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THE EFFECTS OF DOMESTIC VIOLENCE ON BEHAVIOR PROBLEMS OF
PRESCHOOL CHILDREN

by

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ABSTRACT OF THE DISSERTATION

The Effects of Domestic Violence on Behavior Problems of Preschool Children

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Using four waves across 5 years of a recent longitudinal dataset, this study examined whether domestic violence toward mothers by a child's father at Year 1 had long-term effects on preschool children's externalizing and internalizing behavioral outcomes at Year 5 directly or indirectly through maternal mental health and parenting at Year 3. The study also analyzed whether the effects differed depending on poverty and marital status. Findings from structural equation modeling conducted in AMOS showed that domestic violence toward mother by a child's father at Year 1 was associated with poor maternal mental health and greater use of spanking at Year 3, which in turn were related to greater children's externalizing and internalizing behavior problems at Year 5. These associations among latent variables in the models still remained significant even when control variables were included in the analyses; only the path between maternal mental health at Year 3 and children's internalizing behavior problems at Year 5 was no longer significant. Notably, the direct effect of domestic violence on children's behavior problems was still significant even after including mediators and control variables in the analyses. Findings from the multiple-group analyses for fully-controlled models revealed that the effects of domestic violence at Year 1 on children's behavioral outcomes at Year

5 varied by poverty and marital status. Regarding the moderating role of poverty status, contrary to the hypotheses, the overall impacts of domestic violence at Year 1 on both types of behavioral outcomes of children at Year 5 were bigger for nonpoor than for poor families. With respect to the moderating role of marital status, the impacts of domestic violence at Year 1 on children's externalizing behavior problems at Year 5 were bigger for unmarried-mother than for married-mother families. In contrast, the impacts of domestic violence at Year 1 on children's internalizing behavior problems at Year 5 were bigger for married-mother than for unmarried-mother families. Findings from this study highlight that the effects of domestic violence on the behavior problems of preschool children are long-term, that those effects vary by socioeconomic categories, such as poverty and marital status, and, therefore, that children's and their mothers' needs in violent families vary widely as well. Policy, practice, and research implications are discussed.

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INTRODUCTION

The link between domestic violence toward women and children's behavioral outcomes has been of great interest to researchers over the past few decades. Research has shown that at least 1 in 4 women during their lifetime have been physically, emotionally, or sexually victimized by an intimate partner (Straus & Gelles, 1986; Coker et al., 2002). Incidents of domestic violence are likely to be higher in families with children, especially children under 6 years of age; in a recent study of 1,581 domestic violence crimes reported by police officers in the Northeast, 43 % of all domestic violence crimes had children in the household, almost all of those children (95%) had experienced sensory exposure to the violence, and the children exposed to domestic violence were disproportionately younger than age 6 (52%) (Fusco & Fantuzzo, 2009). Additionally, children who are exposed to domestic violence often exhibit higher levels of internalizing and externalizing behavior problems compared to children who are not exposed to domestic violence, even when they are not the target of the violence (Cummings, Iannotti, & Zahn-Waxler, 1985; Holden & Ritchie, 1991; Huang, Wang, & Warrener, 2010; Jouriles, Norwood, McDonal, & Vincent, 1996; Kilpatrick & Williams, 1997; Levendosky, Huth-Bocks, Shapiro, & Semel, 2003; Litrownik, Newton, English, & Everson, 2003; Levendosky, Leahy, Bogat, Davidson, & Eye, 2006; O'Keefe, 1994; Schoppe-Sullivan, 2007; Zerk, Mertin, & Proeve, 2009).

Although the effects of domestic violence on children's behavior problems are now well documented in the literature, very little empirical research has examined similar effects among preschool children (Carpenter & Stacks, 2009; Huang et al., 2010; Levendosky et al., 2003; Litrownik et al., 2003; Zerk et al., 2009). Most research in this

area has focused on school-age children (6 to 12 years of age; Fantuzzo, Boruch, Beriama, Atkins, & Marcus, 1997; Jourlies et al., 1996; Levendosky & Graham-Bermann, 1998, 2000, 2001; Levendosky et al., 2006; McCloskey, Figueredo, & Koss, 1995; O'keefe, 1994; Owen, Thompson, & Kaslow, 2006; Schoppe-Sullivan, 2007; Zlotnick, Johnson, & Kohn, 2006). Research suggests that young children may be at particular risk to the negative influences of domestic violence because they tend to be exposed to greater amounts of violence than older children (Carpenter & Stacks, 2009; Edelson, 1999; Fantuzzo et al., 1997; Fusco & Fantuzzo, 2009; Holt, Buckley, & Whelan, 2008; Hughes, 1988; Hughes & Barad, 1983; Kitzmann, Gaylord, Holt, & Kenny, 2003), and because they have a limited understanding of the complexities of domestic violence and less developed strategies for coping with it (Carpenter & Stacks, 2009; Edelson, 1999; Fantuzzo et al., 1997; Fusco & Fantuzzo, 2009; Holt et al., 2008; Kitzmann et al., 2003). Given the potential implications that early-childhood experiences have for later development (Holt et al., 2008), assessing the effects that domestic violence has on preschool children is a critical step. The present study focused on preschool children and examined the effects of domestic violence on the behavior problems of the children.

Because domestic violence toward women is not an isolated event and it occurs within a family system, it may disrupt family functioning, especially maternal functioning such as mental health and parenting quality (Holt et al., 2008). Research shows that women who are victimized by intimate partner violence frequently suffer from mental health problems and parenting difficulties (Anderson & Cramer-Benjamin, 1999; Bonami et al., 2006; Campbell, 1997, 1999; Cascardi & O'Leary, 1992; Coker et al., 2002; Levendosky & Graham-Bermann, 2001; Levendosky et al., 2006; Zerk et al., 2009;

Zlotnick et al., 2009). Research shows that intimate partner violence toward mothers impairs maternal mental health and reduces the quality of parenting, which in turn lead to negative behavioral outcomes for children (Anderson & Cramer-Benjamin, 1999; Carpenter & Stacks, 2009; Edelson, 1999; Coker et al., 2002; Fantuzzo et al., 1997; Fincham, Grych, & Osborne, 1994; Holden & Ritchie, 1991; Holt et al., 2008; Levendosky & Graham-Bermann, 1998, 2000, 2001; Levendosky et al., 2003, 2006; O'keefe, 1994; Owen et al., 2006; Shoppe-Sullivan, 2007; Zerk et al., 2009; Zlotnick et al., 2006; Wolfe, Jaffe, Wilson, & Zak, 1985). In theory, this model involves a longitudinal relationship among domestic violence, maternal mental health, parenting, and children's behavioral outcomes, which may reflect causal chains over time (Fincham et al., 1994). Only a few studies, however, have conducted longitudinal tests of these relationships (Huang et al., 2010; Litrownik et al., 2003; Schoppe-Sullivan, 2007; Zlotnick et al., 2006). The majority of studies have depended on cross-sectional designs, which provide limited understanding of causal relationships. Additionally, most studies on the effects of domestic violence on women and children have used small, local, or shelter samples, and thus the effects remain poorly understood in large community samples. To address these limitations, the current study used multiple waves of a large and recent longitudinal dataset to examine the associations among domestic violence at Year 1, maternal mental health and parenting at Year 3, and children's behavioral outcomes at Year 5.

A disproportionate number of the children exposed to domestic violence are also raised in low-income and single-mother households. Research suggests that domestic violence and low socioeconomic status, such as poverty or unmarried-mother status, co-

occur at high rates (Duncan & Brooks-Gunn, 1997; Fantuzzo et al., 1997; Holt et al., 2008; Huang, Son, & Wang, 2010; McLanahan et al., 2003; Thomson, Hanson, & McLanahan, 1994), and that the combination of these factors can magnify their negative effects on women and children by increasing psychological distress and constraining resources and coping options (Aytac & Rankin, 2009; Bradley & Corwyn, 2002; Brown & Moran, 1997; Conger et al., 1990; Conger et al., 2002; Fox, Benson, DeMaris, & Wyk, 2002; Goodman, Smyth, Borges, & Singer, 2009; Holt et al., 2008; Mistry, Bieanz, Taylor, Burchinal, & Cox, 2004; Yeung, Linver, & Brooks-Gunn, 2002).¹ However, the interconnections between domestic violence and social categories, such as poverty and unmarried-mother status, and its effects have for women and children has been not fully researched (Goodman et al., 2009). Typically, previous studies have considered income or marital status as control variables but have not made them central concerns in examining the effects of domestic violence on children's behavioral outcomes (Goodman et al., 2009). To obtain a more comprehensive understanding of the effects of domestic violence on women and children and to develop more adequate policies and services for supporting domestic violence victims and their children, studies must examine whether domestic violence affects women and children differently across a variety of social categories. Therefore, this current study examined whether poverty and marital status moderated the effect of domestic violence on children's behavioral outcomes.

In summary, using the first four waves of data from the Fragile Families and Child Wellbeing Study, the current study examined longitudinal associations between domestic violence toward mothers and the behavioral outcomes of preschool children.

¹ This evidence, however, does not mean that domestic violence is confined to low-income or single-mother families. Researchers are careful to point out that domestic violence can be found in families across the spectrum of socioeconomic status (Gelles, 1980).

First, using structural equation modeling (SEM), this study examined whether domestic violence toward mother at Year 1 negatively affects children's behaviors at Year 5 directly or indirectly through its effects on maternal mental health and parenting at Year 3. Second, using multiple-group SEM, this study also investigated whether the impacts of domestic violence on child behavioral outcomes differed by poverty and marital status. This study adds to and expands existing research by (a) focusing on the preschool children, a time period that has important effects on later development; (b) investigating whether domestic violence toward mothers has long-term behavioral outcomes for preschool children; and (c) determining whether domestic violence matters more for children living in poor or unmarried-mother families. A more comprehensive understanding of the effects of domestic violence on mother's mental health and parenting and preschool children's behavioral outcomes would aid policymakers and domestic-violence-prevention service providers in their efforts to design and implement effective intervention strategies for this population.

THEORETICAL FRAMEWORK

Bronfenbrenner's Bioecological Theory

The bioecological theory of human development (Bronfenbrenner, 1974, 1977, 1979, 1986, 1994, 1999) underscores the importance of the dynamic interactions between children and their external environments. According to Bronfenbrenner's theory, children's development takes place through reciprocal interactions between their own biology and the immediate environments in which they actually live and grow. Such interactions are referred to as *proximal processes*. Bronfenbrenner was concerned not so much with development per se but the environmental contexts in which development takes place (1977, 1979). Thus, Bronfenbrenner (1994) argued that to understand children's developmental processes, one must consider the entire system of ecological environments as contexts of development. This system is composed of four different subsystems that influence child development: the micro-, meso-, exo-, and macrosystems. The microsystem refers to a pattern of activities, social roles, and interpersonal relations experienced by the child in an immediate setting in which the child routinely interacts, such as the family, school, and peer groups. The mesosystem comprises the interrelations between two or more microsystem environments that include the child, such as the relationship between the family and the child's school. The exosystem consists of environments in which the child does not directly participate but that indirectly affect the processes in settings in which the child does interact. Some examples of exosystem environments are the world of work, the neighborhood, and the distribution of goods and services. The macrosystem consists of the institutional patterns of culture, such as the economic, social, educational, legal, and political systems that influence or have the

ability to influence the child through the other environmental layers. All interactions among the child and the various environmental systems are inseparable and bidirectional, each affecting the other.

Based on the bioecological model, it is within the immediate environment of the microsystem that proximal processes operate to produce and sustain child development. The power of the processes on child development depends on the characteristics of the child and the environmental contexts in which the processes are taking place. Although there are several environmental settings in which developmental process can do occur, the family is the principal environmental context in which child development takes place. Bronfenbrenner suggests that parent–child interaction is a good example of how the family affects development. For instance, good mother–infant interaction across time, as a proximal process, has powerful impact on behavioral problems exhibited by the child. However, the power of the process varies as its relationship both to environmental contexts (e.g., socioeconomic status) and to the characteristics of the child (e.g., birth weight). That is, mother–child interactions have the general effect of reducing socioeconomic-status differences in developmental outcomes, especially under high levels of mother–child interaction. Bronfenbrenner (1999) placed special emphasis on the developmental importance of the environments in which proximal processes take place. He asserted that, although the effects of proximal processes on child development tend to considerably exceed the effects of environmental contexts, some environmental features can have substantial, indirect effects on subsequent child development (Bronfenbrenner, 1999). Bronfenbrenner (1999) found more specific evidence on the effect of environmental instability on children’s development. For example, the quality of marital

relationship influences the patterns of parent–child interaction, which in turn affect children’s school achievement and social behavior in the classroom. In short, environmental contexts influence the processes and developmental outcomes not only in terms of the resources that they make available but also in the degree to which they provide the stability and consistency over time that proximal processes require for their effective functioning (Bronfenbrenner, 1999).

Belsky’s Ecological Theory of Parenting

Belsky (1980, 1984) employed Bronfenbrenner’s ecological framework to develop a model to understand the etiology of child maltreatment (Belsky, 1980) and eventually to draw attention to general sources of influence on parenting (Belsky, 1984). When addressing the issue of child maltreatment, Belsky (1980) argued that Bronfenbrenner’s ecological model failed to account for individual differences that parents bring to the primary microsystem in which their children develop. Belsky (1980) referred to characteristics of parents as *ontogenic development*. Ontogenic development includes parents’ personal psychological attributes, which are derived, in part, from their own developmental history. To account for the etiology of child maltreatment, Belsky (1980) asserted that parents’ ontogenic origins and psychological resources can affect the parent–child relationship through interactions with the micro- and exosystemic environments. For instance, stress and conflict in a marital relationship (microsystemic factor) are negatively associated with the quality of the parent–child relationship, but, the marital relationship can also affect the parent–child relationship through interactions with a parent’s developmental origins and psychological attributes (1980). Alternatively, child maltreatment may result when a mother’s developmental history conspires to keep her

from establishing supportive social networks (exosystemic factor) that can help prevent a negative parent–child relationship (1980). Ontogenic development is of special significance in understanding the etiology of child development because it leads researchers to focus on the effects of parents' psychological attributes (e.g., psychological well-being) on the parent–child relationship, a key factor on development in early childhood.

To understand parenting and its influence on child development, Belsky (1984) suggested that across childhood, parenting, defined as “sensitively attuned to children's capabilities and to the developmental tasks they face,” promotes a variety of highly valued developmental outcomes, including emotional security, behavioral independence, social competence, and intellectual achievement. Belsky's (1984) ecological model of parenting identified three domains of determinants of parenting. First, parenting may be influenced by the characteristics of parents (e.g., personal psychological attributes including personality and parental psychological well-being), which are derived, in part, from their own developmental history. Belsky (1984) found compelling evidence on the influence of personal psychological attributes on parental functioning while investigating psychologically disturbed adults. The disturbance in parental psychological functioning that has received the most attention in this regard is depression. Depressed mothers tend to offer a disruptive, hostile, rejecting home environment to their children, which, not surprisingly, undermines child functioning. The second determinant is comprised of the characteristics of the child (e.g., gender and child temperament). For instance, Belsky (1984) suggested that an important child characteristic in terms of influencing parental functioning is temperament, especially those behavioral styles that make parenting more

or less difficult. The third domain is the social context within which the parent–child relationship is embedded, particularly the marital relationship, social networks, and parental employment. Belsky (1984) suggested that, to understand parenting and its influence on child development, attention must be given to the marital relationship. A positive marital relationship is strongly related to competent parenting, whereas high interspousal hostility is negatively associated with parenting. Belsky (1984) emphasized that contextual stress and support can influence parenting directly or indirectly through its effects on the parent’s psychological functioning; in particular, “marital relationships do not influence parenting directly so much as they do indirectly by having an impact on psychological well-being and only thereby the skills they exercise in the parenting role” (p. 88). Therefore, Belsky’s (1984) model of parenting assumes that the social context as well as parents’ developmental histories influences the individual personality and psychological well-being of parents and thereby parental functioning, and, in turn, child development. Belsky (1984) regarded personal psychological resources as the most influential determinant of parenting, not simply for its direct effects on parental functioning but also because of the role it undoubtedly plays in recruiting contextual support. And he argues that a parent’s psychological resources are more important in buffering parent-child interactions from *stress* than contextual sources of *support*, which in turn are more important than the characteristics of the child.

Because most children, especially young children, spend a large portion of their time with their family and are completely dependent on parents for all aspects of care, many factors that may influence development can be found within the family itself. Consideration of these factors leads researchers to investigate the microsystem more

deeply in the ecological analysis of child development. The development of young children may be influenced somewhat by children's biological characteristics and heavily by the external resources available to them within the family system. Throughout the empirical and theoretical literature, examinations of family factors in the study of the etiology of child development have focused attention on the parents, including parent–parent interactions and parent–child interactions. Based on ecological frameworks, domestic violence can influence parenting directly or indirectly through its effects on the parents' psychological functioning, and parenting can be the most influential factor in early-childhood development.

Belsky's (1980) ecological perspective also emphasized that exosystemic factors (i.e., work, lack of resources, social support) can affect child development through the influence they exert on the family microsystem. For example, in his empirical research on etiology of child maltreatment, Belsky (1980) found that unemployment may stimulate violence in the family, such as spousal and child abuse. The processes through which unemployment triggers violence are likely to be varied. Unemployment may be associated with frustrating circumstances such as a lack of monetary resources, which might stimulate the violence. Alternatively, failure as family provider can result in a sense of powerlessness that can fuel intrafamilial violence. In evaluating the role of exosystemic factors, Belsky (1980) emphasized that these influences most likely stimulate intrafamilial violence through the pressures they place on the family and the consequent stress they create. The examination of the influence that the unemployment exerts in the etiology of child maltreatment is of special significance in understanding processes through which low- socioeconomic conditions, such as poverty, are related to

domestic violence.

Stress and Resource Theory

Belsky's (1980) observation on the roles of exosystemic factors in child maltreatment are consistent with the well-known stress and resource theories, which provide a reasonable account for understanding how socioeconomic conditions, such as poverty and marital status, is related to domestic violence (Gelles & Straus, 1979; Farington, 1980; Jasinski, 2001). Stress and resource theories postulate that individuals' locations in the social structure (e.g., difficult working conditions, unemployment, economic hardship, and single motherhood) expose them to various types of stressors (Avison & Gotlib, 1994; Conger et al., 1997; Farington, 1980). When individuals or groups are exposed to the stressors, they can either meet the stressors or fail to deal with them. Their mastery of stressors depends on the resources available to meet the demands imposed by the stressors. If the demands exceed the resources, stress levels can increase (Farington, 1980). Domestic violence in these perspectives would be viewed as the outcome of a pileup of stressors associated with a perceived excess of demands over resources (Fox et al., 2002).

Within the theoretical context, low socioeconomic status, such as poverty or unmarried-mother status, can create economic or psychological strain or pressure in daily living (e.g., painful or frustrating experiences related to a lack of monetary resources), which may result in psychological distress. Resource deficits commonly experienced in such situations (e.g., economic and social supports from close ties), may increase psychological distress, which in turn may stimulate marital conflict. As Belsky (1980) described, the processes through which low-socioeconomic situations stimulate domestic

violence are likely to vary. Low-income or unmarried mothers may often lack the economic and psychological resources of high-income or married mothers, and they are more likely to rely on the support of an abusive partner and therefore face more material difficulties in leaving an abusive or potentially abusive relationship (Brown & Moran, 1997; Goodman et al., 2009). Alternatively, male partners in poor families may feel a sense of powerlessness if they are unable to earn sufficient income or are dethroned as the primary wage earner, which may contribute to violence toward the female partner.

Whatever processes or factors actually account for the association between domestic violence and low socioeconomic conditions, stress and resource theories suggest that the psychological impact of domestic violence may be magnified within the context of low socioeconomic status, such as poverty or unmarried-mother status. Previous literature has demonstrated that women in abusive relationships experience an ongoing stressor or coercive control. Women typically use a wide range of coping strategies to manage the stress of domestic violence, often none of which succeed in stopping the violence, and these situations ultimately disrupt their mental health (Goodman et al., 2009). When domestic violence combines with poverty or unmarried-mother status, the experience of having limited coping options or resources and the subsequent psychological distress can be especially intense (Goodman et al., 2009). This distress may further disrupt the mother's capacity to deal successfully with difficulties that they are faced with (Brown & Moran, 1997; Conger et al., 2010; Goodman et al., 2009). The ever increasing psychological distress in this vicious circle can spill over into the parent-child relationship by heightening hostility and diminishing parental warmth and involvement. Such parenting behaviors can increase the risk for maladjustment of

children by compromising academic, behavioral, and social competence.

Based on the theoretical perspectives, abused mothers with low-income or unmarried status are more likely to experience material, psychological, and other family stresses (e.g., negative parenting), but they may have fewer resources or less capacity to deal with these problems than mothers with high-income or married status. These limitations may affect behavioral outcomes of children in low-income or single-mother families.

EMPIRICAL BACKGROUND

Definition of Domestic Violence

The term *domestic violence* broadly refers to the intimate context within which one partner is abused by the other, involving both men and women as victims and same-sex partner violence. Although this term is the most frequently and widely used, it has been criticized for its gender neutrality and for its primary emphasis on physical assault and exclusion of other types of abuse (Holt et al., 2008; Kurz, 1997). Domestic violence is not any single behavior, but a pattern of many physical, sexual, and psychological behaviors perpetrated by a current or former intimate partner, and women are far more likely than men to experience physical injuries or psychological consequences (Honor, 2005; Kurz, 1997; Rodriguez, Bauer, McLoughlin, & Grumbach, 1999). In this study, the term *domestic violence* is used to describe the intimate context within which women are abused physically, sexually, or emotionally by men. Because some of the literature uses the term *intimate partner violence*, this study uses the terms *domestic violence* and *intimate partner violence* interchangeably.

The Direct and Mediated Effects of Domestic Violence on Children's Behaviors through Maternal Mental Health and Parenting

Empirical studies have documented evidence on the direct association between exposure to domestic violence and children's behavioral outcomes. These studies, most of which focused on school-age children, have shown that exposure to domestic violence is associated with increases in children's internalizing behavior problems, externalizing behavior problems, or both (Cummings et al., 1985; Hughes & Barad, 1983; Hughes, 1988; Jouriles et al., 1996; Levendosky et al., 2001, 2003; O'Keefe, 1994; Schoppe-

Sullivan, 2007; Wolfe, Jaffe, Wilson, & Zak, 1985; Zerk et al., 2009). Although behavioral problems have not been well documented in preschool children exposed to domestic violence, a few studies have indicated that even infant and young children exhibited behavior problems as a result of hearing or witnessing domestic violence (Bogat, DeJonghe, Levendosky, Davidson, & Eye, 2006; Huang et al., 2010; Levendosky et al., 2003; Litrownik et al., 2003). Some studies that examined both preschool and school-age children have found that younger children exposed to domestic violence exhibited more behavioral problems than older age groups (Hughes & Barad, 1983; Hughes, 1988). Holt and colleagues (2008) pointed out that early exposure to domestic violence can potentially create more severe problems because it affects subsequent development.

