collective\ Efficacy)_{ij} + \beta_2(Corporal\ Punishment)_{ij} + \beta_3(Covariates)_{ij} + \mathrm{u}_{0j} + e_{ij}$$

β_0	is the intercept for neighborhood j
$\beta_1, \beta_2, \beta_3$	are 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

Table 2.1. Cross-sectional Multilevel Models.

	Model 1	*Model 2*	*Model 3*
Dependent Variables	Ext. behavior (or Int. behavior)	Ext. behavior (or Int. behavior)	Ext. behavior (or Int. behavior)
Independent Variables: Neighborhood Disorganization	Collective efficacy	Collective efficacy	Collective efficacy
Independent Variables: Maternal Corporal Punishment		Maternal corporal punishment	Maternal corporal punishment
Covariates	Ext. behavior, age 3	Ext. behavior, age 3	Ext. behavior, age 3 Child age Child gender Maternal warmth Maternal depression Race/ethnicity Relationship status Education Mother's age Household income Neighborhood income

To address the mediation hypothesis of the current study that maternal corporal punishment 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 independent variable (collective efficacy) and dependent variable (child behavior) were examined; (b) the relationship between the independent variable (collective efficacy) and the mediator variable (mother's corporal punishment) were assessed; (c) the association between the mediator variable (mother's corporal punishment) and the dependent variable (child behavior) were examined; (d) the effect of the independent variable on dependent variable was investigated

after accounting for the mediator variable. This procedure is described in Table 2.2. A complete mediation can be determined if the association between independent variable and dependent variable is no longer significant after controlling for the mediator variable; partial mediation can be determined if the relationship between independent variable and the dependent variable diminishes but remains statistically significant (Baron & Kenny, 1986; Beeble, Bybee, Sullivan, & Adams, 2009; Holmbeck, 1997). The same procedure was repeated for internalizing behavior problems. Variables that were included in the mediation analysis are outlined in Table 2.2.

Table 2.2. Mediation Hypothesis.

	Model 1	*Model 2*	*Model 3*
Dependent Variables	Ext. behavior (or Int. behavior)		Ext. behavior (or Int. behavior)
Independent Variables: Neighborhood Disorganization	Collective efficacy	Collective efficacy	
Mediator Variable		Maternal corporal punishment	Maternal corporal punishment
Covariates	Ext. behavior, age 3	Ext. behavior, age 3	Ext. behavior, age 3
	Child age Child gender	Child age Child gender	Child age Child gender
	Maternal warmth Maternal depression	Maternal warmth Maternal depression	Maternal warmth Maternal depression
	Race/ethnicity Relationship status Education Mother's age Household income Neighborhood income	Race/ethnicity Relationship status Education Mother's age Household income Neighborhood income	Race/ethnicity Relationship status Education Mother's age Household income Neighborhood income

In order to account for the clustering of the current study sample in neighborhoods into the mediation analyses, the indirect effect was computed based on the product-of-coefficient approach, using the multilevel mediation analysis command available in STATA 13 (StataCorp, 2013)[1] that was adapted from Krull and MacKinnon (2001). Subsequently, the present study performed a bootstrap analyses per recommendation by Preacher and Hayes (2008) with 2000 resampled data sets. Bootstrapping estimates the indirect effect on each resampled data set based on the null hypothesis that the indirect effect is not different from zero. The researcher can reject the null hypothesis if the confidence interval does not include zero (Preacher & Hayes, 2008).

Results

Descriptive Statistics

Table 2.3 represents the demographic characteristics for the study sample of 2,472 respondents and their focal child at Wave 4 (child age 5). The average age of mothers was 30 years with a range of 20 to 50 years. One third of the mothers (33%) did not have a high school degree. The sample was approximately half (51%) African American, a quarter (24%) Hispanic, 22% white, and 3% another race/ethnicity. On average, the annual household income was $36,690. The mean of mothers' perceived collective efficacy in their neighborhoods was 3.10 (range 1–4), which falls on the response options "somewhat likely to intervene" on behalf of the common values for the Informal Social Control subscale and "agree" to the statements in the Social Cohesion and Trust subscale. Based on CIDI-SF, 17% of mothers in this study sample probably suffered from depression. The mean of maternal warmth was 0.76 (*SD* = .28, range 0–1), meaning that mothers in general were observed to be warm and caring to their children. Mothers' reports of their relationship status with focal children's fathers indicated that 30% were

[1] This study used the `ml_mediation` command in STATA 13 for multilevel mediation analysis.

married, 13% were cohabiting, and over half of the mothers (57%) were neither married nor cohabiting.

In terms of child characteristics, the average age of children in this study was 61 months with a range of 57 to 71 months and just over half (52%) were boys. The mean of children's 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. The clinical cut points and *T*-scores from the Achenbach's Child Behavior Checklist CBCL/4-18 could not be applied to this study's sample mean behavior problems because FFCWS did not administer the full set of CBCL questions.

In regards to maternal corporal punishment, half of the mothers reported that they had never spanked their 5-year-old in the past month, roughly one third had spanked their child once or twice in the past month, 13% a few times in the past month, and about 6% had spanked their child a few times or more often in the past week. The prevalence of maternal corporal punishment in this study sample was comparable to the prevalence rates of previous studies on U.S. preschoolers and Kindergarteners, as this is a developmental period during which corporal punishment tends to reach its peak in this country (Berlin et al., 2009; Regalado, Sareen, Inkelas, Wissow & Halfon, 2004; McLoyd & Smith, 2002; Wissow, 2001).

Table 2.3. Demographic Characteristics & Missing Data, Wave 4 (N = 2,472)

Variable	%	Mean (SD)	Range	n	Missing
Child outcomes					
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%
Neighborhood (dis)organization					
Collective efficacy		3.10 (0.65)	1–4	2,458	0.6%
Mother's corporal punishment (%)		0.74 (0.89)	0–3	2,436	1.5%
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	
Mother's depression (%)		0.17 (0.38)	0–1	2,470	0.1%
Yes	17.2				
No	82.8				
Mother's warmth		0.76 (0.28)	0–1	2,018	18.4%
Child demographics					
Age (months)		61.11 (2.42)	57–71	2,472	0%
Sex of focal child (% male)	52.1			2,472	0%
Mother's demographics					
Age (years)		30.21 (6.01)	20–50	2,472	0%
Race/Ethnicity (%)				2,463	0.4%
White, non-Hispanic	21.9			540	
Black, non-Hispanic	51.3			1,264	
Hispanic	23.7			584	
Other	3.1			75	
Education (%)				2,469	0.1%
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	

Table 2.3. (cont'd)

Variable	%	Mean (SD)	Range	n	Missing
Relationship status (%)				2,470	0.1%
Married	30.4			750	
Cohabiting	13.0			320	
Not married or cohabiting	56.7			1,400	
Neighborhood demographics					
Neighborhood income ($)		37,806 (18,937)	6,913–157,559	2,471	0%

Bivariate Statistics

The correlation matrix of the variables included in this study is presented in Table 2.4. Collective efficacy demonstrated a small but significant, inverse relationship with five-year-olds' externalizing ($r = –.14$, $p < .001$) and internalizing ($r = –.13$, $p < .001$) behavior problems. The association between maternal corporal punishment and externalizing behavior ($r = .25$, $p < .001$) was greater than that between maternal corporal punishment and internalizing behavior ($r = .10$, $p < .001$). Collective efficacy and maternal corporal punishment 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.

Multilevel Models

Table 2.5 and Table 2.6 show results for a series of random intercept models that tested the effects of neighborhood collective efficacy and maternal corporal punishment on externalizing behavior and internalizing behavior respectively, while controlling for the clustering of families within the neighborhoods.

Externalizing behavior problems.

In Table 2.5, consistent with the hypothesis, Model 1 established that higher levels of mothers' perceived collective efficacy was significantly related to decreased externalizing behavior problems at age 5 after accounting for externalizing behavior at age 3. More specifically, a one unit increase in collective efficacy was met with 0.023 units decrease in child externalizing behavior even after accounting for earlier externalizing behavior at age 3 ($p < .001$). The random effects in Model 3 reflect the proportion of variance in externalizing

Table 2.4. Correlation Matrix for Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1.Ext. Behavior, Age 5	—																				
2.Int. Behavior, Age 5	**0.52**	—																			
3.Ext. Behavior, Age 3	**0.55**	**0.39**	—																		
4.Int. Behavior, Age 3	**0.40**	**0.45**	**0.70**	—																	
5.Collective Efficacy	**-0.14**	**-0.13**	**-0.14**	**-0.16**	—																
6.Mother's CP	**0.25**	**0.10**	**0.21**	**0.10**	**-0.06**	—															
7.Maternal Warmth	**-0.10**	**-0.06**	**-0.07**	**-0.10**	**0.11**	**-0.03**	—														
8.Maternal Depression	**0.18**	**0.18**	**0.17**	**0.15**	**-0.08**	**0.09**	**-0.03**	—													
9.Child Age	**-0.03**	**0.03**	**0.01**	**0.05**	**-0.03**	**-0.04**	**-0.04**	**0.01**	—												
10.Child Sex	**-0.07**	**-0.03**	**-0.05**	**-0.03**	-0.01	**-0.07**	**0.03**	**-0.02**	0.01	—											
11.Mother's Age	**-0.13**	**-0.09**	**-0.12**	**-0.12**	**0.08**	**-0.14**	**0.13**	**-0.04**	**-0.06**	0.00	—										
12.Race/Ethinicity: White	**-0.04**	**-0.08**	**-0.07**	**-0.13**	**0.17**	**0.02**	**0.15**	**0.03**	**-0.17**	-0.01	**0.19**	—									
13.Race/Ethinicity: Black	**0.05**	**-0.06**	**0.05**	**0.05**	**-0.12**	**0.09**	**-0.14**	**0.03**	**0.09**	-0.01	**-0.14**	**-0.54**	—								
14.Race/Ethinicity: Hispanic	**-0.02**	**0.13**	-0.01	**0.06**	**-0.03**	**-0.12**	**0.03**	**-0.07**	**0.07**	**0.02**	**-0.04**	**-0.30**	**-0.57**	—							
15.Race/Ethinicity: Other	0.00	**0.02**	**0.02**	**0.02**	0.00	**-0.02**	**-0.03**	**0.01**	**-0.03**	**-0.02**	**0.04**	**-0.09**	**-0.18**	**-0.10**	—						
16.Education	**-0.15**	**-0.17**	**-0.15**	**-0.27**	**0.17**	**-0.02**	**0.18**	**-0.03**	**-0.12**	**-0.01**	**0.40**	**0.31**	**-0.13**	**-0.19**	**0.09**	—					
17.Relationship: Married	**-0.15**	**-0.10**	**-0.12**	**-0.14**	**0.16**	**-0.04**	**0.13**	**-0.07**	**-0.10**	-0.01	**0.30**	**0.28**	**-0.32**	**0.06**	**0.09**	**0.34**	—				
18.Relationship: Cohabiting	**-0.01**	**0.04**	0.00	**0.03**	**-0.04**	**-0.04**	-0.01	**-0.06**	**-0.01**	**0.03**	**-0.06**	**-0.06**	**-0.02**	**0.09**	-0.01	**-0.11**	**-0.26**	—			
19.Relationship: Neither	**0.15**	**0.07**	**0.11**	**0.11**	**-0.11**	**0.06**	**-0.12**	**0.10**	**0.10**	**-0.01**	**-0.24**	**-0.22**	**0.31**	**-0.12**	**-0.07**	**-0.24**	**-0.76**	**-0.44**	—		
20.Household Income	**-0.13**	**-0.14**	**-0.14**	**-0.22**	**0.18**	-0.01	**0.14**	**-0.08**	**-0.10**	-0.01	**0.21**	**0.25**	**-0.19**	**-0.05**	**0.08**	**0.42**	**0.36**	0.00	**-0.33**	—	
21.Neighborhood Income	**-0.11**	**-0.08**	**-0.13**	**-0.17**	**0.25**	**-0.05**	**0.07**	**-0.03**	**-0.06**	0.00	**0.18**	**0.35**	**-0.38**	**0.06**	**0.11**	**0.33**	**0.33**	**-0.06**	**-0.26**	**0.30**	—

Note: $p < .05$ or lower are bolded.

behavior that was not explained by the variables in the model. The intraclass correlation (ICC)—the proportion of variance between individuals within the same neighborhood—of Model 1 was 0.013, suggesting that 1.3% of the variance in 5-year-olds' externalizing behavior was observed between neighborhoods and the remaining variance was due to individual differences, after accounting for earlier externalizing behavior scores. The low ICC value in this model indicates that child externalizing behavior differs far more between individual children than between neighborhoods. Nevertheless, the significant random intercept of the model suggests that there were neighborhood-level differences in 5-year olds' externalizing behavior 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 will demonstrate the family- and individual-level influences on child externalizing behavior while accounting for the clustered nature of the data.

Model 2 included maternal corporal punishment as an additional predictor of child externalizing behavior. Both neighborhood collective efficacy and mother's corporal punishment, regardless of frequency, were significant predictors of children's externalizing behavior, even after accounting for prior externalizing behavior score. Relative to Model 1, the magnitude of the effect of collective efficacy has reduced. For every unit increase in collective efficacy, externalizing behavior reduced by 0.021 points, holding age 3 externalizing behavior and maternal corporal punishment constant. The ICC for Model 2 was 0.006 and the random intercept was not significant, indicating that neighborhood-level differences in children's externalizing behavior were minimal when maternal corporal punishment entered the model. A joint Wald test was performed to test whether the additional coefficients in this model are equal

to zero. Results rejected the null hypotheses and confirmed that the coefficients of mother's corporal punishment were significantly different from zero. In other words, including maternal corporal punishment resulted in a statistically significant improvement in the fit of the model.

Model 3 is the full model that tested the covariates in addition to all of the main independent variables in this study. Maternal corporal punishment remains statistically significant—compared to "never" spanking in the past month, all frequencies of spanking were met with increases in child externalizing behavior (β = 0.035 to 0.108, $p < .001$). The effect of collective efficacy on child externalizing behavior reduced both in magnitude and significance in comparison to the previous model (β = –0.013, $p < .07$). Specifically, a unit increase in the level of collective efficacy was associated with lower child externalizing behavior by 0.013 points, although the estimated probability of this effect was marginally above traditional significance levels ($p = .06$). Taken together, these results suggest that neighborhood effects on child externalizing behavior diminish when corporal punishment and demographic factors are simultaneously examined and neighborhood effects cease to be statistically significant. Turning to the covariates of Model 3, parenting contexts were significant predictors of externalizing behavior problem such that maternal warmth was significantly associated with lower levels of externalizing behavior (β = –0.04, $p < .05$), whereas maternal depression was related to higher externalizing behavior scores (β = 0.05, $p < .001$). Older children exhibited significantly less externalizing behavior (Beyers et al., 2003). Girls had less externalizing behavior than boys. In terms of family characteristics, externalizing behavior was lower among African American children compared to whites. Education and relationship status of mothers were significant predictors of externalizing behavior. Specifically, children of mothers with some levels of college education and those married to the child's father scored significantly lower on

externalizing behavior compared to children of mothers with less than high school degree and who were not married. The estimates of low ICC of Model 3 (0.008) and the insignificant random intercept coefficient suggest that after considering child and family demographics as well as parenting variables in the model, there is no longer any significant neighborhood-level variation in child externalizing behavior problem. Joint tests of coefficients confirmed that the coefficients of additional covariates were significantly different from zero. Put differently, the additional variables in this model improved the model fit in comparison to the previous model.

Internalizing behavior problems.

Model 1 in Table 2.6 shows results for the unconditional multilevel model. Consistent with the study hypothesis, increases in neighborhood collective efficacy were met with decreases in children's internalizing behavior at age 5, even after accounting for prior internalizing score at age 3. The random intercept coefficient of this model was significant at the $p < .001$ level. That is, there are significant differences in children's internalizing behavior across neighborhoods when collective efficacy and internalizing behavior at age 3 is 0. However, the ICC of Model 1, as well as the subsequent models in Table 2.6, was close to 0 and suggested that overall, there is relatively little variation in children's internalizing behavior between neighborhoods.

Collective efficacy had a significant inverse relationship with internalizing behavior even when maternal corporal punishment was added to the model and age 3 internalizing score was controlled (Model 2). Maternal corporal punishment, regardless of frequency, was positively associated with higher internalizing behavior after accounting for collective efficacy and earlier internalizing problem score. The random intercept coefficient of this model was not significant. Results from the Wald test indicated that the additional coefficients of mother's corporal punishment are significantly different from zero.

Results of the full model in Table 2.6 (Model 3) show that collective efficacy and maternal corporal punishment are significant indicators of internalizing behavior problem, net of other child- and family-level predictors. The magnitude of the effect of collective efficacy in Model 3 was lower compared to the previous two models, whereas the effect of maternal corporal punishment was higher in magnitude in this model that includes the full set of control variables relative to the previous models. To elaborate, for a one unit increase in collective efficacy, child internalizing behavior reduced by 0.014 points, after holding all other variables in the model constant ($p < .05$). 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 effects of corporal punishment on internalizing behavior were greater for more frequent use of spanking—"a few times this past month" were 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 ($\beta = 0.06$, $p < .001$), whereas maternal warmth did not predict internalizing behavior. Race/ethnicity was a significant predictor of child internalizing behavior such that in comparison to whites, Hispanic children had higher internalizing behavior. Results from the random effects demonstrate 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 were significant and confirmed that the current model improved model fit relative to the previous model.

Table 2.5. Multilevel Regression Models on Externalizing Behavior at Age 5 (N = 2,472)

	Model 1	Model 2	Model 3
Fixed Effects			
Collective efficacy	–0.023***	–0.021**	–0.013†
	(0.007)	(0.007)	(0.007)
Externalizing behavior, age 3	0.345***	0.326***	0.307***
	(0.011)	(0.011)	(0.011)
Mother's corporal punishment: never			
Only once or twice		0.037***	0.035***
		(0.010)	(0.010)
A few times this past month		0.081***	0.076***
		(0.013)	(0.013)
A few times a week or more		0.116***	0.108***
		(0.019)	(0.019)
Maternal warmth			–0.040*
			(0.018)
Mother's depression			0.050***
			(0.011)
Child demographics			
Age of child (months)			–0.004*
			(0.002)
Sex of child: female			–0.016†
			(0.008)
Mother's demographics			
Age of mother (years)			–0.000
			(0.001)
Race/ethnicity: White, non-Hispanic			
Black, non-Hispanic			–0.025*
			(0.012)
Hispanic			–0.014
			(0.013)
Other			–0.007
			(0.026)
Education: less than high school			
High school degree or GED			–0.009
			(0.011)
Some college/technical school			–0.025*
			(0.012)
College degree or higher			–0.037*
			(0.019)
Relationship Status: married			
Cohabiting			0.018
			(0.015)
Not married or cohabiting			0.040***
			(0.011)
Logged annual household income			–0.001
			(0.003)
Logged neighborhood income			–0.004
			(0.010)

Table 2.5. (cont'd)

	Model 1	Model 2	Model 3
Constant	0.270***	0.247***	0.608***
	(0.023)	(0.023)	(0.156)
Random Effects			
Level-2 variance (u_{0j})	0.024**	0.016	0.018
	(0.031)	(0.053)	(0.040)
Level-1 variance (e_{ij})	0.210***	0.208***	0.204***
	(0.004)	(0.004)	(0.004)

Note: † $p < 0.07$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; Standard errors in parentheses

Table 2.6. Multilevel Regression Models on Internalizing Behavior at Age 5 (N = 2,472)

	Model 1	Model 2	Model 3
Fixed Effects			
Collective efficacy	–0.019***	–0.018**	–0.014*
	(0.006)	(0.006)	(0.006)
Internalizing behavior, age 3	0.370***	0.366***	0.336***
	(0.015)	(0.015)	(0.016)
Mother's corporal punishment: never			
Only once or twice		0.012	0.016*
		(0.008)	(0.008)
A few times this past month		0.030**	0.035**
		(0.012)	(0.011)
A few times a week or more		0.032*	0.037*
		(0.016)	(0.016)
Maternal warmth			–0.005
			(0.016)
Mother's depression			0.060***
			(0.010)
Child demographics			
Age of child (months)			0.000
			(0.001)
Sex of child: female			–0.004
			(0.007)
Mother's demographics			
Age of mother (years)			–0.000
			(0.001)
Race/ethnicity: White, non-Hispanic			
Black, non-Hispanic			–0.018
			(0.011)
Hispanic			0.048***
			(0.011)
Other			0.025
			(0.022)
Education: less than high school			
High school degree or GED			0.002
			(0.010)
Some college/technical school			–0.016
			(0.010)
College degree or higher			0.012
			(0.016)
Relationship Status: married			
Cohabiting			0.026*
			(0.013)
Not married or cohabiting			0.016
			(0.010)
Logged annual household income			–0.003
			(0.003)
Logged neighborhood income			0.000
			(0.010)

Table 2.6. (cont'd)

	Model 1	Model 2	Model 3
Constant	0.163***	0.152***	0.146
	(0.020)	(0.020)	(0.133)
Random Effects			
Level-2 variance (u_{0j})	0.000	0.000***	0.000
	(0.000)	(0.000)	(0.000)
	0.179***	0.179***	0.175***
Level-1 variance (e_{ij})	(0.003)	(0.003)	(0.002)
	0.163***	0.152***	0.146

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; Standard errors in parentheses

Table 2.7. Indirect Effects of Collective Efficacy on Child Behavior Problems through Maternal Corporal Punishment

	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

Percentile confidence interval based on 2,000 bootstrap samples.

Multilevel Mediation Models

Table 2.7 represents results from the mediation analysis that tested the hypothesis that maternal corporal punishment 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 effects of neighborhood collective efficacy on externalizing and internalizing behavior problems via maternal corporal punishment were not significant, after accounting for parenting contexts (maternal warmth and maternal depression), child characteristics (age and child sex), mother's demographics (age, race, education, relationship status, family income), and neighborhood demographics (neighborhood income). These results indicate that maternal corporal punishment has minimal effects on the observed inverse relationships between neighborhood collective efficacy and child behavior problems.

Discussion

This study tested the hypotheses that both neighborhood collective efficacy and maternal corporal punishment would predict increased levels of child behavior problems among a sample of low-income 5-year-olds. Results from multilevel models presented in this study demonstrated that young children in socially disorganized neighborhoods as well as young children who were spanked by their mothers tend to have higher levels of both externalizing and internalizing behavior problems. The influences of neighborhood collective efficacy and maternal corporal punishment were still present after taking children's individual characteristics (including earlier behavior problems), mothers' parenting contexts, mothers' individual characteristics, and neighborhood demographics into account. However, the indirect effect of collective efficacy on internalizing and externalizing behavior through maternal corporal punishment was not supported. These findings contribute to the literature regarding the neighborhood and parenting

processes that affect behavioral outcomes in early childhood, building on existing scholarship that weaves the ideas of social disorganization, family stress, social learning, and attachment theories. It furthers this research by encompassing the dynamic processes of neighborhood effects on child development and examining the direct effects of both neighborhood and parenting processes, specifically collective efficacy and corporal punishment, on early childhood outcomes.

Direct Neighborhood and Parent Effects on Child Behavior Problems

As hypothesized, results support the tenets of social disorganization theory such that neighborhood collective efficacy had an inverse association with both externalizing and internalizing behavior problems of children at age 5. More explicitly, under the common goals of maintaining social control in the community and supporting social interactions among neighbors, children growing up in neighborhoods with higher levels of collective efficacy have fewer behavior problems. This finding adds support to extant literature that establishes the positive influence of collective efficacy on child outcomes, including behavior problems (Deng et al., 2006; Sampson et al., 2002; Xue et al., 2005). Previous research on neighborhood effects, however, has concentrated on outcomes of adolescence (Church II et al., 2012). This study extended prior research by providing empirical evidence that children in early childhood are also significantly affected by neighborhood-level processes. Findings should be interpreted in line with the significant developmental and social transitions around the age of 5, during which children's exposure to their neighborhoods are increased through greater cognitive capabilities and entry to public education. Additionally, 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, adds an important contribution to the existing knowledge base.

Results suggest that regardless of economic and structural properties of the neighborhood, neighborhood collective efficacy serves as a protective factor with respect to adverse child behavioral outcomes. Although neighborhood poverty and disorder are generally predictive of lower levels of collective efficacy (Ross & Jang, 2000), this study suggests that strong ties to community values and common goals between residents would support positive child development even in poverty-stricken neighborhoods. These results highlight collective efficacy as a neighborhood-level construct that has direct substantive implications for child outcomes; and unlike neighborhood structure, collective efficacy is potentially malleable to intervention.

In terms of parent effects on child behavior problems, findings were consistent with the study hypotheses such that maternal corporal punishment was positively associated with both externalizing and internalizing behavior problems. These associations held true irrespective of the frequency of corporal punishment. Compared to children who were never spanked, children who were infrequently spanked in this study (once or twice in the past month) showed higher externalizing and internalizing behavior problem scores. This finding is in contrast to a small subset of the literature that found that only frequent corporal punishment increased behavior problems (Larzelere, 2000; Simons, Johnson, & Conger, 1994). Study results stand in the tradition of empirical literature that documents the adverse effects of corporal punishment even if it happens occasionally (MacKenzie et al., 2012; Ma et al., 2012). The significant relationship between corporal punishment and internalizing behavior further extends previous research concerning the effects of corporal punishment on a wide spectrum of behavior problems. Results of this study that underscore corporal punishment as a predictor of internalizing behavior make a noteworthy contribution to extant research as the effects of corporal punishment on internalizing behavior has received limited attention relative to the large body of evidence on externalizing

behavior (Gershoff, 2002). Consequently, the significant associations between corporal punishment and early internalizing problems found in this study provide theoretical implications on the wide array of child behavioral outcomes associated with corporal punishment (Mulvaney & Mebert, 2007). This study complements the current focus on social learning theory by supporting the attachment hypothesis that corporal punishment leads to higher internalizing symptoms.