Consistent evidence on the direct association between domestic violence and children's behaviors has been documented in the literature; therefore, research efforts over the past decade have focused on understanding the various mechanisms or processes through which domestic violence affects children's behaviors. Because domestic violence is only one type of family event that affects children, it is necessary to specify the aspects of family functioning (especially maternal functioning) that are likely to be important and to state explicitly how they are related to domestic violence (Fincham et al., 1994). Empirical studies, largely from school-age children, have supported an ecological model of the effects of domestic violence on the well-being of mothers and their children; the ecological model posits that violence toward mother by an intimate partner has an adverse effect on maternal mental health and reduces her ability to provide good quality of parenting, resulting in poor behavioral outcomes for children in the household

(Anderson & Cramer-Benjamin, 1999; Carpenter & Stacks, 2009; Coker et al., 2002; Edelson, 1999; Fantuzzo et al., 1997; Fincham et al., 1994; Holden & Ritchie, 1991; Holt et al., 2008; Huang et al., 2010; Levendosky & Graham-Bermann, 1998, 2000, 2001; Levendosky et al., 2003, 2006; O'keefe, 1994; Owen et al., 2006; Zerk et al., 2009; Zlotnick et al., 2006).

Domestic violence and maternal mental health. The empirical evidence clearly shows that domestic violence toward women has an adverse effect on their mental health. The primary mental health response of abused women in an ongoing intimate relationship is depression. Numerous studies from a variety of settings have found that abused women experience higher levels of depression than nonabused women (Bonami et al., 2006; Cascardi & O'Leary, 1992; Campbell, 1997, 1999; Coker et al., 2002; Levendosky & Graham-Bermann, 2001; Levendosky et al., 2003, 2006; Zerk et al., 2009; Zlotnick et al., 2009). For instance, one study found that about 30% of women ($N = 6,790$) had experienced physical, sexual, or psychological domestic violence during their lifetime and that all types of violence were associated with a high risk of depressive symptoms and chronic mental illness (Coker et al., 2002). Research has also suggested that the association between domestic violence and maternal mental health is likely to be long-term (Huang et al., 2010; Levendosky et al., 2006; Zlotnick et al., 2006). For instance, Zlotnick et al. (2006) in their longitudinal study with a national sample of women ($N = 3,173$) found that women who experienced domestic violence at Wave 1 reported significantly more depression compared to those who did not report domestic violence at the 5-year follow-up. Likewise, in a study of 203 mother–infant dyads, Levendosky et al. (2006) found that past domestic violence, as well as current domestic violence,

significantly affected current maternal mental health.

Maternal mental health and children's behaviors. Maternal mental health may play an important role in the behavioral adjustment of children from violent families. Maternal mental health is found to have both direct and indirect effects on children's behaviors via its influence on parenting. For direct effects, studies have shown that poor maternal mental health is associated with increased behavioral problems for children (Huang et al., 2010; Jackson, Brooks-Gunn, Huang, & Glassman, 2000; Levendosky & Graham-Bermann, 2001, 2001; Levendosky et al., 2006; Meadows, McLanahan, & Brooks-Gunn, 2007). A study using the Fragile Families and Child Wellbeing Study ($N = 2,120$) found that maternal mental health was associated with increased odds of anxious/depressed, attention deficit, and oppositional defiant disorders for children aged 3 (Meadows et al., 2007). In addition, studies have consistently found maternal mental health to be associated with either externalizing or internalizing behaviors of infant (Levendosky et al., 2006), preschool children (Huang et al., 2010), and school-age children (Levendosky and Graham-Bermann, 2001).

With respect to indirect effects, many studies have shown that poor maternal mental health has a negative effect on parenting quality and that parenting under psychological distress is associated with increased behavior problems of children (Carpenter & Stacks, 2009; Downey & Coyne, 1990; Holt et al., 2008; Jackson et al., 2000; Levendosky & Graham-Bermann, 2001; Levendosky et al., 2003; Zerk et al., 2009). For example, Levendosky et al. (2003) found that the amount of psychological distress was significantly related to preschool children's externalizing behaviors, primarily through the indirect effect of parenting effectiveness. Some meta-analytic studies of the

domestic violence literature have emphasized that maternal depression was negatively related to children's behaviors via parenting difficulties (Downey & Coyne, 1990; Holt et al., 2008). These studies found that continued domestic violence can have negative influences on mothers' parenting and the quality of the mother-child attachment. The studies further suggested that maternal stress and depression result at times in emotionally distant, unavailable, or even abusive mothers whose emotional energy and time for their children are severely compromised. However, empirical evidence on the indirect effects of maternal mental health on child behavior through parenting is mixed. For instance, two studies focusing on preschool children did not find an association between maternal mental health and parenting (Huang et al., 2010; Levendosky, 2006).

Domestic violence, parenting, and children's behaviors. Studies have indicated that domestic violence toward mother impedes mothers' parenting quality and thereby increases children's behavior problems (Anderson & Cramer-Benjamin, 1999; Carpenter & Stacks, 2009; Holden & Ritchie, 1991; Holt et al., 2008; Huang et al., 2011; Levendosky & Graham-Bermann, 1998, 2001; Levendosky et al., 2001, 2003, 2006; Miller, Cowan, Cowan, Hetherington, & Clingempeel, 1993; Owen et al., 2006; Schoppe-Sullivan, 2007). First, previous studies have clearly shown that parenting has a direct effect on children's behaviors (Huang et al., 2010; Levendosky et al., 2001, 2003, 2006; Miller et al., 1993; O'Keefe, 1994; Schoppe-Sullivan, 2007). These studies have consistently found poor parenting quality to be associated with increased behavior problems for children. For instance, in a study of 185 children who resided with their mother at a shelter, O'Keefe (1994) found that mother's violence toward the child had a significant effect on children's externalizing and internalizing behaviors, whereas father's

violence toward the child had no such effect. Moreover, this study found that (a) the quality of the mother–child relationship was a key predictor of externalizing behavior problems, (b) the amount of mother–child violence had a deleterious effect on the behaviors of school-age children, and (c) father-child violence had no effect on children’s behaviors. In a study of 41 families from the Becoming a Family Project, Miller et al. (1993) found that positive parenting behaviors, such as parenting warmth, significantly reduced behavioral problems in preschool children and early adolescents; the authors also found that the effects tended to be bigger for preschool children than for adolescents.

Additionally, previous studies have documented evidence on the mediating role of parenting in the relationship between domestic violence and children’s behavior problems (Anderson & Cramer-Benjamin, 1999; Conger et al., 1990, 2002, 2010; Holden & Ritchie, 1991; Levendosky et al., 2003, 2006; Levendosky & Graham-Bermann, 1998, 2001; Schoppe-Sullivan, 2007; Owen et al., 2006). These studies suggested that domestic violence toward mother makes mothers less emotionally and physically available, which can result in increased behavior problems of children. For example, Levendosky et al. (1998, 2001, 2003, 2006), in a series of studies involving infants, preschoolers, and school-age children, found that both psychological and physical violence were significant predictors of parenting, and that such parenting was significantly related to children’s behavior problems. Their findings strongly supported that parenting mediates the association between domestic violence and children’s adjustment, suggesting that domestic violence toward mother reduces the mother’s ability to respond warmly and sensitively to her children and makes her less likely to bond positively with her children, which further contaminates children’s behaviors. In a longitudinal study of 203 mothers

and their 8- to 16-year-old children, Schoppe-Sullivan (2007) found that multiple dimensions of parenting (i.e., behavioral control, psychological autonomy, and warmth) mediated the relationship between marital conflict and children's externalizing and internalizing behaviors. Schoppe-Sullivan found that greater marital conflict was associated with less positive parenting over time, which in turn predicted greater externalizing and internalizing behavior problems.

However, evidence with regard to abused mothers' parenting has been mixed. Some studies have found that domestic violence functions differently with respect to specific dimensions of parenting (Huang et al., 2010; Krishnakumar & Buehler, 2000; Levendosky et al., 2003). For instance, Huang et al. (2010) found that domestic violence was associated with spanking by the mother, but not with other maternal parenting behaviors, such as responsive parenting, harsh parenting, or a lack of verbal or social skills. Likewise, Levendosky et al. (2003) found that domestic violence was related to mother's parenting effectiveness but not to authoritative parenting. Other studies have found no parenting differences between abused and nonabused women (Holden & Ritchie, 1991; Holden, Stein, Ritchie, Harris, & Jouriles, 1998; Sullivan, Nguyen, Allen, Bybee, & Juras, 2000; Renner, 2009).

Although many studies have documented the associations between domestic violence, maternal mental health, maternal parenting, and children's behavioral outcomes, most of those studies have focused on school-age children. Very little research has examined the effects that domestic violence has on the behavioral outcomes of preschool children (Huang et al., 2010; Levendosky, 2003; Litrownik et al., 2003). Furthermore, most of the studies on the association between domestic violence and behavioral

outcomes of children suffer from some methodological limitations, such as cross-sectional designs or small and local samples. To the best of my knowledge, until recently, only one study (Huang et al., 2010) has used a large, nationally representative dataset to examine the longitudinal relationships between domestic violence, maternal functioning, and preschool children's behavioral outcomes. Clearly more research is needed to get more comprehensive understanding of mechanisms through which domestic violence affects behavioral outcomes of preschool children.

The Moderated Effect of Domestic Violence on Children's Behaviors by Poverty and Marital Status

Poverty status as a moderator. Although domestic violence occurs at all socioeconomic levels, numerous studies have documented that low-income women and their children are more likely to experience domestic violence (Aytac & Rankin, 2009; Bradley & Corwyn, 2002; Brown & Bassuk, 1997; Conger et al., 1990, 2002; Fox et al., 2002; Frias & Angel, 2007; Goodman et al., 2009; Honeycutt, Marshall, & Weston, 2001; Holt et al., 2008; Meisel, Chandler, & Rienzi, 2003; Tolman & Rosen, 2001). Among 19,000 women in a pooled multistate sample, those with incomes below \$25,000 were almost twice as likely to experience abuse as women with higher incomes (Vest et al., 2002). In addition, studies consistently found that the rates of physical violence for women receiving welfare (i.e., 23% during the previous 12 months, 62.8% lifetime) is considerably higher than in nationally representative samples of women (7.8% during the previous 12 months, 21.7% lifetime; Brown & Bassuk, 1997; Frias & Angel, 2007; Honeycutt et al., 2001; Tolman & Rosen, 2001).

Research has shown that low income has a negative effect on child development

through critical three mediators – maternal depression, the quality of parent-child interaction, and financial resources, (Conger et al., 2010; Duncan & Brooks-Gunn, 2000; Mistry et al., 2004). Low-income women are far more likely to experience psychological distress (Conger et al., 2010; Tolman & Rosen, 2001). For instance, Tolman and Rosen (2001) found that the welfare sample in their study had 2 to 3 times the prevalence of depression (25%), anxiety (7%), and PTSD (30%) than women in national studies (13%, 4%, and 10%, respectively). In addition, randomized experimental studies have demonstrated a casual relationship between income and child development, suggesting that improvement in family income may have beneficial effects for parents and children (Huston et al., 2005; Leventhal, Fauth, & Brooks-Gunn, 2005; Morris, Duncan, & Clark-Kauffman, 2005). In a review of the relationships between poverty and children's development, Conger et al. (2010) suggested that economic hardships can decrease the resources or investments parents make in their children's development, which may lead to poor development outcomes for children.

Although domestic violence and poverty co-occur at a high rate and may operate in similar ways in terms of mother's and children's outcomes (Goodman et al., 2009), very little research has been conducted to examine whether domestic violence in the context of poverty increases the risk of maternal psychological distress and poor parenting and thereby children's behavior problems. Some researchers have conjectured that low-income women and their children are more adversely influenced by domestic violence and its associated family stressors (Conger et al., 2002; Goodman et al., 2009), but the data are conflicting. Goodman and colleagues' (2009) recent review of the domestic violence literature suggested that when domestic violence and poverty co-occur,

their negative effects on women and children may magnify each other by increasing psychological distress, powerlessness, and social isolation. Likewise, in another review, Conger et al. (2002) suggested that domestic violence in the context of poverty increases the risk of parents' psychological distress. They further suggested that this increased psychological distress may heighten the risk of harsh, uninvolved, and inconsistent parenting behaviors, which in turn predict higher child maladjustment and behavioral problems.

On the other hand, Krishnakumar and Buehler (2000) found no evidence to support the common perception that domestic violence in the context of poverty decreases mother's parenting quality. Rather, their investigation found that the negative effect of domestic violence on parenting behaviors was stronger for middle-income families than for low-income families. Their study suggested that the fact that domestic violence and poverty are commonly interconnected does not necessarily mean that the interconnection intensifies abuse's consequences for woman and children.

Across the literature, it seems clear that domestic violence combined with poverty increases the risk of mother's psychological distress. However, it is less clear whether domestic violence matters more for parenting quality and children's behavioral outcomes in low-income families than in families of other income statuses. Gewirtz and Edleson (2007) suggested that many protective factors, such as competent parenting, social support, and easy temperament, can influence the impact of domestic violence on parenting for such socioeconomically disadvantaged mothers and their children's development.

Marital status as a moderator. Unmarried mothers are also more likely than

married mothers to experience domestic violence (Brown & Moran, 1997; Conger et al., 2010; Davis, Avison, & McAlpine, 1997; Fantuzzo et al., 1997; Holt et al., 2008; Huang, Son, & Wang, 2010; McLanahan & Persheski, 2008; McLanahan, 2009; Thomson, Hanson, & McLanahan, 1994). For instance, Brown and Moran's (1997) study of 404 mothers with a child indicated that unmarried mothers were 3 times as likely as married mothers (45 vs. 13%) to experience domestic violence.

Research has shown that, compared to married mothers, unmarried mothers tend to be less educated and to have lower incomes, lower employment quality, and less trusting relationships (Brown & Moran, 2007; McLanahan, 2009; McLanahan & Persheski, 2008). The most striking difference between married and unmarried mothers concerns family income. Studies have indicated that unmarried mothers are twice as likely to be in financial hardship (Brown & Moran, 2007; Davis et al., 1997; Conger et al., 2010; McLanahan, 2009; McLanahan & Persheski, 2008) despite being twice as likely to be working full-time, compared to married mothers (Brown & Moran, 2007). Research suggests that the financial hardship, full-time work, and associated strain and exhaustion often faced by unmarried mothers may create ongoing psychological distress (Conger et al., 2010; McLanahan & Persheski, 2008; McLanahan, 2009; Thomson et al., 2004) and disrupt parenting quality (Brown & Moran, 2007). Additionally, compared to married mothers, unmarried mothers may have less access to psychological and social support from an intimate partner or close ties (McLanahan, 2009). The resource deficits may increase a mother's psychological distress, which may negatively affect the parent-child relationship and thereby lead to poor child outcomes (Conger et al., 2010; McLanahan & Persheski, 2008; McLanahan, 2009; Thomson et al., 2004).

Although domestic violence against women and unmarried status have been highly correlated in the literature and may have similar effects on women's and children's outcomes, little has been done to illuminate whether domestic violence combined with unmarried-mother status increases abuse's consequences of mother and children. Some have suggested that domestic violence may matter more for unmarried mothers and their children than for married mothers and their children. Conger et al. (2002) suggested that when domestic violence and unmarried-mother status co-occur, their negative effects on women and children may magnify each other by decreasing mother's resources or coping options and increasing psychological distress and parenting difficulties. However, other researchers have pointed out that the outcomes for unmarried mothers are not always bleak. For example, Brown and Moran (2007) found that although unmarried mothers are far more likely to have experienced intimate partner violence and live in marked financial hardship compared to married mothers, many of them reported competent parenting and social supports from close ties. Krishnakumar and Buehler (2000) also found an interesting result; namely, the negative effect of domestic violence on parenting behaviors was stronger for married families than for unmarried families. These findings are not consistent with the common perception that domestic violence may have more adverse effects on children in unmarried-mother families than on children in married-mother families. Some studies have suggested that the impact of domestic violence on children in unmarried- mother families may vary depending on how the unmarried mothers respond to the negative effect of domestic violence and its related mental health problems or how such mothers and their children may be supported by social support from close ties or communities (Gerwirtz & Edleson, 2007).

Throughout the literature, domestic violence and social categories such as poverty or single-mother status have been commonly perceived as distinct and highly differentiated in their effects on women and children (Goodman et al., 2009), even though their occurrences are highly correlated and may have similar effects. Typically, studies have considered income or marital status as variables to be controlled for and have not made them central concerns when investigating the effects of domestic violence on child behavioral outcomes (Goodman et al., 2009). More research is required to investigate whether the effects of domestic violence on children's behaviors varies by poverty and marital status and whether domestic violence matters more for children in certain social categories, such as low-income and unmarried-mother families.

Resilience Among Children Exposed to Domestic Violence

Although the literature has clearly demonstrated the negative impacts of domestic violence toward mother on children's behaviors, it is also important to remember that not all children with exposure to domestic violence show poorer behavioral outcomes. Indeed, there are some children who remain relatively resilient and unscathed from their experiences (Daniel & Wassell, 2002; Gewirtz & Edleson, 2007; Grych et al., 2000; Holden et al., 1998; Huges & Luke, 1998; Kitzmann et al., 2003; Sullivan et al., 2000). For example, a meta-analytic review of the literature found that whereas approximately 67% of children who were exposed to domestic violence showed poorer developmental outcomes than children who were not exposed to domestic violence, the remaining 37% exhibited similar or even better developmental outcomes than their counterparts (Kitzmann, Gaylord, Holt, & Kenny, 2003). Holt et al. (2003) surmised that the absence of serious developmental problems does not necessarily mean

that children are unaffected by domestic violence, but that some protective factors, such as social support, may influence the extent of the impact of domestic violence on children's outcomes.

RESEARCH QUESTIONS AND HYPOTHESES

The current study was conceptualized by both Bronfenbrenner's bioecological theory and Belsky's ecological model of parenting. The conceptual framework underlying this study posited that the first 5 years of child behavioral outcomes are determined by the child's characteristics and the external resources available to the child. With respect to the main focus, domestic violence, this study hypothesized that domestic violence would reduce the resources and availability of mechanisms affecting child outcomes (e.g., maternal mental health and parenting) and thus would have negative effects on children's behavioral outcomes. On the basis of stress and resources theories, this current study further postulated that domestic violence in the context of certain social categories, such as poverty or unmarried-mother status, would increase the risk of experiencing a lack of resources that would affect child outcomes. Additionally, this study hypothesized that such a deficiency in resources would intensify the negative effects on children's behavioral outcomes.

Therefore, the theoretical model in this study hypothesized that domestic violence toward mothers would be associated with poor maternal mental health and parenting quality, which in turn would be related to poor child behavioral outcomes. This study also hypothesized that the negative effects of domestic violence on child behavioral outcomes would vary depending on poverty and marital status and that domestic violence would have stronger effects on these outcomes for low-income families and unmarried-mother families than for high-income families and married-mother families. Figure 1 presents the hypothesized structural model.

Research Question 1: Does domestic violence toward mother at Year 1 affect mothers' mental health and parenting at Year 3?

Two effects were hypothesized for Research Question 1:

1. Domestic violence at Year 1 will negatively affect maternal mental health.
2. Domestic violence at Year 1 will negatively influence maternal parenting.

Research Question 2: Do maternal mental health and parenting at Year 3 affect children's externalizing and internalizing behaviors at Year 5?

Three effects were hypothesized for Research Question 2:

1. Maternal mental health at Year 3 will positively affect children's behaviors at Year 5.
2. Maternal mental health at Year 3 will positively affect children's behaviors at Year 5 indirectly through its influence on parenting at Year 3.
3. Parenting at Year 3 will positively influence children's behaviors at Year 5.

Research Question 3: Does domestic violence toward mother at Year 1 affect children's externalizing and internalizing behaviors at Year 5 directly, indirectly through its effects on maternal mental health and parenting at Year 3, or both?

Three effects were hypothesized for Research Question 3:

1. Domestic violence at Year 1 will have a direct effect on children's behaviors at Year 5.
2. Maternal mental health at Year 3 will mediate the link between domestic violence at Year 1 and children's behaviors at Year 5.
3. Parenting at Year 3 will mediate the relationship between domestic violence at Year 1 and children's behaviors at Year 5.

Research Question 4: Do poverty and marital status moderate relevant associations between domestic violence and children's externalizing and internalizing behaviors?

Two effects were hypothesized for Research Question 4:

- 1) The negative effect of domestic violence at Year 1 on children's behaviors at Year 5 will vary by poverty status and may be bigger for low-income families than for high-income families.
- 2) The negative effect of domestic violence at Year 1 on children's behaviors at Year 5 will vary depending on marital status and may be bigger for unmarried-mother families than for married-mother families.

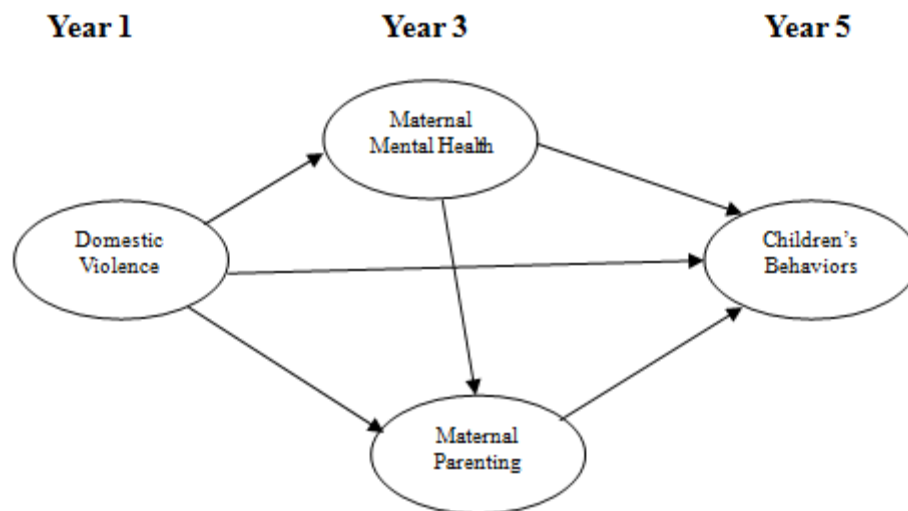


Figure 1. Hypothesized structural model. This model shows the theoretical relationships among domestic violence at Year 1, maternal mental health at Year 3, parenting at Year 3, and children's behavior problems at Year 5.