Based on the ecological framework, this study's simultaneous investigation of the direct effects of neighborhood- and parent-level predictors on child behavior problems also contributes to the child development knowledge base (Freisthler, Merritt, & LaScala, 2006). Both collective efficacy and maternal corporal punishment predicted increased problem behaviors in early childhood, a finding that underlines the joint prominence of parent- and community-level influences in early development. This unique yet simultaneous effects of parent and neighborhood processes on child behavior problems speak to the need to consider both proximal and distal contexts of the child in research that surround patterns of early behavior problems.

Indirect Effects of Neighborhood Disorganization on Children through Corporal Punishment

Contrary to the study's hypothesis, the effect of collective efficacy on externalizing and internalizing behavior problems was not mediated by maternal corporal punishment. While the strength of the direct association between collective efficacy and behavior problems was noticeably reduced when maternal corporal punishment is included in the model, the non-significant mediation coefficients suggest that maternal corporal punishment 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

disorganization 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., 2002; Furstenberg, 1993; Simons et al., 2000). This study suggests that neighborhood disorganization and corporal punishment are empirically separate domains, yet they jointly have significant direct influences on child behavior problems.

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 neighborhood disorganization and adverse child outcomes would operate through parenting processes. Previous studies that found a significant indirect effect of neighborhood disadvantage on behavior problems through parenting process included a more comprehensive set of parenting constructs—consistent parenting behaviors, cognitive stimulation in the home in addition to punitive behaviors (Kohen et al., 2008) and parental stress, parental mastery as well as aggravation in parenting (Church II et al., 2012). As such, future research should examine a more comprehensive array of both neighborhood and parenting processes and child behavioral outcomes.

Parenting Contexts and Earlier Problem Behavior

Consistent with most existing research (Berlin et al., 2009; Deater-Deckard et al., 2006; Lansford, 2010; Lee et al., 2013; Ma et al., 2012), the current study found that the effects of maternal corporal punishment remained significant even after controlling for maternal warmth. This finding underscores the potentially deleterious effect of corporal punishment on children even in the presence of a positive parent-child relationship. Additionally, in line with previous findings (Goodman et al., 2011), maternal depression was a significant risk factor for externalizing and internalizing behavior problems in this study. Relatedly, existing research

point to maternal depression as a risk factor for increased use of harsh parenting practices such as corporal punishment (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 the inclusion of the prior assessment of the dependent variable—behavior problems at age 3—strengthens the causal and temporal arguments concerning neighborhood and parent effects on children. By controlling children's initial behavior problem scores in the analyses, findings provide stronger evidence that the outcomes in this study are driven by neighborhood and parent influences rather than by the child (Mulvaney & Mebert, 2007).

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, the measurement of variables in this study is solely based on mothers' self-report. As such, responses on neighborhood collective efficacy and maternal corporal punishment were susceptible to self-desirability bias (Fisher & Katz, 2008). Mothers may have had a tendency to understate problems in their neighborhoods as well as their use of corporal punishment. In addition, reliance on self-definitions of spanking may have biased results if mothers' interpreted "spanking" to include more severe forms of corporal punishment such as hitting the child with an object (Gershoff, 2002). Another limitation is that by including maternal parenting behaviors only, the parenting roles of children's fathers, mothers' current partners, or other caregivers were not considered in the analyses. To overcome these limitations, studies that utilize more objective sources of information including contextual neighborhood data from census and observational

data on parent-child interactions and family dynamics are necessary. Also, the use of multi-informant measures that include fathers or partners into measurements is suggested for future research. Finally, although this study controlled for preceding levels of child behavior problems, causal directions between negative influences of neighborhood and parenting on child outcomes cannot be fully established based on cross-sectional models. The age of the child also determines his or her cognitive ability to process the disciplinary message implied by the punishment. Therefore, a longitudinal design that enables measurements of the reciprocal and transactional nature of neighborhood effects, parent-child interactions, as well as the developmental trajectory of children is warranted in future research.

Practice and Policy Implications

The current study points to the importance of reducing both neighborhood disorganization and maternal use of corporal punishment for more desirable child behavioral outcomes and sheds light on several practice and policy implications at the community- and family-levels. At the neighborhood-level, the salience of neighborhood effects on early childhood behavior has implications for practice and policy. State and local governments should consider strategically investing in resources for community-based, grass-roots initiatives to increase social control, cohesion, and trust. Resource allocation should give priority to the most impoverished neighborhoods considering the protective role of collective efficacy in reducing social disorder (McLoyd, 1998; Sampson et al., 2002). More specifically, interventions might target community building such as neighborhood watch and community conferencing to build and reinforce social norms. Likewise, community-based initiatives and programs such as neighborhood clean-up projects, parent support groups, and children's play groups that allow residents to get to know each other and form social connections may help develop and strengthen

social cohesion and trust amongst residents. The findings of this study suggest that in turn, these place-based community engagement efforts may support healthier child development by reducing both internalizing and externalizing behavior problems.

Also, policy should strongly advocate for the use of evidence-based programs for families such as parental education and parent training program that promote positive and supportive parenting practices, including the use of nonviolent discipline, in the communities. These programs should aim to increase parental warmth and positive parent-child interactions, all of which are parenting practices that the empirical literature identifies as protective factors for child behavior problems, as well as reduce the use of corporal punishment.

An example of an evidence-based behavioral parenting intervention that promotes positive parenting and reduces harsh parenting is the Triple P-Positive Parenting Program (Sanders, 2008). Triple-P combines both universal and preventive programs at the community-level and targets intervention for at-risk families. Triple-P improves positive parenting by enhancing parental warmth and increasing parental self-efficacy, and reduces negative parenting, such as parental hostility and parental stress, and has been found to be effective in populations with low-SES backgrounds (Bor, Sanders, & Markie-Dadds, 2002; Thomas & Zimmer-Gembeck, 2007; Turner & Sanders, 2006). Another notable strength of this program is its goal to support the ecological context of parenting through targeting multiple social domains that influence parents on a daily basis, including schools and child care systems, work sites, religious institutions, multi-media, and health care services (Sanders, 2008; Thomas & Zimmer-Gembeck, 2007).

Finally, professionals working with parents of young children (e.g., pediatricians and nurses, early childhood education professionals, social workers) should note signs of harsh

parenting including spanking as parental use of spanking is likely to elevate the problem behavior that parents intended to control. These professionals should offer practical information on alternative discipline strategies to spanking. Furthermore, given the high prevalence of corporal punishment in U.S. families, professional organizations such as the American Academy of Pediatrics should continue to disseminate effective alternative methods of discipline that are supported by scientific research. This information may be distributed using a variety of effective settings including pediatric offices and credible on-line parenting resources such as the Healthy Children web site (www.healthychildren.org) (Healthy Children, 2010) as well as on-line parenting communities and social media such as FaceBook that are more accessible among new parents. Thoughtful public education campaigns are also needed to inform parents about the negative consequences of corporal punishment and help shift public opinion in the U.S. about its appropriateness as a discipline strategy (Global Initiative to End All Corporal Punishment of Children, 2011).

Conclusion

Using a diverse urban sample of young children and their mothers, the findings of this study add support to previous research that highlights the deleterious influences of neighborhood disorganization (i.e., lack of collective efficacy) on both externalizing and internalizing behavior problems. Furthermore, in line with a large tradition of existing literature, the current study found significant associations between maternal corporal punishment—regardless of its frequency—and increased externalizing and internalizing behavior problems. While this study found evidence on the direct effects of neighborhood and parenting processes on child behavior problems, the indirect effects of collective efficacy on behavior problems through maternal corporal punishment were not statistically supported. These findings point to the significant but

distinct roles of positive neighborhood and parenting processes in early childhood development. Future research that extends the current results by exploring additional mediating mechanisms and longitudinal trajectories may aid further understanding of the relationships between neighborhood disorganization, parenting practices, and early child behavior problems.

CHAPTER THREE

RACIAL AND ETHNIC DIFFERENCES IN THE EFFECTS OF NEIGHBORHOOD DISORGANIZATION AND MATERNAL CORPORAL PUNISHMENT ON EARLY BEHAVIOR PROBLEMS

Abstract

Racial/ethnic minority populations comprise approximately one third of the U.S. population (Centers for Disease Control and Prevention, 2013), yet, research that addresses racial/ethnic differences in the effects of both neighborhood- and parenting-processes on child development is limited. To address this gap in extant literature, this chapter explores whether there are discernible patterns in the relationships between neighborhood disorganization (i.e., lack of collective efficacy) and corporal punishment on five-year-olds' externalizing and internalizing behavior problems by race/ethnicity. The analytic sample for this study consisted of 2,388 white, Black, or Hispanic families in the Fragile Families and Child Wellbeing Study. Multilevel models with interaction terms were employed to examine whether the effects of neighborhood collective efficacy and maternal corporal punishment on early behavior problems differed by race/ethnicity. Covariates at the individual child-, parent-, and neighborhood-levels were included to effectively account for the racial/ethnic differences in structural and socio-economic factors. Results demonstrate that the effects of maternal corporal punishment on behavior problems were indistinguishable by race/ethnicity. The significant interaction between collective efficacy and Hispanic race/ethnicity indicate that the protective effects of collective efficacy on internalizing behavior were more pronounced in Hispanic children than white children. Race/ethnicity, however, did not moderate the associations between collective efficacy and externalizing behavior. Overall, these findings underline the importance of multilevel intervention that strengthens neighborhood collective efficacy and enhances positive parenting practices to all families regardless of their ethnic/racial backgrounds.

Literature Review

The ecological systems framework proposes that developmental outcomes of children are shaped by multiple social contexts (Bronfenbrenner, 1986; Bronfenbrenner & Morris, 1998). Among a series of ecological systems that affect child development, the most proximal social contexts, in particular family and parent influences, hold prime importance. Largely missing from existing scholarship is a discussion of the influence of more distal contexts, such as neighborhood influences, on child development (Brooks-Gunn et al., 1993). The reciprocal and mediating relationships between the proximal and distal social systems (e.g., family and neighborhood) call for simultaneous consideration of individual, family, and neighborhood characteristics when exploring developmental outcomes of children.

Research on child development in minority children merits special attention given the recent shifting demographics of race and ethnicity. Black and Hispanic Americans are the largest and fastest growing minority population groups in the United States (Humes, Jones, & Ramirez, 2011)—according to the 2010 U.S. Census, 13% of Americans have identified themselves as Black Americans and 16% as Hispanic Americans (Humes et al., 2011). The growth of these two largest minority groups together are projected to comprise approximately 45% of the U.S. population in 2060, exceeding the expected proportion of white Americans (43%) (U.S. Census Bureau, 2012).

Individual-, family-, and neighborhood-level processes are intricately related to cultural norms that are strongly informed by race and ethnicity (Garcia Coll et al., 1996; McLoyd, 1990; Pinderhughes et al., 2007; Schofield et al., 2012). Prior literature suggests that neighborhood and parent influences may have distinguishable effects on minority children due to differences in culture, socio-economic and structural conditions, and contextual influences that are intricately

confounded with race and ethnicity (Garcia Coll et al., 1996; Pachter et al., 2006). Yet, scant research in child development has focused on the concurrent effects of neighborhood and parenting processes using samples that include minority families. To overcome this scarcity of research on minority children, the current study explores whether there are discernible patterns in the effects of neighborhood disorganization and corporal punishment on child behavior by racial and ethnic groups, particularly, Black and Hispanic children in comparison to white children.

The Influence of Race and Ethnicity on Neighborhood and Parenting Processes

The risk model (Spencer, 1990) and the group differences hypothesis (Garcia Coll, 1990) offer broad explanations for the prominent racial and ethnic influences on neighborhood and parenting processes. The former contends contextual and environmental risk factors that are more pronounced in minority communities and families are the underlying causes of differential neighborhood and parent effects. More explicitly, children of color are disproportionately more vulnerable to experiencing contextual risk factors including poverty, crime, and violence (Duncan et al., 1994; Sampson et al., 1997), coupled with negative social mechanisms such as racism, discrimination, and stereotypes (Garcia Coll et al., 1996). The constellation of these adverse influences at the macro-level and the stress they place on families may, in turn, be transmitted to negative family and parent processes such as the use of more harsh and inconsistent parenting practices in minority families.

According to the group differences hypothesis, the salient differences in institutional, environmental, and cultural contexts among minority groups are reflected in the developmental processes of children (Deater-Deckard, Dodge, Bates, & Pettit, 1996; Garcia Coll, 1990). This hypothesis asserts that the associations among a range of ecological factors that affect child development differ between racial and ethnic groups. For instance, children may perceive

negative neighborhood factors differently in relation to family dynamics and cultural norms that are strongly shaped by their racial/ethnic backgrounds (Gershoff, Lansford, Sexton, Davis-Kean, & Sameroff, 2012; Ingoldsby & Shaw, 2002; Lansford et al., 2005). Likewise, corporal punishment that constitutes normative parenting practice based on cultural values and beliefs in a particular racial/ethnic group could be considered problematic by another group (Flynn, 1998; Gershoff et al., 2010, 2012; Ingoldsby & Shaw, 2002).

Racial and Ethnic Differences in Neighborhood Effects on Child Behavior

A long tradition of research underscores the adverse effects of neighborhood disadvantage on child development (Beck, Ohmer, & Warner, 2012; Chase-Lansdale & Gordon, 1996; Elliott et al., 1996; Jencks & Mayer, 1990; Klein & Merritt, 2014; Kohen et al., 2002; Leventhal & Brooks-Gunn, 2000; Odgers et al., 2009; Sampson et al., 2002), building on existing scholarship grounded in social disorganization theory (Sampson, 2001; Shaw & McKay, 1942; Wilson, 1987). Social disorganization theory posits that impoverished neighborhoods lack collective efficacy—the dynamic neighborhood mechanism through which residents maintain social control of individual behaviors, share social norms, and promote positive common values and goals based on mutual trust (Sampson, 2001; Sampson et al., 1997; Wilson, 1987). Empirical evidence reveals that children growing up in neighborhoods with higher levels of collective efficacy have a greater chance of receiving constructive supervision, monitoring, and support that would discourage undesirable behaviors and lead to positive child development (Elliott et al., 1996; Kohen et al., 2002, 2008; Morenoff et al., 2001; Odgers et al., 2009; Sampson, 1997).

Cultural and racial/ethnic influences are reflected in the relationship between neighborhood disorganization and child outcomes in several ways. The substantial

overrepresentation of racial/ethnic minority population in disadvantaged neighborhoods has been widely reported in the literature and highlights the fact that children of minority populations are more likely to be exposed to higher levels of neighborhood disorganization (Browning, Leventhal, & Brooks-Gunn, 2004; Ingoldsby et al., 2006; Kimbro & Schachter, 2011; López Turley, 2003; Mennis, Dayanim, & Grunwald, 2013; Pinderhughes et al., 2007; Sampson & Raudenbush, 2004).

Given the disproportionate exposure to adverse neighborhood conditions of minority children, one line of inquiry focuses on the disparities among the various racial/ethnic groups and finds that there are differential pathways through which neighborhood disadvantage operates on child behavior problems by racial/ethnic groups (Burchfield & Silver, 2013; Pachter et al., 2006). As Leventhal and Brooks-Gunn (2000) have noted in their review of the literature on neighborhood effects on children outcomes, most research to date has reported that neighborhood effects on child development are less salient for Black children than white children. A plausible explanation for this discrepancy is that parents and children may perceive and manage neighborhood disadvantage differently based on their cultural backgrounds, and the mechanism through which neighborhood effects are transmitted through parenting would vary accordingly. Interestingly, a recent study by Pachter and colleagues (2006) conducted separate structural equation models for nearly 2,000 Black, white, and Hispanic families with children in the National Longitudinal Survey of Youth (ages 6–9 years) to examine whether the influences of chronic poverty on externalizing and internalizing behavior problems of children were mediated by neighborhood and parenting processes and how these effects differed by child race and ethnicity. These researchers found that while the effects of poverty and parenting were universal across all three groups, the mechanisms through which neighborhood effects on child behavior

were mediated differed by racial and ethnic groups. Significant direct and indirect associations between collective efficacy and child behavior problems were found in Black and white families, but not in Hispanic families, perhaps, the researchers suggest, due to the strong sense of interdependence in Hispanic culture that may protect these families from adverse neighborhood influences (Pachter et al., 2006). These findings suggest that the pathways through which neighborhood effects are manifested on child outcomes are contingent upon cultural norms and social processes.

Another body of research is grounded in the moderation model, which investigates whether membership in a racial/ethnic group plays a significant role in the relationships between neighborhood and individual processes (Brisson, Roll, & East, 2009; Duncan et al., 1997). These studies tested the hypothesis that group-level processes such as cultural values and beliefs that are associated with race/ethnicity may exacerbate or attenuate the adverse effects of neighborhood disadvantage on child behavior (Brooks-Gunn et al., 1993; Kupersmidt, Griesler, DeRosier, Patterson, & Davis, 1995). The results are inconclusive—a handful of studies found substantial evidence for differential neighborhood effects on child behavior problems by racial/ethnic groups whereas other studies did not find significant differences by race/ethnicity. For instance, based on analyses on a sample of 1,271 second- through fifth-grade white and Black children, Kupersmidt and colleagues (1995) found a significant negative association between low-SES neighborhoods and aggressive behavior among Black children who were living in low-income and single-parent families. This relationship, however, was not found for white children, suggesting that neighborhood effects on child behavior problems are not uniform. In contrast, Brooks-Gunn and colleagues (1993) explored the question of distinguishable neighborhood effects on developmental outcomes by comparing Black and white children using

two samples—894 children in early childhood and 2,346 children in adolescence. Their findings indicated substantial differences in cognitive and behavioral outcomes between Black and white adolescents with larger neighborhood effects found among white adolescents. Neighborhood effects on children's externalizing and internalizing behavior at 36 months, on the other hand, were not significantly different between Black and white children. These results suggest that race and ethnicity may not attenuate neighborhood effects on younger children because they are undergoing rapid cognitive development and are less capable of perceiving their environments than school-aged children and adolescents (Chase-Lansdale, Gordon, Brooks-Gunn, & Klebanov, 1997; Shonkoff & Phillips, 2000).

Racial and Ethnic Differences in Parent Effects on Child Behavior

Social disorganization theory and the ecological framework underscore neighborhood as the primary context for parent-child relationships (Bronfenbrenner, 1986; Sampson, 2001; Wilson, 1987). Research in child development also proposes that neighborhood contexts shape parenting processes in minority populations in order to socialize children to adapt to their immediate environmental, physical, and social environments (Garcia Coll et al., 1996; Gershoff et al., 2012; Lansford et al., 2005; Pinderhughes et al., 2007). Multiple studies find that parenting in impoverished neighborhoods tend to be more harsh and controlling than warm and consistent (Burton & Jarrett, 2000; Button, 2008; Furstenberg, 1993; Grant et al., 2005, 2006; Hill & Herman-Stahl, 2002; McLoyd, 1990; Molnar et al., 2003; Pinderhughes et al., 2007; Reising et al., 2013). Specifically, based on a multilevel study of 4,252 families living in 80 neighborhoods from the Project on Human Development in Chicago Neighborhoods (PHDCN), Molnar and collagues (2003) found that neighborhood disadvantage significantly predicted higher levels of parent-to-child physical aggression, a construct that included spanking. This

calls for a comprehensive approach in the studies of child development that considers the joint impacts of neighborhood disorganization as well as corporal punishment—a harsh parenting practice that remains a common strategy of child discipline in U.S. families (MacKenzie et al., 2012; Straus, 1994)—on minority children.

Theoretical discussions that relate corporal punishment to adverse behavioral outcomes in childhood are supported by the tenets of social learning theory (Bandura, 1973; Bandura & Walters, 1959) and attachment theory (Bowlby, 1982; Levy & Orlans, 2000). Bandura's (1973) social learning theory purports that by using corporal punishment to correct children's misbehavior, parents are unintentionally modeling to their children that violence is socially acceptable, a pattern that could eventually lead to a vicious cycle of harsh parenting. Attachment theory by Bowlby (1982) asserts that parental corporal punishment inadvertently disrupts the attachment and reciprocal relationship between parent and child, which in turn places the child at higher risk for anxiety, avoidance, and subsequently, internalizing problems. Drawing from these premises, the majority of research demonstrates that corporal punishment is associated with increased externalizing and internalizing behavior problems (Coley, Kull, & Carrano, 2014; Grogan-Kaylor, 2004; Lee, Taylor, et al., 2013; Maguire-Jack et al., 2012; Ma et al., 2012; Mulvaney & Mebert, 2007; Straus et al., 1997; Taylor et al., 2010).

An ongoing debate surrounding the differential effects of corporal punishment based on race and ethnicity continues in the literature. In general, prior studies found that the use of corporal punishment is more prevalent in Black families than white families or Hispanic families (Berlin et al., 2009; Bradley et al., 2001; Grogan-Kaylor & Otis, 2007; MacKenzie et al., 2011; Maguire-Jack et al., 2012; Pinderhughes, Dodge, Bates, Pettit, & Zelli, 2000; Taylor et al., 2010;

Wissow, 2001). Further, rates of corporal punishment are typically lower in Hispanic families than white families (Berlin et al., 2009; Maguire-Jack et al., 2012; Wissow, 2001).

In addition, several studies investigate the extent to which the harmful effects of corporal punishment on child development differ by race and ethnicity (Coley et al., 2014; Eamon, 2001; Gershoff et al., 2012; Grogan-Kaylor, 2004; Gunnoe & Mariner, 1997; Mulvaney & Mebert, 2007). Empirical findings to date, however, have not reached consensus (Gershoff, 2002; Lansford, 2010). A number of researchers report that the effects of corporal punishment on children are weaker or even insignificant in minority families (Berlin et al., 2009; Deater-Deckard et al., 1996; Gunnoe & Mariner, 1997; Stacks, Oshio, Gerard, & Roe, 2009), although prevalence rates of corporal punishment are higher in Black and Hispanic families compared to white families (Gershoff, 2002). In a longitudinal study that included white and Black families in three U.S. cities, Deater-Deckard and colleagues (1996) reported a significant relationship between corporal punishment and externalizing behavior problems for white children only. Similarly, using data from the Early Head Start Research and Evaluation Study, Stacks and colleagues (2009) found significant adverse effects of corporal punishment on behavior problems for children of white mothers but not for children of Black and Hispanic mothers. These differential effects and prevalence by racial and ethnic groups may indicate that socio-cultural and racial/ethnic differences shape the meaning-making of corporal punishment—both for the parents and children—in that corporal punishment is perceived more normative and acceptable in certain racial and ethnic groups, particularly among Black families (Coley et al., 2014; Horn, Cheng, & Joseph, 2004; Mulvaney & Mebert, 2007).

On the other hand, a second set of studies fail to find significant between-group differences in the negative effects of corporal punishment on children, suggesting that the

detrimental influences are consistent regardless of the child's race and ethnicity (Gershoff et al., 2012; Grogan-Kaylor, 2004, 2005a; McLoyd & Smith, 2002; Straus et al., 1997). Grogan-Kaylor (2004, 2005a) and Gershoff and colleagues (2012) found that the effects of corporal punishment on children's behavior problems did not vary by race and ethnicity based on analyses using nationally representative samples—the National Longitudinal Survey of Youth (NLSY) and the Early Childhood Longitudinal Study's Kindergarten Cohort of 1998–1999 (ECLS–K), respectively. Gershoff (2002) attributes this inconsistency to significant variations in parental attitudes and behaviors towards corporal punishment in both between and within cultural and ethnic groups. It is also plausible that the distinct methodological approaches may account for the contradictory findings observed in the effects of corporal punishment on behavior problems by race and ethnicity. More specifically, in the aforementioned study that examined the effect of corporal punishment on anti-social behavior among children (ages 4–14) in the NLSY, Grogan-Kaylor (2004) used fixed-effects methods that provide stronger statistical control for all unobserved time-invariant variables in the models. This study, therefore, may not have found statistical evidence for differences in the effects of corporal punishment across racial and ethnic groups because of the inclusion of unobserved relationships in the analysis. Additional research is warranted to gain further understanding on the role of race and ethnicity in exploring parent effects on child outcomes (Spencer, 1990).

Research Questions and Hypotheses, and Contribution of Current Study

In view of the growth of racial and ethnic minority populations that now comprise more than one third of U.S. residents (Centers for Disease Control and Prevention, 2013) and their disproportionate concentration in low-income and sometimes socially disorganized neighborhoods (Massey, 2004; Pachter et al., 2006; Sampson et al., 1997), there is a critical need

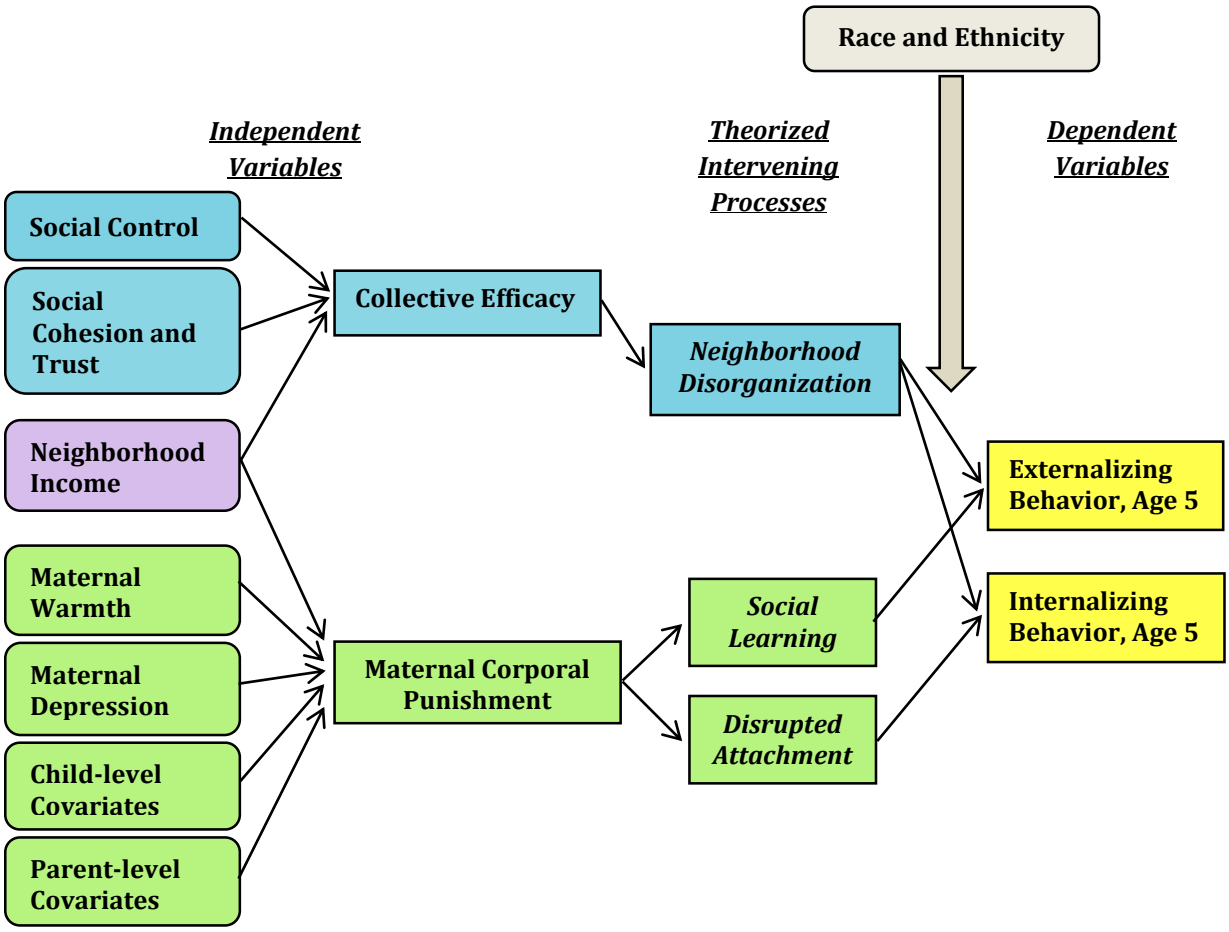
to gain a deeper understanding of the extent to which race and ethnicity influence the associations between neighborhood and parenting processes and child behavioral outcomes. Only a handful of studies, however, have considered the joint effects of neighborhood and family processes on early childhood outcomes within an ecological framework (Campbell et al., 2000). Another limitation in existing literature is the concentration on Black and white families with fewer studies exploring the differences between these two groups and Hispanic families (Ingoldsby & Shaw, 2002). As such, additional research that uses strong neighborhood process measures to examine whether or not the concurrent effects of neighborhood disorganization and parental use of corporal punishment on young children's behavioral outcomes differs between white, Black, and Hispanic families is warranted.

Drawing from the perspectives of ecological perspective (Bronfenbrenner, 1986), social disorganization theory (Wilson, 1987), social learning theory (Bandura, 1973), attachment theory (Bowlby, 1982), the risk model (Spencer, 1990), and the group differences hypothesis (Garcia Coll, 1990), this study aims to extend current knowledge on the role of race/ethnicity in the associations between neighborhood disorganization and maternal corporal punishment and behavior problems in early childhood (the conceptual model of the current study is described in Figure 3.1). A key contribution of this study is the multi-level context that encompasses the transactional relationships between neighborhood- and parenting-processes and early behavior problems. The inclusion of both externalizing and internalizing problems as the outcomes of this study extends the limited empirical evidence to the factors that may predict internalizing behavior in early childhood. To adequately consider the multiple influences on child development, a wide array of demographic information at the neighborhood-, parent-, and individual-levels were included in the analyses using multilevel modeling. Another important

strength of this study is the strong control for child effects. Children with more problematic behaviors elicit harsher discipline including parental corporal punishment (Beauchaine, Webster-Stratton, & Reid, 2005). Thus, this study follows Lee and colleagues (2013) and Maguire-Jack and colleagues' (2012) lead and includes initial assessments of externalizing and internalizing behavior problems as covariates in the analyses. Furthermore, to capture the broader context of parenting and maternal well-being that may be confounded with the use of corporal punishment as well as the overall quality of the parent-children relationship, maternal warmth and maternal depression were accounted for in the analytic models (Berlin et al., 2009; Lee et al., 2013). Specifically, this study addresses the following research questions:

1. Do the relationships between neighborhood collective efficacy, maternal use of corporal punishment, and externalizing behavior problems among 5-year-olds differ across racial/ethnic groups (white, Black, and Hispanic families)?
2. Do the relationships between neighborhood collective efficacy, maternal use of corporal punishment, and internalizing behavior problems among 5-year- olds differ across racial/ethnic groups (white, Black, and Hispanic families)?

Based on previous theoretical and empirical literature, the current study hypothesizes that the relationships between neighborhood collective efficacy and maternal use of corporal punishment with externalizing and internalizing behavior problems will differ across racial and ethnic groups such that the effects of neighborhood collective efficacy and corporal punishment will be weaker in Black and Hispanic families in comparison to white families.



Note: Child-level covariates: externalizing behavior age 3, internalizing behavior age 3, age, gender
Parent-level covariates: age, race/ethnicity, education, family income, relationship status

Figure 3.1. Conceptual Model of Current Study.

Method

Data and Participants

The current study uses data from the Fragile Families and Child Well-being Study (FFCWS), a birth cohort study of nearly 5,000 children born between the years 1998 to 2000 in 20 large U.S. cities that had populations of 200,000 or more (Reichman et al., 2001). To better understand the unique experiences of children who were raised in single-parent households, FFCWS oversampled unmarried mothers from the target hospitals at the time of their focal child's birth. Consequently, three-quarters of the children in the final sample were born to unmarried mothers that resulted in a disproportionately higher representation of racial/ethnic minorities and disadvantaged socio-economic backgrounds in comparison to the U.S. population (Reichman et al., 2001 provide a complete description of the study). The core study conducted baseline in-person interviews with mothers and biological fathers when the focal child was born (Wave 1), followed by phone interviews at 1 year (Wave 2), 3 years (Wave 3), 5 years (Wave 4), and 9 years (Wave 5) after the child's birth. In addition, mothers who participated in the Wave 3 and Wave 4 core studies were asked to take part in supplemental in-home interviews when the children were 3 and 5 years of age.

The analytic sample for the current study includes only those respondents who participated in both the Wave 3 and Wave 4 In-Home study during which the outcome variables—externalizing and internalizing behavior of children—were assessed (N = 2,488). While exploring the effects of racial/ethnic groups beyond whites, Blacks, and Hispanics would illuminate the limited knowledge base in existing literature on minority families, respondents in the other race category in FFCWS did not yield a sufficient sample size for reliable estimates (n = 76, American Indian/Native American, Native Hawaiian/Pacific Islander, and Asian). As such,

the analysis sample is further limited to respondents who had valid responses on race/ethnicity and who reported their race/ethnicity as non-Hispanic white (n = 540), non-Hispanic Black (n = 1,264), and Hispanic (n = 584). Exclusion of cases with missing data on respondent's race (n = 9) and census tract information (n = 15) resulted in a final sample of 2,388 families.

Measures

Dependent variables. Externalizing and internalizing behavior at age 5 were assessed during the Wave 4 In-Home interviews, using Achenbach's Child Behavior Checklist (CBCL) (Achenbach, 1991), a widely used measure of child behavior problems that has demonstrated high reliability across numerous populations, nations, and multi-cultural groups (Achenbach, 2010; Achenbach & Rescorla, 2007). The CBCL is offered in a variety of forms depending on the child's age. Behavior problems at 5 years were assessed using the Child Behavior Checklist CBCL/4-18 (Achenbach, 1991) and the Child Behavior Checklist CBCL/2-3 was used at 3 years (Achenbach, 1992). The CBCL items were mother's reports about specific child behaviors observed during the past two months using a three-point scale (0 = *not true*, 1 = *somewhat or sometimes true*, 2 = *very true or often true*).

Externalizing behavior. The Externalizing Behavior scale at child age 5 (Wave 4) was based on mother's report of 30 items that inquired about the focal child's Aggressive Behavior (20 items) and Delinquent Behavior (10 items). Example items included: "Child argues a lot", "Child is cruel, bullies and shows meanness to others", and "Child destroys his/her own things" in the Aggression subscale. Examples of items on the Delinquency subscale include, "Child lies or cheats", "Child runs away from home", and "Child steals at home". Mother's responses to these items were averaged such that higher scores indicate increased externalizing behavior problems. Cronbach's alpha for externalizing behavior at 5 years (Wave 4) was .87.

The externalizing behavior scale at 3 years in FFCWS only consisted of a subset (15 items) from the Aggression subscale. Example items that assessed aggressive behavior at age 3 included "Child is defiant", "Child is easily frustrated", "Child gets in many fights", and "Child hits others" with an alpha of .86. The Delinquency subscale at age 3 was not administered to the full sample and thus was excluded from this study.

Internalizing behavior. Internalizing behavior at 5 years (Wave 4) was measured based on 22 items from the CBCL. Of the total items, 14 items were included in the Anxious-Depressed subscale and nine items in the Withdrawn subscale. Example items in the Anxious-Depressed subscale were: "Child fears s/he might think/do something wrong", "Child feels or complains no one loves him/her", and "Child is nervous, high strung, or tense". The Withdrawn subscale included items such as "Child would rather be alone than with others", "Child refuses to talk", and "Child is secretive, keeps things to self". One item ("Child is unhappy, sad, or depressed") was included in both subscales. Cronbach's alpha for internalizing behavior at 5 years (Wave 4) was .76.

The internalizing behavior scale at age 3 was assessed using 24 items from the CBCL. The Anxious-Depressed subscale included 10 items and the Withdrawn subscale consisted of 14 items. Examples of items from Anxious-Depressed Subscale were: "Child clings to adults or is too dependent", "Child feelings are easily hurt", and "Child gets too upset when separated from parents". Examples of items from the Withdrawn subscale were: "Child avoids looking others in the eye", "Child doesn't answer when people talk to (him/her)", "Child doesn't know how to have fun, or he/she acts like little adult", and "Child seems unresponsive to affection". Internal consistency for internalizing behavior at Wave 3 (child age 3) was .75.

Independent variables.

Neighborhood (dis)organization. Neighborhood (dis)organization was represented by mother's perceived level of neighborhood collective efficacy that was assessed during the Wave 4 core mother interview (child age 5). This scale was drawn from the Project on Human Development in Chicago Neighborhoods (PHDCN) Community Survey Questionnaire (Sampson et al., 1997) and consisted of five items from the Informal Social Control subscale and five items from the Social Cohesion and Trust subscale. For the informal Social Control subscale, mothers responded the likelihood that they are willing to intervene to the following five scenarios in their neighborhoods: "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". Responses of these items were measured on a 4-point scale (1 = *very likely*, 2 = *somewhat likely*, 3 = *not likely*, 4 = *very unlikely*). The following five items assessed mothers' perceived level of Social Cohesion and Trust among neighbors: "People around here are willing to help their neighbors", "This is a close-knit neighborhood", "People in this neighborhood generally don't get along with each other", "People in this neighborhood do not share the same values", and "Gangs are a problem in this neighborhood" with a 4-point response option (1 = *strongly agree*, 2 = *agree*, 3 = *disagree*, 4 = *strongly disagree*). The last three items in this subscale were reverse-coded. Constructs from the Informal Social Control and Social Cohesion and Trust scales were averaged to represent the overall degree of collective efficacy. Following prior FFCWS studies that include the collective efficacy construct in the analyses (Kim & Maguire-Jack, 2013; Kimbro, Brooks-Gunn, & McLanahan, 2011), these ten items were recoded so that *higher scores represent increased levels of perceived collective*

efficacy (or lower levels of neighborhood disorganization). Internal consistency for the 10-item collective efficacy scale was .87.

Maternal corporal punishment. In the Wave 4 core interview when the focal child was 5 years of age, mothers indicated whether they had spanked their child in the previous month with the following question, "In past month, have you spanked child because he/she was misbehaving?" (1 = *yes*, 0 = *no*). Mothers were also asked: "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 examining maternal corporal punishment in the FFCWS (Taylor et al., 2010), these two variables were combined and recoded to represent the frequency of maternal corporal punishment in the past month (0 = *never*, 1 = *only once or twice this past month*, 2 = *a few times this past month*, 3 = *a few times a week or every day and nearly every day*).

Control variables.

The current study includes a comprehensive set of covariates at the child-, parent-, and neighborhood-levels to adequately account for possible confounds that may be associated with neighborhood and parenting processes.

Maternal warmth. During the Wave 4 In-Home study, interviewers rated the degree of maternal warmth using nine items from the Early-Childhood HOME (EC-HOME) inventory for children ages 3 to 6 (Caldwell & Bradley, 1984). This measure has demonstrated consistent and reliable psychometric properties across multiple cultural and racial/ethnic groups (Bradley et al., 2001; Caldwell & Bradley, 1984; Totsika & Sylva, 2004). Interviewers reported whether they observed the following parental behaviors during the home assessment (0 = *no*, 1 = *yes*),

for example: “Parent responded verbally to child's vocalizations”, “Parent spontaneously praised child at least twice”, “Parent's voice conveys positive feelings toward child”, “Parent encourages child to contribute”, “Parent caresses, kisses, or hugs child”, and “Parent responds positively to praise of child”. An average score was computed to indicate the overall degree of maternal warmth. Internal consistency of maternal warmth at age 5 was .81.

Mother's depression. The Composite International Diagnostic Interview-Short Form (CIDI-SF), Section A (Kessler et al., 1998) measured mother's depression at Wave 4 (child age 5). The CIDI-SF is widely recognized for its validity, reliability as well as appropriateness for studies with international and cross-cultural populations (Sajatovic & Ramirez, 2012). Mothers were categorized as potentially suffering from major depression (0 = *no*, 1 = *yes*) if they scored 3 or higher on the following eight items: “In the past year, have felt sad or depressed for two weeks or more in row?”, “In those two weeks, did you lose interest in things that give you pleasure?”, “In past year, have you lost interest in things that give pleasure for two weeks or more in row?”, “Thinking about same two weeks, did you feel more tired out/low on energy than usual?”, “Did you have more trouble than usual falling asleep during those two weeks?”, “During those two weeks, did you have a lot more trouble concentrating than usual?”, “During those two weeks, did you feel down on yourself, no good, or worthless?”, and “Did you think about death-either own, someone else's, or in general during those two weeks?”. Cronbach's alpha for this scale at Wave 4 was .98.

Child demographics. Age of child was measured in months during core mother interviews. Sex of child was measured dichotomously (0 = *male*, 1 = *female*).

Mother's demographics. Mother's demographic and socio-economic characteristics included race/ethnicity (0 = *non-Hispanic white*, 1 = *non-Hispanic Black*, 2 = *Hispanic*),

education (0 = *less than high school*, 1 = *high school degree or GED*, 2 = *some college/technical school*, 3 = *college degree or higher*), and age in years. These items were assessed at the time of the child's birth. Mothers reported their relationship status with the child's father at Wave 4 when the child was age 5 (0 = *married*, 1 = *cohabiting*, 2 = *not married or cohabiting*). Annual household income at Wave 4 was measured by asking, "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?" and was coded as a continuous variable based on the exact amount or range that respondents provided. Missing data (10%) was imputed by FFCWS based on mother's socio-economic characteristics such as relationship status (mother's report), age, race/ethnicity, immigrant status, employed last year, earnings, total adults in the household, and welfare receipt. For the multivariate models, the annual household income variable was natural log transformed to reduce the positive skew.

Neighborhood demographics. Of the 2,388 respondents in this study, approximately one fourth (23%) of the respondents were residing with at least one other respondent in the same Census tract at the Wave 4 interview when the neighborhood disorganization measure was administered. To account for the possible clustering of mothers' responses regarding perceived neighborhood collective efficacy, the current study used mothers' Census tract information at Wave 4 as a grouping variable to identify respondents from identical census tracts. Neighborhood income was the median household income of the respondents' Census tract in 1999 based on the 2000 U.S. Census. Neighborhood income was natural log transformed in multivariate models to adjust the positive skew.

Data Analysis Plan

Missing Data and Imputation

To maximize sample size and account for the presence of missing data in the study sample, multiple imputations through chained equations were performed to impute 10 data sets for the multilevel models using the MI program in STATA 13 (StataCorp, 2013). Based on the values of the variables included in the analysis, the multiple imputation procedure replaced missing items with plausible values from the 10 imputed data sets. The largest percentage of missing cases was observed in maternal warmth (18%), mainly due to the fact that this variable was based on interviewer observations during the Wave 4 In-Home assessment. The CBCL scales were set as missing if more than 30% of the items in each scale were missing, resulting in 0.8% and 1% of cases considered to be missing of the CBCL scales at Wave 4 (child age 5) and Wave 3 (child age 3), respectively. All other variables had less than 1.5% of missing cases. Multiple imputations were performed to impute plausible values for all variables that included missing cases.

Analytic Strategy

First, descriptive and bivariate analyses were performed. These generated a bivariate correlation matrix of all predictors and outcomes, Bonferonni corrected one-way analyses of variance (ANOVA) for continuous variables, and chi-square tests for categorical variables. Second, this study employed cross-sectional hierarchical linear models to examine the relationships between neighborhood collective efficacy and maternal corporal punishment and behavior problems of 5-year-olds while effectively controlling for intraclass correlation in the data—the clustering of families within the same neighborhood. Given the conceptual framework of this study that explores the simultaneous effects of family- and neighborhood-level processes,

the use of hierarchical linear models is more appropriate than traditional ordinary least squares (OLS) models (Raudenbush & Bryk, 2002). Random intercept models were estimated to simultaneously assess both between- and within-neighborhood differences in children's externalizing behavior and internalizing behavior. To determine whether the effects of collective efficacy and corporal punishment on children's behavior problems differ by race/ethnicity, interaction terms between collective efficacy and race/ethnicity as well as maternal corporal punishment and race/ethnicity were included in the models. Continuous variables were centered at their mean to facilitate the interpretation of the coefficients. Consequently, the coefficients of the explanatory variables are interpreted as the slope when all other variables are at their reference category or at their mean for centered variables. In order to more thoroughly investigate statistically significant interactions, these were followed up with simple slopes analyses and interaction plots as delineated by Preacher, Curran, and Bauer (2006).

Results

Descriptive and Bivariate Statistics

Table 3.1 describes the descriptive and demographic characteristics of this study sample as well as results from Bonferonni corrected one-way analyses of variance (ANOVA) for continuous variables and chi-square tests that were employed for categorical variables. The study sample included 23% white families, 53% Black families, and 24% Hispanic families. Child behavior problems at age 5 ranged from 0 to 1.5 with a mean of 0.42 for externalizing behavior and 0 to 1.4 with a mean of 0.25 for internalizing behavior. Average scores and maximum behavior problems at age 3 were higher for both externalizing behavior (M = 0.65, range = 0–2.0) and internalizing behavior (M = 0.39, range = 0–1.5). In terms of explanatory variables, the average of collective efficacy was 3.10 (SD = 0.65). On average, nearly half

(49%) of the mothers never spanked their child in the past month; approximately one third (32%) spanked their child once or twice this past month; 13% spanked a few time this past month; and 5% of mothers reported that they spanked their child a few times a week or more often in the past month. Mother's average age was 30 years (*SD* = 6.00). Nearly one third (30%) of mothers reported that they were married to the father of the focal child at Wave 4, followed by 13% who were cohabiting. More than half (57%) were neither married nor cohabiting. In terms of child characteristics, on average children were 61 months old (*SD* = 2.42). Sex of children was almost equally divided—52% of the children were boys and 48% were girls.

A number of statistically significant group differences across the three racial/ethnic groups were identified in the bivariate analyses. Externalizing behavior at 5 years was highest among Black children (*M* = 0.44, *SD* = 0.26) and lowest among white children (*M* = 0.41, *SD* = 0.24). Internalizing behavior at 5 years was highest among Hispanic children (*M* = 0.30, *SD* = 0.24) and lowest among white children (*M* = 0.22, *SD* = 0.18). In general, Black and Hispanic mothers reported lower levels of neighborhood collective efficacy and residence in neighborhoods with significantly lower income in comparison to white mothers, a finding that is consistent with extant literature (Browning et al., 2004; Ingoldsby & Shaw, 2002; Sampson & Raudenbush, 2004). Perceived neighborhood collective efficacy among white mothers (*M* = 3.31, *SD* = 0.56) was highest followed by Hispanic mothers (*M* = 3.06, *SD* = 0.62) and Black mothers (*M* = 3.03, *SD* = 0.68). In terms of racial and ethnic group differences concerning corporal punishment, Hispanic mothers reported less prevalent corporal punishment than the other two racial groups. Fewer Hispanic mothers (41%) spanked their child at least once in the past month than white mothers (49%) and Black mothers (56%). A larger proportion of white mothers in the sample (19%) suffered from depression in comparison to Black (18%) and

Hispanic mothers (13%). Maternal warmth was highest among white mothers (M = 0.85, SD = 0.24), followed by Hispanic mothers (M = 0.79, SD = 0.26), and then Black mothers (M = 0.72, SD = 0.30).

In terms of socio-demographic variables, significant racial and ethnic differences emerged in mother's age, education, relationship status, and income. On average, Black mothers were younger (M = 29.4 years, SD = 5.62) while white mothers were older (M = 32.4, SD = 6.48). Compared to 83% of white mothers who had a high school degree or higher, a much smaller proportion of Black (67%) and Hispanic (52%) mothers had graduated from high school. Turning to mother's relationship status with the focal child's father, 55% of white mothers were married to the focal child's father compared to 36% of Hispanic and 16% of Black mothers. Annual household income of white families was more than double of Hispanic and Black families' incomes. Also, average neighborhood income was highest for white families, followed by Hispanic and Black families. The mean neighborhood income of white families was 1.7 times higher than that of Black families and 1.3 times higher than Hispanic families. This finding indicates that Hispanic and Black children typically reside in lower-income neighborhoods. In sum, these bivariate results suggest that Black and Hispanic families in this study are generally in disadvantaged socio-economic conditions in comparison to white families.

Table 3.2 presents the correlation matrix for the variables included in this study. The coefficients indicate small to moderate associations between study variables. Notably, neighborhood collective efficacy and externalizing (r = –.14, p < .001) and internalizing behavior problems (r = –.13, p < .001) at age 5 demonstrated small but significant inverse relationships. Mother's use of corporal punishment had significant positive relationships with externalizing (r = .24, p < .001) and internalizing behavior problems (r = .11, p < .001) at age 5. The highest

Table 3.1. Descriptive and Bivariate Analysis by Racial and Ethnic Groups (N = 2,388)

Variable (Range)	Total Sample N = 2,388 (100%) *M* (*SD*) or %	White n = 540 (23%) *M* (*SD*) or %	Black n = 1,264 (53%) *M* (*SD*) or %	Hispanic n = 584 (24%) *M* (*SD*) or %	Missing %
Child Outcomes					
Externalizing Behavior, Age 5 (0–1.5)	0.42 (0.25)	0.41 (0.24)*	0.44 (0.26)*	0.42 (0.25)*	0.8%
Internalizing Behavior, Age 5 (0–1.4)	0.25 (0.20)	0.22 (0.18)***	0.24 (0.19)***	0.30 (0.24)***	0.8%
Externalizing Behavior, Age 3 (0–2.0)	0.65 (0.39)	0.60 (0.35)**	0.67 (0.41)**	0.65 (0.39)**	1.0%
Internalizing Behavior, Age 3 (0–1.5)	0.39 (0.24)	0.34 (0.20)***	0.41 (0.24)***	0.42 (0.25)***	1.0%
Neighborhood Disorganization					
Collective Efficacy (1–4)	3.10 (0.65)	3.31 (0.56)***	3.03 (0.68)***	3.06 (0.62)***	0.5%
Mother's Corporal Punishment (%)					1.5%
Never	49%	51%***	44%***	59%***	
Only once or twice	32%	28%**	35%**	29%**	
A few times this past month	13%	13%***	15%***	9%***	
A few times a week or more	5%	8%**	6%**	3%**	
Mother's Warmth (0–1)	0.76 (0.28)	0.85 (0.24)***	0.72 (0.30)***	0.79 (0.26)***	18.3%
Mother's Depression (%)	17%	19%**	18%**	13%**	0.0%
Child demographics					
Age (57–71 months)	61.12 (2.42)	60.34 (2.07)***	61.32 (2.24)***	61.40 (2.90)***	0.0%
Sex of focal child (boy)	52%	53%	52%	50%	0.0%
Mother's demographics					
Age (20–50 years)	30.17 (6.00)	32.35 (6.48)***	29.40 (5.62)***	29.77 (5.86)***	0.0%

Table 3.1. (cont'd)

Variable (Range)	Total Sample *N* = 2,388 (100%) *M* (*SD*) or %	White *n* = 540 (23%) *M* (*SD*) or %	Black *n* = 1,264 (53%) *M* (*SD*) or %	Hispanic *n* = 584 (24%) *M* (*SD*) or %	Missing %
Education (%)					0.1%
Less than High School	33%	17%***	33%***	48%***	
High school degree or GED	31%	23%***	36%***	26%***	
Some college/technical school	26%	29%***	26%***	22%***	
College degree or higher	10%	30%***	5%***	4%***	
Relationship Status (%)					0.1%
Married	30%	55%***	16%***	36%***	
Cohabiting	13%	9%***	12%***	18%***	
Not married or cohabiting	57%	36%***	72%***	46%***	
Annual Household Income ($0–800,000)	35,689 (40,695)	61,449 (61,839)***	27,135 (27,738)***	30,384 (27,870)***	
Neighborhood demographics					
Neighborhood income ($6,913–157,559)	37,410 (18,579)	50,302 (21,863)***	30,969 (13,238)***	39,422 (18,533)***	0.1%

Note: Chi-square tests were conducted for binary and categorical variables. Bonferonni corrected one-way analyses of variance (ANOVA) were conducted for continuous variables.
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 3.2. Correlation Matrix for Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1.Ext. Behavior, Age 5	–																			
2.Int. Behavior, Age 5	**0.52**	–																		
3.Ext. Behavior, Age 3	**0.54**	**0.39**	–																	
4.Int. Behavior, Age 3	**0.40**	**0.45**	**0.70**	–																
5.Collective Efficacy	**-0.14**	**-0.13**	**-0.15**	**-0.17**	–															
6.Mother's CP	**0.24**	**0.11**	**0.22**	**0.10**	**-0.06**	–														
7.Maternal Warmth	**-0.10**	**-0.06**	**-0.07**	**-0.10**	**0.11**	**-0.04**	–													
8.Maternal Depression	**0.18**	**0.18**	**0.17**	**0.16**	**-0.09**	**0.09**	**-0.03**	–												
9.Child Age	**-0.03**	**0.03**	**0.01**	**0.05**	**-0.03**	**-0.04**	**-0.04**	**0.02**	–											
10.Child Sex	**-0.07**	**-0.03**	**-0.06**	**-0.03**	-0.01	**-0.07**	**0.03**	**-0.02**	0.01	–										
11.Mother's Age	**-0.13**	**-0.09**	**-0.12**	**-0.13**	**0.08**	**-0.14**	**0.12**	**-0.03**	**-0.05**	0.01	–									
12.Race/Ethinicity: White	**-0.04**	**-0.08**	**-0.07**	**-0.13**	**0.18**	**0.01**	**0.16**	**0.03**	**-0.17**	-0.01	**0.20**	–								
13.Race/Ethinicity: Black	**0.05**	**-0.05**	**0.06**	**0.06**	**-0.12**	**0.10**	**-0.18**	**0.03**	**0.09**	-0.01	**-0.13**	**-0.57**	–							
14.Race/Ethinicity: Hispanic	**-0.02**	**0.14**	0.00	**0.07**	**-0.03**	**-0.12**	**0.05**	**-0.07**	**0.07**	**0.02**	**-0.04**	**-0.31**	**-0.60**	–						
15.Education	**-0.15**	**-0.17**	**-0.15**	**-0.27**	**0.17**	-0.01	**0.19**	**-0.03**	**-0.11**	-0.01	**0.39**	**0.32**	**-0.11**	**-0.18**	–					
16.Relationship: Married	**-0.15**	**-0.11**	**-0.12**	**-0.15**	**0.16**	**-0.03**	**0.14**	**-0.07**	**-0.10**	-0.01	**0.29**	**0.30**	**-0.31**	**0.08**	**0.33**	–				
17.Relationship: Cohabiting	**-0.02**	**0.04**	-0.01	**0.03**	**-0.04**	**-0.04**	-0.01	**-0.06**	-0.01	**0.03**	**-0.06**	**-0.06**	**-0.03**	**0.09**	**-0.11**	**-0.25**	–			
18.Relationship: Neither	**0.15**	**0.07**	**0.11**	**0.12**	**-0.12**	**0.06**	**-0.12**	**0.10**	**0.09**	**-0.02**	**-0.23**	**-0.23**	**0.31**	**-0.13**	**-0.23**	**-0.75**	**-0.45**	–		
19.Household Income	**-0.14**	**-0.15**	**-0.15**	**-0.23**	**0.17**	0.00	**0.15**	**-0.08**	**-0.10**	-0.01	**0.21**	**0.26**	**-0.18**	**-0.05**	**0.41**	**0.35**	0.00	**-0.33**	–	
20.Neighborhood Income	**-0.11**	**-0.08**	**-0.13**	**-0.17**	**0.25**	**-0.05**	**0.08**	**-0.03**	**-0.05**	0.01	**0.18**	**0.37**	**-0.37**	**0.07**	**0.32**	**0.31**	**-0.06**	**-0.25**	**0.29**	–

Note: $p < .05$ or lower are bolded.

correlation between independent variables was found between mother's age and education (r = .39, p < .001). As such, the current analyses are not likely to be biased by multicollinearity.