DATA AND METHODS

Data

The current study used data from the Fragile Families and Child Wellbeing Study, a longitudinal birth cohort study that began in 1998 with a baseline sample of 4,898 births in 20 U.S. cities. Unmarried parents were oversampled by design with a 3:1 ratio in the study. The data was primarily designed to provide comprehensive information on the capabilities and relationships of unmarried parents and outcomes for their children's well-being. The data is a stratified random sample of 20 U.S. cities with populations over 200,000. The first stage of the sampling process was to select 20 cities out of all 77 cities with populations of 200,000 or more, which was based on policy environments and labor market conditions in the different cities. In each city, data were collected from all or randomly selected hospitals, which was based on the number of hospitals in that city. Randomly selected eligible samples were then drawn from each selected hospital (see Reichmann, Teitler, Garfinkel, & McLanahan, 2001, for a detailed description of the sample and design). The final sample contains 4,898 births in 75 hospitals in 20 cities across the United States.

The initial interviews with both the mother and father were conducted at the time of the baby's birth in the hospital. At baseline, the data included 3,711 unmarried parents and 1,187 married parents. Follow-up phone surveys were conducted when the child was one, three, and five years old. The first four waves of surveys were used in this present study: baseline, Year 1, Year 3, and Year 5. Of the 4,898 eligible mothers at baseline, 4,364 were interviewed at Year 1, 4,231 at Year 3, and 4,139 at Year 5. After the Year 3 interview, families were asked to participate in an in-home assessment in which

interviewers assessed the behaviors of the mothers and children and interviewed mothers about their parenting behaviors. For the in-home surveys, 3,288 mothers participated at Year 3 and 3,001 participated at Year 5. A total of 2,404 mothers completed all six data collections (the four core surveys and the two in-home assessments). Domestic violence at Year 1 was only asked for parents who were currently cohabiting or romantically involved at Year 1 or who had been cohabiting or romantically involved at baseline. The 402 mothers who were not involved in relationships were not included in the present study's analysis. An additional 768 cases were dropped from the analysis due to incomplete information on the explanatory and dependent variables. The final sample of this study included 1,234 mothers, who had complete information on all variables across six surveys.

Background characteristics of the final sample ($N = 1,234$) are presented in Table 1. About 20% of the sample were teen mothers at baseline, 35% were between 20 and 24 years old, 23% were between 25 and 29 years old, and 22% were age 30 or above. For educational attainment, about 32% of the sample did not have a high-school education, 31% had a high school diploma, and 37% had more than a high-school education. About 53% of the sample was African American, 21% were White, 22% were Hispanic, and all other races made up the remaining 3%. At the time of the birth of the focal child, 25% of the mothers were married. At Year 1, approximately 68% of the mothers were unmarried, 42% had incomes below the poverty line, and the average score of parenting stress at Year 1 was 8.61 ($SD = 2.64$; ranging from 4 to 16). About half of the children in the sample were boys, 10% of the children had a low birth weight, and the average child-temperament score was 2.57 ($SD = 0.74$; ranging from 1 to 5). In addition, demographic

differences between mothers who did ($N = 185$) and did not experience ($N = 1,049$) any types of domestic violence at Year 1 were explored. Compared to mothers who did not report domestic violence, mothers who reported domestic violence were less likely to be married at child birth and Year 1, more likely to be in poverty at Year 1, and reported higher levels of parenting stress at Year 1. No significant differences were found for mother's age, education, or race and for children's gender, low birth weight, or temperament at Year 1.

To investigate the influence of sample lost on the findings, baseline characteristics of the final sample and the dropped cases were examined. The final sample was significantly more likely to be African American and less likely to be Hispanic than the dropped cases. No significant differences were found for other background characteristics. Given that African American was more likely to have domestic violence and children's behavior problems in the literature, the sample lost may lead to an upward bias in the effects of domestic violence on child outcomes reported in this study.

Table 1

Demographic Characteristics of the Participants

Variables	All Sample (N = 1,234)	DV Sample ^a (N = 185)	No DV Sample ^b (N = 1,049)	X ² /or F-test
	N (%)	N (%)	N (%)	
Age				
19 and under	239(19.37)	47(25.41)	192(18.30)	
20–24	438(35.49)	66(35.68)	372(35.46)	
25–29	284(23.01)	31(16.76)	253(24.12)	
30 and above	273(22.12)	41(22.16)	232(22.12)	7.80
Education				
Less than high school	394(31.93)	64(34.59)	330(31.46)	
High school diploma	387(31.36)	63(34.05)	324(30.89)	
More than high school	453(36.71)	58(31.35)	395(37.65)	2.69
Race				
White	265(21.47)	39(21.08)	226(21.54)	
Black	659(53.40)	97(52.43)	562(53.57)	
Hispanic	273(22.12)	44(23.78)	229(21.83)	
Others	37 (3.00)	5(2.70)	32(3.05)	0.39
Unmarried at year 1	843(68.31)	146(78.92)	697(66.44)	11.31**
Poverty at year 1	523(42.38)	96(51.89)	427(40.71)	8.06**
Parenting stress at Year 1 (4-16)	8.61(2.64)	9.65(2.89)	8.53(2.59)	5.92*
Child temperament at year 1 (1-5)	2.57(0.74)	2.67(0.81)	2.55(0.74)	3.73
Marital birth	315(25.53)	34(18.38)	281(26.79)	5.85*
Low birth weight	121(9.81)	20(10.81)	101(9.63)	0.25
Boys	636(51.54)	96(51.89)	540(51.48)	0.01

Note. a = Mothers who reported any types of domestic violence at Year 1, b = Mothers who did not report domestic violence at Year 1. Mean (SD) for parenting stress and child temperament at Year 1. F-test for parenting stress and child temperament at Year 1. + $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Measures

Children's behaviors. Early-childhood behavior problems at Year 5 were measured by the partial scale of the Child Behavior Checklist for ages 4 to 18 (CBCL/4-18; Achenbach, 1991). The CBCL/4-18 is a standardized set of measures for assessing problematic behavior of young children. Internalizing behavior problems are related to issues such as poor mental health and social relationships, and externalizing behavior problems involve aggressive and health-damaging behaviors, such as bullying. Internalizing behavior problems were measured in two dimensions: anxious–depressed (14 items) and withdrawn (9 items). Anxious-depressed behavior contained 14 items, such as “child looks unhappy without good reason” and “child is too fearful or anxious.” Withdrawn was comprised of 9 items, such as “child looks shy or timid” and “child is withdrawn; child doesn’t get involved with others.” Based on the final sample of the present study ($N = 1,234$), the internal-consistency reliabilities (Cronbach’s alpha) for the anxious–depressed and withdrawn subscales were 0.66 and 0.58, respectively. Externalizing behavior problems were measured in two dimensions: aggressive (20 items) and delinquent (10 items) problems. Aggressive behavior consisted of 20 items, such as “child gets in many fights” and “child destroys his/her own things.” Delinquent behavior was comprised of 10 items, such as “child is lying or cheating” and “child hangs around with others who get in trouble.” The Cronbach’s alphas for the aggressive and delinquent subscales in the present study were 0.84 and 0.52, respectively. The assessment was based on mothers’ ratings of their children’s behavior problems. The mothers were instructed to rate their children’s behaviors whether the statement was not true (coded 0), sometimes or somewhat true (coded 1), or very true or often true of the

focal child (coded 2). The scores for each of the four problem behaviors—anxious—depressed, withdrawn, aggressive, and delinquent behaviors—were calculated by adding the scores for the items in those categories.

Maternal mental health. Maternal mental health at Year 3 was measured by two dimensions, major depressive symptoms and generalized anxiety disorder. Both conditions were based on the Composite International Diagnostic Interview Short Form (CIDI-SF) (Walters, Kessler, Nelson, & Mroczek ., 2002). For depression, mothers who reported feeling sad, blue, or depressed or who reported losing interest in most things for at least a 2-week period were subsequently asked seven questions related to those feelings. The questions asked whether the mothers lost interest in most things, felt more tired or lower on energy than usual, gained or lost 10 pounds without trying, had trouble falling asleep, had trouble concentrating, felt down, and had thoughts about death. Consistent with the CIDI-SF scoring method, mothers who reported experiencing three or more items were counted as having a major depressive episode. For anxiety disorder, mothers who reported feeling worried or anxious during at least six months or more were subsequently asked seven physiological symptoms related to their worry and anxiety, including whether they were restless, were keyed up or on edge, tired easily, had difficulty concentrating, felt irritable, had tense or aching muscles, and had trouble falling asleep. Mothers who reported a lack of control over the anxiety period of 6 months and experienced three or more physiological symptoms were classified as having generalized anxiety disorder. Both depression and anxiety were measured in a categorical way (1 = *yes*, 0 = *no*).

Parenting. Parenting at Year 3 comprised two subdimensions: the interviewer's

assessment of parenting behavior and the mother's report of using spanking as a disciplinary behavior. The assessment of parenting behavior was measured in three dimensions: unresponsive, harsh, and lack of verbal or social skills. The measures were drawn from subscales of the Home Observation for Measurement of the Environment (HOME; Bradley, 1993). The interviewer's assessment of parenting behavior included whether a mother was unresponsive, harsh, or exhibited a lack of verbal or social skills to the child during the home visit. The unresponsive parenting behavior consisted of six items, which included (a) "she spontaneously vocalized to the child twice," (b) "she responded verbally to child's vocalization," (c) "she told child the name of an object or person," (d) "she spontaneously praised the child at least twice," (e) "her voice conveyed positive feelings toward child," and (f) "she caressed or kissed child at least once." The harsh parenting behavior contained five questions, which included (a) "she did not shout at child," (b) "she did not express annoyance with or hostility toward the child," (c) "she neither slapped nor spanked child during the visit," (d) "she did not scold or criticize child," and (e) "she did not interfere with or restrict child more than 3 times." The lack of verbal or social skills included three items, such as (a) "her speech was distinct and audible," (b) "she initiated verbal exchanges with visitors," and (c) "she conversed freely and easily." One point was assigned for each positive response, which was reverse coded to represent level of negative parenting behaviors. Thus, higher score indicates worse parenting. The Cronbach's alphas for the unresponsive, harsh, and lack of verbal or social skills were 0.75, 0.75, and 0.72, respectively. Spanking is measured by the frequency with which the mother spanked the child when the child misbehaved or acted up in the month prior to the interview. Responses were coded into a 5-level variable: 0 (*never*), 1

(*only once or twice*), 2 (*a few times in the past month*), 3 (*a few times a week*) and 4 (*nearly every day*).

Domestic violence. Domestic violence at Year 1 was measured in three dimensions: physical, emotional, and sexual abuse by child's father. The current study focused on domestic violence toward mother at Year 1, because it allowed to examine the mediating effects of maternal mental health and parenting at Year 3 in relationship between domestic violence toward mother at Year 1 and children's behavior problems at Year 5. Mothers were asked to describe the extent of physical, emotional, and sexual abuse by the child's father. The items "he slapped or kicked you" and "he hit you with his fist or a dangerous object" were used to measure physical violence. Items on emotional violence included (a) "he tried to isolate you from family and friends," (b) "he tried to prevent you from going to work and/or school," and (c) "he withheld money, made you ask for money, or took your money." Sexual abuse was measured with the item, "he tried to make you have sex or do sexual things you didn't want to do." There were three possible responses for each item: "never" "sometimes," and "often." Because only a few cases reported "often," mothers who reported "sometimes" and "often" were combined into one category, "yes." For each of the three dimensions of violence—physical, emotional, and sexual—the mother's response was coded *yes* if she had experienced any of above items in that category or *no* if she had never experienced any of the items (1 = *yes*, 0 = *no*).

Moderators. The current study included two moderators—poverty and marital status—to examine whether the impacts of domestic violence on children's behavioral outcomes varied across socioeconomic categories. For poverty status, this study focused

on poverty at Year 1, because it allowed to measure how children adjusted to poverty at the time of domestic violence. Poverty status at Year 1 was comprised of two categories: poor and nonpoor families. Poverty was measured by a family income-to-needs ratio of less than 1 at Year 1. The family income-to-needs ratio was calculated by dividing total family income by the official poverty threshold and adjusting the result for household size. The poverty line for a family with three people was \$12,931 in 1997. Marital status at Year 1 was measured by two categories: married and unmarried. Unmarried mothers in this study included women who were divorced, widowed, or never married at Year 1.

Controls. The present study controlled for several antecedent characteristics of mothers and children that previous studies have shown to be predictive of domestic violence and child development. This study controlled for child's gender (1 = *boy*, 0 = *girl*) and birth weight (low birth weight was considered lower than 2,500 grams and coded 1, 0 otherwise), and mother's age (19 and under, 20–24, 25–29, and 30 and above), race (White, Black, Hispanic, and other), and educational attainment (less than high school, high school, and more than high school). All of these control variables were measured at the focal child's birth. In addition, although this study used four waves of longitudinal data and examined the effects of domestic violence on mothers and children over time, reverse causality was still possible. For example, a recent study showed that preexisting child behaviors had an impact on parenting and later child behaviors. Shoppe and Sullivan's (2007) longitudinal study using SEM found that marital conflict at Wave 1 affected child behaviors at Wave 3 indirectly through its influence on parenting at Wave 2. However, when preexisting child behaviors (at Wave 1) were included in their model, the significant pathways through parenting were reduced. Likewise, the birth of child and the

subsequent parenting difficulties could foster marital conflict and later parenting difficulties (Belsky, 1980). To address this issue, the present study controlled for parenting stress and child temperament at age 1. Parenting stress was measured as the summing score of four items that asked mothers to rate the difficulty of being a parent (Meadows & McLanahan, 2007). Items on parenting stress included (a) “being a parent is harder than I thought,” (b) “feel trapped by parental responsibilities,” (c) “taking care of my child is much more work than pleasure,” and (d) “feel tired or exhausted from raising a family.” Responses were coded into a 4-level variable: *strongly agree* (4), *agree* (3), *disagree* (2), and *strongly disagree* (1). The responses were reverse coded to represent level of stressful parenting. Higher scores indicated more stressful views of parenting. Child temperament was measured by the average score of six items that asked mothers to rate the focal child’s temperament. Items on child temperament included (a) “the child fusses and cries,” (b) “the child tends to be shy,” (c) “the child is very sociable,” (d) “the child gets upset easily,” (e) “the child reacts strongly when upset,” (f) “the child is very friendly with strangers.” Child temperament was measured with a subscale taken from the emotionality and shyness dimensions of the Emotionality, Activity, and Sociability Temperament Survey for children (Buss & Plomin, 1984; Meadows & McLanahan, 2007). The Cronbach’s alpha of the scale in the present study was 0.47 (emotionality = 0.42, shyness = 0.59). Responses were coded into a 5-level variable: 1 (*not at all*), 2 (*a little*), 3 (*somewhat*), 4 (*a lot*), and 5 (*very much*). Higher scores indicated worse temperament. Child temperament may account for the possibility that a child’s behavior influences parenting and later child behavioral problems.

Analytic Techniques

Descriptive statistics for all measures and correlations among study variables were conducted. The Structural equation modeling (SEM) program AMOS was used to test major hypotheses in the current study. The hypothesized model posited that children's behavior problems at Year 5 were partially determined by the domestic violence toward mother at Year 1 and the associated maternal mental health and parenting at Year 3. Specially, this study examined how domestic violence at Year 1 operates directly and indirectly to affect preschool children's behavior problems at Year 5 through its influence on maternal mental health and parenting at Year 3. Since multiple equations were needed to examine the hypothesized model, structural equation modeling was appropriate to test the theoretical model (Huang et al., 2010).

The SEM model had two components, a measurement model and a structural equation model. The measurement model specified the relations of the observed indicators to their corresponding latent constructs. Structural equation model specified the associations between the latent constructs. A confirmatory factor analysis for observed indicators of all latent constructs was first conducted to identify that the latent constructs were measured well by their corresponding observed indicators in the model. On the basis of the theoretical model and the factor analysis, an alternative model was developed. The specific description for model development was presented in the result section.

A SEM analysis was first conducted to test whether domestic violence toward mother at Year 1 affected children's behavior problems at Year 5 directly and indirectly through maternal mental health and parenting at Year 3. Separate model testing was conducted for internalizing and externalizing behavior problems. Subsequently, this study

incorporated control variables in these analyses to isolate the effects of domestic violence on children's behavior problems.

In addition, a multiple-group SEM analysis was conducted to test whether poverty and marital status moderated the relevant paths in the models. Separate analyses were conducted for externalizing and internalizing behavior problems by poor versus nonpoor families and by unmarried versus married-mother families. A total of four multiple-group models were analyzed. The specific tests for each hypothesis were discussed in the result section.

Factor loadings for the observed indicators and their corresponding latent constructs were provided by the SEM-AMOS program, which indicated if the latent constructs were measured well by their corresponding observed indicators. Path coefficients and their significances (p-value) between latent constructs were provided to present direct links between the variables. The indirect effect parameters and their significance were also provided. The indirect effects were estimated by computation of the product of the path coefficient linking the independent variable and the mediating variables and the path coefficient linking the mediating variables and the dependent variables. The significance of these indirect effects was determined by employing bootstrapping procedures. Bootstrapping function in AMOS was used to obtain 2000 random samples to derive estimates of the indirect effect and their 95% confidence intervals (CIs) (Schoppe-Sullivan, 2009).

To evaluate model fit, several commonly used fit indices were employed. First, the traditional chi-square test of model fit was employed, which indicates adequate fit if it is small and insignificant. Several other fit indices were also used. The root mean square

error of approximation (RMSEA) was used, which indicates appropriate fit if it is less than .08. The goodness of fit index (GFI) and the comparative Fit Index (CFI) were also used, which indicate good fit if values exceed 0.90.

RESULTS

Descriptive Statistics and Correlations

Descriptive statistics of the observed indicators in the hypothesized model appear in Table 2.² At Year 1, about 12% of mothers experienced emotional violence, 4% experienced physical violence, and 4% experienced sexual violence.³ At Year 3, 15% of the sample experienced depression and 5% reported anxiety disorder. Overall, the levels of mothers' negative parenting at Year 3 were low: unresponsive parenting behavior had a mean of 0.83 (ranging from 0 to 6), harsh parenting behavior had a mean of 0.46 (ranging from 0 to 5), and lack of verbal or social skills had a mean of 0.19 (ranging from 0 to 3). Likewise, the level of spanking at Year 3 was low, with a mean of 0.98 (ranging from 0 to 4). At Year 5, the levels of children's behavior problems were low. For internalizing behavior problems, the means for anxious–depressed and withdrawn behavior were 3.33 (ranging from 0 to 18) and 2.14 (ranging from 0 to 13), respectively. For externalizing behavior problems, the mean of aggressive behavior was 10.94 (ranging from 0 to 34) and that of delinquent behavior was 1.91 (ranging from 0 to 12). Differences in main model variables between mothers who did and did not report any types of domestic violence at Year 1 were explored. Compared to mothers who did not report domestic violence, mothers who reported domestic violence were more likely to report depressive symptoms and anxiety disorder and to utilize harsh parenting and spanking. No significant differences between groups were found for unresponsive parenting and lack of verbal or social skills. Overall, the mothers who reported domestic violence rated their children's behavior problems higher than those who did not report domestic violence.

² Descriptive statistics of the control variables were presented in Table 1.

³ Approximately 15% of the sample reported experiencing at least one type of domestic violence.

Table 2

Descriptive Statistics for the Variables in the Hypothesized Model

Main Variables	All Sample (N = 1,234)		DV Sample ^a (N = 185)		No DV Sample ^b (N = 1,049)	
	N (%) /or M (SD)		N (%) /or M (SD)		N (%) /or M (SD)	X ² /or F-test
Domestic violence at Year 1						
Physical violence	48 (3.89)					
Emotional violence	151 (12.24)					
Sexual violence	54 (4.38)					
Maternal mental health at Year 3						
Depression	185 (14.99)		46 (24.86)		139 (13.25)	16.65***
Anxiety	56 (4.54)		23 (12.43)		33 (3.15)	31.31***
Maternal parenting at Year 3						
Unresponsive parenting (0-6)	0.83 (1.34)		0.94 (1.38)		0.81 (1.34)	1.23
Harsh parenting (0-5)	0.46 (1.01)		0.67 (1.23)		0.42 (0.96)	9.56**
Lack of verbal/social skills (0-3)	0.19 (0.59)		0.19 (0.62)		0.19 (0.59)	0.00
Spanking (0-4)	0.98 (1.09)		1.26 (1.21)		0.93 (1.06)	14.87***
Child's internalizing problems at Year 5						
Depressed behavior (0-18)	3.33 (3.05)		4.55 (3.64)		3.11 (2.89)	35.65***
Withdrawn behavior (0-13)	2.14 (2.06)		2.53 (2.38)		2.08 (2.00)	7.63**
Child's externalizing problems at Year 5						
Aggressive behavior (0-34)	10.94 (6.53)		13.05 (6.86)		10.58 (6.40)	23.04***
Delinquent behavior (0-12)	1.91 (1.73)		2.13 (1.92)		1.87 (1.70)	3.53

Note. a = Mothers who reported any types of domestic violence at Year 1, b = Mothers who did not reported domestic violence at Year 1.

N (%) for domestic violence at Year 1 and maternal mental health at Year 3 and Mean (SD) for maternal parenting at Year 3 and child's internalizing and externalizing behavior problems at Year 5.
X²-test for domestic violence and maternal mental health and F-test for maternal parenting and children's behavior problems.
+*p* < .10. **p* < .05. ***p* < .01. ****p* < .001.

Table 3

Correlations of the Observed Variables

	1	2	3	4	5	6	7	8	9	10	11	12
1. Physical												
2. Emotional	.27***											
3. Sexual	.35***	.32***										
4. Depression	.01	.11***	.09**									
5. Anxiety	.12***	.17***	.09**	.39***								
6. Unresponsive	.04	-.02	.03	.06+	-.03							
7. Harsh	.05+	.07*	.04	.05+	-.03	.30***						
8. Lack skills	.03	-.02	-.00	.01	-.04	.54***	.18***					
9. Spanking	.04	.09**	.11***	.08**	.05	-.01	.10***	-.03				
10. Aggressive	.08**	.11***	.10***	.12***	.12***	.08**	.12***	.04	.18***			
11. Delinquent	.06*	.01	.07*	.06*	.10***	.16***	.12***	.11***	.12***	.64***		
12. Depressed	.07*	.13***	.12***	.08**	.09**	.06*	.07*	.04	.09**	.51***	.38***	
13. Withdrawn	.04	.04	.08**	.05+	.04	.10***	.13***	.10***	.05+	.33***	.33***	.52***

Note. $N = 1,234$.