Multilevel Models with Race/Ethnicity as Moderator

Table 3.3 presents results from two random intercept models that explore the simultaneous effects of collective efficacy and maternal corporal punishment on 5-year-olds' externalizing behavior, as well as the racial/ethnic differences in the main effects, while controlling for earlier behavior problems and a wide array of covariates at the child-, mother-, and neighborhood-levels. Model 1 examines the main effects only, whereas Model 2 includes the interaction terms for collective efficacy and race/ethnicity as well as for corporal punishment and race/ethnicity. Contrary to the study hypotheses, both interactions in Model 2 were not significant. Also, the Wald test results indicated that the added parameters involved in the interaction terms in Model 2 were not significantly different from zero. The non-significant interaction coefficients underscore the finding that the effects of collective efficacy and mother's corporal punishment on child externalizing behavior were not statistically different across racial/ethnic groups. The coefficients of the main effects in Model 2—collective efficacy and corporal punishment—can be interpreted as the slope of the corresponding variable when the continuous covariates are at their means and the value of the categorical variables are at 0, the reference category. As such, the significant main effect of spanking "a few times a week or more" (β = 0.105, p < .01) suggests that in this sample, the predicted 5-year externalizing behavior of a white boy who was spanked a few times a week or more often would be 0.105 units higher compared to being never spanked when all other covariates are at their mean or reference category. The significant variance of the random intercept indicate that there are significant differences in the average child externalizing behavior between neighborhoods.

Table 3.3. Multilevel Regression Models on Externalizing Behavior Problems at Age 5 (N = 2,388)

	Model 1	Model 2
Fixed Effects		
Collective efficacy[a]	–0.014*	–0.007
	(0.007)	(0.017)
Race/ethnicity: White, non-Hispanic		
Black, non-Hispanic	–0.028*	–0.027
	(0.013)	(0.018)
Hispanic	–0.016	–0.034†
	(0.014)	(0.019)
Mother's corporal punishment: never		
Only once or twice	0.034**	0.021
	(0.010)	(0.021)
A few times this past month	0.074***	0.060*
	(0.014)	(0.028)
A few times a week	0.097***	0.105**
	(0.020)	(0.035)
Collective efficacy and race interactions		
Collective Efficacy × Black		–0.013
		(0.019)
Collective Efficacy × Hispanic		–0.001
		(0.022)
Mother's corporal punishment and race interactions		
Mother's CP (=1) × Black		0.002
		(0.025)
Mother's CP (=1) × Hispanic		0.046
		(0.029)
Mother's CP (=2) × Black		0.006
		(0.033)
Mother's CP (=2) × Hispanic		0.046
		(0.042)
Mother's CP (=3) × Black		–0.027
		(0.044)
Mother's CP (=3) × Hispanic		0.030
		(0.062)
External behavior problem, age 3[a]	0.308***	0.307***
	(0.012)	(0.011)

Table 3.3. (cont'd)

	Model 1	Model 2
Maternal warmth[a]	–0.031	–0.031
	(0.017)	(0.017)
Mother's depression	0.050***	0.050***
	(0.012)	(0.012)
Child demographics		
Age of child (months)[a]	–0.004*	–0.004*
	(0.002)	(0.002)
Sex of child: girl	–0.017*	–0.018*
	(0.009)	(0.009)
Mother's demographics		
Age of mother (years)[a]	–0.000	–0.000
	(0.001)	(0.001)
Education: less than high school		
High school degree or GED	–0.007	–0.007
	(0.011)	(0.011)
Some college/technical school	–0.024†	–0.023
	(0.012)	(0.012)
College degree or higher	–0.044*	–0.046*
	(0.019)	(0.019)
Relationship Status: married		
Cohabiting	0.015	0.016
	(0.015)	(0.015)
Not married or cohabiting	0.040***	0.040***
	(0.011)	(0.011)
Household income[a,b]	–0.002	–0.002
	(0.003)	(0.003)
Neighborhood demographics		
Neighborhood income[a,b]	–0.008	–0.008
	(0.010)	(0.010)
Constant	0.404***	0.408***
	(0.016)	(0.018)
Random Effects	Standard Deviation	
Level-2 variance (u_{0j})	0.024*	0.030**
	(0.036)	(0.023)
Level-1 variance (e_{ij})	0.205***	0.204***
	(0.004)	(0.004)

Note: CP = corporal punishment.

[a] Continuous predictors were grand mean-centered for analyses.

[b] Household income and neighborhood income were log transformed for analyses.

† $p < 0.07$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; Standard errors in parentheses.

Table 3.4 shows results for the associations between collective efficacy and maternal corporal punishment on internalizing behavior at age 5 (Model 3) and the interaction effects between these two main effects and race/ethnicity on the outcome (Model 4). The Wald test indicate that at least one of the interactions between collective efficacy and race/ethnic is significantly different from zero. A test of overall significance of the interactions was significant at the $p < .05$ level. While the interactions between every category of mother's corporal punishment and each race/ethnicity were not significant, the interaction between collective efficacy and Hispanic ethnicity was statistically significant, suggesting that the slope of collective efficacy is notably different for Hispanics than whites. The significant negative interaction coefficient ($\beta = –0.039$, $p < .05$) in Model 4 indicates that the protective influence of collective efficacy on child internalizing behavior is stronger for Hispanic children than white children. The simple slope indicates that a 1 standard deviation increase in collective efficacy is associated with 0.04 points decrease in internalizing behavior for Hispanic children ($p < .05$). However, the simple slopes for white and Black children were not statistically significant. Figure 3.2 presents the simple collective efficacy slopes for each racial/ethnic group. The slope of Hispanic children (short dotted line) is steeper than that of the white children (solid line). Turning to the main effects of race/ethnicity, the coefficients can be interpreted as the difference in the intercept between groups. The significant positive coefficient for Hispanic children ($\beta = 0.042$, $p < .01$) suggests that the average internalizing behavior is higher for Hispanic children in comparison to white children, when collective efficacy and the other variables in the model are at the mean or reference category. This difference in the intercept was not significant between white and Black children. In terms of the interaction between maternal corporal punishment and race/ethnicity, none of the interactions were significant. This indicates that the effects of

corporal punishment on internalizing behavior are consistent across all three racial/ethnic groups. Finally, the non-significant coefficients of random intercepts of Model 3 and 4 underline that average child internalizing behavior is not different across neighborhoods.

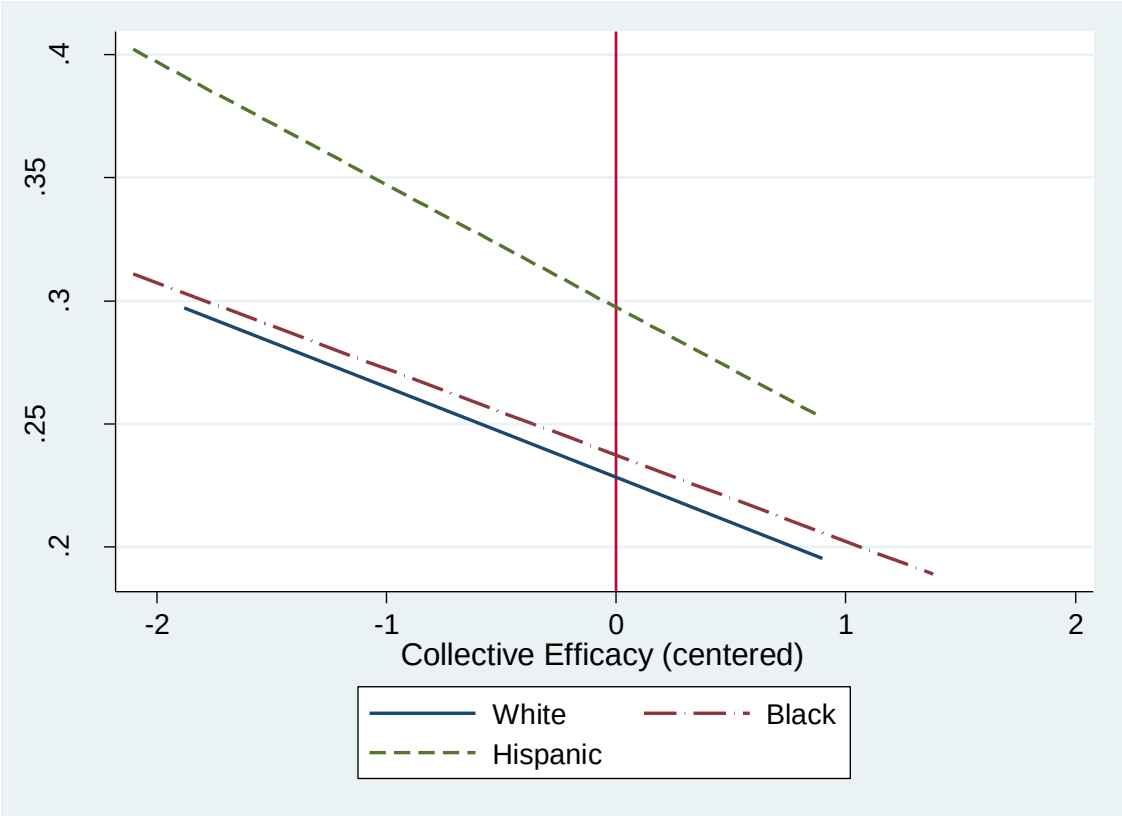


Figure 3.2. Effects of Collective Efficacy on Children's Internalizing Behavior.

Table 3.4. Multilevel Regression Models on Internalizing Behavior Problems at Age 5 (N = 2,388)

	Model 3	Model 4
Fixed Effects		
Collective efficacy[a]	–0.013*	–0.002
	(0.006)	(0.014)
Race/ethnicity: White, non-Hispanic		
Black, non-Hispanic	–0.020	–0.021
	(0.011)	(0.015)
Hispanic	0.048***	0.042**
	(0.012)	(0.016)
Mother's corporal punishment: never		
Only once or twice	0.016†	0.015
	(0.008)	(0.018)
A few times this past month	0.036**	0.028
	(0.012)	(0.024)
A few times a week	0.039*	0.021
	(0.017)	(0.030)
Collective efficacy and race interactions		
Collective Efficacy × Black		–0.003
		(0.016)
Collective Efficacy × Hispanic		–0.039*
		(0.018)
Mother's corporal punishment and race interactions		
Mother's CP (=1) × Black		–0.002
		(0.021)
Mother's CP (=1) × Hispanic		0.013
		(0.025)
Mother's CP (=2) × Black		0.013
		(0.028)
Mother's CP (=2) × Hispanic		0.008
		(0.037)
Mother's CP (=3) × Black		0.026
		(0.037)
Mother's CP (=3) × Hispanic		0.034
		(0.053)
Internalizing behavior problem, age 3[a]	0.335***	0.335***
	(0.016)	(0.016)

Table 3.4. (cont'd)

	Model 3	Model 4
Maternal warmth[a]	–0.006	–0.007
	(0.016)	(0.016)
Mother's depression	0.060***	0.060***
	(0.010)	(0.010)
Child demographics		
Age of child (months)[a]	0.000	0.000
	(0.002)	(0.002)
Sex of child: girl	–0.007	–0.006
	(0.007)	(0.007)
Mother's demographics		
Age of mother (years)[a]	–0.000	–0.000
	(0.001)	(0.001)
Education: less than high school		
High school degree or GED	0.002	0.003
	(0.009)	(0.009)
At least some college	–0.016	–0.015
	(0.011)	(0.011)
College degree or higher	0.013	0.011
	(0.016)	(0.017)
Relationship Status: married		
Cohabiting	0.028*	0.027*
	(0.013)	(0.013)
Not married or cohabiting	0.019*	0.019*
	(0.010)	(0.010)
Household income[a,b]	–0.003	–0.003
	(0.003)	(0.003)
Neighborhood demographics		
Neighborhood income[a,b]	–0.003	–0.004
	(0.008)	(0.008)
Constant	0.217***	0.218***
	(0.013)	(0.016)
Random Effects	Standard Deviation	
Level-2 variance (u_{0j})	2.54e-11***	3.43e-12***
	(9.88e-11)	(1.04e-11)
Level-1 variance (e_{ij})	0.175***	0.175***
	(0.003)	(0.003)

Note: CP = corporal punishment.

[a] Continuous predictors were grand mean-centered for analyses.

[b] Household income and neighborhood income were log transformed for analyses.

† $p < 0.07$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; Standard errors in parentheses.

Discussion

Drawing from the ecological framework, the current study builds on extant literature demonstrating distinguishable differences between neighborhood and parenting effects on child behavior problems by race and ethnicity (Berlin et al., 2009; Kupersmidt et al., 1995; Pachter et al., 2006; Stacks et al., 2009). A notable contribution of this study is the use of a conceptual framework as well as an analytic approach that considers the multilevel and interactive relationships between neighborhood-, parent-, and individual child- processes. Accordingly, a comprehensive array of child, family, and contextual factors that may confound neighborhood and parent influences on child development were accounted for in the multilevel models. The hypotheses that the associations between neighborhood disorganization and maternal corporal punishment on child externalizing and internalizing behavior would be attenuated for minority children were only partially supported. Race/ethnicity was not a significant moderator in the relationship between maternal corporal punishment and externalizing and internalizing behavior problems. The interaction between race/ethnicity and collective efficacy was significant for Hispanic children's internalizing behavior only. These findings are further elaborated below.

Overrepresentation of Minority Children in Disadvantaged Neighborhoods

Consistent with a host of prior studies, the current analysis found that compared to white children, minority children are disproportionately represented in underprivileged neighborhood conditions that include both structural and process-oriented measurements of neighborhood disadvantage (Browning et al., 2004; Ingoldsby et al., 2006; Jencks & Mayer, 1990; Massey, Gross, & Shibuya, 1994; Sampson & Raudenbush, 2004; Wilson, 1987). A plausible explanation for this overrepresentation of low-income minority families in disadvantaged socio-economic as well as structural conditions in the current study could be attributed to the sampling design of the

FFCWS. To gain an in-depth understanding of the complex challenges of single parent families in urban settings, the FFCWS oversampled single mothers residing in large cities. Consequently, results of this study highlight that the intersections of a number of marginalized socio-economic statuses including urban poverty are more pronounced for racial and ethnic minority families. This finding supports the risk model that purports that minority families are at higher risk of experiencing contextual and environmental risk factors (Spencer, 1990). In addition, the results build on a large tradition of extant literature that underscores the significant associations between both concentrated disadvantage and disorganization of neighborhoods on undesirable child outcomes and suggests that minority children are at higher risk of these detrimental neighborhood hazards (Drake & Rank, 2009; Jargowsky, 1997; Massey, 2004; Raudenbush & Bryk, 2002; Sharkey, 2008; Wilson, 1987).

Interaction between Neighborhood Disorganization and Race/Ethnicity

In support of the group differences hypothesis (Garcia Coll, 1990), multilevel models in the current study demonstrated that the protective effect of collective efficacy on internalizing behavior is more salient for Hispanic children compared to white children. Prior research provides a probable argument for the prominent role of collective efficacy in shaping internalizing behavior of Hispanic children. It is widely reported that Hispanic/Latino culture and tradition place a strong value on *familismo* (familism) that is defined as the solidarity and commitment toward the immediate and extended family (Bird et al., 2001; Toro-Morn, 2012). The strong sense of belonging and respect for community, coupled with a higher degree of support and attachment among family members in Hispanic families may serve as a mechanism that strengthens the protective influences of collective efficacy on positive child behavior (Ayón,

Marsiglia, & Bermudez-Parsai, 2010; Garcia Coll et al., 1996; Halgunseth, Ispa, & Rudy, 2006; Way, Finch, & Cohen, 2006).

Furthermore, existing literature identifies a number of acculturation measures such as nativity status, time lived in the U.S., and English language proficiency (Massey, 1993) and cultural indicators such as traditional gender norms and religiosity (Altschul & Lee, 2011; Lee & Altschul, 2015) as factors that are associated with individual- and family-processes in Hispanic families (Finch & Vega, 2003; Way et al., 2006). In fact, prior studies found evidence of an inverse relationship between acculturation and *familismo* such that higher levels of acculturation lead to decreases in family cohesion (Halgunseth et al., 2006; Rumbaut, 2005). A post-hoc analysis indicated that a considerable proportion of Hispanic mothers (36%) in this study were foreign-born. The degree of acculturation in these foreign-born Hispanic mothers may account for some of the intensified positive influence of collective efficacy on internalizing behavior among Hispanic children. For instance, the benefits of collective efficacy coupled with the protective effects of *familismo* may be stronger in less acculturated immigrant Hispanic families. These cultural concepts, however, were not included in this study and suggest a direction for future research.

Finally, contrary to the study hypothesis, this study found that the positive role of collective efficacy in reducing externalizing behavior is not distinguishable between racial/ethnic groups. It is unclear why the effects of collective efficacy is more pronounced only on internalizing problems of Hispanic children compared to white and Black children, and not on externalizing problems of Hispanic children compared to other racial/ethnic groups. A possible explanation is that the supportive and communal mechanism of collective efficacy that promotes positive family processes such as *familismo* appears to attenuate internalizing issues (i.e., anxiety

and depression) of Hispanic parents (Ceballos & Bratton, 2010; Weiss, Goebel, Page, Wilson, & Warda, 1999). This in turn, may protect children from internalizing behavior problems. Future research should make efforts to further extend a limited number of earlier research that explored whether the protective influence of positive neighborhood processes on child behavior problems were consistent across racial/ethnic groups (Brooks-Gunn et al., 1993; Eamon, 2002).

Prevalence of Corporal Punishment by Race/Ethnicity

The rates of maternal corporal punishment during the past month when children were 5 years of age were 51% in the current study. This finding confirms earlier FFCWS studies that indicate that approximately half of the 5-year-olds were spanked in the past month at age 5 (MacKenzie et al., 2013; Maguire-Jack et al., 2012). These high rates of maternal corporal punishment at age 5 suggest that spanking is still a normative parenting practice in early childhood despite the long tradition of empirical evidence that demonstrates its adverse effects on child development (Berlin et al., 2009; Coley et al., 2014; Gershoff, 2002; Grogan-Kaylor, 2005a; Lee et al., 2013; Maguire-Jack et al., 2012; Straus et al., 1997; Wissow, 2001).

Racial and ethnic disparities in the rates of corporal punishment are also evident in the current study. The average maternal use of corporal punishment in the past month was most prevalent in Black families (56%), close to average in white families (49%), and least common in Hispanic families (41%). This finding is consistent with a line of previous research that demonstrate evidence for favorable attitudes towards spanking in Black families compared to white families (Berlin et al., 2009; Flynn, 1998; Grogan-Kaylor & Otis, 2007) and lower rates of corporal punishment in Hispanic families than the two other racial groups (Altschul & Lee, 2011; Berlin et al., 2009; Lee et al., 2013).

The parenting contexts in Hispanic families that are deeply rooted in cultural values of interdependence provide further exploration on the lower rates of corporal punishment in Hispanic families. Hispanic parents may be less likely to approve harsh and coercive parenting practices based on *familismo* (familism) and *respeto* (respect) (Halgunseth et al., 2006; O'Brien Caughy & Franzini, 2005). *Familismo* is one of the most significant cultural norms in Hispanic and Latino families that strongly values cohesiveness, respect, and interdependence within the family (Ferrari, 2002; Guilamo-Ramos et al., 2007). *Respeto* refers to the importance of respecting harmonious interpersonal relationships in the family (Halgunseth et al., 2006). Given this strong emphases on supportive and respectful relationships between family members, cultural norms in Hispanic families define maternal roles to be caring and nurturing (Halgunseth et al., 2006). Consequentially, the firm family ties and commitment for respectful family interactions in Hispanic and Latino culture may well serve as protective factors against the use of harsh parenting practices such as corporal punishment (Altschul & Lee, 2011; Parra-Cardona, Córdova, Holtrop, Villarruel, & Wieling, 2008).

Scholarly discussions regarding parenting contexts in Black families highlight several afro-centric cultural values that may influence higher rates of corporal punishment in Black families. For one, grounded in the traditional value for children's respect for adults and the elders in the family and communities, corporal punishment is considered as a necessary practice of discipline to correct disrespectful child behavior (Berlin et al., 2009; Ispa & Halgunseth, 2004; McLoyd, 1990). Additionally, given the long-standing history of racial discrimination and institutionalized social and economic segregation of Black communities (Massey et al., 1994; McLoyd, 1990), some researchers have argued that Black parents in low-income neighborhoods are more supportive of harsh and power-assertive parenting practices in order to better prepare

their children for environmental challenges and physical danger (Furstenberg, 1993; Ispa & Halgunseth, 2004; McLoyd, 1990).

Taken together, the distinctive rates in corporal punishment among minority families add support to the growing body of empirical research that documents disproportionate rates of certain parenting practices based on cultural norms and values (Berlin et al., 2009; Lee & Altschul, 2015; MacKenzie et al., 2011; Regalado et al., 2004; Wissow, 2001). In contrast to the racial and ethnic group differences in the rates of corporal punishment, however, race and ethnicity was not a significant moderator in the associations between maternal corporal punishment and child behavior problems. The adverse influence of corporal punishment on externalizing and internalizing behavior is consistent regardless of the child's race/ethnicity, even after neighborhood processes and a wide array of covariates are controlled. This null finding is consistent with findings from a group of prior studies that conclude that the deleterious effects of corporal punishment on child behavior problems are universal across racial and ethnic groups (Gershoff et al., 2012; Grogan-Kaylor, 2004, 2005a; MacKenzie et al., 2012; McLoyd & Smith, 2002; Straus et al., 1997).

Study Limitations and Directions for Future Research

The results of this study should be interpreted with the following limitations. First of all, most of the measurements in this study relied on maternal self-reports, which could be subject to social desirability bias. Particularly, given the increasing evidence of and publicity about the negative influence of corporal punishment on child outcomes and associations between corporal punishment and child maltreatment (Lee et al., 2014; Zolotor et al., 2011), it is possible that mothers under-report the frequency of spanking. Additionally, corporal punishment by fathers or other caregivers was not included in this study. Although more than half of the mothers in this

study were neither married nor cohabiting with the focal child's birth father, mothers may have partners or other family members in the household who are involved in child rearing. As such, the reliance on mother's report of corporal punishment may limit our understanding of the broader family contexts in which children are disciplined. Future studies should utilize multi-informant reports including observations for a more robust measurement.

Moreover, this study found that positive neighborhood processes have a stronger influence on internalizing behavior of Hispanic children, yet the mechanism through which this difference is manifested onto child outcomes is not clear. An important direction for future research is to further explore the distinctive role of cultural factors such as acculturation and cultural norms and values (e.g., familism) in minority families in examining the associations between neighborhood and parenting processes and child outcomes.

Also, the cross-sectional nature of the analyses limits its ability to confirm the causal relationships suggested in this study. To account for this methodological limitation, this study included prior measures of the child behavior problems as covariates in the analytic models. Future research should employ longitudinal designs to more confidently demonstrate the causal links between neighborhood disorganization, maternal corporal punishment, and child behavior problems.

Finally, a caveat of the findings in this study is the characteristics of the sample. Minority populations and single parents who experience disproportionately higher rates of socio-economic and neighborhood disadvantages are overrepresented in the current sample. Thus, generalization of the study results to more privileged populations and non-urban settings is limited. Additional studies with samples from rural and suburban settings are warranted in future

research to extend the current knowledge base regarding racial and ethnic differences in neighborhood and parent effects on child development.

Practice and Policy Implications

The current study has a number of practice implications. The added knowledge from this study provides meaningful insight for programs that aim to increase positive neighborhood processes and parenting practices for families regardless of their racial and ethnic backgrounds. Also, findings of this research further highlight the importance of culturally relevant programs by pointing to discernible patterns in the relationship between neighborhood collective efficacy on internalizing behavior problems by race and ethnicity.

The non-significant interaction between collective efficacy and race and ethnicity on externalizing behavior suggests that community-level policies and programs that aim to increase social cohesion and informal social control would be beneficial to all children, regardless of their racial and ethnic backgrounds. The significant main effects of collective efficacy underscore the influential role of positive neighborhood processes on child development and highlight the need to develop evidence-based programs that specifically target social cohesion and control in disadvantaged neighborhoods. At the same time, the significant interaction between collective efficacy and Hispanic origin on internalizing behavior suggest that interventions that increase collective efficacy in neighborhoods may be especially valuable for reducing internalizing problems among Hispanic children. To provide effective and relevant services based on values and traditional norms of minority cultures, programs and services should place strong emphasis on cultural competency. In neighborhoods that are racially and ethnically heterogeneous, additional efforts should be made to foster a sense of community and cohesion among neighbors of various cultural backgrounds, as prior research suggest that the integration of diverse

communities could serve as a promising prevention and intervention strategy in providing a supportive environment for positive child development (Klein & Merritt, 2014).

The study results also indicate the universal (i.e., race/ethnicity neutral) effect of maternal corporal punishment on adverse child outcomes. Professional and clinical settings including pediatric clinics, child care centers, parent education programs, and home visiting programs should continue to inform parents of the growing body of research demonstrating the deleterious influence of maternal corporal punishment on child behavior and provide information on alternative and effective disciplinary strategies. As cultural beliefs and values of minority communities may intricately inform the meaning-making of corporal punishment to the parents and the children, an awareness and sensitivity to effectively address cultural values associated with parenting practices of minority parents is imperative in these efforts.

Another important aspect to consider is the intersections of neighborhood, family, and parenting contexts and its complex influences on child development. To fully consider the ecological and interactive relationships between neighborhood-, family-, and individual-processes, a family-centered and strength-based approach should be implemented for programs that serve families with children in disadvantaged neighborhoods.

Conclusion

In conclusion, this study strongly suggests that neighborhood disorganization and maternal corporal punishment are significant predictors of child behavior problems even after controlling for a comprehensive range of predictors at the individual-, family-, and neighborhood-levels. Overall, these findings were consistent across racial and ethnic groups—differences were only apparent for the association between neighborhood collective efficacy and internalizing behavior for Hispanic children. These results contribute to the growing body of

literature regarding neighborhood and parent effects on child outcomes and point to the significance of an ecological perspective that also takes into account the possibility that the salience of micro- (family) and exo-system (neighborhood) processes on child outcomes may vary by cultural identity.

CHAPTER FOUR

LONGITUDINAL PATTERNS OF BEHAVIOR PROBLEMS IN EARLY CHILDHOOD: THE EFFECTS OF NEIGHBORHOOD DISORGANIZATION AND MATERNAL CORPORAL PUNISHMENT

Abstract

Young children's perception of neighborhood and parent influences are strongly dependent on their developmental stages, however, scant research has jointly considered the roles of neighborhood and parenting processes on early childhood outcomes. To address this limitation, this chapter explores the effects of neighborhood disorganization (i.e., lack of collective efficacy) and maternal corporal punishment on the longitudinal patterns of early externalizing and internalizing behavior problems on a sample of 3,705 families in the Fragile Families and Child Wellbeing Study. Longitudinal multilevel models examined the effects of neighborhood collective efficacy and maternal corporal punishment on initial behavior problems at age 3 as well as on the patterns of behavior problems between the ages 3 to 5. To test whether neighborhood and parent effects on child behavior varies over time, the interactions between the main predictors and child age were included. A comprehensive set of confounding variables were considered in the analyses to effectively account for the reciprocal relationships between individual child-, parent-, and neighborhood-contexts. Results indicate that lack of collective efficacy and maternal corporal punishment were significant indicators of higher levels of behavior problems at mean age of the sample. The interactions between the main predictors and child age were only significant for the interaction between collective efficacy and child age on internalizing problems, suggesting that neighborhood influences on internalizing behavior are stronger for younger children. These findings highlight the importance of programs and policy that alleviate neighborhood- and parent-level risk factors for children in early childhood.

Literature Review

Early childhood is characterized by rapid rates of cognitive, behavioral, and physical development that exceed any other stages of an individual's life. Researchers underline the importance of early development on later child adjustment and well-being over the life course, mainly because children in this period are highly capable but also very vulnerable and dependent upon their environments (Shonkoff & Phillips, 2000). Of the multiple contexts in which child development takes place, parents and neighborhoods provide the most proximal and prominent influences that explain early developmental outcomes (Duncan & Raudenbush, 1999). Previous research finds evidence that neighborhood and family processes, both uniquely and jointly, are substantial predictors of several important outcomes in early childhood, including behavior problems (Church II et al., 2012; Ingoldsby et al., 2006; Kohen et al., 2008), social and emotional competence (Kochanska, Murray, & Harlan, 2000; Lengua, Honorado, & Bush, 2007), and verbal ability (Kohen et al., 2002, 2008).

A considerable shortcoming in prior research, however, is the lack of studies that examine the associations of parent- and neighborhood-processes with early child behavior problems concurrently, while accounting for the interactive nature of these social contexts and child development. Based on an ecological framework, the present study addresses this limitation by employing a longitudinal design using data from the Fragile Families and Child Wellbeing Study (FFCWS hereafter) to examine the simultaneous effects of corporal punishment and neighborhood disorganization on early childhood behavior.

Effects of Corporal Punishment on Early Childhood Behavior Problems

Despite the preponderance of evidence that demonstrates the associations between corporal punishment and a wide range of adverse child outcomes (Gershoff, 2002; Grogan-

Kaylor, 2005a; Ma et al., 2012; Straus, 1994; Taylor et al., 2010), parental corporal punishment in early childhood remains a normative and accepted disciplinary strategy among many U.S. families (Lee et al., 2013; MacKenzie et al., 2012; Maguire-Jack et al., 2012; Straus, 1994). A recent study using data from the FFCWS, which consists of a sample of largely unmarried and socio-economically disadvantaged families from several U.S. cities, Maguire-Jack and colleagues (2012) reported that parental spanking is widely endorsed in early childhood—approximately 30% of one-year-olds, 56% of three-year-olds, and 50% of the five-year-olds were spanked at least once in the past month by a parent. Notwithstanding the prevalence and normativeness of spanking during the early years of life in the U.S., burgeoning research documents the harmful consequences of spanking in early childhood on a range of outcomes. Children who are spanked tend to exhibit externalizing (Coley et al., 2014; Lee et al., 2013; Maguire-Jack et al., 2012; Taylor et al., 2010) and internalizing behavior problems (Coley et al., 2014; Maguire-Jack et al., 2012; McLoyd & Smith, 2002; Mulvaney & Mebert, 2007), and cognitive deficits (Berlin et al., 2009; MacKenzie et al., 2012; Straus & Paschall, 2009) at significantly higher rates than children who are not spanked or spanked less often.

Theoretical basis for the link between corporal punishment and behavior problems are found in social learning theory (Bandura, 1973) and attachment theory (Bowlby, 1982). Specifically, social learning theorists suggest that parental corporal punishment increases child aggressive behavior mainly because parents themselves model the use of aggression and inadvertently legitimize the use of violence to control the behavior of others. Attachment theory posits that corporal punishment may leave the child with negative feelings of hostility, avoidance, and fear towards the parent as children are highly dependent on their parents for meeting their essential developmental needs such as the desire for comfort, attention, and care

during the early years. According to this theory, a constellation of a child's unmet needs and negative internal state caused by corporal punishment may ultimately inhibit the emotional bond and parent-child attachment, which in turn, are likely to lead to more internalizing problems.

In contrast to the long tradition of theoretical and empirical discussions on the adverse effects of corporal punishment on child development, a handful of studies assert that child problem behaviors may be the underlying causes for parental corporal punishment and underscore corporal punishment as an effective method of reinforcing desirable behavior to children (Baumrind, Larzelere, & Cowan, 2002; Larzelere, 2000; Larzelere & Kuhn, 2005). This stream of research contends that mild corporal punishment such as spanking are linked to less defiance and less antisocial behavior in children when the effects of alternative disciplinary methods such as time-outs on child outcomes are controlled (Larzelere, 2000; Larzelere & Kuhn, 2005). Other researchers, however, found that the harmful effects of spanking persisted even after accounting for the effects of omitted and/or unobserved variables (Gershoff & Grogan-Kaylor, 2013; Grogan-Kaylor, 2004). In order to disentangle the ambiguous directions between corporal punishment and child outcomes, a rigorous longitudinal design that accounts for the reciprocal relationships between parent and child effects would offer insight not readily available in the existing literature.

Effects of Neighborhood Disorganization on Early Childhood Behavior Problems

Guided by the ecological framework for human development (Bronfenbrenner, 1979, 1986, 2005) and social disorganization theory (Sampson & Groves, 1989; Shaw & McKay, 1942; Wilson, 1987), contemporary research in child development increasingly recognizes the substantial role of neighborhood, along with parent influences, in shaping early childhood outcomes (Klein, 2011; Kohen et al., 2002, 2008; Leventhal & Brooks-Gunn, 2000; Odgers et

al., 2012). More specifically, Bronfenbrenner's (2005) "person-in-context" perspective underpins the reciprocal relationships between contextual factors such as the neighborhood and family, and how these interact to influence child development. Social disorganization theory outlines the mechanism through which adverse neighborhood factors are associated with child delinquency and misbehavior (Sampson & Groves, 1989; Wilson, 1987). This theory highlights collective efficacy as an informal mechanism through which the structural disadvantages of neighborhoods such as poverty, unemployment rates, violence, and physical disorder are manifested on individual outcomes. Collective efficacy represents the degree of social control, shared norms, and mutual trust of a community that encourages residents to cooperatively work on common goals such as maintaining social order and supervising positive child behavior and socialization (Sampson & Groves, 1989; Sampson et al., 1997). According to this theory, children in neighborhoods with low collective efficacy are likely to observe increased levels of social disorder, which in turn are associated with more problematic child behaviors (Sampson et al., 1997; Shaw & McKay, 1942).

A large volume of literature underscores the noticeable effects of neighborhood disorganization on a host of adolescent outcomes, such as externalizing (Beyers et al., 2003; Campbell et al., 2000; Church II et al., 2012; Odgers et al., 2012; Sampson et al., 2002) and internalizing behavior problems (Deng et al., 2006; Roosa et al., 2010), lower levels of academic achievement (McLoyd, 1998), and substance use (Chuang et al., 2005). In contrast, only a handful of studies have examined the effects of neighborhood processes on early childhood development (Ingoldsby et al., 2006; Kohen et al., 2002, 2008; Xue et al., 2005). These studies find that, as with adolescents, young children's exposure to neighborhood disorganization is associated with adverse outcomes, including increased behavior problems (Ingoldsby et al.,

2006; Kohen et al., 2008), more limited verbal abilities (Kohen et al., 2002, 2008), and increased mental health issues (Xue et al., 2005).

Behavioral Trajectories in Early Childhood in the Contexts of Neighborhood and Parenting

Effects of Neighborhood

During infancy and early toddlerhood, exposure to neighborhood is directly supervised and monitored by parents or parental figures (Bronfenbrenner & Morris, 1998). Very young children are also cognitively less capable of perceiving the neighborhood factors they observe than children in middle and late childhood. Thus, neighborhood influences on children are generally thought to increase with age. Indeed, one study found that school-aged children are entrusted to spend more time outside their homes with less parent supervision (Valentine & McKendrck, 1997) and with greater independent mobility (Veitch, Bagley, Ball, & Salmon, 2006), which allow them more time with peers and adults in the community. It has been suggested that by the time children enter early childhood care and education programs (i.e., preschool) and the public elementary education system (i.e., kindergarten), children are exposed to more routine neighborhood effects (Chase-Lansdale et al., 1997; Shonkoff & Phillips, 2000). Developmentally, children become increasingly aware of their physical and social environments through major transitions to new social contexts such as preschool and later K-12 schools. Also, with growing cognitive, social, and physical capabilities, children make more frequent attempts to establish autonomy within their social contexts as they grow older (Brooks-Gunn et al., 1993; Gilliom & Shaw, 2004; Wadsworth & Santiago, 2008). These theoretical discussions on differential neighborhood influences depending on the child's age are supported by empirical findings from research by Chase-Lansdale and colleagues (1997), who found that neighborhood

effects were more evident on the cognitive and behavioral outcomes of school-age children than preschool children.

Effects of Corporal Punishment

Previous literature demonstrates an inverse association between parental corporal punishment and child age such that corporal punishment is most prevalent among preschoolers and less common among older children (Flynn, 1998; Gershoff, 2002). The negative effects of corporal punishment also appear to be stronger when children are in middle childhood than in early childhood (Gershoff, 2002; Gunnoe & Mariner, 1997). Nonetheless, research often fails to distinguish between the use and effects of corporal punishment across the stages of early childhood (for notable exceptions see Maguire-Jack et al., 2012; Slade & Wissow, 2004). Attention to the differential effects of corporal punishment on infants compared with toddlers and early school-age children is important, however, given that child behavior is subject to the child's own cognitive and emotional capacity of processing "the disciplinary message implied by the punishment" (Gershoff, 2002, p. 557; Margolin & Gordis, 2000). This developmental capacity changes dramatically as children advance through infancy into toddlerhood and then into the preschool years.

With limited vocabulary and self-regulation, infants are more likely to use extreme emotional outbursts (e.g., crying, whining, and screaming) to communicate their fundamental needs such as hunger, tiredness, and discomfort than older children (Belsky & Rovine, 1987; Kochanska & Coy, 2002). Relatedly, the literature underscores the substantial role of child characteristics, many of which are highly correlated with age and developmental stage, in shaping children's relationship with parents (Mathiesen & Tambs, 1999). Heightened child emotionality represented by upset, resistant, and dysregulated behaviors under stressful situations

is associated with increased parenting stress (Gelfand, Teti, & Fox, 1992), which sequentially, may lead to harsher parenting (Pinderhughes et al., 2000) as well as more behavior problems in later years (Maguire-Jack et al., 2012; Shaw, Keenan, Vondra, Delliquardi, & Giovannelli, 1997). Mounting research evidence indicates that corporal punishment as a parental response to infants' problem behaviors has detrimental effects on children's emotional and cognitive development, mainly because corporal punishment disrupts the on-going trust and attachment that infants are seeking from their caregivers (MacKenzie et al., 2011; Maguire-Jack et al., 2012; Slade & Wissow, 2004; Zeanah, Boris, & Larrieu, 1997). Furthermore, as most infants are not equipped with the cognitive capability to understand the disciplinary message that parents are trying to convey (Gershoff, 2002; Slade & Wissow, 2004), early corporal punishment fails to teach children alternative ways to express their desires, which may result in the continuance of undesirable child behavior that then engenders more frequent corporal punishment, a cycle that lasts through later years in childhood. Thus, it is imperative to explore whether the effects of corporal punishment have differential patterns on child development over time while accounting for early child emotionality.

Longitudinal Patterns in Child Behavior Problems

Understanding longitudinal patterns in child behavior problems is important to identify the early onset of behavioral problems that are salient risk factors for more serious problems during later childhood and adolescence (Campbell, 1995; Campbell et al., 2000; Fanti & Henrich, 2010; Gilliom & Shaw, 2004; Hill, Degnan, Calkins, & Keane, 2006). On the whole, several multi-cohort longitudinal studies on children document that the normative developmental trajectories of externalizing behavior problems show a significant decrease over time (Bongers et al., 2003; Fanti & Henrich, 2010; Gilliom & Shaw, 2004; Hill et al., 2006; Keiley, Bates, Dodge,

& Pettit, 2000; Miner & Clarke-Stewart, 2008; Stanger, Achenbach, & Verhulst, 1997). Conversely, the trajectory for internalizing behavior manifests an upward trend, with these types of behavior problems increasing over time as children age (Bongers et al., 2003; Fanti & Henrich, 2010; Gilliom & Shaw, 2004; Keiley et al., 2000). In a study that examined trajectories of early behavior problems on a sample of 303 boys (ages 2-6) who participated in the WIC (Women, Infants, & Children) nutritional supplement program, Gilliam and Shaw (2004) found that externalizing behavior had a negative relationship with children's age whereas internalizing behavior gradually increased with age. Fanti and Henrich (2010) found similar patterns using a larger and more heterogeneous sample of 1,232 children (ages 2-12, 52% boys) from the NICHD Study of Early Child-Care.

While research on the effects of neighborhood and corporal punishment on children are generally two distinct literatures, children's perception of their neighborhood environments and parenting practices are both intricately related to their cognitive development (Sameroff, 1975). Reflecting this reality, a small but emerging literature identifies the interactive relationships between trajectories of child behavior problems and neighborhood and parenting processes. In a longitudinal study of 218 low-income boys and their mothers who were recruited from the aforementioned WIC program, Ingoldsby and colleagues (2006) examined whether neighborhood and parenting were linked to patterns of child antisocial behavior using hierarchical regression models. They found that both neighborhood problems and parent-child conflict in early childhood were associated with increased levels of antisocial behavior at age 5, which then predicted increased levels of antisocial behavior across middle childhood (Ingoldsby et al., 2006). A longitudinal study of 3,528 Canadian children (ages 4 to 5) explored the associations between neighborhood cohesion, negative parenting, and young children's

development using data from the Canadian National Longitudinal Survey of Children and Youth (NLSCY) (Kohen et al., 2008). Results from structural equation models highlighted neighborhood cohesion and punitive parenting as pathways through which neighborhood structural disadvantage affected children's cognitive and behavioral outcomes.

With the exception of the aforementioned studies, a notable gap in extant literature is that most research on neighborhood processes does not attempt to measure the temporal or causal pathway between neighborhood and children's outcomes (Sampson et al., 2002). Therefore, rigorous longitudinal and experimental designs are imperative in order to gain a more comprehensive understanding of the interactive relationship between children and their neighborhoods. Similarly, scant research in child development has used strong theory-driven longitudinal models that account for the reciprocal nature of relations between parent and child (see Lee et al., 2013; Maguire-Jack et al., 2012, for notable exceptions). While most empirical studies identify corporal punishment as an antecedent of problematic child outcomes, it is also likely that child misbehavior elicits the use of corporal punishment (Baumrind et al., 2002; Larzelere & Kuhn, 2005) and thus analytic models should, ideally, account for this possibility.

Another limitation in extant research is the scarcity of studies that concurrently investigate the influences of neighborhood and parenting on early childhood behavior problems. The present study builds on the accumulating research evidence that emphasizes the bi-directional relationships between developmental trajectories of children and neighborhood and parenting processes (Beyers et al., 2003; Chung & Steinberg, 2006; Mrug & Windle, 2009). Using data from the FFCWS, it employs longitudinal multilevel models to explore the simultaneous effects of neighborhood disorganization and maternal corporal punishment on child

externalizing and internalizing behavior problems across most of early childhood (from ages 1 to 5). Specifically, this study addresses the following research questions:

1. What is the relationship between both externalizing and internalizing child behavior problems and child age (time) during early childhood?
2. What is the effect of neighborhood collective efficacy at ages 3 to 5 on the average externalizing and internalizing behavior problems among 3-year-olds and the average rate of change in externalizing and internalizing behavior problems from ages 3 to 5?
3. What is the effects of corporal punishment, both at age 1 and at ages 3 to 5, on the average externalizing and internalizing behavior problems among 3-year-olds and the average rate of change in externalizing and internalizing behavior problems from ages 3 to 5?
4. Does child age (time) moderate the effects of neighborhood collective efficacy and maternal corporal punishment on externalizing and internalizing behavior problems?

Based on the existing theoretical and empirical literature, the current study hypothesized that externalizing behavior problems will decrease over time during early childhood, while internalizing behavior will increase over time. Both neighborhood disorganization (ages 3 and 5) and maternal corporal punishment (age 1, ages 3 and 5) were expected to predict higher levels of behavior problems at the mean age of the study sample (intercept). The rate of change in externalizing problems was expected to increase by child's exposure to neighborhood disorganization and maternal corporal punishment (time slope) while the rate of change in internalizing problems was expected to decrease by child's exposure to neighborhood disorganization and maternal corporal punishment (time slope). Lastly, child age is hypothesized to moderate the effects of neighborhood disorganization and maternal corporal punishment on

both externalizing and internalizing behavior such that neighborhood and parent influences on child behaviors are expected to be stronger for older children.

The current study contributes to existing literature in several ways. The key strength is the longitudinal and simultaneous examination of the social contexts of neighborhood and parenting on early childhood (from ages 1 to 5), an understudied developmental period in extant studies. Another advantage is the analytic approach that moves in the direction of disentangling the potentially bi-directional effects of corporal punishment on infants (age 1) from corporal punishment on toddlers and preschoolers (ages 3 and 5). Particularly, the current study's analysis accounts for emotionality at age 1, which represents child temperament and functioning that may provoke parents to use harsh and punitive reactions such as corporal punishment (Lee et al., 2013; Maguire-Jack et al., 2012). In addition to emotionality, this study examined the effects of age 1 corporal punishment on subsequent behavior problems. In view of the recurrent debate on parent effect and child effect—by which the former argues that parental corporal punishment is the underlying cause for increased problem behavior (Berlin et al., 2009) and the latter claims that child misbehavior elicits corporal punishment (Baumrind et al., 2002)—the current study's analytic strategy yields more systematic investigation of the direction of the relationship between corporal punishment and child behavior problems.

Additional contribution of the current study is the statistical control for a comprehensive range of covariates. Existing literature has found a number of neighborhood, family, and individual characteristics that may be confounded with the relationships between neighborhood disorganization, corporal punishment, and child behavior problems. The foremost are maternal warmth and maternal depression. Previous studies document an inverse association between maternal warmth and corporal punishment (Deater-Deckard et al., 2006; Lee et al., 2013; Smith

& Brooks-Gunn, 1997), and a positive association between maternal depression and use of corporal punishment (Berlin et al., 2009; McLoyd et al., 1994; Mulvaney & Mebert, 2007; Wissow, 2001). Furthermore, based on findings that boys are more likely to experience corporal punishment (Gershoff, 2002), child sex were controlled for in the analysis. Additionally, in line with extant literature that recognized parental, cultural, and family backgrounds as significant predictors of corporal punishment (Gershoff, 2002; MacKenzie et al., 2011), socio-demographic characteristics of the mother and family included in the models were mother's age, race/ethnicity, education, relationship with child's father, and family income. Finally, models also accounted for median household income of census tract, a structural economic indicator that prior studies have identified as an indicator of neighborhood (dis)organization (Sampson & Groves, 1989).

Method

Data and Participants

The present study used data from the Fragile Families and Child Wellbeing Study (FFCWS), a longitudinal birth cohort study of 4,898 children who were born between years 1998 to 2000 in 20 large U.S. cities with populations over 200,000. By study design, the baseline (Wave 1) interview oversampled unmarried mothers at hospitals immediately after the focal child's birth until they reached about three-quarters of the full sample. Fathers were also recruited at hospitals or later by phone for the baseline interview (Reichman et al., 2001). This sampling design resulted in an overrepresentation of minority populations and socio-economically disadvantaged families in the FFCWS compared with the U.S. population. As such, children in the FFCWS are more likely to be raised in underprivileged neighborhoods and family contexts (Conger et al., 2002).

The in-person baseline interviews occurred at hospitals after the target child's birth. Participants were then followed up by phone-surveys when children were 1-year-old (Wave 2), 3-years-old (Wave 3), 5-years-old (Wave 4), and 9-years-old (Wave 5). These core interviews assessed a wide range of information including demographics, physical and mental health, family relationships and functioning, child well-being, and program participation. Mothers who participated in the Wave 3 and Wave 4 core interviews were also invited to participate in the In-Home Longitudinal Study of Pre-School Aged Children (In-Home study hereafter). Based on interviewer observations and mothers self-report, the supplemental In-Home study assessed various domains of the child and the family such as child development, home environment, parent-child interaction, and parenting behavior when the focal child was 3 and 5 years of age. Participants who refused home-visits completed the In-Home study over the phone. Thus, interviewer observed assessments such as the parental warmth scale were not available for these participants.

Analyses for the current study uses data drawn from Wave 2 (child age 1) of the core study in addition to both the core studies and supplemental In-Home surveys at Wave 3 (child age 3) and Wave 4 (child age 5). The study sample is limited to mothers who took part in at least one of the Wave 3 or Wave 4 In-Home interviews (either the home-visit or the phone survey) during which child behavior problems, the outcomes of this study, were assessed. As a result, the final sample for this study is 3,705.

Missing Data and Imputation

As is the case with most longitudinal surveys, the FFCWS contains cases with incomplete data at different data collection points. In order to account for missing data bias and to retain maximum sample size in the analysis, the Multiple Imputation through Chained Equations

procedure was used to impute missing data in complete interviews (Royston, 2004; Royston & White, 2011).