1 = Physical violence, 2 = Emotional violence, 3 = Sexual violence, 4 = Maternal depression, 5 = Maternal anxiety, 6 = Maternal unresponsive parenting, 7 = Maternal harsh parenting, 8 = Maternal lack of verbal or social skills, 9 = Maternal spanking, 10 = Children's aggressive behavior problems, 11 = Children's delinquent behavior problems, 12 = Children's anxious-depressed behavior problems, and 13 = Children's withdrawn behavior problems.

+ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

A correlations matrix of the observed indicators is presented in Table 3. As shown in this table, the strongest correlations were found between the measures assessing the same construct. There were significant correlations among physical, emotional, and sexual violence at Year 1 (ranging from $r = .27$ to $.35$), between maternal depression and anxiety at Year 3 ($r = .39$), between aggressive and delinquent behavior problems at Year 5 ($r = .64$), and between anxious–depressed and withdrawn behavior problems at Year 5 ($r = .52$). There were significant correlations among unresponsive parenting, harsh parenting, and lack of verbal or social skills at Year 3 (ranging from $r = .18$ to $.54$), but these were not correlated to spanking at Year 3. Only harsh parenting was significantly correlated with spanking at Year 3 ($r = .10$).

Overall, indicators of domestic violence at Year 1 (physical, emotional, and sexual) were significantly associated with indicators of maternal mental health at Year 3 (ranging from $r = .09$ to $.17$) and indicators of both externalizing (ranging from $r = .06$ to $.11$) and internalizing (ranging from $r = .07$ to $.13$) behavior problems at Year 5. However, indicators of domestic violence at Year 1 were not significantly related to measures of parenting at Year 3. Only spanking at Year 3 was significantly related to emotional ($r = .09$) and sexual violence ($r = .11$) at Year 1. Indicators of maternal mental health at Year 3 (depression and anxiety) were significantly correlated with most indicators of both externalizing (ranging from $r = .06$ to $.12$) and internalizing (ranging from $r = .08$ to $.09$) behavior problems at Year 5; however, the maternal-mental-health indicators were not related to indicators of parenting at Year 3, and only depression was correlated with spanking at Year 3 ($r = .08$). Overall, parenting indicators at Year 3 (unresponsive, harsh, lack of verbal or social skills, spanking) were significantly

associated with both externalizing (ranging from $r = .08$ to $.18$) and internalizing behavior problems (ranging from $r = .06$ to $.13$) at Year 5.

Path Model Development

Model development was guided by the theoretical model (see Figure 1). A confirmatory factor analysis of the observed indicators of all latent constructs was first conducted to identify the validity of the measurement model in the model. Figure 2 shows the results of the standardized factor loadings for the observed indicators and their corresponding latent constructs and correlations among the latent constructs.

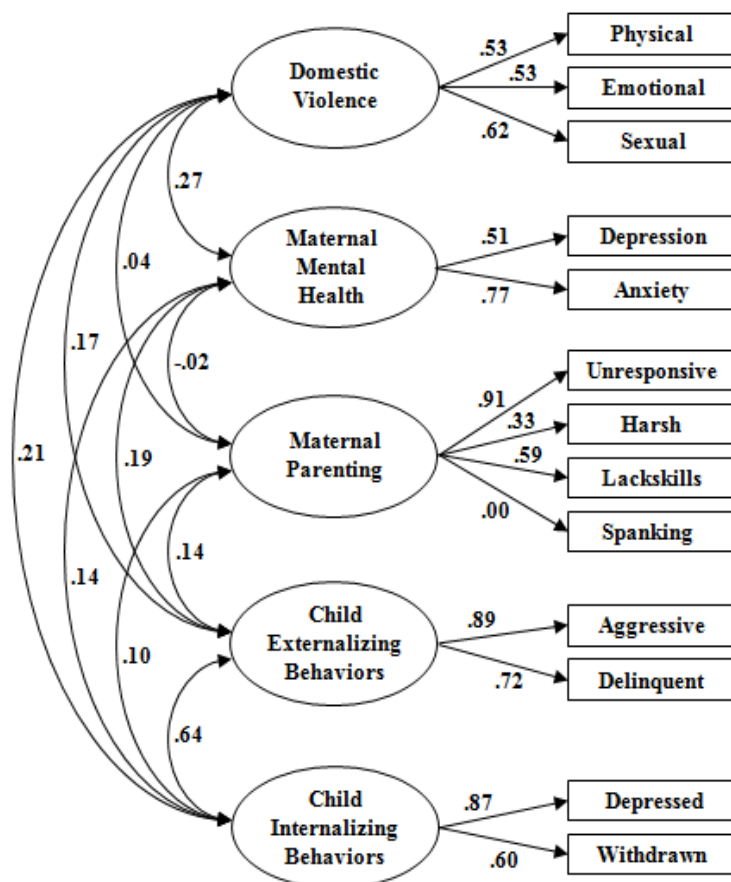


Figure 2. Confirmatory factor analysis for observed indicators of all latent constructs in the theoretical model. $\chi^2 = 199.62$ ($df = 55$, $p < .001$); GFI = .97; CFI = .94; RMSEA = .04.

A chi-square of model fit was significant ($\chi^2 = 199.62$, $df = 55$, $p < .001$),⁴ but other model fit indices provided a good fit to the observed data (GFI = .97; CFI = .94; RMSEA = .04). The factor loadings were all significant, with the exception of one: the factor loading for spanking and its corresponding parenting construct was not significant, indicating that the latent construct *parenting* was not measured well by its indicator, spanking. Most estimates of correlations among the latent constructs were significant, as expected. However, estimates of correlations between domestic violence and parenting and between maternal mental health and parenting were not significant. Thus, the model was modified to obtain a better fit.

Many models were tried on the basis of the theoretical model and the factor analysis, and the resulting alternative model fit the conceptual model and data well (Figure 3). In the alternative model, two dimensions of parenting at Year 3—the interviewer’s assessment of parenting behavior (measured by unresponsive parenting, harsh parenting, and lack of verbal or social skills) and the mother’s report of her use of spanking—were kept separate. Given that parenting was measured well by the three measures of parenting behavior but not measured well by spanking, these two distinct variables—spanking and parenting behavior—could not be combined into a single parenting construct. Therefore, parenting was divided into two constructs, parenting behavior and spanking. The construct *parenting behavior* had three indicators (unresponsive parenting, harsh parenting, and lack of verbal or social skills), and the construct *spanking* was measured by only a single indicator: spanking.

⁴ A small, nonsignificant chi-square value is evidence that the specified model fits the observed data well.

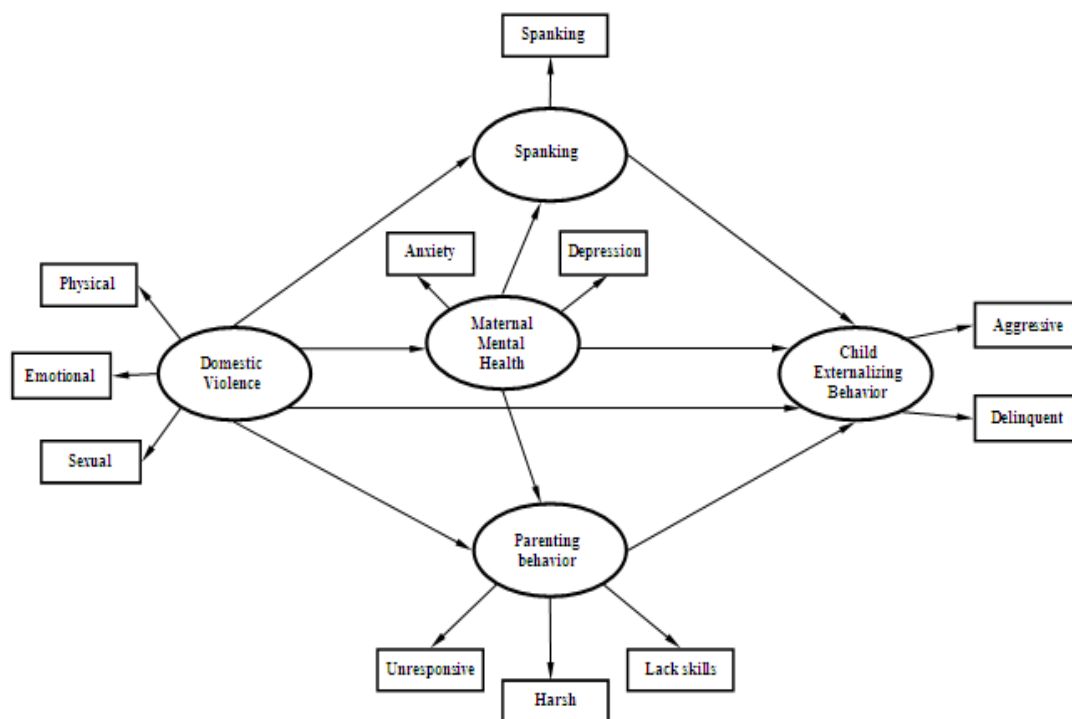


Figure 3. An alternative path model showing the relationships among domestic violence at Year 1, maternal mental health at Year 3, parenting at Year 3, and children's behavior problems at Year 5.

As shown in Figure 3, the alternative model specified the associations between the latent constructs. The model specified that domestic violence at Year 1 was associated with maternal mental health, spanking, and parenting behavior at Year 3; that maternal mental health at Year 3, in turn, was related to spanking and parenting behavior at Year 3 and to children's behavior problems at Year 5; and that spanking and parenting behavior at Year 3, respectively, were associated with children's behavior problems at Year 5. The direct effect of domestic violence at Year 1 on children's behavior problems at Year 5 also was specified. Additionally, the alternative model specified the relationships of the observed indicators to their corresponding latent constructs (Figure 3). The model specified that: 1) Domestic violence had three indicators: physical, emotional, and sexual

violence. 2) Maternal mental health had two indicators: depression and anxiety. 3) Parenting behavior had three indicators: unresponsive parenting behavior, harsh parenting behavior, and lack of verbal or social skills. 4) Children's internalizing behavior problems had two indicators: withdrawn and anxious-depressed behaviors. 5) Externalizing behavior had two indicators: aggressive and delinquent behaviors.

The Mediation Models

The first research question in this present study asked whether domestic violence toward mother at Year 1 was associated with children's externalizing and internalizing behavior problems at Year 5 directly or indirectly through its influence on maternal mental health and parenting at Year 3.

The effects of domestic violence on children's externalizing behavior problems. Figure 4 shows the SEM results for the effects of domestic violence at Year 1 on children's externalizing behavior problems at Year 5. Assessments of model fit were conducted to determine whether the model depicted in Figure 4 fit the observed data. The results showed that the chi-square value was significant ($\chi^2 = 108.61$ $df = 36$, $p < .001$),⁵ but other model fit indices indicated that this model provided a good fit to the observed data (GFI = .98; CFI = .96; RMSEA = .04).

For the path coefficients between latent constructs (Figure 4), the findings indicated that domestic violence at Year 1 was directly associated with poor maternal mental health ($\beta = 0.27$, $p < .001$) at Year 3 and greater use of spanking ($\beta = 0.14$, $p < .05$) at Year 3. However, domestic violence at Year 1 was not directly related to

⁵ When testing the adequacy of the model, a small, nonsignificant chi-square is evidence that the specified model is compatible with the observed data.

parenting behavior at Year 3. Poor maternal mental health at Year 3 had a direct association with greater children's externalizing behavior problems at Year 5 ($\beta = 0.15, p < .01$), but maternal mental health at Year 5 was not directly associated with parenting at Year 3. Poor parenting at Year 3—both parenting behavior ($\beta = 0.15, p < .05$) and spanking ($\beta = 0.19, p < .01$)—was directly associated with greater externalizing behavior problems at Year 5. The direct link between domestic violence at Year 1 and children's externalizing behavior problems at Year 5 approached significance ($\beta = 0.09, p < .10$).

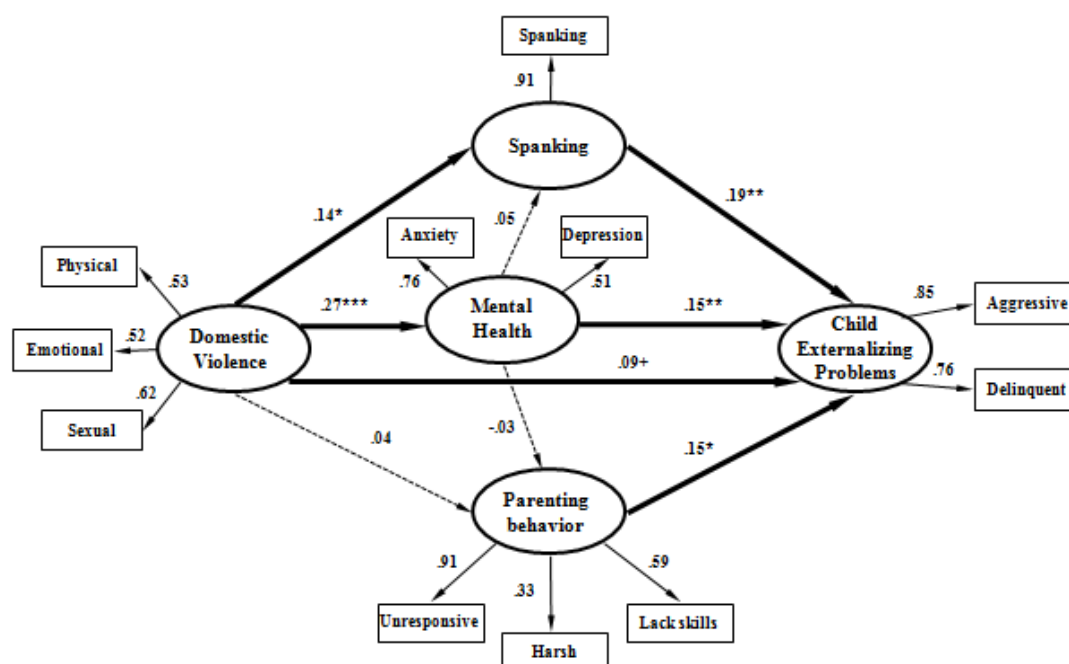


Figure 4. Structural equation modeling of domestic violence on externalizing behavior problems of children. $\chi^2 = 108.61$ ($df = 36, p < .001$); GFI = .98; CFI = .96; RMSEA = .04. + $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4 presents the indirect and total effects of domestic violence at Year 1 on children's externalizing behavior problems at Year 5. The indirect effects of domestic violence at Year 1 on children's externalizing behavior problems at Year 5 through maternal mental health and parenting at Year 3 were significant ($\beta = 0.08, p < .001$).

However, the indirect effect of maternal mental health at Year 3 on externalizing behavior problems at Year 5 through parenting at Year 3 was not significant.

Table 4

Direct and Indirect Effects of Domestic Violence on Children's Externalizing Behavior Problems

Predictor	Dependent variables	Direct effect	Indirect effect	Total effect
Domestic violence	Mental health	.27***	–	.27***
	Spanking	.14*	.01	.16**
	Parenting behavior	.04	–.01	.04
	Externalizing behavior	.09 ⁺	.08***	.17**
Mental health	Spanking	.05	–	.05
	Parenting behavior	–.03	–	–.03
	Externalizing behavior	.15**	.01	.16**
Spanking	Externalizing behavior	.19**	–	.19**
Parenting behavior	Externalizing behavior	.15*	–	.15*

Note. + $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

The results suggested that maternal mental health and spanking at Year 3 partially mediated the effect of domestic violence at Year 1 on children's externalizing behavior problems at Year 5. Domestic violence at Year 1 had an association with poor maternal mental health at Year 3, and such maternal mental health was related to greater externalizing behavior problems at Year 3. Likewise, domestic violence at Year 1 was associated with greater use of spanking at Year 3, which in turn was related to greater externalizing behavior problems at Year 5. However, the effect of domestic violence at Year 1 on externalizing behavior problems at Year 5 was not mediated through parenting behavior at Year 3. The effect of maternal mental health at Year 3 on externalizing behavior problems at Year 5 was also not mediated through parenting at Year 3 in this study. These results, coupled with the direct effect of domestic violence at Year 1 on

children's externalizing behavior problems at Year 5, partially supported the hypotheses that maternal mental health and parenting at Year 3 mediated the association between domestic violence at Year 1 and children's externalizing behavior problems at Year 5.

The effects of domestic violence on children's internalizing behavior problems. Figure 5 shows the SEM results for predicting children's internalizing behavior problems at Year 5. The chi-square was significant ($\chi^2 = 92.16$ $df = 36$, $p < .001$), but other model fit indices suggested that this model provided a good fit to the data (GFI = .99; CFI = .96; RMSEA = .03). Overall, the results for children's internalizing behavior problems at Year 5 were consistent with the results for externalizing behavior problems at Year 5. Compared to the results for children's externalizing behavior problems, however, the direct effect of domestic violence at Year 1 was stronger for internalizing behavior problems at Year 5.

With respect to the path coefficients, domestic violence at Year 1 was directly associated with poor maternal mental health ($\beta = 0.27$, $p < .01$) at Year 3, greater use of spanking ($\beta = 0.14$, $p < .01$) at Year 3, and greater internalizing behavior problems at Year 5 ($\beta = 0.17$, $p < .01$). However, domestic violence at Year 1 was not related to parenting behavior at Year 3. Poor maternal mental health at Year 3 was directly related to greater internalizing behavior problems at Year 5 ($\beta = 0.09$, $p < .05$) but not to parenting at Year 3. Poor parenting at Year 3—both parenting behavior ($\beta = 0.10$, $p < .05$) and spanking ($\beta = 0.08$, $p < .05$)—was directly associated with greater internalizing behavior problems of children at Year 5.

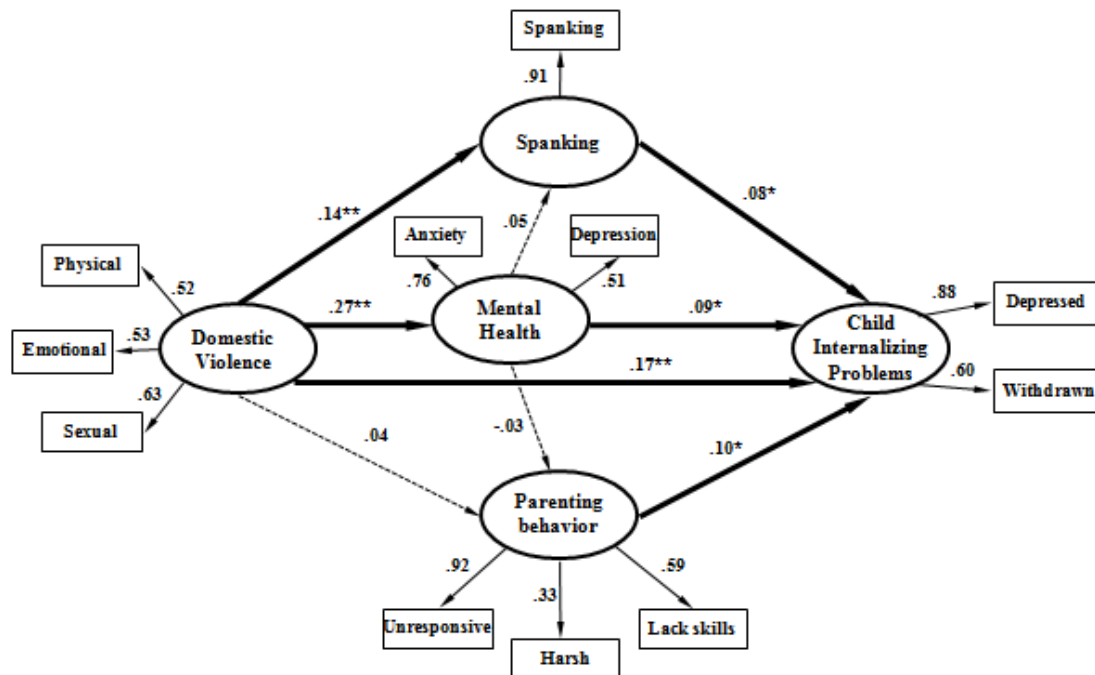


Figure 5. Structural equation modeling of domestic violence on internalizing behavior problems of children. $\chi^2 = 92.16$ ($df = 36$, $p < .001$); GFI = .99; CFI = .96; RMSEA = .03. $+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

The indirect effects of domestic violence at Year 1 on internalizing behavior problems of children at Year 5 were significant ($\beta = 0.04$, $p < .01$), indicating that maternal mental health and parenting at Year 3 partially mediated the relationship between domestic violence at Year 1 and children's internalizing behavior problems at Year 5 (Table 5). The indirect effect of maternal mental health at Year 3 on externalizing behavior problems at Year 5 through parenting at Year 3 was not significant.

The results showed that the effect of domestic violence at Year 1 on children's internalizing behavior problems at Year 5 was partially mediated through maternal mental health and spanking at Year 3. However, this effect was not mediated through parenting behavior at Year 3. The effect of maternal mental health at Year 3 on children's internalizing behavior problems at Year 5 was also not mediated through parenting at

Year 3. It was notable that the direct association between domestic violence at Year 1 and children's internalizing behavior problems at Year 5 was still strong, even when including the mediators. Thus, although maternal mental health and spanking at Year 3 mediated the relationship between domestic violence at Year 1 and internalizing behavior problems at Year 5, full mediation was not supported.

Table 5

Direct and Indirect Effects of Domestic Violence on Children's Internalizing Behavior Problems

Predictor	Dependent variables	Direct effect	Indirect effect	Total effect
Domestic violence	Mental health	.27**	—	.27**
	Spanking	.14**	.01	.16**
	Parenting behavior	.04	-.01	.03
	Internalizing behavior	.17**	.04**	.21**
Mental health	Spanking	.05	—	.05
	Parenting behavior	-.03	—	-.03
	Internalizing behavior	.09*	.00	.09*
Spanking	Internalizing behavior	.08*	—	.08*
Parenting behavior	Internalizing behavior	.10*	—	.10*

Note. + $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Change in the effects of domestic violence on children's behavior problems after control variables included in the analyses. Further analyses were conducted to determine whether the relevant paths in the models remained significant after controlling other variables that were predictive of domestic violence and children's behavior problems. Maternal control variables included mother's age, educational attainment, race, marital status at child's birth, poverty status at Year 1, marital status at Year 1, parenting stress at Year 1. Child control variables included child's gender, low birth weight, and temperament at Year 1.