Item missing data was imputed based on the full set of variables in the analysis from the current and preceding interviews using the MI program in STATA 13 (StataCorp, 2013). Specifically, a missing item was replaced with an imputed value only if the respondent participated in the particular wave during which the item was assessed[2]. To obtain a more robust outcome measurement, the externalizing and internalizing behavior problem scale scores were recoded to missing if more than 30% of the total items in the scale were missing. Consequently, the proportion of missing data in externalizing and internalizing behavior scores was 1.1% at Wave 3 (child age 3) and 1.2% at Wave 4 (child age 5) of the complete cases in each Wave, which were imputed with chained equations.

Missing data in the main predictors and covariates were also imputed. In terms of the main predictors, collective efficacy was missing in 1.4% of the total cases at Wave 3 (child age 3) and in 0.6% at Wave 4 (child age 5); maternal corporal punishment was missing in 0.4% of complete cases at Wave 2 (child age 1), in 0.9% of cases at Wave 3 (child age 3), and in 1.2% of cases at Wave 4 (child age 5). The models in this study were analyzed on ten imputations and combined to a single set of final estimates (Graham et al., 2007; Royston & White, 2011).

Measures

Dependent variables.

Behavior problems in early childhood were assessed using the Child Behavior Checklist (Achenbach, 1991, 1992) during Wave 3 (CBCL/2-3) and Wave 4 (CBCL/4-18) in-home

[2] For example, missing data in Wave 3 maternal warmth was imputed using all study variables from all current (Wave 3) and preceding (Wave 1) interviews, only if the respondent participated in Wave 3 In-Home study during which maternal warmth was assessed.

interviews when the focal child was age 3 and age 5, respectively. The CBCL is a commonly utilized measure that has demonstrated high reliability and validity across diverse cultures and populations (Achenbach & Rescorla, 2000; Greenbaum & Dedrick, 1998). Mothers reported whether each statement regarding their child's behavior was *not true* (score of 0), *somewhat or sometimes true* (score of 1), or *very true or often true* (score of 2). Responses to these items were averaged for each subscale such that higher scores represent more severe levels of behavior problems.

Externalizing behavior. Externalizing behavior problems at Wave 3 (child age 3) in this study was measured by the Aggressive Behavior subscale that included 15 items of the CBCL/2-3 (range 0–2). Example items from this scale at Wave 3 (age 3) included: "Child is defiant", "Child gets in many fights", and "Child hits others" ($\alpha = .86$).

The average of 20 items from the Aggressive Behavior subscale in CBCL/4-18 approximates externalizing behavior problems at age 5 (range 0–2). At Wave 4 (child age 5) this scale consists of items such as: "Child is cruel, bullies and shows meanness to others", "Child destroys his/her own things", and "Child physically attacks people" ($\alpha = .85$).

Internalizing behavior. Internalizing behavior problems at Wave 3 (child age 3) consisted of a total of 24 items of the CBCL/2-3—14 items from the Anxious-Depressed subscale and 10 items from the Withdrawn subscale. The Anxious-Depressed subscale included items such as: "Child looks unhappy without good reason" and "Child is nervous, high strung, or tense". Example items in the Withdrawn subscale included: "Child doesn't know how to have fun, or he/she acts like little adult" and "Child seems unresponsive to affection". Cronbach's alpha for this 24-item internalizing behavior scale (range 0–1.5) at Wave 3 was .81.

Internalizing behavior problems at Wave 4 (child age 5) was based on 22 items from the Anxious-Depressed and Withdrawn subscales of the CBCL/4-18. Example items in the 14-item Anxious-Depressed subscale included: "Child feels or complains no one loves him/her" and "Child is unhappy, sad, or depressed". The Withdrawn subscale included nine items such as: "Child would rather be alone than with others" and "Child is underactive, slow moving, lacks energy". The internalizing behavior scale was the average score of 22 items (range 0–1.4, α = .76) from these subscales as an item ("Child is unhappy, sad, or depressed") was included in both subscales.

Independent variables.

Neighborhood (dis)organization. The level of neighborhood (dis)organization was represented by mothers' self-reports of the level of collective efficacy in their neighborhoods. It was assessed during the In-Home study at Wave 3 (child age 3) and core interview at Wave 4 (child age 5). Higher scores in the collective efficacy scale indicated *lower levels of neighborhood disorganization*. Collective efficacy was the average of ten items that consisted of two five-item constructs—(1) the Informal Social Control subscale and (2) Social Cohesion and Trust subscale—from the Project on Human Development in Chicago Neighborhoods (PHDCN), a commonly used measurement of neighborhood (dis)organization with high reliability and strong validity (Odgers et al., 2009; Sampson et al., 2002, 1997).

The Informal Social Control subscale represented mothers' willingness to intervene in the following scenarios in their neighborhoods: "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". Responses to these

items were coded on a 5-point response option (1 = *very unlikely*, 2 = *somewhat unlikely*, 3 = *neither likely/unlikely*, 4 = *somewhat likely*, 5 = *very likely*) at Wave 3 and a 4-point response option at Wave 4 (1 = *very unlikely*, 2 = *not likely,* 3 = *somewhat likely*, 4 = *very likely*).

The Social Cohesion and Trust subscale among neighbors at Wave 3 included five items with a 5-point scale: "People around here are willing to help their neighbors", "This is a close-knit neighborhood", "People in this neighborhood can be trusted", "People in this neighborhood generally don't get along with each other", and "People in this neighborhood do not share the same values" (1 = *strongly disagree*, 2 = *somewhat disagree*, 3 = *neither agree/disagree*, 4 = *somewhat agree*, 5 = *strongly agree*). The negatively-keyed items in this construct were reverse-coded such that higher scores indicated increased levels of social cohesion and trust in the neighborhood. The Wave 4 (child age 5) Social Cohesion and Trust subscale included the first three items from the Wave 3 Social Cohesion and Trust subscale while the last two items were replaced with the following questions: "People in this neighborhood generally don't get along with each other" and "Gangs are a problem in this neighborhood". A 4-point response option (1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, 4 = *strongly agree*) was used at Wave 4. The last three items that were negatively formulated in this subscale were reverse-coded.

Proportional linear transformation was used to rescale the inconsistent response options between the 5-point response options at Wave 3 and the 4-point response options at Wave 4. Specifically, the minimum and maximum points of the Wave 3 scales were matched to that of the Wave 4 scales and the remaining values in Wave 3 scales were substituted to match the proportional distance between response options in the Wave 4 scales[3]. Methodological literature suggests that increasing the number of scale points and removing neutral midpoints from rating

[3] The values in the Wave 3 5-point scales were converted to the values in the Wave 4 4-point scales as follows: 2 to 1.75, 3 to 2.5, 4 to 3.25, and 5 to 4.

scales does not have significant effects on reliability and stability of responses (Adelson & McCoach, 2010; Borgers, Sikkel, & Hox, 2004; Leung, 2011). Internal consistency of the ten-item collective efficacy scale in this study was .85 at Wave 3 and .86 at Wave 4 (ranges 1–4).

Maternal corporal punishment. During the Wave 2 (age 1), Wave 3 (age 3), and Wave 4 (age 5) core surveys respectively, two questions assessed how frequently mothers used corporal punishment, specifically, spanking: "In the 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*). To represent the frequency of maternal use of corporal punishment, these two variables were combined and recoded to an ordinal variable (0 = *never*, 1 = *only once or twice*, 2 = *a few times this past month*, 3 = *a few times a week or every day or nearly every day*) (Lee et al., 2013; Taylor et al., 2010).

Control variables.

Child emotionality. To consider earlier child functioning and temperament that may be potential indicators of increased use of maternal corporal punishment before the initial assessment of child behavior problems at age 3, child emotionality at age 1 was included in the analyses. During the Wave 2 core interviews when the focal child was age 1, mothers were asked to rate three statements about their child on a 5-point scale (1 = *not at all like my child* to 5 = *very much like my child*). The statements were drawn from the Emotionality, Activity, and Sociability Temperament Survey—Parent Form (Buss & Plomin, 1984): "Child often fusses and cries", "Child gets upset easily", and "Child reacts strongly when upset". Internal consistency of this three-item scales was .60 in the present study, which is consistent with earlier studies that

found adequate reliability of this construct (Mathiesen & Tambs, 1999; Saudino, McGuire, Reiss, Hetherington, & Plomin, 1995).

Maternal warmth. Interviewers rated maternal warmth using items from the parental warmth subscale in the Early-Childhood HOME (EC-HOME) inventory for children aged 3 to 6 (Caldwell & Bradley, 1984) during the In-Home interviews at Wave 3 (child age 3) and Wave 4 (child age 5). The EC-HOME is a measurement of children's home environment and caregivers with strong validity and reliability (Fuligni, Han, & Brooks-Gunn, 2004; Leventhal, Martin, & Brooks-Gunn, 2004; Totsika & Sylva, 2004).

Maternal warmth at Wave 3 (child age 3) was based on five items indicating whether the following parental behaviors were observed during the in-home assessment: "Parent spontaneously vocalized to child twice", "Parent responded verbally to child's vocalizations", "Parent spontaneously praised child at least twice", "Parent's voice conveys positive feelings toward child", and "Parent caressed or kissed child at least once" (0 = *no*, 1 = *yes*). These items were averaged (range 0–1) with higher scores representing more maternal warmth ($\alpha = .71$).

The maternal warmth scale at Wave 4 (age 5) included five items from Wave 3 maternal warmth scale and the following four additional items: "Parent encourages child to contribute", "Parent mentions skill of child", "Parent uses diminutive for child's name", "Parent caresses, kisses, or hugs child", and "Parent responds positively to praise of child" (0 = *no*, 1 = *yes*). The average score of these nine items indicated the level of maternal warmth (range 0–1, $\alpha = .81$).

Mother's depression. The Composite International Diagnostic Interview-Short Form (CIDI-SF), Section A (Kessler et al., 1998) was used during core interviews at Wave 2 (child age 1), Wave 3 (child age 3), and Wave 4 (child age 5) to detect whether mothers suffered from Major Depression. The CIDI-SF, a well-recognized standardized assessment of identifying

depression (Sajatovic & Ramirez, 2012), includes eight items. In the FFCWS, mothers were asked a diagnostic stem question, "In the past year, have you felt sad or depressed for two weeks or more in row?" with a dichotomous response option (0 = *no*, 1 = *yes*). Respondents who endorsed this question were then asked an additional seven questions concerning depressive symptoms (e.g., lost interest, feel tired out/low on energy, had trouble concentrating, felt down or worthless, thought about death). A major depression case was indicated if mothers scored 3 or higher on the eight questions. Cronbach's alpha of maternal depression was .97 at Wave 3 (age 1), .97 at Wave 3 (age 3), and .98 at Wave 4 (age 5).

Child demographics. Child sex was included as control variables in the multilevel models. Child sex was assessed during the baseline core interviews (1 = *male*, 2 = *female).*

Mother's demographics. A variety of time-invariant and time-varying socio-demographic characteristics of the mother were also included in the analyses in order to fully consider factors that may have an association with the main predictors. Time-invariant variables that were assessed at baseline (Wave 1) core interviews included mother's 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*). Time-varying factors that were measured at Wave 2 (age 1), Wave 3 (age 3), and Wave 4 (age 5) include mothers' age in years, relationship status with the focal child's father (1 = *married*, 2 = *cohabiting*, 3 = *not married or cohabiting*) and annual household income. Annual household income was a continuous variable based on mother's responses to the following interview 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?" Mothers were asked to provide an exact dollar amount or if this was not possible, a

range. The FFCWS imputed an amount for respondents who reported a range (10%) based on the following covariates: relationship status with father (mother's report), age, race/ethnicity, immigrant status, employed last year, earnings, total adults in the household, and welfare receipt. To adjust the positive skew of household income, this variable was log-transformed in the analysis.

Neighborhood demographics. Median neighborhood income in 1999 was taken from the 2000 U.S. Census and represented the median income of the households in the Census tract in which the respondent was residing at the time of the interview. The logarithm of neighborhood income was included in the multivariate models in order to adjust the positive skew.

Analytic Strategy

Univariate statistics are presented to describe sample characteristics at different time points. T-tests and ANOVA were conducted for time-varying variables to examine whether the differences over time were statistically significant. Correlation analyses were performed to examine the bivariate associations between different study variables, as well as the correlations between time-varying variables at baseline and subsequent time points. Lastly, longitudinal multilevel models (MLM, Singer & Willet, 2003), also known as hierarchical linear models (HLM, Raudenbush & Bryk, 2002), were employed to examine the simultaneous effects of neighborhood disorganization and maternal corporal punishment on child externalizing and internalizing behavior problems across ages 3 to 5. Repeated observations over time on the same construct for the identical person are likely to be correlated. The longitudinal multilevel model can correctly adjust for the within-person variation by estimating repeated measurements of a particular individual as Level 1 units and the individual themselves as Level 2 units. Although participants in this study were somewhat clustered within the same neighborhoods, prior cross-

sectional models of the effects of collective efficacy and maternal corporal punishment on early childhood behavior problems with FFCWS data found that the neighborhood-level variation in child behavior problems was not statistically significant after accounting for the same covariates included in this study (see Chapters Two & Three of this dissertation). Therefore, the current study does not include neighborhood as an additional Level 3 unit.

The multilevel model is a preferred method for longitudinal data analysis with several advantages. As Singer and Willett (2003) note, the longitudinal MLM does not require balanced data. It effectively uses all available data in model estimation and allows flexibility in regards to missing data across different time points (Hox, 2002). Another advantage of the multilevel model is that it permits varying time intervals between observations (Kwok et al., 2008; Singer & Willett, 2003). As such, the multilevel model is an optimal strategy to analyze repeated observations of children in the current study and allows the simultaneous investigation on whether the between-child differences in initial behavior problems as well as the rate of change in behavior problems depend on neighborhood and parenting processes.

In this study, repeated observations of children were the Level 1 unit of analysis and the children themselves were the Level 2 unit of analysis. To discern the effects of corporal punishment of infants (age 1) from later corporal punishment (age 3 and age 5), corporal punishment at age 1 was estimated as a time-invariant predictor while ages 3 and 5 corporal punishment was analyzed as a time-varying predictor. To aid interpretation of results, child age that indicated child's age at the time of the interview, which was assessed in months, was recoded to represent age in years and grand mean centered (mean age = 3.1 years).

After the associations between behavior problems and time (child age) were determined using scatter plots, sequentially nested models were developed based on the following steps

suggested by Singer and Willett (2003): first, an unconditional model (Model 1) examined the average level of behavior problems at mean age and the average annual rate of change in which both the intercepts and time slopes were allowed to vary randomly; next, the conditional model (Model 2) analyzed the effects of between-child variability in the main predictors—collective efficacy, time-invariant age 1 corporal punishment, and time-varying ages 3 and 5 corporal punishment—on mean behavior problems and the linear slope of behavior problems over time. This unconditional model also included a comprehensive set of covariates to examine whether the between-child effects of main predictors on the intercept were affected by the added covariates. As stated earlier, the intercept and time slope were estimated as random effects, which allowed the intercept (average behavior problem score) and time slope (the effect of age on behavior problem score) to vary across individual children. Neighborhood collective efficacy and maternal corporal punishment were estimated as fixed effects based on the assumption that the effects of these predictors will not be different across individual children. Finally, the interactions between neighborhood collective efficacy and child age and between corporal punishment and child age were included in the analysis to test whether the rate of change in behavior problems differed by the main predictors. All analyses were performed with the `mixed` command in STATA 13 (StataCorp, 2013). The analytic sample for the multilevel models included 3,424 respondents (total of 5,828 observations points) with an average of 1.7 observations per respondent. Specification of the final study model is as follows:

$$y_{ti} = [\beta_{00} + \beta_{01}Neighborhood_{ti} + \beta_{02}CP_{0i} + \beta_{03}CP_{ti} + \beta_{04}Covariates_i + \beta_{10}Age_{ti}$$

$$+ \beta_{11}(Neighborhood_{ti} \times Age_{ti}) + \beta_{12}(CP_{ti} \times Age_{ti})] + [\mu_{0i} + \mu_{1i}\,Age_{ti} + e_{ti}]$$

β_{00}	is the intercept of behavior problem at mean age
$\beta_{01} - \beta_{04}$	are the effects of predictors (collective efficacy, age 1 corporal punishment, ages 3-5 corporal punishment, and covariates) on the grand mean initial behavior problem
β_{10}	is the average annual rate of change in behavior problem across children
β_{11}	is the mean effect of collective efficacy on average annual rate of change in behavior problem across children
β_{12}	is the mean effect of corporal punishment on average annual rate of change in behavior problem across children
μ_{0i}	is the random error term for individual child's mean initial behavior problem from the grand mean initial behavior problem
μ_{1i}	is the random error term for individual child's rate of change in behavior problem from the average annual rate of change
e_{ti}	is the error term for individual child's initial behavior problem from the grand mean behavior problem

Results

Descriptive Statistics and Bivariate Correlations

Figures 4.1 and 4.2 are graphical representations of the associations between children's age and externalizing behavior and internalizing behavior, respectively. Overall, both externalizing and internalizing behavior represented a decreasing trend as child age increased from age 3 to 5.

Table 4.1 is a description of the variables that were included in the analysis. In this sample, the mean and standard deviation of both the externalizing and internalizing behavior score were higher when children were age 3 than age 5. Maternal reports of neighborhood collective efficacy were 2.91 (SD = 0.70) at child age 3 and increased to 3.10 (SD = 0.65) at child age 5. The average values of collective efficacy at child age 3 and age 5 approximated the response options "somewhat likely to intervene" for the common values for the Informal Social Control subscale and "agree" to the statements in the Social Cohesion and Trust subscale. Approximately 27% of mothers reported that they had used corporal punishment at least once during the past month when the child was age 1. The frequency of corporal punishment reached its peak in this sample when children were age 3 and slightly decreased by age 5—slightly more than half (54%) of children at age 3 and 48% at age 5 experienced corporal punishment at least once in the past month. Maternal depression was most prevalent when children were age 3 (21%), which corresponds to the time frame when corporal punishment was most commonly used. At age 1 and age 5, 16% and 17% of the mothers, respectively, were identified as suffering from depression. The level of maternal warmth was also highest at age 3 when corporal punishment and maternal depression were most prevalent. Fifty-two percent of the children were boys and the average ages were 15 months at Wave 2 (child age 1), 36 months at Wave 3 (child

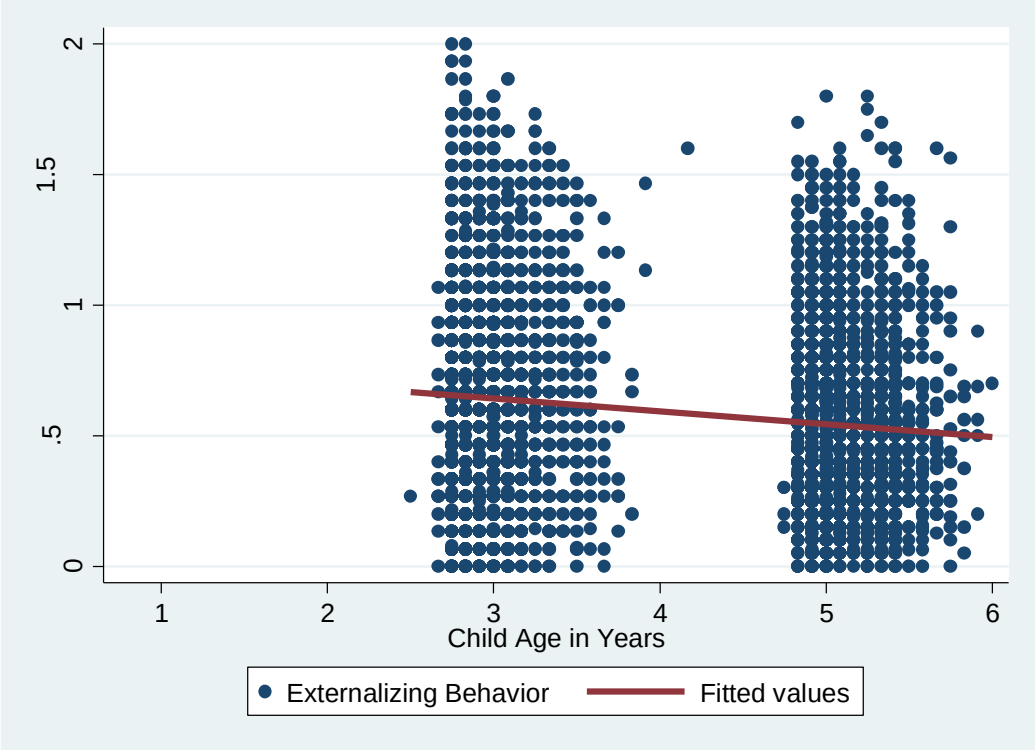


Figure 4.1. Scatter Plot of Externalizing Behavior by Child Age in Years.

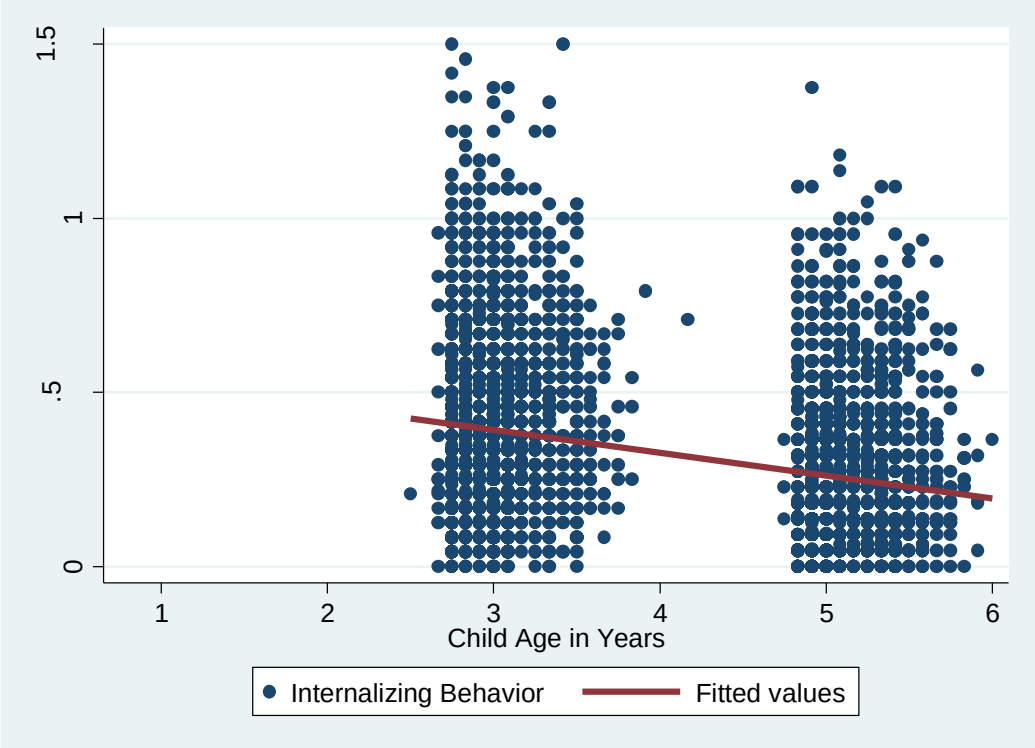


Figure 4.2. Scatter Plot of Internalizing Behavior by Child Age in Years.

age 3), and 62 months at Wave 4 (child age 5). The grand mean of child age in this sample was 3.1 years. Mothers' mean ages ranged from 26 years at Wave 2 to 30 years at Wave 4. Black mothers represented half of the study respondents, followed by Hispanic (26%), white (21%), and other (3%) race/ethnicity mothers. Approximately one third of the mothers (31%) had a high school degree; one fourth of the mothers had some college education; and 10% had a college degree. The stability of mother's relationship with the focal child's father decreased with time, but their household income and median neighborhood income increased.

A correlation matrix is shown in Table 4.2. Most study variables within the same model had statistically significant, weak to moderately sizeable relationships, indicating that multicollinearity is not a concern in the analyses. Particularly, collective efficacy at age 3 and age 5 were inversely associated with externalizing and internalizing behavior at age 3 and age 5 (ranges of *r*s = –.12 to –.16, $p < .001$). Child emotionality at age 1 was positively associated with subsequent externalizing behavior problems at ages 3 and 5 (ranges of *r*s = .20 to .25, $p < .001$) and internalizing behavior problems (ranges of *r*s = .14 to .18, $p < .001$). Externalizing and internalizing behavior problems at age 3 ($r = .70$, $p < .001$) and age 5 ($r = .47$, $p < .001$) showed positive, moderate to large correlations, suggesting that these behavior problems are likely to co-occur in early childhood. Corporal punishment at age 1, age 3, and age 5 was positively correlated with externalizing and internalizing behavior at age 3 and age 5 (*r*s = .14 to .20, $p < .01$). The correlation coefficients between corporal punishment at age 1 to age 3 and at age 3 to age 5 were .38 and .31, respectively ($p < .001$). The low to moderate, yet statistically significant, correlations between maternal use of corporal punishment on infants (age 1) compared with corporal punishment on toddlers (age 3) and preschoolers (age 5) indicate that corporal punishment at these two stages are somewhat confounded (Maguire-Jack et al., 2012).