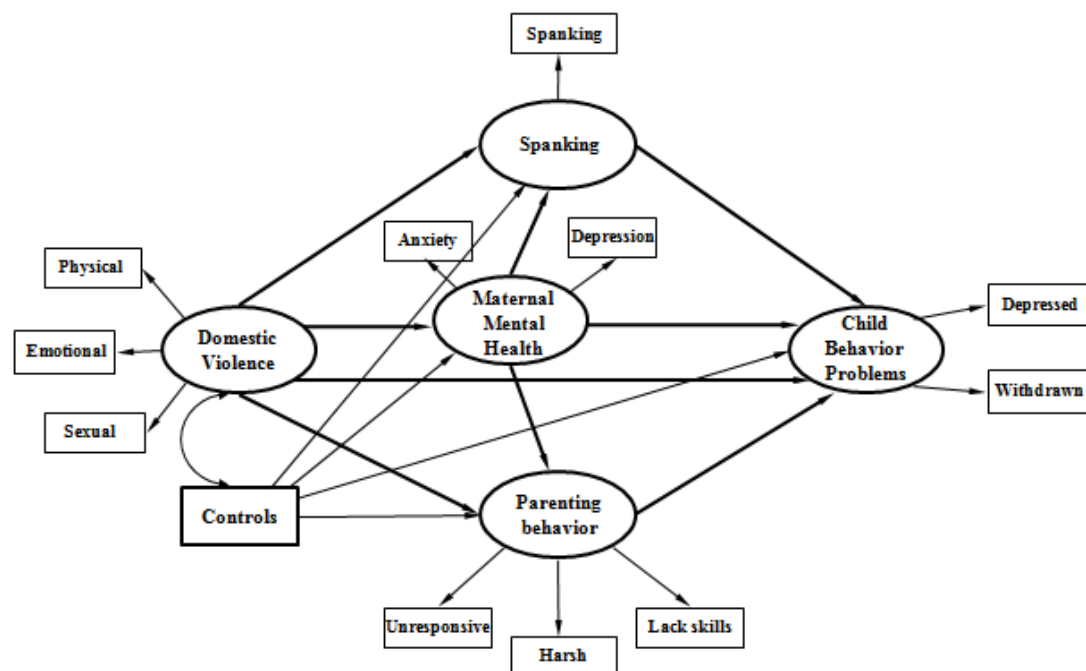


Figure 6. A fully-controlled model that incorporated other variables in the analyses. The associations between control variables and main variables were specified in the full model; Control variables were associated with maternal mental health at Year 3, maternal spanking and parenting behavior at Year 3, and children's behavior problems at Year 5, respectively. Child gender (boys=1) was only associated with children's behavior problems. Covariances between control variables and domestic violence were also specified.

The fully-controlled model that included all control variables jointly in the analyses was first conducted (Figure 6). Separate analyses were conducted for externalizing and internalizing behavior problems of children. The results from the fully-controlled models showed that the associations among latent variables in the models did not change considerably and remained significant even after controlling other variables, with one exception; the link between maternal mental health at Year 3 and children's internalizing behavior problems at Year 5 was no longer significant when the control variables were included in the model. The indirect effect of domestic violence at Year 1 on children's internalizing behavior problems at Year 5 was still significant. Regarding

the effects of control variables on child outcomes, child gender, child temperament at Year 1, and parenting stress at Year 1 were significantly associated with either externalizing or internalizing behavior problems of children at Year 5 directly or indirectly through maternal mental health and parenting at Year 3. Other control variables were not significantly associated with both types of behavior problems of children. However, model-fit tests for the fully-controlled models revealed that the models did not fit the data well. It might be because too many equations were required to test the fully-controlled models. Structural equation modeling could be suitable to examine multiple equations, while the number of variables in the equations had to be limited when estimating the equations jointly because the model otherwise would have been intractable (Huang et al., 2010). Therefore, the fully-controlled models in this study included the key control variables that had significant direct or indirect associations with children's externalizing and internalizing behavior problems and excluded other control variables that were not significantly associated with children's behavior problems in the models. The key control variables were child gender, child temperament at Year 1, and parenting stress at Year 1. No significant differences were found between the results for the models that included all control variables in the analyses and the results for the models that included the key significant control variables in the analyses, other than model fits.

Change in the effects of domestic violence on children's externalizing behavior problems. Figure 7 shows the results for the fully-controlled model predicting children's externalizing behavior problems at Year 5. The path coefficients between control variables and main variables were not displayed in the Figure 7 to focus on the paths among main variables in the model. The path coefficients between control variables and

main variables were only presented in Table 6. The results showed that the chi-square value was significant ($\chi^2 = 152.65$, $df = 57$, $p < .001$), but other model fit indices indicated that this fully-controlled model provided an acceptable fit to the observed data (GFI = .98; CFI = .95; RMSEA = .04). The results of the fully-controlled model showed that the paths among main variables in the models did not change and remained significant even when the control variables were included in the analysis.

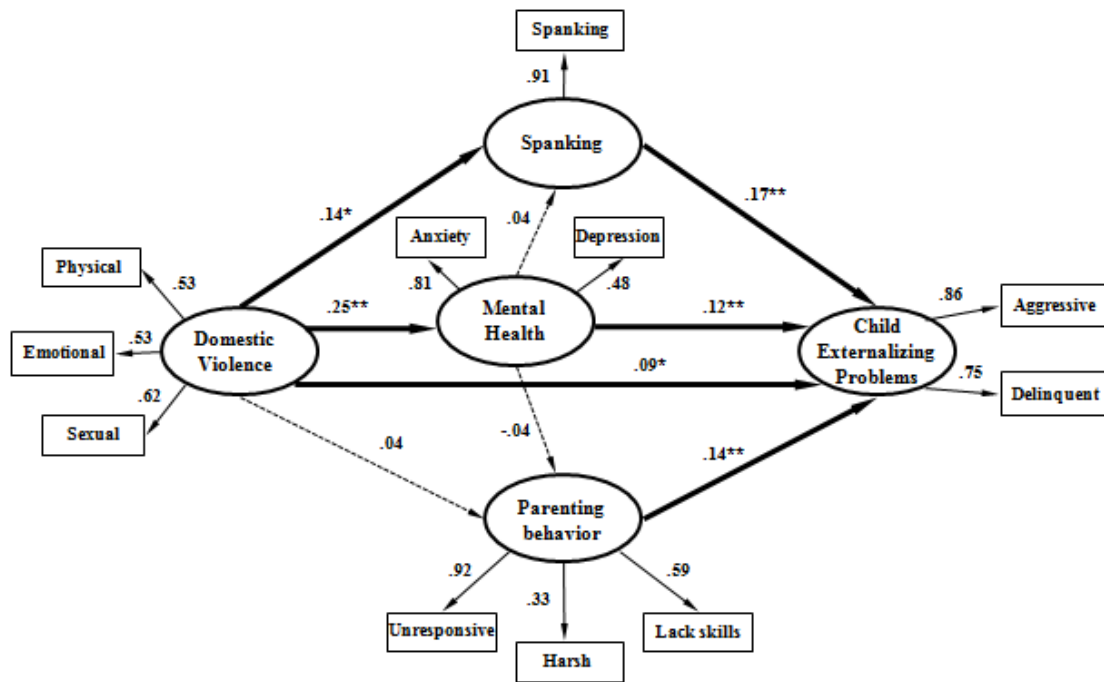


Figure 7. The fully-controlled SEM of domestic violence on externalizing behavior problems of children. $\chi^2 = 152.65$ ($df = 57$, $p < .001$); GFI = .98; CFI = .95; RMSEA = .04. + $p < .10$. * $p < .05$. ** $p < .01$ *** $p < .001$.

As shown in Table 6, the indirect effect of domestic violence on children's externalizing behavior problems was still significant ($\beta = 0.06$, $p < 0.01$) after controlling other variables, indicating that the effects of domestic violence at Year 1 on children's externalizing behavior problems at Year 5 were mediated through maternal mental health and spanking at Year 3. Notably, the direct effect of domestic violence was significant (β

= 0.09, $p < 0.05$), even after controlling mediators and other variables. Thus, full mediation was not supported.

Table 6

Direct and Indirect Effects of Domestic Violence on Children's Externalizing Behavior Problems, With Controls for Other Variables

Predictor	Dependent variables	Direct effect	Indirect effect	Total effect
Domestic violence	Mental health	.25**	—	.25**
	Spanking	.14*	.01	.15**
	Parenting behavior	.04	-.01	.03
	Externalizing problems	.09*	.06**	.15**
Parenting stress	Mental health	.07*	—	.07*
	Spanking	.11**	.00	.11**
	Parenting behavior	.06	-.00	.05
	Externalizing problems	.10*	.04**	.14**
Child temperament	Mental health	.07*	—	.07 ⁺
	Spanking	-.03	.00	-.03
	Parenting behavior	.04	-.00	.04
	Externalizing problems	.12**	.01	.13**
Mental health	Spanking	.04	—	.04
	Parenting behavior	-.04	—	-.04
	Externalizing problems	.12**	.00	.12**
Spanking	Externalizing problems	.17**	—	.17**
Parenting behavior	Externalizing problems	.14**	—	.14**
Boys	Externalizing problems	.09*	—	.09*

Note. ⁺ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Regarding the effects of control variables, higher level of parenting stress at Year 1 was directly associated with poor maternal mental health at Year 3 ($\beta = 0.07$, $p < 0.05$), greater use of spanking at Year 3 ($\beta = 0.11$, $p < 0.01$), and greater externalizing behavior problems for children at Year 5 ($\beta = 0.10$, $p < 0.05$). The indirect effect of parenting stress at Year 1 on children's externalizing behavior problems at Year 5 was significant,

indicating that the effects of parenting stress were mediated through maternal mental health and spanking at Year 3. The effects of child temperament at Year 1 on children's externalizing behavior problems at Year 5 were only direct; Higher level of child temperament at Year 1 was directly associated with greater externalizing behavior problems of children at Year 5 ($\beta = 0.12, p < 0.01$). Boys exhibited more externalizing behavior problems ($\beta = 0.09, p < 0.05$).

Change in the effects of domestic violence on children's internalizing behavior problems. Figure 8 shows the results for the fully-controlled model predicting children's internalizing behavior problems at Year 5. The chi-square was significant ($\chi^2 = 139.03, df = 57, p < .001$), but other model fit indices suggested that this model provided a good fit to the data (GFI = .98; CFI = .95; RMSEA = .03). The results showed that most paths among main variables in the model remained significant even after controlling other variables, with one exception; the path between maternal mental health at Year 3 and children's internalizing behavior problems at Year 5 was no longer significant when control variables were included in the model. Still, the indirect effect of domestic violence at Year 1 on children's internalizing behavior problems at Year 5 was significant ($\beta = 0.03, p < 0.05$; Table 7). The results of the fully-controlled model suggested that the effect of domestic violence at Year 1 on children's internalizing behavior problems at Year 5 was partially mediated through maternal spanking at Year 3. However, the effects of domestic violence were not mediated through maternal mental health at Year 3 when control variables were included in the model. Notably, the direct effect of domestic violence was still strong even after controlling mediators and other variables ($\beta = 0.17, p < 0.01$). Thus, full mediation was not supported.

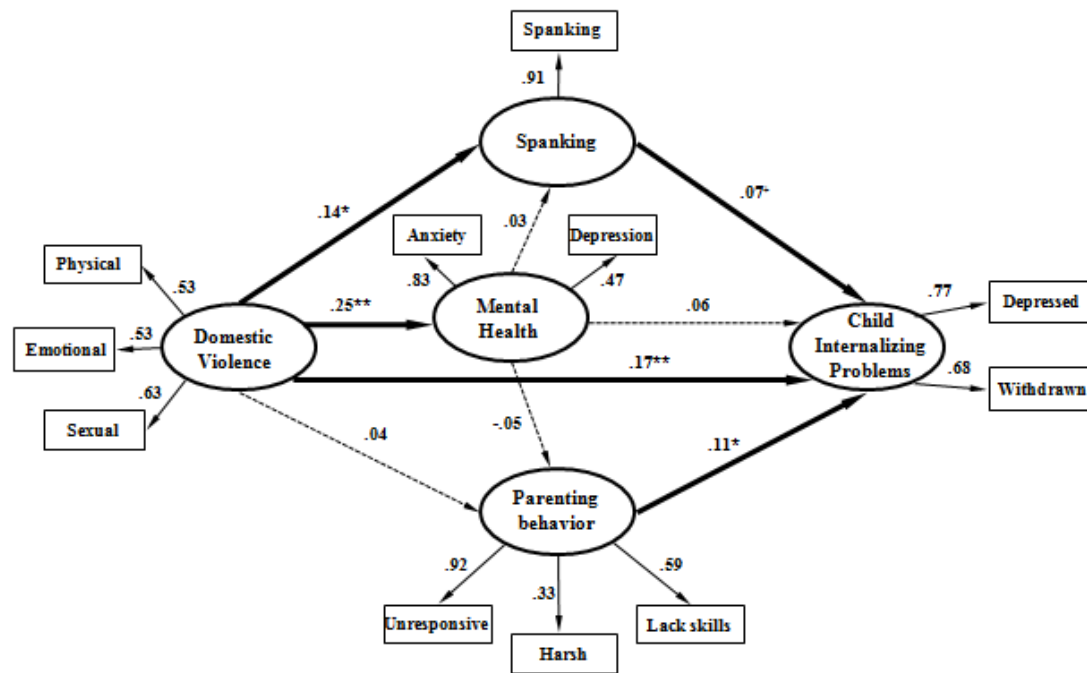


Figure 8. The fully-controlled SEM of domestic violence on internalizing behavior problems of children. $\chi^2 = 139.03$ ($df = 57$, $p < .001$); GFI = .98; CFI = .95; RMSEA = .03. + $p < .10$. * $p < .05$. ** $p < .01$ *** $p < .001$.

Regarding the effects of control variables, higher level of parenting stress at Year 1 was directly associated with poor maternal mental health ($\beta = 0.7$, $p < 0.01$), greater use of spanking ($\beta = 0.11$, $p < 0.01$), poor parenting behavior at Year 3 ($\beta = 0.6$, $p < 0.10$), and greater internalizing behavior problems for children at Year 5 ($\beta = 0.10$, $p < 0.05$). The indirect effect of parenting stress on children's internalizing behavior problems was significant ($\beta = 0.02$, $p < 0.01$), indicating that the effects of parenting stress at Year 1 on children's internalizing behavior problems at Year 5 were mediated through its effects on parenting at Year 3 (both spanking and parenting behavior). Higher level of child temperament at Year 1 was directly associated with poor maternal mental health ($\beta = 0.07$, $p < 0.05$) and children's internalizing behavior problems at Year 5 ($\beta = 0.18$, $p < 0.01$). But the indirect effect of child temperament at Year 1 on children's internalizing

behavior problems at Year 5 was not significant. Child gender had no effect on children's internalizing problems.

Table 7

Direct and Indirect Effects of Domestic Violence on Children's Internalizing Behavior Problems, With Controls for Other Variables

Predictor	Dependent variables	Direct effect	Indirect effect	Total effect
Domestic violence	Mental health	.25**	—	.25**
	Spanking	.14*	.01	.15**
	Parenting behavior	.04	-.01	.03
	Internalizing problems	.17**	.03*	.20**
Parenting stress	Mental health	.07*	—	.07*
	Spanking	.11**	.00	.11**
	Parenting behavior	.06 ⁺	-.00	.05
	Internalizing problems	.10*	.02**	.12**
Child temperament	Mental health	.07*	—	.07*
	Spanking	-.03	.00	-.03
	Parenting behavior	.04	-.00	.04
	Internalizing problems	.18**	.01	.19**
Mental health	Spanking	.03	—	.03
	Parenting behavior	-.05	—	-.05
	Internalizing problems	.06	-.00	.06
Spanking	Internalizing problems	.07 ⁺	—	.07 ⁺
Parenting behavior	Internalizing problems	.11*	—	.11*
Boys	Internalizing problems	.05		.05

Note. + $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

The Moderation Models

A subsequent question in this study was whether the effects of domestic violence toward mother at Year 1 on children's behavior problems at Year 5 would be different for poor versus nonpoor families and for married versus unmarried families.

A multiple-group SEM using AMOS was used to determine whether the

relationships among latent constructs in the fully-controlled models differed by groups. The multiple-group analyses compared a free model in which paths in the model were allowed to vary freely across groups *to* constrained models in which paths in the model were constrained to be equal across groups (Mistry et al., 2002; Schoppe-Sullivan, 2007). This procedure required that the factor loadings, path coefficients, covariance, and residuals in the SEMs were constrained to be equal across groups. Comparing the chi-square statistics obtained for the constrained models *to* those for the free model made it possible to ascertain whether poverty and marital status moderated the paths in the model. If the constrained models, compared to the free model, resulted in a significant increase in chi-square statistics, the free model would be more adequate than the constrained models, and paths within the model were different across groups (Mistry et al., 2002). This study presented the result of the model comparison between a free model and a constrained model in which the factor loadings, path coefficients, and structural covariances in the model were constrained to be equal across groups.

The models for multi-group analyses included control variables – child gender, child temperament at Year 1, and parenting stress at Year 3 – in the models, since the paths among main variables in the models were slightly changed when the control variables included in the model. To focus on the effects of domestic violence, the path coefficients between control variables and main variables in the fully-controlled models were not presented in the result section. The specific path coefficients between control variables and main variables were displayed in appendix B - E. Separate analyses were conducted for externalizing and internalizing behavior problems by poor versus nonpoor families and by unmarried-mother versus married-mother families. A total of four

multiple-group models were analyzed. All four multi-group models provided acceptable fits to the data.

The moderation effect of poverty status. Data were analyzed for 523 poor families and 711 nonpoor families. Table 8 displays the sample characteristics with respect to the model variables between these two groups.

Table 8

Descriptive Statistics for the main Variables by Poverty Status

Variables	Poor group (<i>n</i> = 523)	Nonpoor group (<i>n</i> = 711)	<i>X</i> ² /or <i>F</i> -test
	<i>N</i> (%) /or M(SD)	<i>N</i> (%) /or M(SD)	
Domestic violence			
Physical violence	34(6.50)	14(1.97)	16.55***
Emotional violence	79(15.11)	72(10.13)	6.95**
Sexual violence	31(5.93)	23(3.23)	5.22*
Maternal mental health			
Depression	84(16.6)	101(14.21)	0.81
Anxiety	26(4.97)	30(4.22)	0.39
Maternal parenting			
Unresponsive	1.10(1.52)	0.64(1.17)	36.23***
Harsh parenting	0.56(1.11)	0.38(0.92)	9.45**
Lack of skills ^a	0.29(0.71)	0.13(0.47)	23.10***
Spanking	0.89(1.08)	1.04(1.09)	5.10**
Child externalizing problems			
Aggressive	11.67(6.88)	10.42(6.22)	11.22***
Delinquent	2.11(1.84)	1.77(1.65)	11.52***
Child internalizing problems			
Depressed	3.47(3.10)	3.23(3.01)	1.76
Withdrawn	2.35(2.14)	1.99(1.99)	9.94**

Note. *N* = 1,234. *a* = Maternal lack of verbal or social skills.

N (%) for domestic violence and maternal mental health and Mean (SD) for maternal parenting and children's behavior problems. *X*²-test for domestic violence and maternal mental health and *F*-test for maternal parenting and children's behavior problems.

+*p* < .10. **p* < .05. ***p* < .01. ****p* < .001.

The data showed that domestic violence toward mother at Year 1 was not equally distributed between the poor and nonpoor groups. Although domestic violence at Year 1 was experienced by both groups, domestic violence was more common in the poor group than the nonpoor group. An interesting finding was that poor mothers were more likely to use negative parenting behaviors (unresponsive parenting, harsh parenting, and lack of verbal or social skills) than nonpoor mothers, but nonpoor mothers used spanking more frequently than poor mothers. Poor mothers rated their children's behavior problems higher than the nonpoor group.

The effects of domestic violence on children's externalizing behavior problems by poverty status. Multiple-group analyses were first conducted to determine whether the effects of domestic violence toward mother at Year 1 on children's externalizing behavior problems at Year 5 differed for poor versus nonpoor families. For the full model predicting children's externalizing behavior problems, the results revealed that the constrained model resulted in a significant increase in chi-square statistics ($\chi^2_{\text{diff}} = 105.93[234.03-339.97]$, $df = 34[114-148]$, $p < .001$), indicating that the free model was more adequate than the constrained model and that the factor loadings and path coefficients in the model differed by groups. For the free model, assessments of model fit were conducted to determine whether the mode depicted in Figure 9 fit the observed data. The results indicated that the chi-square was significant ($\chi^2 = 234.03$, $df = 114$, $p < .001$), but the other model fit indices provided an adequate fit to the data (GFI = .97; CFI = .94; RMSEA = .03). Figure 9 displays the factor loadings and path coefficients in poor versus nonpoor group, respectively.