Table 4.1. Demographic Characteristics (N = 3,705)

Variable	Age 1 (M (SD) or %)	Age 3 (M (SD) or %)	Age 5 (M (SD) or %)	p value
Child Outcomes				
Externalizing behavior		0.65 (0.39)	0.54 (0.34)	< .001
Internalizing behavior		0.40 (0.24)	0.24 (0.20)	< .001
Neighborhood Disorganization				
Collective efficacy		2.91 (0.70)	3.10 (0.65)	< .001
Mother's Corporal Punishment	0.46 (0.86)	0.91 (1.03)	0.71 (0.88)	< .001
Never	73%	46%	52%	
Only once or twice	15%	28%	31%	
A few times this past month	6%	14%	12%	
A few times a week or more	6%	12%	5%	
Child emotionality	3.05 (1.17)			N/A
Mother's depression (%)	0.16 (0.36)	0.21 (0.41)	0.17 (0.38)	< .001
Yes	16%	21%	17%	
No	84%	79%	83%	
Mother's warmth		0.88 (0.22)	0.76 (0.28)	< .001
Child Demographics				
Age (months)	15.02 (3.43)	35.61 (2.44)	61.58 (2.70)	< .001
Sex of focal child (%)				N/A
Male	52%			
Female	48%			
Mother's Demographics				
Age (years)	26.29 (6.02)	28.07 (6.04)	30.16 (6.02)	0.954
Race/Ethnicity				N/A
White, non-Hispanic	21%			
Black, non-Hispanic	50%			
Hispanic	26%			
Other	3%			
Education				N/A
Less than high school	34%			
High school degree or GED	31%			
Some college/technical school	25%			
College degree or higher	10%			

Table 4.1. (cont'd)

Variable	Age 1 (M (SD) or %)	Age 3 (M (SD) or %)	Age 5 (M (SD) or %)	*p* value
Relationship status	2.14 (0.84)	2.18 (0.88)	2.25 (0.90)	< .001
Married	29%	31%	31%	
Cohabiting	28%	20%	13%	
Not married or cohabiting	43%	49%	56%	
Household income ($)	31,215 (34,920)	34,502 (43,373)	36,662 (42,638)	< .001
Neighborhood Demographics				
Median household income ($)	35,826 (17,036)	36,404 (17,950)	37,847 (18,612)	< .001

Note. Chi-square tests were conducted for binary and categorical variables. Two independent samples *t*-tests or Bonferonni corrected one-way analyses of variance (ANOVA) were conducted for continuous variables.

Table 4.2. Correlation Matrix for Study Variables (N = 3,705)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1.Ext. behavior, age 3	—																														
2.Ext. behavior, age 5	**0.53**	—																													
3.Int. behavior, age 3	**0.70**	**0.40**	—																												
4.Int. behavior, age 5	**0.38**	**0.47**	**0.44**	—																											
5.Collective efficacy, age 3	**-0.16**	**-0.14**	**-0.16**	**-0.12**	—																										
6.Collective efficacy, age 5	**-0.14**	**-0.13**	**-0.16**	**-0.12**	**0.36**	—																									
7.Maternal CP, age 1	**0.14**	**0.08**	**0.08**	**0.05**	**-0.06**	**-0.06**	—																								
8.Maternal CP, age 3	**0.20**	**0.17**	**0.07**	**0.06**	**-0.07**	**-0.06**	**0.38**	—																							
9.Maternal CP, age 5	**0.20**	**0.24**	**0.09**	**0.10**	**-0.09**	**-0.06**	**0.31**	**0.47**	—																						
10. Emotionality, age 1	**0.25**	**0.20**	**0.18**	**0.14**	**-0.10**	**-0.08**	**0.12**	**0.11**	**0.09**	—																					
11.Maternal warmth, age 3	**-0.13**	**-0.09**	**-0.17**	**-0.14**	**0.11**	**0.10**	**-0.07**	0.00	-0.03	-0.04	—																				
12.Maternal warmth, age 5	**-0.07**	**-0.10**	**-0.10**	**-0.06**	**0.07**	**0.10**	-0.02	-0.03	-0.04	0.00	**0.19**	—																			
13.Maternal depression, age 1	**0.12**	**0.13**	**0.10**	**0.13**	**-0.08**	**-0.08**	**0.06**	**0.07**	**0.05**	**0.11**	-0.03	-0.02	—																		
14.Maternal depression, age 3	**0.18**	**0.15**	**0.15**	**0.15**	**-0.11**	**-0.11**	**0.08**	**0.11**	**0.08**	**0.09**	-0.04	-0.03	**0.34**	—																	
15.Maternal depression, age 5	**0.18**	**0.17**	**0.15**	**0.16**	**-0.07**	**-0.09**	**0.04**	**0.09**	**0.07**	**0.09**	-0.03	-0.02	**0.28**	**0.36**	—																
16.Child age	**0.05**	0.00	**0.09**	0.03	**-0.04**	-0.01	**0.07**	-0.02	-0.01	0.03	**-0.12**	**-0.05**	0.02	0.02	0.01	—															
17.Child sex	**-0.05**	**-0.05**	**-0.04**	-0.03	0.02	0.01	**-0.06**	**-0.06**	**-0.06**	-0.02	**0.05**	0.03	-0.01	0.00	-0.01	0.01	—														
18.Mother's age	**-0.12**	**-0.12**	**-0.12**	**-0.08**	**0.15**	**0.09**	**-0.12**	**-0.11**	**-0.13**	**-0.04**	**0.10**	**0.12**	-0.02	**-0.05**	-0.03	-0.03	0.01	—													
19.Race/Ethinicity: White	**-0.08**	-0.01	**-0.14**	**-0.06**	**0.19**	**0.17**	**-0.10**	0.02	0.01	**-0.06**	**0.18**	**0.16**	-0.01	0.00	0.03	**-0.17**	-0.01	**0.17**	—												
20.Race/Ethinicity: Black	**0.05**	0.03	**0.04**	**-0.05**	**-0.15**	**-0.10**	**0.20**	**0.10**	**0.11**	**0.08**	**-0.18**	**-0.17**	**0.04**	**0.05**	0.02	**0.10**	0.00	**-0.13**	**-0.52**	—											
21.Race/Ethinicity: Hispanic	0.01	-0.02	**0.08**	**0.12**	-0.01	**-0.05**	**-0.13**	**-0.13**	**-0.12**	-0.03	0.03	**0.06**	-0.03	**-0.06**	**-0.06**	**0.05**	0.01	**-0.04**	**-0.31**	**-0.58**	—										
22.Race/Ethinicity: Other	0.01	0.00	0.01	0.01	0.01	0.01	-0.03	-0.01	-0.03	-0.02	0.04	-0.02	-0.02	-0.01	0.00	-0.01	-0.01	**0.06**	**-0.10**	**-0.18**	**-0.11**	—									
23.Education: Less than HS	**0.11**	**0.09**	**0.22**	**0.13**	**-0.13**	**-0.13**	-0.01	**-0.07**	-0.03	**0.05**	**-0.18**	**-0.13**	0.01	**0.04**	0.01	**0.13**	0.01	**-0.27**	**-0.18**	-0.01	**0.19**	**-0.04**	—								
24.Education: HS diploma	0.03	0.02	0.03	0.01	**-0.06**	-0.01	**0.06**	**0.04**	0.03	0.02	-0.01	-0.02	-0.01	-0.01	0.00	-0.01	-0.02	**-0.07**	**-0.06**	**0.12**	**-0.07**	**-0.05**	**-0.48**	—							
25.Education: Some college	**-0.07**	**-0.05**	**-0.14**	**-0.10**	**0.08**	**0.04**	-0.01	**0.05**	**0.05**	**-0.04**	**0.13**	**0.07**	**0.04**	0.03	**0.04**	**-0.05**	0.02	**0.11**	**0.04**	0.01	**-0.05**	0.01	**-0.41**	**-0.38**	—						
26.Education: College or higher	**-0.11**	**-0.11**	**-0.17**	**-0.07**	**0.18**	**0.16**	**-0.07**	**-0.04**	**-0.07**	**-0.06**	**0.13**	**0.13**	**-0.06**	**-0.08**	**-0.07**	**-0.11**	-0.02	**0.36**	**0.31**	**-0.18**	**-0.13**	**0.13**	**-0.24**	**-0.23**	**-0.20**	—					
27.Relationship: Married	**-0.12**	**-0.12**	**-0.13**	**-0.08**	**0.17**	**0.15**	**-0.07**	-0.02	-0.02	**-0.06**	**0.15**	**0.14**	**-0.10**	**-0.09**	**-0.05**	**-0.09**	0.00	**0.31**	**0.27**	**-0.32**	**0.06**	**0.11**	**-0.19**	**-0.11**	**0.05**	**0.38**	—				
28.Relationship: Cohabiting	0.00	-0.02	0.01	**0.04**	-0.03	-0.03	-0.03	-0.03	**-0.04**	0.00	-0.02	-0.01	-0.03	**-0.04**	-0.02	-0.03	0.02	**-0.07**	**-0.07**	-0.01	**0.09**	**-0.04**	**0.08**	0.03	-0.02	**-0.14**	**-0.33**	—			
29.Relationship: Neither	**0.11**	**0.12**	**0.11**	**0.04**	**-0.14**	**-0.11**	**0.09**	**0.05**	**0.05**	**0.05**	**-0.12**	**-0.11**	**0.11**	**0.11**	**0.06**	**0.10**	-0.02	**-0.23**	**-0.20**	**0.31**	**-0.13**	**-0.07**	**0.11**	**0.08**	-0.03	**-0.24**	**-0.66**	**-0.49**	—		
30.Household Income	**-0.11**	**-0.12**	**-0.18**	**-0.12**	**0.21**	**0.21**	**-0.09**	-0.03	**-0.06**	**-0.07**	**0.16**	**0.14**	**-0.06**	**-0.10**	**-0.05**	**-0.11**	0.00	**0.29**	**0.32**	**-0.21**	**-0.10**	**0.11**	**-0.27**	**-0.11**	**0.07**	**0.50**	**0.38**	**-0.06**	**-0.31**	—	
31.Neighborhood Income	**-0.12**	**-0.09**	**-0.15**	**-0.08**	**0.24**	**0.17**	**-0.09**	**-0.04**	**-0.06**	**-0.06**	**0.13**	**0.06**	**-0.05**	-0.03	-0.02	**-0.04**	0.01	**0.21**	**0.35**	**-0.34**	0.01	**0.12**	**-0.17**	**-0.14**	**0.06**	**0.39**	**0.32**	**-0.08**	**-0.23**	**0.47**	—

Note: Time-varying demographic variables (child age, mother's age, relationship status, household income, neighborhood income) are from Wave 3 when the focal child was age 3.

$p < .05$ or lower are bolded.

Multilevel Models

Externalizing behavior problems.

Table 4.3 presents results from the multilevel models that examined the simultaneous effects of collective efficacy and corporal punishment on externalizing behavior problems. Model 1 is the unconditional model that revealed that externalizing behavior significantly decreased at a rate of 0.05 units each year ($p < .001$) from the ages 3 to 5. The random effects listed on the bottom of the table reflect the variance in the outcomes that was not explained in the model. As indicated by the significant random intercept and random slope, there were significant between-child differences in the intercept and the rate of change in externalizing behavior that were not accounted for in this model.

Model 2 in Table 4.3 describes results from the conditional model. After considering the effects of collective efficacy, corporal punishment at age 1 and ages 3-5, and the covariates, the effect of age remained significant, with the average level of externalizing behavior significantly declining from ages 3 to 5 ($\beta = –0.063$, $p < .001$). Collective efficacy had a significant inverse association with between-child differences in externalizing behavior at mean age, net of covariates ($\beta = –0.037$, $p < .001$). The time-invariant corporal punishment at age 1 did not have a significant effect on between-child differences in externalizing behavior at mean age, after controlling for the covariates in this study. The time-varying corporal punishment at age 3-5, however, was significantly associated with higher externalizing behavior at mean age, and the magnitude of the effect increased as frequency of corporal punishment increased. Compared with children who were not spanked in the past month (reference group), the average externalizing behavior at mean age was 0.074 units higher for children who were spanked "once or twice in the past month" ($p < .001$), 0.106 units higher for children who were spanked "a few

times this past month" ($p < .001$), and 0.147 units higher for children who were spanked "a few times a week or more often this past month" ($p < .001$). The non-significant interaction terms indicate that, contrary to the study hypotheses, child age did not moderate the relationships between collective efficacy and externalizing behavior and corporal punishment and externalizing behavior.

Turning to the covariates in the model, higher levels of emotionality at age 1 predicted increased externalizing behavior at mean age ($\beta = 0.056$, $p < .001$). Overall, maternal warmth predicted reduced externalizing behavior at mean age ($\beta = -0.068$, $p < .001$), whereas maternal depression predicted more externalizing behavior at mean age ($\beta = 0.085$, $p < .001$). Several demographic variables also showed significant effects on between-child differences in externalizing behavior. Average externalizing behavior at mean age was lower in girls, in children with older mothers, in Black children compared with white children, and in children whose mothers were more educated. On the other hand, mother's unstable relationship status with the child's father predicted higher externalizing behavior.

Finally, the Wald test was performed to assess whether the added coefficients in the conditional model were significant. The results confirmed that the conditional model has significantly improved model fit relative to the unconditional model (F-test = 26.24, $p < .001$). The significant random effect parameters, however, indicated that there is remaining variance in the intercept and the slope that was not accounted for by the variables in this model.

Table 4.3. Multilevel Models Predicting Externalizing Behavior Problems

Fixed Effects	Model 1	Model 2
Externalizing behavior at mean age (intercept)	0.637***	0.937***
	(0.007)	(0.125)
Rate of change in externalizing behavior (slope)	–0.050***	–0.063***
	(0.003)	(0.017)
Collective efficacy		–0.037***
		(0.008)
Corporal punishment, age 1: Never		
Only once or twice this past month		–0.006
		(0.014)
A few times this past month		0.010
		(0.022)
A few times a week or more		0.032
		(0.021)
Corporal punishment, age 3-5: Never		
Only once or twice this past month		0.074***
		(0.014)
A few times this past month		0.106***
		(0.017)
A few times a week or more		0.147***
		(0.019)
Interactions between main effects and child age		
Collective efficacy × child age		0.008
		(0.005)
CP, ages 3-5 (Only once or twice) × child age		–0.008
		(0.008)
CP, ages 3-5 (A few times past month) × child age		0.004
		(0.011)
CP, ages 3-5 (A few times a week or more) × child age		0.007
		(0.013)
Emotionality, age 1		0.056***
		(0.004)
Maternal warmth		–0.068***
		(0.017)
Mother's depression		0.085***
		(0.011)
Child demographics		
Sex of child: girl		–0.023*
		(0.010)

Table 4.3. (cont'd)

	Model 1	Model 2
Mother's demographics		
Age of mother (years)		–0.002*
		(0.001)
Race/ethnicity: White, non-Hispanic		
Black, non-Hispanic		–0.039**
		(0.015)
Hispanic		–0.003
		(0.016)
Other		0.016
		(0.030)
Education: Less than high school		
High school degree or GED		–0.030*
		(0.013)
Some college/Technical School		–0.064***
		(0.014)
College degree or Higher		–0.085***
		(0.022)
Relationship Status: Married		
Cohabiting		0.024
		(0.015)
Not married or cohabiting		0.037**
		(0.012)
Logged household income		–0.005
		(0.004)
Neighborhood demographics		
Logged median household income		–0.020
		(0.011)
Random Effects	Standard Deviation	
Level-2 variance for intercept (μ_{0i})	0.317***	0.282***
	(0.010)	(0.012)
Level-2 variance for slope of child's age (μ_{1i})	0.071***	0.079***
	(0.018)	(0.019)
Level-1 variance (e_{ti})	0.217***	0.214***
	(0.014)	(0.017)

Note: N = 5,828 observations (Level 1); N = 3,424 individuals (Level 2).
Age of child was grand mean centered.
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; Standard errors in parentheses.

Internalizing behavior problems.

Model 1 in Table 4.4 presents results from the conditional model that examined the intercept and the rate of change in internalizing behavior. The significant time slope indicated that internalizing behavior declines over time at a rate of 0.067 units per year ($p < 0.001$) from ages 3 to 5. The significant random effects reflect the proportion of remaining variance in the intercept and rate of change in internalizing behavior not considered in this model.

Model 2 in Table 4.4 shows results from the conditional model that included collective efficacy, the time-invariant corporal punishment at age 1 and the time-varying corporal punishment at ages 3-5, and control variables that predict between-child differences in the intercept and the rate of change in internalizing behavior. The effect of age on internalizing behavior remained significant, net of the additional predictors, decreasing at a rate of 0.088 units per year ($p < .001$). On average, children living in neighborhoods with higher levels of collective efficacy had lower internalizing behavior at mean age, controlling for the covariates ($\beta = -0.026$, $p < .001$). The time-invariant corporal punishment at age 1 was not a significant predictor of internalizing behavior at mean age, whereas the time-varying corporal punishment at age 3-5 was significantly associated with between-child differences in internalizing behavior at mean age. Compared with children who were not spanked in the past month, the average internalizing behavior was 0.018 units higher for children who were spanked "once or twice in the past month" ($p < .05$) and 0.038 units higher for children who were spanked "a few times a week or more often this past month" ($p < .01$). The significant interaction between collective efficacy and child age on within-child differences in internalizing behavior at mean age indicates that the protective effects of collective efficacy on internalizing behavior reduced as children get older ($\beta = 0.008$, $p < .05$). On the other hand, the non-significant interactions between corporal

punishment and child's age on internalizing behavior demonstrate that the positive associations between corporal punishment and internalizing behavior were not dependent on child's age.

In terms of the other variables in the model, emotionality at age 1 was positively associated with internalizing behavior at mean age (β = 0.023, $p < .001$). Increases in maternal warmth were met with lower internalizing behavior at mean age (β = –0.030, $p < .01$). Conversely, maternal depression was associated with higher levels of internalizing behavior at mean age (β = 0.059, $p < .001$). Child sex and mother's age, however, were not a significant predictors of between-child differences in internalizing behavior at mean age. In comparison to white children, internalizing behavior at mean age was higher in Hispanic children (β = 0.050, $p < .001$) and in children of an "other" race/ethnicity than white, Black or Hispanic children (β = 0.046, $p < .05$). Several socio-economic indicators were significant predictors of between-child differences in internalizing behavior at mean age. Higher levels of mother's education and higher household income had significant associations with reduced internalizing behavior at mean age. The significant random effects parameters in this model indicate the remaining variance in the intercept and slope in internalizing behavior not accounted for in this model.

Results from the Wald test supported that the conditional model (Model 2) with the additional predictors is a better fit compared to the unconditional model (Model 1) in predicting internalizing behavior (F-test = 22.62, $p < 0.001$).

Table 4.4. Multilevel Models Predicting Internalizing Behavior Problems

Fixed Effects	Model 1	Model 2
Internalizing behavior at mean age (intercept)	0.388***	0.595***
	(0.004)	(0.078)
Rate of change in internalizing behavior (slope)	–0.067***	–0.088***
	(0.002)	(0.011)
Collective efficacy		–0.026***
		(0.005)
Corporal punishment, age 1 (baseline): Never		
Only once or twice this past month		0.011
		(0.009)
A few times this past month		0.000
		(0.013)
A few times a week or more		0.015
		(0.013)
Corporal punishment, age 3-5: Never		
Only once or twice this past month		0.018*
		(0.009)
A few times this past month		0.013
		(0.011)
A few times a week or more		0.038**
		(0.012)
Interactions between main effects and child age		
Collective efficacy × child age		0.008*
		(0.003)
CP, ages 3-5 (Only once or twice) × child age		–0.003
		(0.005)
CP, ages 3-5 (A few times past month) × child age		0.011
		(0.007)
CP, ages 3-5 (A few times a week or more) × child age		0.003
		(0.009)
Emotionality, age 1		0.023***
		(0.003)
Maternal warmth		–0.030**
		(0.011)
Mother's depression		0.059***
		(0.007)
Child demographics		
Sex of child: girl		–0.008
		(0.006)

Table 4.4. (cont'd)

	Model 1	Model 2
Mother's demographics		–0.001
Age of mother (years)		(0.001)
Race/ethnicity: White, non-Hispanic		
Black, non-Hispanic		–0.008
		(0.009)
Hispanic		0.050***
		(0.010)
Other		0.046*
		(0.018)
Education: Less than high school		
High school degree or GED		–0.033***
		(0.008)
Some college/Technical School		–0.077***
		(0.009)
College degree or Higher		–0.076***
		(0.014)
Relationship Status: Married		
Cohabiting		0.011
		(0.009)
Not married or cohabiting		0.014†
		(0.008)
Logged household income		–0.007**
		(0.002)
Neighborhood demographics		
Logged median household income		–0.008
		(0.007)
Random Effects	Standard Deviation	
Level-2 variance for intercept (μ_{0i})	0.190***	0.170***
	(0.007)	(0.008)
Level-2 variance for slope of child's age (μ_{1i})	0.058***	0.061***
	(0.010)	(0.010)
Level-1 variance (e_{ti})	0.140***	0.137***
	(0.009)	(0.010)

Note: N = 5,828 observations (Level 1); N = 3,424 individuals (Level 2).
Age of child was grand mean centered.
† $p < 0.07$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; Standard errors in parentheses.

Robustness checks.

To ensure that the rescaling of the 5-point collective efficacy items in Wave 3 to match the 4-point items in Wave 4 did not bias the analyses, the models were repeated with two additional transformations—(1) the neutral response option in the Wave 3 scales (*neither likely/unlikely*, *neither agree/disagree*) were replaced as missing values and were imputed with the other missing variables through the Multiple Imputation through Chained Equations procedure and (2) the collective efficacy scales in both waves were transformed into a categorical variable by dividing the responses into tertiles, such that each category represented low (reference group), medium, and high collective efficacy. Results from both of these sensitivity analyses (available upon request) were very similar to the current results. This suggests that the current analyses are robust and not threatened by the rescaling of the collective efficacy construct.

Discussion

The present study used longitudinal data from the FFCWS to investigate the simultaneous effects of neighborhood and parenting processes on average child behavior problems and the rate of change in behavior problems from ages 3 to 5. Both externalizing and internalizing behavior in this sample decreased over time. Consistent with the study hypotheses, results from longitudinal multilevel models indicated that, overall, increases in neighborhood collective efficacy were met with lower average externalizing and internalizing behavior problems at mean age (3.1 years) of the study sample. On average, more frequent corporal punishment at ages 3-5 was associated with greater externalizing and internalizing behavior problems. These effects were evident even after controlling for a comprehensive range of covariates at the child, family, and neighborhood levels. The significant interaction between the time-varying effects of

neighborhood collective efficacy between ages 3-5 and child age on internalizing behavior indicate that the protective influence of collective efficacy diminished as children aged. Contrary to the hypothesis, corporal punishment at age 1 did not predict externalizing or internalizing behavior problems at mean age. Also, contrary to the hypothesis, child age did not moderate the associations between corporal punishment between ages 3-5 and externalizing behavior, nor did child age moderate the association between corporal punishment and internalizing behavior. These findings suggest that the effects of corporal punishment during this period of early childhood are not dependent on child age. As a whole, findings from this study contribute to the literature by confirming the unique and concurrent effects of neighborhood disorganization and corporal punishment on early childhood development.

Behavioral Trajectories in Early Childhood

Following the tradition of earlier research, the significant correlations between emotionality and later behavior problems found in this study provide support for the reciprocal associations between infant temperament and later behavior problems (Eisenberg et al., 2001; Lemery, Essex, & Smider, 2002; Lengua, West, & Sandler, 1998; Mathiesen & Sanson, 2000). The declining trend in externalizing and internalizing behavior in the current study can be explained by the high levels of problem behavior before the age of 3, which to some degree, is considered developmentally normative (Buss & Plomin, 1984; Campbell, 1995; Mathiesen & Sanson, 2000). Relatedly, prior literature underscores a curvilinear relationship in externalizing behavior problems during early childhood such that it increases from 18 months and reaches its peak around age 3, then begins to attenuate until ages 5 to 6 when children typically become more compliant and cooperative (Tremblay, 2000). The declining internalizing behavior over time in this sample that is contrary to the study hypothesis could be attributed to the young age

and constrained time frame of the current sample. Prior studies that found a positive association between child age and internalizing behavior included older children and more data collection points from longer time frames than this current study (Fanti & Henrich, 2010; Gilliom & Shaw, 2004).

Effects of Corporal Punishment at Age 1 and Ages 3-5

The significant correlations between emotionality at age 1, behavior problems at age 3 and age 5, and corporal punishment at age 1, age 3, and age 5 in this study suggest that child emotionality, misbehavior, and corporal punishment are likely to co-occur. A closer examination of the effects of corporal punishment at different child ages has several implications.

Corporal Punishment at Age 1.

Time-invariant corporal punishment at age 1 was not a substantial predictor of later behavior problems at age 3 when emotionality at age 1 and other covariates were controlled in the models. Unlike an earlier study that found the lasting effects of corporal punishment at age 1 on externalizing behavior at ages 3 and 5 (Maguire-Jack et al., 2012), this finding indicates that the effects of corporal punishment at age 1 did not persist until children reach age 3. The non-significance of the effects of age 1 corporal punishment in this study may be attributed to the way corporal punishment was measured. Whereas the current study only measured maternal corporal punishment, Maguire-Jack and colleagues (2012) included both parents' corporal punishment in their analysis. The broader conceptual framework of this study that concurrently investigated neighborhood and parenting influences could also contribute to the non-significance of the effects of age 1 corporal punishment on later behavioral outcomes. It is possible that collective efficacy may offset the effects of early corporal punishment on behavior problems. Also, considering the weak yet significant negative correlation between collective efficacy and

maternal corporal punishment in this study, socially organized neighborhoods with higher levels of social control and mutual trust may support mothers of young children to use less harsh parenting practices including corporal punishment. Furthermore, earlier child behavior and functioning, represented by emotionality in this study could be confounded with the effects of infant corporal punishment on later behaviors. Indeed, Maguire-Jack and colleagues (2012) found that the effects of corporal punishment at age 1 on behavior problems at age 5 operated indirectly through corporal punishment and behavior problems at age 3, even after emotionality at age 1 was controlled.

Corporal Punishment at Ages 3 and 5.

Turning to the time-varying effects of corporal punishment, the results of this study are in line with a large volume of previous research that also documents longitudinal, positive associations between corporal punishment and behavior problems (Gershoff et al., 2012; Grogan-Kaylor, 2005a; Lee et al., 2013; Maguire-Jack et al., 2012; Slade & Wissow, 2004). A noteworthy contribution of this finding is that corporal punishment at age 3 or age 5 was a substantial predictor of both externalizing and internalizing behavior problems. This finding holds true even after accounting for the broader contexts of neighborhood conditions (Kohen et al., 2002, 2008) and parent functioning (i.e., maternal warmth and depression) (Eamon, 2001; Lee et al., 2013), as well as earlier child functioning (Stacks et al., 2009) that may have confounding relationships with the effects of corporal punishment. The clear effects of corporal punishment—regardless of frequency—on between-child differences in both externalizing and internalizing behavior at age 3 in this study presents strong evidence that more prevalent corporal punishment leads to increased behavior problems during early childhood.