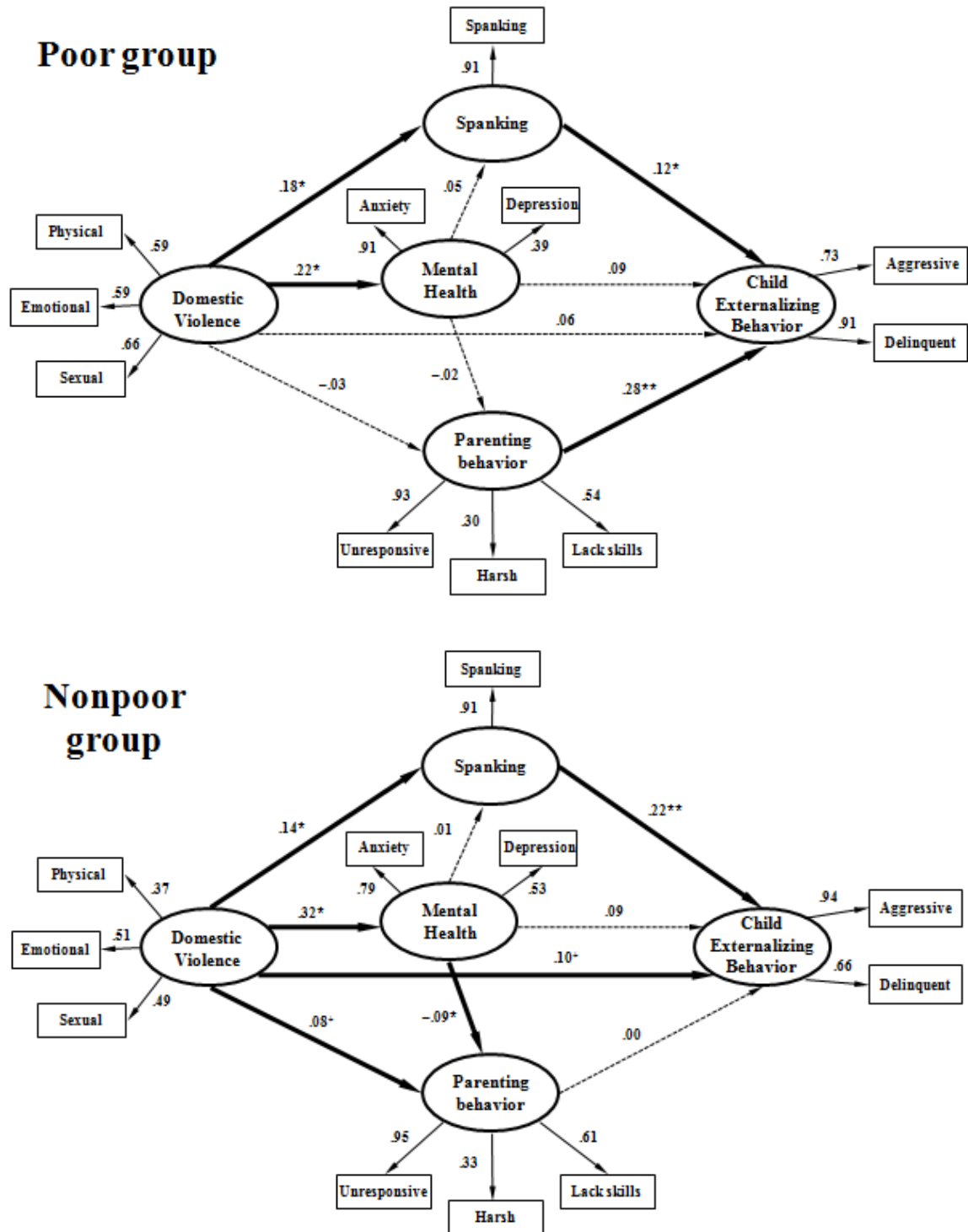


Figure 9. The fully-controlled SEM of domestic violence on externalizing behavior problems of children in poor and nonpoor groups. $\chi^2 = 234.03$ ($df = 114$, $p < .001$); GFI = .97; CFI = .94; RMSEA = .03. + $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

For the poor group, domestic violence at Year 1 was directly associated with poor maternal mental health ($\beta = 0.22, p < .05$) and greater use of spanking ($\beta = 0.18, p < .05$) at Year 3 but not with parenting behavior at Year 3 or children's externalizing behavior problems at Year 5. Maternal mental health at Year 3 was not directly related to children's externalizing behavior problems at Year 5 and parenting at Year 3. Poor parenting at Year 3—both spanking ($\beta = 0.12, p < .05$) and parenting behaviors ($\beta = 0.28, p < .01$)—were directly associated with greater externalizing behavior problems for children at Year 5. As shown in Table 9, no indirect effects were found between domestic violence at Year 1 and children's externalizing behavior problems at Year 5 and between maternal mental health at Year 3 and children's externalizing behavior problems at Year 5.

For the nonpoor group, domestic violence at Year 1 was directly related to poor maternal mental health ($\beta = 0.32, p < .05$), greater use of spanking ($\beta = 0.14, p < .05$), and poor parenting behavior ($\beta = 0.08, p < .10$) at Year 3, as well as to greater children's externalizing behavior problems at Year 5 ($\beta = 0.10, p < .10$). The links between domestic violence and parenting behavior and between domestic violence and children's externalizing behavior problems were only marginally significant. Poor maternal mental health at Year 3 had significant association with positive parenting behavior ($\beta = -0.09, p < .05$) but not with spanking. Maternal mental health at Year 3 was not directly related to children's externalizing behavior problems at Year 5. Spanking at Year 3 was directly related to greater externalizing behavior problems at Year 5 ($\beta = 0.22, p < .01$), whereas parenting behavior at Year 3 was not. The indirect effect of domestic violence at Year 1 on children's externalizing behavior problems at Year 5 was significant ($\beta = 0.06, p < .01$), indicating that maternal spanking at Year 3 mediated the relationship between

domestic violence at Year 1 and children's externalizing behavior problems at Year 5. However, the indirect effect of maternal mental health at Year 3 on children's externalizing behavior problems at Year 5 through parenting at Year 3 was not significant.

Table 9

Direct and Indirect Effects of Domestic Violence on the Externalizing Behavior Problems of Children in Poor and Nonpoor Groups, With Controls for Other Variables

Predictors	Dependent variables	Poor		
		Direct effect	Indirect effect	Total effect
Domestic Violence	Mental health	.22*	–	.22*
	Spanking	.18*	.01	.19**
	Parenting behavior	–.03	–.00	–.03
	Externalizing problems	.06	.03	.10
Mental health	Spanking	.05		.05
	Parenting behavior	–.02		–.02
	Externalizing problems	.09	.00	.09
Spanking	Parenting behavior	.12*	–	.12*
Parenting behavior	Externalizing problems	.28**	–	.28**

Predictors	Dependent variables	Nonpoor		
		Direct effect	Indirect effect	Total effect
Domestic violence	Mental health	.32*		.32*
	Spanking	.14*	.00	.14*
	Parenting behavior	.08 ⁺	–.03*	.05
	Externalizing problems	.10 ⁺	.06**	.16**
Mental health	Spanking	.01		.01
	Parenting behavior	–.09*		–.09*
	Externalizing problems	.09	.00	.09
Spanking	Externalizing problems	.22**		.22**
Parenting behavior	Externalizing problems	.00		.00

Note. ⁺ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

These findings indicated that the effects of domestic violence at Year 1 on children's externalizing behavior problems at Year 5 differed by poverty status at Year 1.

Surprisingly, the results in this study showed that poor families were less affected by domestic violence and its associated maternal dysfunction than nonpoor families. For nonpoor families, the effects of domestic violence at Year 1 on children's externalizing behavior problems at Year 5 were partially mediated through maternal spanking at Year 3; domestic violence at Year 1 had a direct association with greater use of spanking at Year 3, which was in turn related to increased children's externalizing behavior problems at Year 5. However, the mediation effects were not found in the poor group. Specifically, in the poor group, domestic violence at Year 1 had its own effects on both maternal mental health and spanking at Year 3, but maternal mental health and spanking did not mediate the relationship between domestic violence at Year 1 and externalizing behavior problems of children at Year 5. In addition, domestic violence at Year 1 had a direct effect on children's externalizing behavior problems at Year 5 even when controlling mediators and other variables for the nonpoor group, whereas this effect was not found for the poor group. Therefore, the results in this study did not support the hypothesis that children living in poverty would be more affected by domestic violence than those not living in poverty, in terms of children's externalizing behavior problems.

The effects of domestic violence on children's internalizing behavior problems by poverty status. For the full model predicting children's internalizing behavior problems at Year 5, the model comparisons showed that the constrained model resulted in a significant increase in the chi-square statistic ($\chi^2_{\text{diff}} = 126.47[232.31-358.78]$, $df = 34[114-148]$, $p < .001$), indicating that the free model was more adequate than the constrained model and that the factor loadings and path coefficients in the model were different between the poor and non-poor groups.

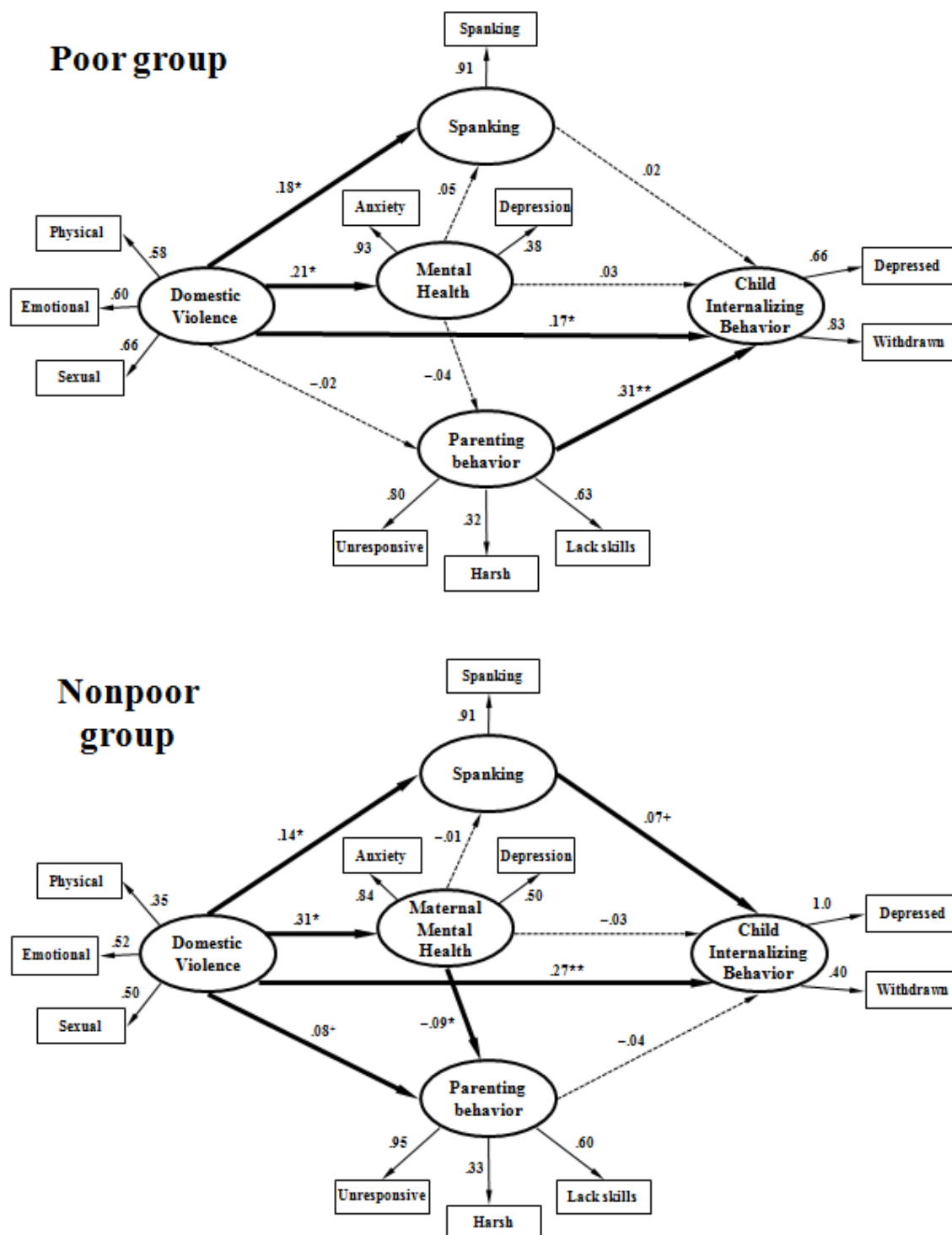


Figure 10. The fully-controlled SEM of domestic violence on internalizing behavior problems of children in poor and nonpoor groups. $\chi^2 = 232.31$ ($df = 114$ $p < .001$); GFI = .97; CFI = .93; RMSEA = .03. + $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

For the free model, the results of model fit test indicated that the chi-square was significant ($\chi^2 = 232.31$, $df = 114$, $p < .001$), but other model fit indices provided an adequate fit to the data (GFI = .97; CFI = .93; RMSEA = .03; Figure 10).

For the poor group, domestic violence at Year 1 was directly associated with poor maternal mental health at Year 3 ($\beta = 0.21$, $p < .05$), greater use of spanking at Year 3 ($\beta = 0.18$, $p < .05$), and greater internalizing behavior problems of children at Year 5 ($\beta = 0.17$, $p < .05$). However, domestic violence at Year 1 was not directly associated with parenting behavior at Year 3, although parenting behavior did exhibit a strong effect on children's externalizing behavior problems at Year 5 ($\beta = 0.31$, $p < .01$). Maternal mental health at Year 3 was not directly related to parenting at Year 3 or children's internalizing behavior problems at Year 5. Unlike parenting behavior, spanking at Year 3 was not related to children's internalizing behavior problems at Year 5. As shown in Table 10, no indirect associations were found between domestic violence at Year 1 and children's internalizing behavior problems at Year 5 or between maternal mental health at Year 3 and children's internalizing behavior problems at Year 5.

For the non-poor group, domestic violence was directly associated with poor maternal mental health at Year 3 ($\beta = 0.31$, $p < .05$), greater use of spanking at Year 3 ($\beta = 0.14$, $p < .05$), and greater internalizing behavior problems of children at Year 5 ($\beta = 0.27$, $p < .01$). Domestic violence at Year 1 had a marginally significant association with poor parenting behavior at Year 3 in this group ($\beta = 0.08$, $p < .10$). Poor maternal mental health at Year 3 was directly associated with positive parenting behavior ($\beta = -0.09$, $p < .05$), but not with spanking. Maternal mental health had no direct association with children's internalizing behavior problems at Year 5. Greater use of spanking at Year 3, but not

parenting behavior, had a marginally significant association with greater internalizing behavior problems ($\beta = 0.07, p < .10$). Similar to the poor group, no indirect associations were found between domestic violence at Year 1 and children's internalizing behavior problems at Year 5 or between maternal mental health at Year 3 and children's internalizing behavior problems at Year 5 in the non-poor group (Table 10).

Table 10

Direct and Indirect Effects of Domestic Violence on Internalizing Behavior Problems of Children in Poor and Nonpoor Groups, With Controls for Other Variables

Predictors	Dependent variables	Poor		
		Direct effect	Indirect effect	Total effect
Domestic violence	Mental health	.21 [*]	–	.21 [*]
	Spanking	.18 [*]	.01	.19 [*]
	Parenting behavior	–.02	–.01	–.03
	Internalizing problems	.17 [*]	.00	.17 [*]
Mental health	Spanking	.05	–	.05
	Parenting behavior	–.04	–	–.04
	Internalizing problems	.03	–.01	.02
Spanking	Internalizing problems	.02	–	.02
Parenting behavior	Internalizing problems	.31 ^{**}	–	.31 ^{**}

Predictors	Dependent variables	Nonpoor		
		Direct effect	Indirect effect	Total effect
Domestic violence	Mental health	.31 [*]	–	.31 [*]
	Spanking	.14 [*]	–.00	.14 [*]
	Parenting behavior	.08 ⁺	–.03 [*]	.05
	Internalizing problems	.27 ^{**}	.00	.27 ^{**}
Mental health	Spanking	–.01	–	–.01
	Parenting behavior	–.09 [*]	–	–.09 [*]
	Internalizing problems	–.03	.00	–.03
Spanking	Internalizing problems	.07 ⁺	–	.07 ⁺
Parenting behavior	Internalizing problems	–.04	–	–.04

Note. + $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

The results showed that poverty status moderated the effects of domestic violence at Year 1 on children's internalizing behavior problems at Year 5. Domestic violence at Year 1 had a direct effect on children's internalizing behavior problems at Year 5 even after controlling mediators and other variables in both poor and non-poor groups. Overall impacts, however, were bigger for non-poor than for poor families, in terms of the direct and total effects of domestic violence. Therefore, the findings in this analysis did not support the hypothesis that domestic violence would matter more for children living in poverty when it comes to children's internalizing behavior problems.

The moderation effect of marital status. Data were analyzed for 834 unmarried mothers and 391 married mothers. As shown in Table 11, the data showed that unmarried mothers had higher rates of experience of domestic violence at Year 1 than married mothers. And unmarried mothers were more likely to use negative parenting behavior and rated their children's behavior problems higher than married mothers.

The effects of domestic violence on children's externalizing behavior problems by marital status. For the full model predicting externalizing behavior problems at Year 5, multiple-group SEM analyses revealed that the constrained model resulted in a significant increase in the chi-square statistic and that the model comparison was significant ($\chi^2_{\text{diff}} = 120.02$ [214.79–334.81], $df = 34$ [114–148], $p < .001$). This statistic indicated that the paths in this model differed by groups. For the free model, assessments of model fit were performed. The results showed that the chi-square was significant ($\chi^2 = 214.79$, $df = 114$, $p < .001$), but other model fit indices provided a good fit to the data (GFI = .98; CFI = .95; RMSEA = .03; Figure 11).

Table 11

Descriptive Statistics of the Main Variables by Marital Status

Variables	Unmarried (<i>n</i> = 834)	Married (<i>n</i> = 391)	<i>X</i> ² /or <i>F</i> -test
	# (%) /or M(SD)	# (%) /or M(SD)	
Domestic violence			
Physical violence	43(5.10)	5(1.28)	10.44**
Emotional violence	121(14.35)	30(7.67)	11.10**
Sexual violence	43(5.10)	11(2.81)	3.34 ⁺
Maternal mental health			
Depression	136(16.13)	49(12.53)	2.71 ⁺
Anxiety	43(5.10)	13(3.32)	1.94
Maternal parenting			
Unresponsive	0.98(1.47)	0.51(0.96)	34.14***
Harsh	0.55(1.09)	0.25(0.76)	23.14***
Lack skills ^a	0.24(0.65)	0.10(0.43)	14.75***
Spanking	0.99(1.10)	0.95(1.08)	0.22
Child externalizing problems			
Aggressive	11.47(6.72)	9.82(5.95)	17.12***
Delinquent	2.05(1.79)	1.61(1.59)	17.32***
Child internalizing problems			
Depressed	3.43(3.10)	3.11(2.95)	2.83 ⁺
Withdrawn	2.27(2.13)	1.88(1.88)	9.27**

Note. *N* = 1,234. *a* = Maternal lack of verbal or social skills.

N (%) for domestic violence and maternal mental health and Mean (SD) for maternal parenting and children's behavior problems. *X*²-test for domestic violence and maternal mental health and *F*-test for maternal parenting and children's behavior problems.

⁺*p* < .10. **p* < .05. ***p* < .01. ****p* < .001.

For the unmarried-mother group, domestic violence at Year 1 was directly associated with poor maternal mental health ($\beta = 0.23$, $p < .01$) and greater use of spanking ($\beta = 0.18$, $p < .01$) at Year 3 but not with parenting behavior at Year 3. The direct association between domestic violence at Year 1 and children's externalizing behavior problems at Year 5 was marginally significant ($\beta = 0.10$, $p < .10$). Poor maternal mental health at Year 3 had a marginally significant association with greater externalizing behavior problems at Year 5 ($\beta = 0.08$, $p < .10$) but not to parenting at Year 3. Poor

parenting at Year 3—both spanking ($\beta = 0.15, p < .01$) and parenting behavior ($\beta = 0.16, p < .05$)—were directly associated with greater externalizing behavior problems at Year 5. The indirect effect of domestic violence at Year 1 on children’s externalizing behavior problems at Year 5 was marginally significant ($\beta = 0.04, p < .10$), indicating that maternal mental health and spanking at Year 3 mediated the relationship between domestic violence at Year 1 and children’s externalizing behavior problems at Year 5 (Table 12). However, the indirect effect of maternal mental health at Year 3 on children’s externalizing behavior problems at Year 5 through parenting at Year 3 was not significant.

For the married-mother group, domestic violence at Year 1 had a direct association with poor maternal mental health ($\beta = 0.23, p < .05$) and poor parenting behavior ($\beta = 0.20, p < .05$) at Year 3. However, domestic violence at Year 1 was not directly related to spanking at Year 3 or children’s externalizing behavior problems at Year 5. Poor maternal mental health at Year 3 had a marginally significant association with positive parenting behavior ($\beta = -0.11, p < .10$) and was directly associated with greater externalizing behavior problems at Year 5 ($\beta = 0.18, p < .05$). Spanking at Year 3, but not parenting behavior, was directly related to greater externalizing behavior problems ($\beta = 0.20, p < .01$). The indirect effect of domestic violence at Year 1 on children’s externalizing behavior problems at Year 5 through maternal mental health and parenting at Year 3 was not statistically significant, although the estimate of indirect effect in this group was not different from that of indirect effect in the unmarried-mother group (0.04 vs. 0.04). The indirect effect of maternal mental health at Year 3 on children’s externalizing behavior problems at Year 5 through parenting at Year 3 was not significant either.

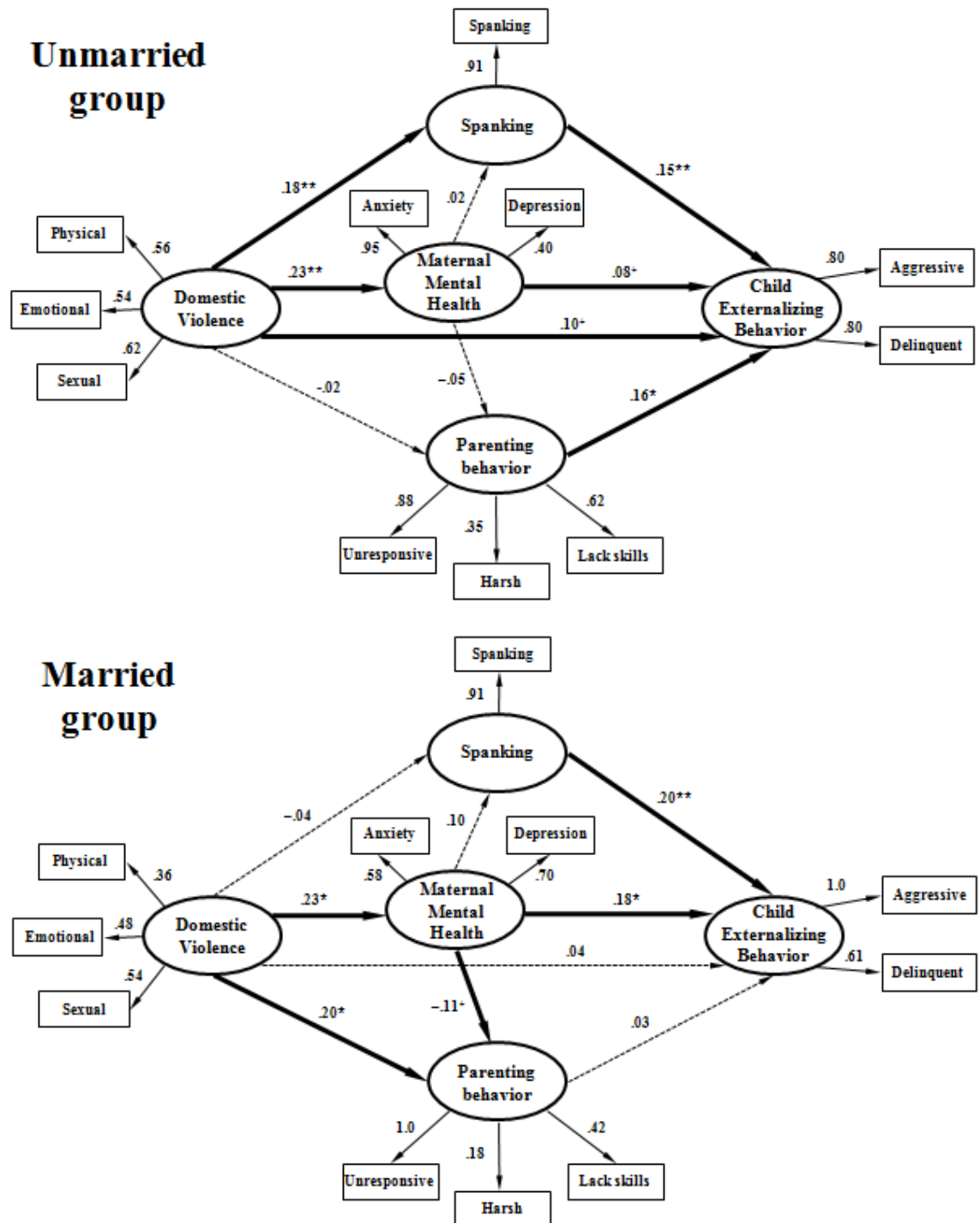


Figure 11. The fully-controlled SEM of domestic violence on externalizing behavior problems of children in unmarried and married groups. $\chi^2 = 214.79$ ($df = 114$, $p < .001$); GFI = .98; CFI = .95; RMSEA = .03. + $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 12

Direct and Indirect Effects of Domestic Violence on Externalizing Behavior Problems of Children in the Married and Unmarried Groups, With Controls for Other Variables

Predictors	Dependent variables	Unmarried		
		Direct effect	Indirect effect	Total effect
Domestic violence	Mental health	.23**	–	.23**
	Spanking	.18**	.01	.19**
	Parenting behavior	–.02	–.01	–.03
	Externalizing problems	.10 ⁺	.04 ⁺	.14*
Mental health	Spanking	.02	–	.02
	Parenting behavior	–.05	–	–.05
	Externalizing problems	.08 ⁺	–.01	.08
Spanking	Externalizing problems	.15**	–	.15**
Parenting behavior	Externalizing problems	.16*	–	.16*

Predictors	Dependent variables	Married		
		Direct effect	Indirect effect	Total effect
Domestic violence	Mental health	.23*	–	.23*
	Spanking	–.04	.02	–.02
	Parenting behavior	.20*	–.03	.17*
	Externalizing problems	.04	.04	.08
Mental health	Spanking	.10	–	.10
	Parenting behavior	–.11 ⁺	–	–.11 ⁺
	Externalizing problems	.18*	.02	.20*
Spanking	Externalizing problems	.20**	–	.20**
Parenting behavior	Externalizing problems	.03	–	.03

Note. ⁺ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

These findings suggested that the association between domestic violence at Year 1 and children's externalizing behavior problems at Year 5 differed by marital status. Consistent with the hypothesis, the results indicated that unmarried-mother group was more affected by domestic violence; the direct and indirect effects of domestic violence were significant for unmarried-mother group only. For unmarried-mother group, the

effects of domestic violence at Year 1 on children's externalizing behavior problems at Year 5 were partially mediated through maternal mental health and spanking at Year 3; domestic violence at Year 1 was associated with poor maternal mental health and greater use of spanking at Year 3, and this poor maternal mental health and greater use of spanking was associated with greater externalizing behavior problems at Year 5. However, the indirect effect was not significant for married-mother group. For married-mother group, domestic violence at Year 1 had direct associations with poor maternal mental health and poor parenting behavior at Year 3, but this poor maternal mental health and parenting behavior did not mediate the relationship between domestic violence at Year 1 and children's externalizing behavior problems at Year 5. Domestic violence at Year 1 had a marginally significant direct effect on children's externalizing behavior problems at Year 5 even after controlling mediators and other variables for unmarried-mother group, whereas the effect was not found for married-mother group. These results supported the hypothesis that unmarried mothers and their children would be more affected by domestic violence than married mothers and their children.

The effects of domestic violence on children's internalizing problems by marital status. For the full model predicting children's internalizing behavior problems at Year 5, multiple-group analyses revealed that the constrained model in which factor loadings and path coefficients were constrained to be equal, resulted in a significant increase in chi-square statistics ($\chi^2_{\text{diff}} = 118.48[202.41-320.89]$, $df = 34[114-148]$, $p < .001$), indicating that the paths in this model were different across the two groups (Figure 12).

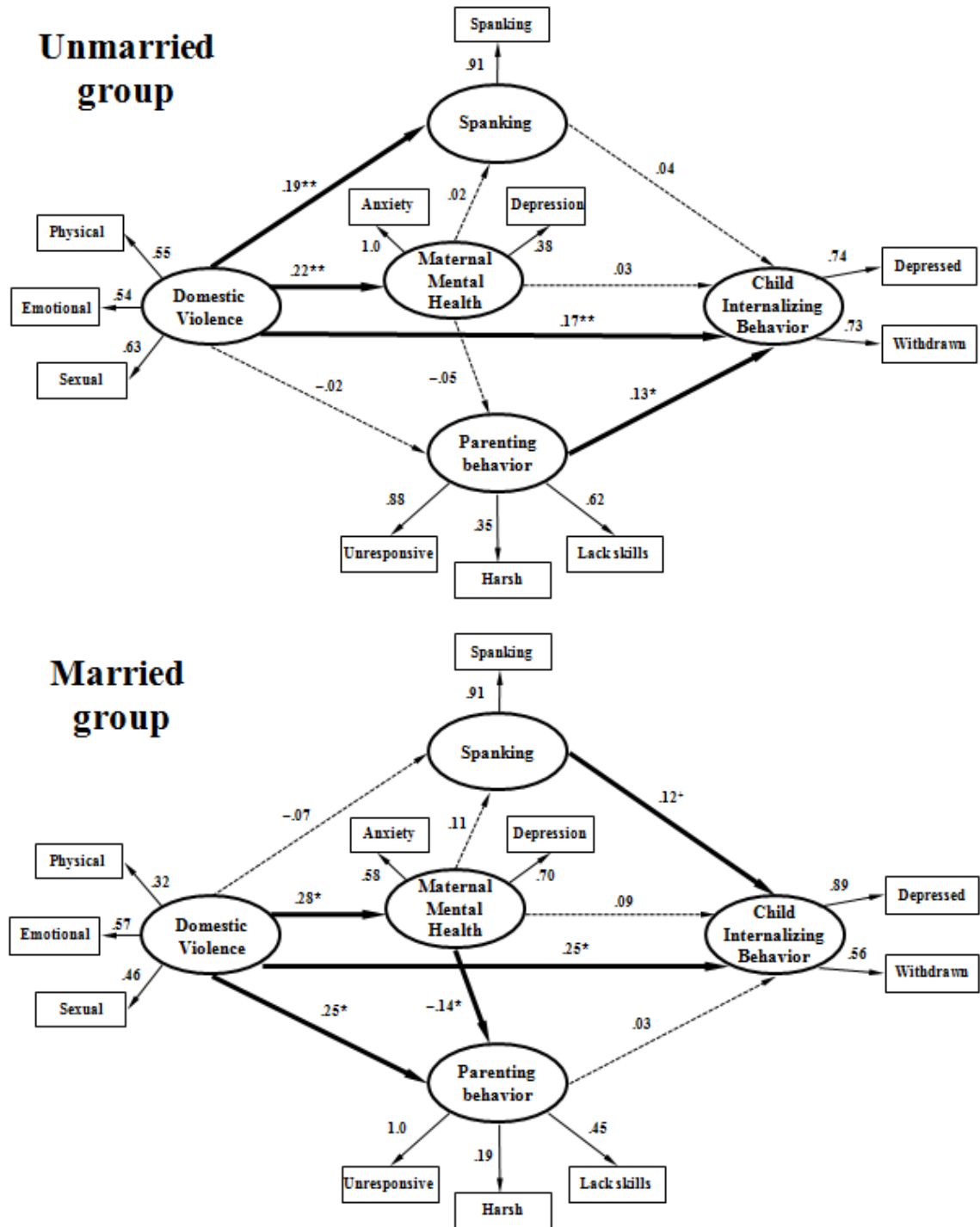


Figure 12. The fully-controlled SEM of domestic violence on internalizing behavior problems of children in married and unmarried groups. $\chi^2 = 202.41$ ($df = 114$, $p < .001$); GFI = .98; CFI = .95; RMSEA = .02. + $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

For the free model, the results of model fit tests showed that the chi-square was significant ($\chi^2 = 202.41$, $df = 114$, $p < .001$), but other model fit indices provided an adequate fit to the data (GFI = .98; CFI = .95; RMSEA = .02; Figure 12).

For the unmarried-mother group, domestic violence at Year 1 had direct associations with poor maternal mental health ($\beta = 0.22$, $p < .01$) at Year 3, greater use of spanking ($\beta = 0.19$, $p < .01$) at Year 3, and greater internalizing behavior problems at Year 5 ($\beta = 0.17$, $p < .01$). However, domestic violence at Year 1 was not directly associated with parenting behavior at Year 3. Maternal mental health at Year 3 had no direct associations with children's internalizing behavior problems at Year 5 and parenting at Year 3. Poor parenting behavior at Year 3, not spanking, had a significant association with greater internalizing behavior problems of children at Year 5 ($\beta = 0.13$, $p < .05$). As shown in Table 13, no indirect effects were found between domestic violence at Year 1 and children's internalizing behavior problems at Year 5 and between maternal mental health at Year 3 and children's internalizing behavior problems at Year 5.

For the married-mother group, domestic violence at Year 1 was directly associated with poor maternal mental health at Year 3 ($\beta = 0.28$, $p < .05$), poor parenting behavior ($\beta = 0.25$, $p < .05$) at Year 3, and greater internalizing behavior problems of children at Year 5 ($\beta = 0.25$, $p < .05$). However, domestic violence at Year 1 was not directly related to spanking at Year 3. Poor maternal mental health at Year 3 had a significant association with positive parenting behavior ($\beta = -0.14$, $p < .05$). Maternal mental health at Year 3 was not directly associated with spanking at Year 3 or children's internalizing behavior problems at Year 5. Greater use of spanking at Year 3, but not parenting behavior, had a marginally significant association with greater internalizing behavior problems at Year 5.

($\beta = 0.12$, $p < .10$). The indirect effect of domestic violence at Year 1 on children's internalizing behavior problems at Year 5 through maternal mental health and parenting at Year 3 was not significant. The indirect effect of maternal mental health at Year 3 on children's internalizing behavior problems at Year 5 through parenting at Year 3 was also not significant (Table 13).

Table 13

Direct and Indirect Effects of Domestic Violence on Internalizing Behavior Problems of Children in the Married and Unmarried Groups, With Controls for Other Variables

Predictors	Dependent variables	Unmarried		
		Direct effect	Indirect effect	Total effect
Domestic violence	Mental health	.22**		.22**
	Spanking	.19**	.00	.19**
	Parenting behavior	-.02	-.01	-.03
	Internalizing problems	.17**	.01	.18*
Mental health	Spanking	.02		.02
	Parenting behavior	-.05		-.05
	Internalizing problems	.03	-.01	.03
Spanking	Internalizing problems	.04		.04
Parenting behavior	Internalizing problems	.13*		.13*

Predictors	Dependent variables	Married		
		Direct effect	Indirect effect	Total effect
Domestic violence	Mental health	.28*		.28*
	Spanking	-.07	.03 ⁺	-.04
	Parenting behavior	.25*	-.04 ⁺	.21*
	Internalizing problems	.25*	.03	.28*
Mental health	Spanking	.11		.11
	Parenting behavior	-.14*		-.14*
	Internalizing problems	.09	.01	.09
Spanking	Internalizing problems	.12 ⁺		.12 ⁺
Parenting behavior	Internalizing problems	.03		.03

Note. ⁺ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

The results showed that the association between domestic violence at Year 1 and children's internalizing behavior problems at Year 5 differed by marital status. Contrary to the hypothesis, unmarried-mother group was less affected by domestic violence in this data. For both unmarried-mother and married-mother groups, the direct effect of domestic violence at Year 1 on children's internalizing behavior problems at Year 5 was still significant even when controlling mediators and other variables, but that effect was not mediated through maternal mental health and parenting at Year 3. Unlike externalizing behavior problems of children, however, the direct and total effects of domestic violence at Year 1 on children's internalizing behavior problems at Year 5 were bigger for married-mother than for unmarried-mother group. Thus, the results in this study did not support the hypothesis that unmarried mothers and their children would be more affected by domestic violence.

DISCUSSION

Using four waves across 5 years of a recent longitudinal dataset, this study examined whether violence toward mother by child's father at Year 1 had long-term effects on preschool children's externalizing and internalizing behavior problems at Year 5 directly or indirectly through maternal mental health and parenting at Year 3. This study also investigated whether those effects varied by poverty and marital status. On the whole, the results from the SEM analyses supported the models in which domestic violence toward mother at Year 1 had deleterious effects on maternal mental health and parenting (especially, spanking) at Year 3, which in turn affected both externalizing and internalizing behavior problems of children at Year 5. Notably, domestic violence at Year 1 had direct and long-term effects on both types of children's behavior problems at Year 5. In addition, the effects of domestic violence at Year 1 on children's behavior problems at Year 5 varied by poverty and marital status at Year 1. Specifically, the effects of domestic violence at Year 1 on both types of behavior problems of children at Year 5 were bigger for nonpoor than for poor families. For externalizing behavior problems of children at Year 5, the effects of domestic violence were bigger for unmarried-mother than for married-mother families. For internalizing behavior problems of children at Year 5, in contrast, the effects of domestic violence were bigger for married-mother than for unmarried-mother families.

The Direct and Indirect Effects of Domestic Violence on Children's Behavior Problems Through Maternal Mental Health and Parenting

The mediation effect of maternal mental health. Consistent with the literature,

this study showed that domestic violence toward mother led to maternal depression and anxiety disorder, which in turn tended to increase both externalizing and internalizing behavior problems of children. The findings in the mediation models showed that domestic violence at Year 1 was associated with poor maternal mental health at Year 3, which increased both the externalizing and internalizing behavior problems of children at Year 5. However, the hypothesis that poor maternal mental health would impede mothers' parenting abilities, thereby increasing children's externalizing and internalizing behavior problems, was not supported in this study. The results indicated that maternal mental health at Year 3 had its own direct effect on children's behavior problems at Year 5, but the effect was not mediated through parenting at Year 3. This was due to a non-significant link between maternal mental health and parenting at Year 3. This finding differs from Belsky's theory on parenting and previous literature, which posited a link between disrupted maternal mental health and poor parenting quality. However, several recent longitudinal studies also failed to uncover a significant link between maternal mental health and parenting at Year 3 (Huang et al., 2010; Levendosky et al., 2006). One possible explanation for this nonsignificant finding is that the father's parenting style may play a role in the link. Indeed, a father's violence against mothers frequently co-occurs with his maltreatment toward children in violent families (Gewirtz & Edleson, 2007; Osofsky, 2003). Mothers, even under psychological distress, might attempt emotional attachment toward their children and positive parenting techniques to help their children cope with the father's abusive parenting (Sullivan et al., 2000), thus decreasing the significance of the pathway between maternal mental health and parenting. Another possible explanation is that maternal mental health could affect child behavior problems

other than through parenting at Year 3. Mother's parenting mastery or other undefined psychological risk factors may play a role in this link (Renner, 2009; Sullivan et al., 2000). Future studies should add these variables to the analytic model presented in this study to gain a more thorough understanding of the mediating role of parenting in the relationship between maternal mental health and child behavior problems.

The mediation effect of parenting. This study showed that the indirect effect of domestic violence on children's behavior problems through mothers' parenting can be moderated by dimensions of parenting. The results indicated that violence toward mother by child's father at Year 1 had an association with greater use of maternal spanking at Year 3, which in turn was related to greater externalizing and internalizing behavior problems at Year 5. However, the effect of domestic violence on children's behavior problems was not mediated through parenting behavior at Year 3. The cause of these results was that domestic violence at Year 1 functioned differently with respect to specific dimensions of parenting at Year 3. In particular, domestic violence at Year 1 had a significant effect on spanking but not on parenting behavior at Year 3. With respect to this issue, Krishnakumar and Buehler (2000) suggested that the effect of interparental conflict on parenting varies by dimensions of parenting behavior (i.e., harsh discipline, inconsistent monitoring, acceptance, and global parenting quality), and they found that the strongest associations between interparental conflict and parenting occurred when the parenting behaviors assessed were harsh punishment and acceptance. Other recent studies also found that domestic violence functions differently regarding specific dimensions of parenting (Huang et al., 2010; Levendosky et al., 2003). Huang et al., (2010) found that domestic violence toward mother was associated with mother's spanking but not with

responsiveness, harsh parenting, or lack of verbal or social skills. Similarly, Levendosky and colleagues (2003) found that domestic violence was related to mother's parenting effectiveness but not to authoritative parenting. Given that spanking was an important mediator in the relationship between domestic violence and children's behavior problems in this study, future research will need to focus on multiple dimensions of parenting rather than only one or two dimensions and explore the specific effects of domestic violence on multiple dimensions of parenting. Using more comprehensive measures of parenting and analyzing their different roles in the relationship between domestic violence and children's behavior in future studies would improve our understanding of parenting (Sullivan et al., 2000).

The direct effect of domestic violence on children's behavior problems. This study confirmed that children's exposure to domestic violence at Year 1 had a direct and long-term impact on their behavior problems at Year 5. The results showed that violence against mothers by child's father at Year 1 had a direct effect on internalizing behavior problems and a marginally significant effect on externalizing behavior problems of children at Year 5, even after controlling for maternal mental health and parenting at Year 3. The results suggested that children's internalizing and externalizing behavior problems were influenced by the existence of domestic violence within the family, without being additionally affected by disrupted maternal mental health and parenting, and that internalizing behavior problems were more strongly affected than externalizing behavior problems by the exposure to domestic violence. One implication of the findings was that violence toward mothers by child's father at Year 1 has long-term effects on young children's behavioral outcomes, and thus social service providers and policy makers

should give more attention to the direct link between intimate partner's violence toward mothers and behavioral outcomes of young children.

Change in the effects of domestic violence on children's behavior problems after including control variables in the analyses. The results from the fully-controlled models showed that the paths among main variables in the models did not change considerably and remained significant even when the control variables were included, with one exception; the link between maternal mental health at Year 3 and children's internalizing behavior problems at Year 5 was no longer significant when the control variables were included in the model. The indirect effect of domestic violence at Year 1 on children's internalizing behavior problems at Year 5 was still significant. Overall, findings from the fully-controlled models confirmed the hypotheses on the effects of domestic violence on children in this study. The findings suggested that for children's externalizing behavior problems at Year 5, the effects of domestic violence at Year 1 were partially mediated through maternal mental health and spanking at Year 3 even after controlling other variables. For children's internalizing behavior problems at Year 5, the effects of domestic violence at Year 1 were partially mediated through maternal spanking at Year 3; however, the mediating effect of maternal mental health became insignificant after control variables were included in the analysis. In addition, it was notable that the direct effect of domestic violence at Year 1 on both types of behavior problems of children at Year 3 still remained significant even after mediators and control variables were included in the analyses. And the direct effect of domestic violence was stronger for internalizing than externalizing behavior problems of children.

The Moderated Effects of Domestic Violence on Children's Behavior Problems by Poverty and Marital Status

Using multi-group SEM analyses, this study tested whether the effects of domestic violence toward mother at Year 1 on children's behavior problems at Year 5 were different for poor versus non-poor families and for married versus unmarried families. The four multi-group models for subgroup analyses controlled other variables – child gender, child temperament at Year 1, and parenting stress at Year 3 – in the analyses, since the paths among main variables in the model were slightly changed after including control variables in the analyses.

The moderation effect of poverty status. The findings in this study showed that domestic violence was commonly interconnected with poverty but that this relationship did not necessarily intensify the consequences of abuse for mothers and their children. Contrary to the hypotheses, the findings in this study showed that the effects of domestic violence were stronger for children who were not living in poverty than for children living in poverty. For children's externalizing behavior problems, the effects of domestic violence were direct and partially mediated through maternal spanking at Year 3 for non-poor families but not for poor families. Specifically, for the nonpoor families, domestic violence at Year 1 had a direct association with greater use of spanking at Year 3 and that spanking was in turn related to greater externalizing behavior problems of children at Year 5. However, the mediation effects were not found in poor families. For the poor families in the sample, domestic violence at Year 1 had its own direct effects on maternal mental health and spanking at Year 3, but such maternal mental health and spanking at Year 3 did not mediate the relationship between domestic violence at Year 1 and

children's externalizing behavior problems at Year 5. Furthermore, domestic violence at Year 1 had a direct effect on children's externalizing behavior problems at Year 5 even after controlling mediators and other variables for non-poor families but not for poor families. For children's internalizing behavior problems, domestic violence at Year 1 had a direct effect on children's behavior problems at Year 5, but the effect was not mediated through maternal mental health or parenting at Year 3 in both poor and non-poor families. However, the direct and total effects of domestic violence on internalizing problems of children were bigger for non-poor than poor families.

This study revealed an interesting and puzzling finding that mothers and children living in poverty were less affected by domestic violence than those who were not in poverty. This finding is not consistent with family stress theory or the previous literature, which has shown that children living in poverty are more adversely affected than those not living in poverty by domestic violence and family stressors (Conger et al., 2007; Goodman et al., 2009). With respect to the unexpected findings in this study, a few explanations seem possible. On the one hand, it might be that measures in the current study were just not sensitive enough to observe the entire range of harm done to these children through domestic violence (Gewirtz & Edleson, 2007). On the other hand, it might be possible that poor children have more resilience than children not in poverty, despite facing significant multiple adversities. Limited research has addressed how poor children cope with domestic violence exposure and additional difficulties, but several studies have suggested that resilience among young children who are exposed to domestic violence and cumulative risk, such as family dysfunction and poverty, is not as rare as once thought (Grych et al., 2000; Holden et al., 1998; Holt et al., 2008; Huges &

Luke, 1998; Kizmann et al., 2003; Sullivan et al., 2000b). At least half of shelter-residing children in these studies exhibited no behavior problems. Still, the findings from these studies do not mean that these children are unaffected by domestic violence; rather, a range of resilient or protective factors may influence the extent of the impact of exposure to domestic violence on the child's outcomes (Holden et al., 1998).