Of particular note is the significant link between corporal punishment between ages 3-5 and internalizing behavior problems at age 3 in this study, a finding that adds to the limited literature on the antecedents of internalizing problems (Xue et al., 2005). This is somewhat contrary to Maguire-Jack and colleagues' (2012) finding that notes the associations between early corporal punishment (age 1 and age 3) and internalizing behavior to be evident only at age 5, which the researchers suggest, may be due to the less prevalent internalizing symptoms such as anxiety and depression in early childhood than in middle childhood (Zahn-Waxler et al., 2000). The significant association between corporal punishment and internalizing behavior at age 3 in this study may reflect the noticeable influence of neighborhood collective efficacy that is likely to predict both early corporal punishment and internalizing symptoms.

The current findings that underline corporal punishment as a significant predictor of internalizing symptoms at an age as early as 3 years lends credence to the principles of attachment theory. That is, corporal punishment in early years may disrupt the unique emotional parent-child relationship, which place children at higher risk of internalizing problems (Bretherton, 1985; Levy & Orlans, 2000). As demonstrated by the significant correlations between internalizing and externalizing problems, these two symptoms frequently co-exist, with researchers reporting the former to be more challenging to detect (Campbell, 1995; Wiesner & Kim, 2006). Despite the methodological challenges in identifying predictors of internalizing problems, the evident link between corporal punishment and internalizing symptoms in the current study highlights the deleterious influence of corporal punishement on the wide-ranging specturm of behavior problems and speaks to the need for additional empirical research that tests these associations.

Interaction between Corporal Punishment at Ages 3-5 and Child Age.

Interestingly, the non-significant interactions between child age and varying frequencies of corporal punishment at ages 3-5 are indicative of the fact that, contrary to the study hypotheses, the effects of corporal punishment on externalizing and internalizing behavior were consistent over time. A possible explanation for the non-significant interaction between the child age and corporal punishment at ages 3-5 on behavior problems may be attributed to the young ages of the children in this study. This study suggests that the negative effects of corporal punishment on child behavior were not dependent on the developmental changes during ages 3 to 5, a period during which corporal punishment is most prevalent (Gershoff, 2002). However, this does not preclude the possibility that the effects of coporal punishment vary when children move from early to middle and/or later childhood.

Existing meta-analyses that investigate whether the effects of corporal punishment differs by the age of children yield contradictory results. Gershoff (2002) found a stronger association between corporal punishment and negative child outcomes during middle childhood than early childhood. This finding supports the argument that corporal punishment of school-aged children during which corporal punishment is less common and normative than preschool years is likely to have intensified effects on children. Alternatively, there may be cumulative effects of corporal punishment on children over time. In constrast, Larzelere and Kuhn (2005) found the harmful effects of severe corporal punishment to be greater for young children in early childhood when corporal punishment is most prevalent. These inconsistencies from prior meta-analyses, along with the findings of this study warrant replication in future studies to better understand the effects of corporal punishment in accordance with child's age.

Effects of Neighborhood Disorganization between Ages 3 and 5

Collective Efficacy between Ages 3 and 5.

Extending the research of neighborhood effects on early child development (Ingoldsby et al., 2006; Kohen et al., 2008; Leventhal & Brooks-Gunn, 2000; Odgers et al., 2009; Xue et al., 2005), the current results found a significant inverse association between neighborhood collective efficacy at ages 3-5 and externalizing and internalizing problems at age 3. In line with the tenets of social disorganization theory (Sampson & Groves, 1989; Shaw & McKay, 1942; Wilson, 1987) and the ecological framework (Bronfenbrenner, 1979), this finding sheds light on the extent to which early childhood development is shaped by multilevel contexts. Although early childhood remains largely unexplored in neighborhood studies based on the perception that the neighborhood context are less influential on early childhood in comparison to middle childhood and adolescence (for exceptions see Brooks-Gunn et al., 1993; Chase-Lansdale & Gordon, 1996; Kohen et al., 2002), the current results underscored the salience of neighborhood processes in shaping early child behaviors.

Interaction between Collective Efficacy between Ages 3-5 and Child Age.

Contrary to the study expectations, the interaction between collective efficacy and child age revealed that the protective influences of collective efficacy on internalizing behavior diminishes over time, whereas the effects of collective efficacy on externalizing behavior remains consistent in early childhood. Taken as a whole, these results run counter to earlier research that found neighborhood effects to be weaker for younger children (Chase-Lansdale et al., 1997). Of particular note is the significant interaction between collective efficacy and child age on internalizing symptoms, which indicates that the strength of the association between collective efficacy and internalizing behavior decreases as child age increases from age 3 to age

5. That is, the current findings highlight the meaningful role of neighborhood processes even at a developmental stage during which children's direct exposure to neighborhoods is restricted and supervised by their parents.

One possible explanation for the stronger neighborhood effect on internalizing behavior of young preschoolers compared to older children in early childhood is that although this study found evidence for direct effects of collective efficacy on behavior problems, neighborhood effects may also impact child behavior through indirect mechanisms during early ages. In fact, accumulating literature has identified family processes including parenting practices and the home environment as a mediator in the association between neighborhood and child development (Chung & Steinberg, 2006; Church II et al., 2012; Kohen et al., 2002; Simons et al., 1996). In socially organized neighborhoods, collective efficacy—represented by the increased social interactions and child-rearing support among neighbors (Klein, 2011)—is expected to discourage negative parenting practices such as corporal punishment (Kohen et al., 2008). Therefore, the current findings may suggest that during earlier ages that are marked with higher dependence on caregivers, the protective effects of collective efficacy in early to late preschool years (ages 3 to 5) are more strongly manifested onto children through positive parenting processes.

It is also possible is that the negative effects of neighborhood disorganization onto child behavior may be exerted more strongly through mothers' individual processes when children are in early preschool years (age 3) compared to late preschool years (age 5). As neighborhood disadvantage predicts maternal depression (Kohen et al., 2008) and child behavioral issues are associated with heightened parenting stress (Baker, Heller, & Henker, 2000), mothers' mental health and functioning may be more susceptible to their adverse neighborhood conditions when

child behavior problems reach their peak around age 3. A detailed empirical investigation of the mediating roles of parent and family processes in the longitudinal associations between neighborhood disorganization and early childhood outcomes merits future research.

Another explanation for why neighborhood effects are stronger on internalizing behavior of younger children is that families may have moved to more advantaged neighborhoods by the time their children reach school age. In light of public school entry at age 5 and research evidence on the neighborhood and school outcomes linkage (Leventhal & Brooks-Gunn, 2000), this interpretation is consistent with the current study that found the average household income and collective efficacy in neighborhoods when the focal child was age 5 to be significantly higher than that at age 3.

Parenting Contexts and Behavior Problems in Early Childhood

Finally, the significant effects of corporal punishment and collective efficacy should be interpreted in accordance with the broader context of parenting and child development. The significant associations found for age 1 emotionality on later behavior problems during ages 3 to 5 in this study are in line with other research that demonstrates the relations between emotionality and later corporal punishment as well as subsequent behavior problems (Maguire-Jack et al., 2012). This finding reflects the importance of identifying early signs of behavior problems, mainly because infant behavior problems may be understood as a precursor for an early onset of a coercive cycle of negative parenting that leads to increased child behavior problems and vice versa (Maguire-Jack et al., 2012). In addition, in light of the substantial relationship between emotionality and later behavior problems, the inclusion of emotionality in the analyses strengthens the causal argument of this study.

Turning to the effects of the broader context of parenting and socio-demographic indicators, the direct neighborhood and corporal punishment effects remained significant even after controlling for maternal warmth and depression, as well as an extensive set of demographic characteristics that previous research has identified as predictors of child behavioral issues (Berlin et al., 2009; Beyers et al., 2003; Gershoff, 2002; Slade & Wissow, 2004). The significance of maternal warmth in the results underlines the deleterious effects of corporal punishment even in the context of a positive parent-child relationship. Likewise, the protective role of collective efficacy holds true net of parenting context (i.e., use of harsh and warm parenting practices), maternal functioning (i.e., depression) and socio-demographic factors (e.g., mother's education, relationship status, family income, neighborhood income). Taken together, the findings of this study validate the value of a multilevel approach in programs that serve families with young children. Preventive intervention programs should be encouraged to identify children with early behavioral issues, promote both positive parenting practices and neighborhood collective efficacy, as well as provide parenting support to marginalized mothers in disadvantaged neighborhoods.

Limitations and Future Directions

The results of this study should be interpreted in light of several limitations. First, most measurements in the study, including the main predictors, relied on mother's self-report—with the exception of maternal warmth that was based on interviewer ratings and neighborhood income that were derived from Census data. Consequently, mother's responses regarding neighborhood problems and their use of corporal punishment may be subject to social desirability bias (Fisher & Katz, 2008). An additional measurement issue related to corporal punishment is the reliance on mother's self-definitions of their own use of spanking. As such,

corporal punishment in this study may be confounded with other forms of harsh parenting and excludes fathers' or other caregivers' use of corporal punishment. Second, by study design, the FFCWS is an urban sample of low-income, unmarried mothers. The over-representation of socio-economically disadvantaged mothers restricts the generalizability of the current findings to similar populations. Third, despite the use of longitudinal data, it should be noted that, as is the case with most of existing literature on this topic, the present study is limited in fully establishing the true causal and temporal direction between the influences of neighborhood disorganization and corporal punishment on child behavior. The issues of omitted variables also caution causal interpretation of the study results. That is, the negative impacts of neighborhood disorganization and corporal punishment on child behavior may be attributed to other variables that are not captured in the current analyses. By accounting for early child functioning in the models, however, this study highlights more rigorous evidence that behavior problems are likely to be the outcomes of neighborhood and parent effects. An important direction for future research is to further explore the causal associations between neighborhood and parent processes and child outcomes using rigorous methodology with stronger statistical controls such as fixed effects models (Grogan-Kaylor, 2004). Finally, while the use of repeated measurements of child behavior under the age of 5 extends the current understanding of early behavioral trajectories, the two-year interval between observations may be a substantial lag considering the rapid rates of development in early childhood. This points to the need for additional repeated measurement designs with shorter follow-up schedules for closer observations of the developmental changes in early childhood.

Practice and Policy Implications

Notwithstanding the study limitations, the current findings contribute to the literature concerning the critical role of neighborhood and parenting processes on child development and underscore the value of multilevel intervention efforts for children and parents in the most disadvantaged neighborhoods (Ingoldsby et al., 2006). Both neighborhood disorganization and maternal corporal punishment were simultaneously and uniquely identified as risk factors for behavior problems in early childhood. As the African proverb proclaims that "it takes a village to raise a child", the current study provides empirical support for the contention that positive socialization of children requires a collective effort, which involves both the family and the community.

Another notable finding of the current study is that neighborhood factors matter even at the earliest stages of life, a critical window of optimal child development. The connection between neighborhood collective efficacy and child behavior problems in this study were evident even after considering the effects of parenting context, maternal characteristics, and demographic indicators. As such, community-level preventive intervention strategies including home visitation programs, Early Head Start, and routine pediatric check-ups should identify children with early behavioral issues in the most socially unstable neighborhoods and link them to services and resources in the community for timely intervention. Policy-level intervention efforts need to strategically prioritize transformational changes on malleable neighborhood processes (i.e., collective efficacy) above structural and economic properties (i.e., neighborhood poverty and income). It is critically important that existing programs incorporate ways to promote positive neighborhood processes into their services for families with young children. As an instance, the Help Me Grow system, which includes 23 affiliate states as of 2015, offers

coordinated early screening of children who are at risk of developmental and behavioral problems and builds collaboration among a wide array of community resources. Of note is the community outreach efforts of the Help Me Grow system that connect at-risk families to local service providers and provide networking opportunities such as parent support groups, family events, and children's activities and play groups (Bogin, 2006). Although the Help Me Grow system does not directly address or empirically test the protective role of collective efficacy in their services, the community-based networking efforts may serve to promote positive neighborhood process among residents, which the findings from this study suggest in turn is likely to support child well-being. Importantly, to maximize the beneficial influences of collective efficacy on child behavior problems, evidence-based intervention programs that explicitly reflect the prominence of neighborhood factors on child outcomes and embrace children starting as early as three years old are warranted.

Further extrapolation of current findings in accordance with the principles of social disorganization theory suggests early childhood education services as a promising point of intervention for strengthening collective efficacy in disadvantaged communities. Accessible and inclusive early childhood education resources may foster the formation of parent support networks and encourage greater involvement in shared supervision of children within the neighborhood (Klein, 2011). In this respect, investing in early childhood education resources in marginalized communities would provide a better foundation for its vulnerable children not only through direct services but also by promoting collective efficacy in the communities.

Turning to individual- and family-level implications, practitioners working with families with young children should focus on detecting signs of risk factors for early behavior problems including heightened negative emotionality and maternal depression. Given research evidence

and the current findings that even occasional corporal punishment at any stage in early childhood leads to increased behavior problems, practitioners and parent intervention programs need to advocate for the effective use of alternative disciplinary strategies including giving age-appropriate instructions, removal of privileges, time-outs, planned ignoring, and logical consequences (American Academy of Pediatrics, 1998; Sanders, 1999). Routine infant check-ups and well-child exams, which are administered in early childhood when parental corporal punishment is most prevalent, may be a promising point of intervention to note signs of corporal punishment and educate parents about alternatives. Given the current findings demonstrating that neighborhood and parent influences are jointly influential on early behavior problems, a critical component of community-based parent intervention curriculum should be discussions on effective and positive parenting strategies, particularly, in the context of distressed neighborhood that lack cohesion and support. Parent education programs may strongly emphasize the salient roles of both positive parenting practices and neighborhood collective efficacy on early behavioral outcomes, even after considering the adverse structural conditions in distressed communities.

At the policy-level, evidence-based parent interventions such as the Triple P-Positive Parenting Program (Bor et al., 2002; Turner & Sanders, 2006), the Incredible Years (Menting, Orobio de Castro, & Matthys, 2013), and the Nurturing Parenting program (Maher, Marcynyszyn, Corwin, & Hodnett, 2011) that are documented to enhance responsive parenting and positive parent-child relationships should be made available to the communities, particularly to marginalized families. Additionally, resources on empirically supported parent education programs need to be widely distributed to practitioners in health, early childhood education, and social work, to effectively link parenting support to disadvantaged communities and families.

Conclusion

The current study simultaneously investigated parent- and neighborhood-level influences on both externalizing and internalizing behavior in early childhood using a longitudinal design. The results point to the importance of detecting early behavioral issues for timely and effective intervention. The longitudinal multilevel models revealed the joint effects of neighborhood disorganization (i.e., low levels of collective efficacy) and maternal corporal punishment as antecedents of between-child differences in initial behavior problems at age 3, after accounting for a comprehensive array of individual child-, parent-, family-, and neighborhood-level factors. The rate of change in internalizing behavior problems over time was dependent on neighborhood disorganization—the protective effect of collective efficacy was stronger when children were younger. However, the effect of maternal corporal punishment on the rate of change in behavior problems was consistent over time. These findings provide support for expanded investment in programs that concurrently consider multiple levels of early childhood intervention, in particular, the neighborhood- and parent-level processes. Finally, an important direction for future research is to attempt to replicate the current results that demonstrate significant influences of multilevel contexts on early behavioral problems on other samples of young children with more closely spaced behavioral trajectories.

CHAPTER FIVE

CONCLUSION

This dissertation examined the concurrent influences of neighborhood- and parent-level processes on behavior problems in early childhood, using a diverse sample of children and their mothers living in large U.S. cities. Specifically, the first empirical paper investigated the direct effects of neighborhood disorganization and maternal corporal punishment on behavior problems as well as the indirect neighborhood effect that is transmitted on child behavior through maternal corporal punishment. The second empirical paper explored the extent to which the simultaneous effects of neighborhood disorganization and maternal corporal punishment on child behavior problems vary by race and ethnicity. The third empirical paper examined longitudinal patterns of behavior problems in early childhood and the joint influences of neighborhood disorganization and maternal corporal punishment during the early years. A comprehensive conceptual framework that draws from the ecological systems perspective, social disorganization theory, social learning theory, attachment theory, the family stress model, and findings from previous empirical literature guided the research questions and hypotheses of each paper. The current chapter will provide a summary of each paper and discuss how the findings of this dissertation contribute to extant theoretical and empirical literature and inform practice and policy.

Summary of Findings

The first empirical paper of this dissertation (Chapter Two) examined the extent to which neighborhood- and parent-level processes explain 5-year-olds' behavior problems. The results from multilevel models support the proposed hypotheses that both neighborhood disorganization and maternal corporal punishment would predict increased externalizing and internalizing behavior problems. The multilevel approach allowed to effectively control for both within- and

between-variances of neighborhood disorganization that were represented as mothers' perceived levels of neighborhood collective efficacy. The direct effects of neighborhood and parenting processes on behavior problems held true even after accounting for the broader parenting contexts and an extensive set of factors at the individual-, family-, and neighborhood-levels. Clearly, the findings of the first paper demonstrate that early behavior problems are shaped by both proximal and distal social processes. In keeping with these results, the first paper also tested the hypothesis that the effects of neighborhood disorganization on child behavior problems would be partially mediated through maternal corporal punishment. Contrary to expectations, results from multilevel mediation analyses indicate that maternal corporal punishment does not have a statistically significant effect on the link between the neighborhood disorganization and behavior problems when individual-, family-, and neighborhood-level factors were accounted for.

The second paper (Chapter Three) extended the analytic models of the first paper and examined racial/ethnic differences in the relationship between neighborhood disorganization, maternal use of corporal punishment, and behavior problems among 5-year-olds. Drawing from extant theoretical and empirical literature, this study anticipated that there would be distinguishable patterns in neighborhood and parent effects between white, Black, and Hispanic children, mainly due to the differences in cultural norms and socio-economic conditions by race and ethnicity. Results partially supported the hypothesis that race and ethnicity would significantly moderate the effects of collective efficacy and corporal punishment on child behavior. Explicitly, this study found that the protective influence of collective efficacy on internalizing problems were more pronounced in Hispanic children than white children. Contrary to the study hypothesis, however, the associations between corporal punishment and

both externalizing and internalizing behavior problems were indistinguishable across the three racial and ethnic groups after controlling for individual-, family-, and neighborhood-level covariates. With regards to racial and ethnic differences in the effects of corporal punishment on early behavior problems, the results did not support the hypothesis. Although Black and Hispanic children experienced corporal punishment at disproportionately higher rates than white children, race and ethnicity was not a significant moderator in the corporal punishment and child behavior linkage, net of individual-, family-, and neighborhood-level covariates.

The third paper (Chapter Four) explored the simultaneous effects of neighborhood disorganization and maternal corporal punishment on the longitudinal patterns of behavior problems in early childhood. This study also examined whether child age moderated the effects of neighborhood and parenting processes on early behavior problems. Hypotheses of this study were based on empirical literature that underscored the reciprocal associations between behavioral trajectories of children and neighborhood and parenting processes. Findings partially supported the hypotheses. Both neighborhood disorganization and maternal corporal punishment were significant predictors of higher levels of externalizing and internalizing behavior problems at the mean age of the study sample, after considering covariates at the individual-, family-, and neighborhood-levels. Contrary to the study expectations, the effect of neighborhood disorganization on child internalizing behavior was stronger for younger children, net of other variables in the model, whereas the association between neighborhood disorganization and child externalizing behavior was not dependent on child age. The effects of maternal corporal punishment on externalizing and internalizing behavior problems in this sample were also consistent over time.

Implications for Theory and Research

Grounded in an integrated conceptual framework, the findings of this dissertation advances current literature concerning the roles of multiple social contexts on early behavior problems. The significant direct effects of neighborhood disorganization and maternal corporal punishment on externalizing and internalizing behavior found support for the tenets of social disorganization theory, social learning theory, and attachment theory. However, maternal corporal punishment was not a significant mediator in the neighborhood disorganization and child behavior association, a finding that runs counter to the family stress model. This suggests that empirically, neighborhood and family processes are separate domains, although a line of literature and theory points to the inter-connected nature between these two social contexts (Berkowitz, 1989; Conger et al., 2000; Simons et al., 1996). On the whole, the current analyses found support for the link between adverse neighborhood- and parenting-processes and increased behavior problems; yet, the mechanism underlying the relationship between neighborhood disorganization and child behavior remains unclear. An important direction for future research is to further explore the individual-and family-level pathways through which neighborhood influences are manifested onto child behavior problems using the multilevel framework, in order to facilitate theoretically informed and empirically tested intervention strategies for young children and their parents.

Methodologically, the ecological and multilevel approach reflected in the conceptual framework and analytic models of the current study underlines the scientific value of multilevel research that effectively involves both proximal and distal predictors of child outcomes (Trickett & Beehler, 2013). The theoretical and empirical bridges across multiple levels of social contexts found in this study should be embraced in all aspects of research that aims to identify the

ecological associations between social systems and child well-being. Also, the direct effect of neighborhood disorganization on early childhood outcomes, even after controlling for the structural effects of neighborhoods, validates the dynamic influence of collective efficacy as a credible indicator of neighborhood effects. Future literature should focus on including both the structural aspects (e.g., SES, crime, physical disorder) and the social and institutional constructs (e.g., collective efficacy, social network) from multiple sources of data into measures that represent neighborhood characteristics.

Implications for Practice and Policy

All three empirical papers in this dissertation found that early behavioral issues are affected by neighborhood disorganization and maternal corporal punishment even after controlling for confounding influences at individual-, family-, and neighborhood-levels. A reflection of the current multilevel analyses in line with the primary mission of the social work profession underscores the value of an ecological and multilevel intervention that promotes social justice at multiple contexts. Notably, early childhood experiences of neighborhood disorganization and corporal punishment may become substantial antecedents of social inequality over the life course as children in poverty are at higher risk of experiencing negative neighborhood conditions and harsh parenting processes (Conger et al., 2000; Ross & Jang, 2000). In fact, the effect of neighborhood disorganization on internalizing behavior was even stronger for younger children in this study, a compelling evidence that sheds light on the substantial neighborhood influence at early ages (Chase-Lansdale et al., 1997). As such, risk factors across neighborhood and parenting contexts ought to be concurrently articulated in social work practice and policy that aim to support well-being in early years.

First, to prevent early behavior problems that are likely to have lasting influences on more serious risk factors throughout childhood, professionals working with parents of young children should facilitate collaborative partnerships between individual- and family-level programs and key community organizations and stakeholders, with the goal of simultaneously promoting positive neighborhood processes and effective child disciplinary practices. Likewise, investing in direct community services for parents with young children that promote social cohesion and community networks such as parent support groups would be an effective route to prevent early behavioral issues. Evidence-based parent education programs should be made widely available to parents with toddlers and preschool-aged children, during which corporal punishment is most commonly used (Gershoff, 2002), to offer parenting support and advocate the use of effective methods of child discipline. These parent education programs also need to stress the significance of collective monitoring and supervision of young children at the community level to promote positive child outcomes.

Moreover, the current mediation analysis found that children living in socially disordered neighborhoods are not necessarily at higher risk of experiencing parental corporal punishment. This indicates that practitioners should advocate the use of positive parenting practices to all parents, regardless of their neighborhood conditions. Further extrapolation of this finding may also suggest that parent education programs should be made available and accessible in every community, as children in both marginalized and more affluent neighborhoods may be equally vulnerable to experiencing corporal punishment.

In addition, although neighborhood and parenting processes are situated in cultural contexts, the current analyses indicated that overall, the effects of neighborhood disorganization and maternal corporal punishment on early behavioral outcomes are consistent across white,

Black, and Hispanic children. This finding highlights the universal prominence of a supportive neighborhood context and family context on child development. From an ecological and multilevel perspective, this means that intervention efforts that promote both neighborhood collective efficacy and positive parenting practices would benefit all children regardless of their racial and ethnic backgrounds. However, consistent with prior literature, racial and ethnic differences in structural and socio-economic conditions such as mother's education, household income, and average household income in neighborhood were apparent in this study. Also, racial and ethnic minority children were overrepresented in disadvantaged neighborhoods and were subject to higher rates of corporal punishment. In order to provide relevant resources and culturally-sensitive practices, intervention efforts should be mindful of the racial and ethnic disparities in structural and social contexts. As for the stronger protective effects of collective efficacy on internalizing behavior problems of Hispanic children compared to white children, social work practice needs to be designed and tailored to address the unique role of Hispanic/Latino culture that is intricately related to neighborhood processes in Hispanic families and communities.

From a policy perspective, the study findings provide scientific support for programs and policy that encourage the development of neighborhood collective efficacy. Resource allocation should give priority to multi-faceted risk assessments that include both structural- and process-oriented neighborhood measures to ensure that the dynamic processes of neighborhood are reflected on community-based intervention. For instance, providing more public resources such as schools, parks, community centers, libraries, and play grounds may directly improve social and environmental conditions and indirectly increase collective efficacy in the most impoverished neighborhoods.

The findings in regards to the effects of maternal corporal punishment also have substantial policy implications. Major human rights treaties and organizations including the United Nations consider corporal punishment as a violation of children's human rights and strongly advise to outlaw its use (United Nations Committee on the Rights of the Child, 2006). Notwithstanding the global initiative that recognizes corporal punishment to be unethical, corporal punishment remains a legitimate, socially accepted, and prevalent childhood experience in the U.S., the only developed nation that has not ratified the Convention on the Rights of the Child to date (Gershoff & Bitensky, 2007; Global Initiative to End All Corporal Punishment of Children, 2015; United Nations Children's Fund, 2006). The current study suggests that it is time for the U.S. to consider joining the global movement that mandates corporal punishment to be both socially and legally unacceptable, to ensure all children are protected from any forms of violence that may put their well-being at risk.

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