It has not been clear what factors enable such children to overcome adversity. Previous studies have proposed some resilient factors, such as the extent of the violence, the child's characteristics, parenting factors, social support networks, or cultural and community factors (Holden et al., 1998; Gewirtz & Edleson, 2007; Levendosky et al., 2003). It is possible that the extent of domestic violence and its interplay with poverty contributed to the findings of this study. For instance, mothers and children in the current study were sampled from the community, and thus they might experience lower levels of violence than shelter samples (Levendosky et al., 2003). In poor neighborhoods, the domestic violence may be more normal, and thus children living in poverty actually may be less affected by domestic violence. Alternatively, it might also be possible that poor mothers and children could be better helped through a continuum of naturally occurring support within the family and the community (Gewirtz & Edleson, 2007). Future research with different data is needed to further investigate the moderating effect of poverty in the relationship between domestic violence and children's behavior problems and to explore what factors may ameliorate or exacerbate the effects of domestic violence on the behavior problems of children living in poverty.

The moderation effect of marital status. The results in this study showed that the impacts of domestic violence for children in married- and unmarried-mother families

varied depending on the types of behavioral outcomes of children in this study. That is, for children's externalizing behavior problems at Year 5, the effects of domestic violence at Year 1 were bigger for unmarried-mother than for married-mother families. For children's internalizing behavior problems at Year 5, in contrast, the effects of domestic violence at Year 1 were bigger for married-mother than for unmarried-mother families. Specifically, for externalizing behavior problems of children at Year 5, the negative effects of domestic violence at Year 1 were direct and mediated through maternal mental health and spanking at Year 3 in unmarried-mother group only. That is, domestic violence at Year 1 had direct associations with poor maternal mental health and greater use of spanking at Year 3 and that poor maternal mental health and spanking were then related to greater externalizing behavior problems at Year 5 in the unmarried-mother group. However, those direct and indirect effects of domestic violence were not found in married-mother group. For internalizing behavior problems at Year 5, domestic violence at Year 1 had a direct effect even after controlling mediators and other variables in both unmarried-mother and married-mother families. Unlike externalizing behavior problems of children, however, the direct and total effects of domestic violence at Year 1 on children's internalizing behavior problems at Year 5 were bigger for married-mother than for unmarried-mother families.

This study revealed an interesting finding that marital status functioned differently for the relationships between domestic violence and externalizing behavior problems of children and for the relationship between domestic violence and internalizing behavior problems of children. The findings in this study were to some extent different from the common perception from the literature that unmarried mothers and their children may be

more influenced by domestic violence and its related family stressors (Conger et al., 2007; Brown & Moran, 1997). For externalizing behavior problems, the findings in this study were consistent with stress and resource theories and previous literature. For internalizing behavior problems, however, the results in this study were different from the theories and previous literature. The results of this study showed that domestic violence affected children's internalizing behavior problems for both unmarried-mother and married-mother families, but the overall impacts were bigger for married-mother than unmarried-mother families.

It may be not clear why unmarried-mother families were less affected by domestic violence in terms of children's internalizing behavior problems. Previous studies have suggested that the impact of domestic violence on children in unmarried- mother families may vary depending on how the unmarried mothers respond to the negative effect of domestic violence and its related mental health problems or how such mothers and their children may be supported by social support from close ties or communities (Gerwartz & Edleson, 2007). As another potential explanation, the unexpected findings might be related to length of exposure to domestic violence. If mothers in this study experienced domestic violence at Year 1 and she was married, they were more likely to still live with the child's father in subsequent waves and thus domestic violence could continue for a longer period in married-mother families. Unmarried mothers were less likely to live with the child's father in subsequent waves and therefore their children might be exposed to domestic violence for a shorter period. The length of exposure to domestic violence can influence abuse outcomes of mothers and their children. One of limitations in this study was that this study did not measure the length of exposure to domestic violence. That is,

this study did not measure whether the domestic violence was a one-time event that happened at Year 1 or that was ongoing in subsequent waves. The different measures of domestic violence (short-term vs. long-term) may reveal divergent results. Previous studies found that long-term and continued abuse was associated with greater mental health problems (Campbell & Soeken, 1997; Bonami et al., 2006) and that maternal mental health was found to be a key factor affecting child outcomes. Given that internalizing behaviors is related to long-term process through which social interactions and the related emotions become part of the child's mental functions, the children's exposure to domestic violence for longer period may be more related to internalizing behavior problems. If children in married-mother families might be exposed to domestic violence for longer period, they may internalize their negative emotions related to domestic violence more. Still, further research with different data is required to fully understand how marital status functions in the effects of domestic violence on different types of behavior problems of children.

The findings in this study suggest that the effects of domestic violence toward mother on children's behavior problems vary by marital status, which in turn suggests that mothers' and children's need for supports or services also vary. However, this study focused on two categories of marital status: married and unmarried. Studies have found a great deal of variation in parents' relationship status and father involvement (i.e., married, cohabitating, nonresident, and noninvolved nonresident fathers; Huang et al., 2010; McLanahan, 2009; McLanahan & Persheski, 2008; Meadow & McLanahan, 2007) and that the relationship status with child's father influences mother's experience of domestic violence (Huang et al., 2010; McLanahan & Persheski, 2008). A father's presence or

absence may influence the mother's mental health and parenting and thereby their children's behavioral patterns (Meadow & McLanahan, 2007). Future research needs to include a variety of parents' relationship statuses and examine whether the effects of domestic violence on children's behavior problems differ by these relationship statuses.

Limitations

This study has some limitations. First, the information on domestic violence, maternal mental health, and children's behavior problems relied on maternal reports, which might have led to single-reporter bias. Second, the substantial loss of data due to sample attrition across six surveys, as well as incomplete data for the variables used in this study, also might have influenced the results in this study. Third, focusing only on mother's mental health and parenting might have been problematic. Father's effects in relationship between domestic violence and children's behavior were absent in the study. Father's mental health and parenting might have had an impact on children's behavior problems. In one of the few studies on father-child relationships and domestic violence, Sullivan et al. (2000) found that children's well-being was affected directly by the presence of paternal abuse, regardless of the mother's mental health status. The missing information on father's effects may account for some of the unexplained variance in children's behavior problems in the current study. Fourth, the measure of domestic violence and maternal parenting behavior may have been limitations in this study. For example, the measure of parenting might have been insensitive to the variability in parenting that was probably present in domestic violence victims, which might have influenced the results in this study. A new measure which would be sensitive to parenting in domestic violence victims is necessary in order to capture the full extent of the effects

of domestic violence on maternal parenting. Additionally, domestic violence may not have been measured well enough to capture the nature of domestic violence toward mother in this study. While the measure of domestic violence in this study appeared to capture the various types of violence, it remains a problem that the measure was based on a few items. Fifth, as discussed above, this study did not measure whether the domestic violence was a one-time event that happened at Year 1 or that was continued over time in subsequent waves. The missing information on the length of exposure to domestic violence might explain the unexpected results, particularly relevant for the moderation effect of marital status. Sixth, although this study controlled for other variables that were found to be key variables affecting child outcome, there might be still possibility of selection bias due to unobserved differences between families that experienced domestic violence and those that did not. These differences might have influenced maternal functioning and children's behavioral outcomes in this study. Seventh, there might be a reverse causality problem that prior maternal mental health may influence later mental health, which might have influenced the result of the study.

Implications

This study has implications for policy, research, and practice. This study first shed light on the long-term consequences of domestic violence toward mother at Year 1 for the mothers' functioning at Year 3 and their preschool children's behavior problems at Year 5. This study suggested that the mothers whose children's behaviors were compromised were struggling with depression and anxiety, mostly resulted from father's violence, and were utilizing poor parenting tactics (i.e., more frequent use of spanking). Given that young children are at a particular risk because they have less developed coping strategies

and are completely dependent on their parents (especially mothers) for all aspects of care, interventions should focus on emotional support and resources to cope with domestic violence and its effects on mothers' mental health and parenting (Levendosky et al., 2001).

The results also emphasize that even young children, who may have limited understanding of domestic violence, can still be influenced by exposure to violence within the family. Therefore, supports and intervention efforts must be aimed at young children, as well as their mothers, to prevent later behavior problems. However, efforts or services for domestic violence intervention should not be provided separately for young children and their mothers. Studies on domestic violence intervention programs for children have found that the intervention program provided to both the child and the mother at the same time was more effective than the intervention for the child only, in reducing the negative outcomes of domestic violence for the child (Graham-Bermann, Lynch, Banyard, DeVoe, & Halabu, 2007; Sullivan, Egan, & Gooch, 2004). For example, Graham-Bermann and her colleagues (2007) studied 181 children aged 6 to 12 in a community-based, domestic violence interventions programs. They assessed the efficacy of intervention comparing three different types of groups: a child-only intervention, a child-plus-mother intervention, and a wait-list comparison. The results in their study revealed that, of the three intervention conditions, a child-plus-mother intervention showed the greatest improvement over time in externalizing behavior problems and attitude about violence. Unfortunately, the intervention programs were only tested on school-age children and, hence, it remains to be shown whether this intervention can be effective when implemented for young children and their mothers.

This study also found that the effects of domestic violence toward mother on children's behavior problems varied by socioeconomic conditions such as poverty and marital status; this variation indicates that children's and mothers' needs in violent families also vary greatly. The most interesting findings in this study were that children from poor families were less influenced by domestic violence than children in non-poor families, suggesting that poor families are more resilient in facing domestic violence and its associated family stressors. Although more research is required to fully understand these relationships, the findings in this study suggest that domestic violence in the context of low socioeconomic status does not necessarily intensify the negative consequences of abuse for women and children. Rather, this study suggests that there is wide variation in children's and mothers' experiences in violent families, depending on a variety of sub-populations, and many risk and protective factors may contribute to the dynamics of these children's and mother's experiences. As such, it is critical for social service professionals to conduct open-minded and holistic assessments that account for the risk and protective factors in every family before drawing conclusions about the risks and harm to specific children and their mothers. This approach should help service providers respond more effectively to the individual needs of every family. Linking a family with supportive resources and intervention programs that fit with their needs may help mothers and children cope with domestic violence and other related challenges more effectively.

This study sheds lights on the different effects of domestic violence on mothers and children depending on poverty and marital status, but additional research is needed to explore the complex effects of domestic violence on women's and children's adjustment over time. First, given the wide variation in children's and mothers' experiences in violent

families, future research should explore the distinct experiences of a variety of subpopulations of domestic violence victims and their children, including immigrant families, ethnic minorities, individuals with disabilities and other chronic health conditions, families receiving public assistance, the homeless, migrant workers, and older people (Goodman et al., 2009). Second, to better understand children's and mother's well-being in the context of domestic violence, future research should examine how domestic violence interrelates over time with other multiple risk and protective factors in a variety of social-economic subgroups. Many risk and protective factors may contribute to the complex relationships between domestic violence, maternal mental health and parenting, and children's behaviors. For instance, social support has been given attention throughout the literature of domestic violence (Belsky, 1984; Holt et al., 2003; Levendosky et al., 2003; Postmus, Severson, Berry, & Yoo, 2009). Differing psychological reactions and parenting practices in abused women may be explained through their experiences with social support in their families or communities (Levendosky et al., 2003). However, previous studies have not explored how socioeconomic status might affect the provision of social support to the domestic violence victims and their children. Thus, future research is needed to examine the different support resources in socioeconomically stretched communities and how such social support function differently in the relationship between domestic violence and children's behavior problems. Third, the findings in this study suggested that the effect of domestic violence on parenting is moderated by dimensions of parenting. There are numerous types of parenting behaviors used in families beyond unresponsive parenting, harsh parenting, lack of verbal or social skills, and spanking. Future research is needed to

include more comprehensive measures of parenting in the analytic models, which can improve the field's understanding of how domestic violence is associated with parenting and thereby children's behavioral outcomes. Finally, qualitative studies would be valuable to deepen our understanding of the relationship between domestic violence and child behaviors in a variety of subpopulations.

APPENDICES

Appendix A

Child Behavior Subscales

Aggressive (20 items):

Child argues a lot

Child brags or boasts

Child is cruel, bullying, or mean to others

Child demands a lot of attention

Child destroys his/her own things

Child destroys things belong to his/her family or others

He/She is disobedient at home

He/She is disobedient in school

Child is easily jealous

He/She gets in many fights

Child physically attacks people

Child screams a lot

Child is showing off or clowning

Child is stubborn, sullen, or irritable

Child has sudden changes in mood or feelings

Child talks too much

Child teases a lot

Child has temper tantrums or hot temper

Child threatens people

Child is unusually loud

Delinquent (10 items):

Child not seems to feel guilty after misbehaving

Child hangs around with others who get in trouble

Child is lying or cheating

Child prefers being with other kids

Child runs away from home

Child sets fire

Child steals at home

Child steals outside home

Child swears or uses obscene language

Child vandalizes

Anxious/Depressed (14 items):

Child complains of loneliness

Child cries a lot

Child fears s/he might think/do something wrong

Child feels s/he has to be perfect

Child feels or complains no one loves him/her

Child feels others out to get him/her

Child feels worthless/inferior

Child is nervous, high strung, or tense

Child is too fearful or anxious

Child feels too guilty

Child is self conscious or easily embarrassed

Child is suspicious

Child is unhappy, sad, or depressed

Child worries

Withdrawn (9 items):

Child would rather be alone than with others

Child refuses to talk

Child is secretive, keeps things to self

Child is shy or timid

Child stares blankly

Child sulks a lot

Child is underactive, slow moving, lacks energy

Child is unhappy, sad, or depressed

Child is withdrawn, doesn't get involve with others

Appendix B

The Effects of Control Variables on the Externalizing Behavior Problems of Children in Poor and Nonpoor Groups

Predictors	Dependent variables	Poor		
		Direct effect	Indirect effect	Total effect
Domestic Violence	Mental health	.22*	—	.22*
	Spanking	.18*	.01	.19**
	Parenting behavior	-.03	-.00	-.03
	Externalizing problems	.06	.03	.10
Parenting stress	Mental health	.06	—	.06
	Spanking	.06	.00	.06
	Parenting behavior	.04	-.00	.04
	Externalizing problems	.07	.03	.09
Child temperament	Mental health	.08	—	.08
	Spanking	-.04	.00	-.04
	Parenting behavior	.00	-.00	.00
	Externalizing problems	.09	.00	.09
Mental health	Spanking	.05		.05
	Parenting behavior	-.02		-.02
	Externalizing problems	.09	.00	.09
Spanking	Externalizing problems	.12*	—	.12*
Parenting behavior	Externalizing problems	.28**	—	.28**
Boys	Externalizing problems	.11*	—	.11*

Predictors	Dependent variables	Nonpoor		
		Direct effect	Indirect effect	Total effect
Domestic violence	Mental health	.32*		.32*
	Spanking	.14*	.00	.14*
	Parenting behavior	.08 ⁺	-.03*	.05
	Externalizing problems	.10 ⁺	.06**	.16**
Parenting stress	Mental health	.08	—	.08
	Spanking	.17**	.00	.17**
	Parenting behavior	.05	-.01 ⁺	.04
	Externalizing problems	.12**	.04**	.16**
Child temperament	Mental health	.05	—	.05
	Spanking	-.01	.00	-.01
	Parenting behavior	.04	-.00	.04
	Externalizing problems	.09*	.00	.09*
Mental health	Spanking	.01		.01
	Parenting behavior	-.09*		-.09*
	Externalizing problems	.09	.00	.09
Spanking	Externalizing problems	.22**		.22**
Parenting behavior	Externalizing problems	.00		.00
Boys	Externalizing problems	.09	—	.09

Note. ⁺ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Appendix C

The Effects of Control Variables on Internalizing Behavior Problems of Children in Poor and Nonpoor Groups

Predictors	Dependent variables	Poor		
		Direct effect	Indirect effect	Total effect
Domestic violence	Mental health	.21 [*]	—	.21 [*]
	Spanking	.18 [*]	.01	.19 [*]
	Parenting behavior	-.02	-.01	-.03
	Internalizing problems	.17 [*]	.00	.17 [*]
Parenting stress	Mental health	.06	—	.06
	Spanking	.06	.00	.06
	Parenting behavior	.05	-.00	.04
	Internalizing problems	.05	.02	.07
Child temperament	Mental health	.08	—	.08
	Spanking	-.04	.00	-.04
	Parenting behavior	-.01	-.00	-.01
	Internalizing problems	.17 ^{***}	-.00	.17 ^{***}
Mental health	Spanking	.05	—	.05
	Parenting behavior	-.04	—	-.04
	Internalizing problems	.03	-.01	.02
Spanking	Internalizing problems	.02	—	.02
Parenting behavior	Internalizing problems	.31 ^{**}	—	.31 ^{**}
Boys	Internalizing problems	.02	—	.02

Predictors	Dependent variables	Nonpoor		
		Direct effect	Indirect effect	Total effect
Domestic violence	Mental health	.31 [*]	—	.31 [*]
	Spanking	.14 ⁺	-.00	.14 ⁺
	Parenting behavior	.08 ⁺	-.03 ⁺	.05
	Internalizing problems	.27 ^{***}	.00	.27 ^{***}
Parenting stress	Mental health	.07 ⁺	—	.07 ⁺
	Spanking	.17 ^{**}	.00	.17 ^{**}
	Parenting behavior	.05	-.01 ⁺	.04
	Internalizing problems	.10 [*]	.01	.11 [*]
Child temperament	Mental health	.05	—	.05
	Spanking	-.01	.00	-.01
	Parenting behavior	.04	-.00	.04
	Internalizing problems	.04	-.00	.04
Mental health	Spanking	-.01	—	-.01
	Parenting behavior	-.09 [*]	—	-.09 [*]
	Internalizing problems	-.03	.00	-.03
Spanking	Internalizing problems	.07 ⁺	—	.07 ⁺
Parenting behavior	Internalizing problems	-.04	—	-.04
Boys	Internalizing problems	.00	—	.00

Note. + $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Appendix D

The Effects of Control Variables on Externalizing Behavior Problems of Children in the Married and Unmarried Groups

Predictors	Dependent variables	Unmarried		
		Direct effect	Indirect effect	Total effect
Domestic violence	Mental health	.23**	—	.23**
	Spanking	.18**	.01	.19**
	Parenting behavior	-.02	-.01	-.03
	Externalizing problems	.10 ⁺	.04 ⁺	.14*
Parenting stress	Mental health	.08*	—	.08*
	Spanking	.12**	.00	.12**
	Parenting behavior	.06	-.00	.06
	Externalizing problems	.10*	.04**	.14**
Child temperament	Mental health	.05	—	.05
	Spanking	-.04	.00	-.04
	Parenting behavior	-.00	-.00	-.01
	Externalizing problems	.08 ⁺	-.00	.08 ⁺
Mental health	Spanking	.02	—	.02
	Parenting behavior	-.05	—	-.05
	Externalizing problems	.08 ⁺	-.01	.08
Spanking	Externalizing problems	.15**	—	.15**
Parenting behavior	Externalizing problems	.16*	—	.16*
Boys	Externalizing problems	.12*	—	.12*

Predictors	Dependent variables	Married		
		Direct effect	Indirect effect	Total effect
Domestic violence	Mental health	.23*	—	.23*
	Spanking	-.04	.02	-.02
	Parenting behavior	.20*	-.03	.17*
	Externalizing problems	.04	.04	.08
Parenting stress	Mental health	.05	—	.05
	Spanking	.11*	.01	.12*
	Parenting behavior	.05	-.01	.04
	Externalizing problems	.13*	.03*	.16**
Child temperament	Mental health	.13 ⁺	—	.13 ⁺
	Spanking	.01	.01	.02
	Parenting behavior	.08 ⁺	-.01	.07
	Externalizing problems	.14*	.03	.17**
Mental health	Spanking	.10	—	.10
	Parenting behavior	-.11 ⁺	—	-.11 ⁺
	Externalizing problems	.18*	.02	.20*
Spanking	Externalizing problems	.20**	—	.20**
Parenting behavior	Externalizing problems	.03	—	.03
Boys	Externalizing problems	.03	—	.03

Note. ⁺ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Appendix E

The Effects of Control Variables on Internalizing Behavior Problems of Children in the Married and Unmarried Groups

Predictors	Dependent variables	Unmarried		
		Direct effect	Indirect effect	Total effect
Domestic violence	Mental health	.22**		.22**
	Spanking	.19**	.00	.19**
	Parenting behavior	-.02	-.01	-.03
	Internalizing problems	.17**	.01	.18*
Parenting stress	Mental health	.07 ⁺		.07 ⁺
	Spanking	.12**	.00	.12**
	Parenting behavior	.07	-.00	.06
	Internalizing problems	.09*	.01	.10*
Child temperament	Mental health	.05		.05
	Spanking	-.04	.00	-.04
	Parenting behavior	-.00	-.00	-.01
	Internalizing problems	.21***	.00	.21***
Mental health	Spanking	.02		.02
	Parenting behavior	-.05		-.05
	Internalizing problems	.03	-.01	.03
Spanking	Internalizing problems	.04		.04
Parenting behavior	Internalizing problems	.13*		.13*
Boys	Internalizing problems	.04		.04

Predictors	Dependent variables	Married		
		Direct effect	Indirect effect	Total effect
Domestic violence	Mental health	.28*		.28*
	Spanking	-.07	.03 ⁺	-.04
	Parenting behavior	.25*	-.04 ⁺	.21*
	Internalizing problems	.25*	.03	.28*
Parenting stress	Mental health	.02		.02
	Spanking	.12*	.00	.12*
	Parenting behavior	.02	-.00	.02
	Internalizing problems	.11	.02	.12
Child temperament	Mental health	.10		.10
	Spanking	.02	.01	.03
	Parenting behavior	.06	-.01	.05
	Internalizing problems	.05	.01	.06
Mental health	Spanking	.11		.11
	Parenting behavior	-.14*		-.14*
	Internalizing problems	.09	.01	.09
Spanking	Internalizing problems	.12 ⁺		.12 ⁺
Parenting behavior	Internalizing problems	.03		.03
Boys	Internalizing problems	.04		.04

Note. ⁺ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

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