

INTIMATE PARTNER VIOLENCE IN RURAL, LOW-INCOME COMMUNITIES:  
PREVALENCE AND LINKS WITH CHILD COMPETENCE

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## ABSTRACT

HANNA CATHARINA GUSTAFSSON: Intimate Partner Violence in Rural, Low-Income Communities: Prevalence and Links with Child Competence  
(Under the direction of Martha J. Cox)

Using data from a longitudinal study of families living in rural, low-income communities, the current dissertation explored the prevalence, nature, and consequences of intimate partner violence (IPV) occurring in families with young children. The primary goal of Study One of this dissertation was to characterize IPV occurring in this understudied population. Specifically, this study documented the prevalence, severity, and chronicity of IPV occurring in this high-risk sample, as well as the demographic correlates thereof. Using data from multiple assessments over the first five years of their child's life, this study also examined changes in the prevalence of IPV across this time. Results indicate that IPV was most prevalent around the birth of the target child, and decreased significantly over the subsequent five years. Study Two of this dissertation explored the link between IPV occurring early in the child's life and children's competence, defined here as their ability to regulate their emotions, to effectively interact with peers, and to demonstrate prosocial skills in their elementary school classrooms. Findings suggest that IPV had a modest negative effect on children's competence. This relation, however, was fully mediated by maternal parenting behaviors over the toddler years. Although IPV was associated with both increases in harsh-intrusive maternal parenting behaviors as well as decreases in sensitive maternal parenting behaviors, only harsh-intrusive maternal parenting behaviors predicted child competence, when both dimensions of parenting were considered in the same model.

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## LIST OF ABBREVIATIONS

IPV: Intimate Partner Violence

FLP: Family Life Project

## **CHAPTER ONE**

### **General Introduction**

The impact of intimate partner violence (IPV) on child and family functioning is a topic that has garnered substantial attention in recent decades. Popularly referred to by its umbrella term, domestic violence, IPV is defined as physical aggression perpetrated among romantic partners. This definition subsumes behaviors that range from more minor (e.g., pushing one's partner) to potentially life threatening (e.g., shooting a gun at one's partner), in addition to physical violence perpetrated between married and unmarried partners. Estimates of IPV in the United States suggest that as many as one in five couples experience IPV each year, and that 15.5 million children live in domestically violent homes (McDonald, Jouriles, Ramisetty-Mikler, Caetano, & Green, 2006; Straus & Gelles, 1990). These are alarming figures, both because of the cost that IPV has been shown to have for society (Max, Rice, Finkelstein, Bardwell, & Leadbetter, 2004; National Center for Injury Prevention and Control, 2003), and because of the potentially devastating consequences that it may have for individuals living in homes characterized by IPV (Golding, 1999; Grych & Fincham, 2001; Kitzmann, Gaylord, Holt, & Kenny, 2003; Margolin & Gordis, 2000; Tolan, Gorman-Smith, & Henry, 2006; Wolfe, Crooks, Lee, McIntyre-Smith, & Jaffe, 2003). Despite knowledge that IPV is relatively common and destructive, several questions remain about the nature, prevalence, and consequences of IPV occurring in families living in the United States.

Much of our current understanding of IPV comes from research conducted with women and children residing in domestic violence shelters. This evidence suggests that IPV

has both short and long term consequences for children's functioning in a variety of domains (Grych, Jouriles, Swank, McDonald, & Norwood, 2000; Jaffe, Wolfe, & Wilson, 1990; McDonald, Jouriles, & Skopp, 2006). Although these studies give tremendous insight into the relation between IPV and individual functioning, their generalizability is somewhat limited because the vast majority of individuals impacted by IPV are dissimilar to those who reside in domestic violence shelters in a number of respects. For example, despite evidence that IPV in shelter-based samples is typically characterized by unidirectional male-to-female IPV, several decades of research shows that IPV in community samples is more commonly mutual, meaning that both romantic partners are physically violent (Archer, 2000; Johnson, 1995; 2006; Johnson & Ferraro, 2004; Straus & Gelles, 1990). In fact, Johnson and Ferraro (2004) suggest that virtually all IPV in community samples is what they term *common couple violence*, where, in the context of an argument, one or both of the partners lash out physically at the other. When compared to *intimate terrorism* (the typology that characterizes shelter-based samples, in which violence is described as only one tactic of control), *common couple violence* tends to be less severe and to be more commonly mutual (Johnson, 2000). Given these differences, it is not entirely clear to what extent relations observed in shelter-based samples are replicable in community-based samples, nor is it clear that it is appropriate to use findings from shelter-based studies to extrapolate to all families affected by IPV. Further research investigating the impact of IPV in community samples, therefore, is needed.

Although limited in quantity, there have been a number of studies investigating IPV in community-based samples, including a few that have recruited nationally representative samples of couples living in the United States (e.g., Caetano, Ramisetty-Mikler, & Field, 2005; Straus & Gelles, 1990). In contrast to studies conducted with small, shelter-based



samples (which have the ability to provide detailed characterization of IPV occurring in their population, and in some cases, to follow the same individuals over time), these large-scale, cross-sectional studies have largely been used to document the prevalence of IPV in the general population at a given assessment timepoint. Although having an accurate population estimate is crucial for properly allocating public funds and implementing intervention programs to help families impacted by IPV, the design of these studies does not lend itself to more nuanced examination of IPV in community based samples. For example, these studies are unable to give insight into the prevalence, severity, or chronicity of IPV occurring in socioeconomic or geographic groups that are at heightened risks for IPV, nor do they give insight into how the prevalence and nature of IPV might change as families develop. Gaining better insight into these types of questions is important to best serve families impacted by IPV, and therefore this was the focus of Study One of this dissertation. Specifically, we used data from a population-based sample of families living in rural, low-income communities who were recruited at the birth of a child to examine the prevalence and nature of IPV assessed over the first five years of the child's life.

Exposure to IPV has been linked with a host of maladaptive outcomes for children of all ages (Kitzmann, Gaylord, Holt, & Kenny, 2003; Tolan, Gorman-Smith, & Henry, 2006; Wolfe, Crooks, Lee, McIntyre-Smith, & Jaffe, 2003). Research suggests this may occur through both direct and indirect pathways. Emotional security theory (EST; Davies & Cummings, 1994; Cummings & Davies, 2010) suggests one direct pathway. According to EST, exposure to conflict among parents is not only distressing and dysregulating for children, but it also undermines their sense of safety and security in the family. That is, witnessing IPV is not only a frightening experience for children (which itself contributes to

their maladjustment), but repeated exposure to interparental conflict triggers concerns about the child's personal safety, the intactness of their family, and the availability of his or her caregivers. These security concerns, in turn, interfere with children's ability to effectively cope with the stresses and challenges of everyday life, including achieving competence in age-salient developmental tasks. EST also suggests that IPV impacts children through indirect means, specifically through disturbances in parenting practices. This is, EST suggests that being in a highly conflicted relationship depletes parental abilities to parent sensitively, resulting in less supportive and more harsh parenting behaviors. These parenting behaviors, in turn, negatively impact child development.

#### *IPV and Child Competence*

Defined by Masten and Coatsworth (1998) as "reasonable success with major developmental tasks expected for a person of a given age and gender in the context of their culture, society, and time," the term competence refers to a pattern of effective adaptation to the child's environment. As this definition implies, the operationalization of child competence changes across the lifespan, as children are faced with different age-appropriate developmental tasks. Whereas competency in infancy may involve acquiring an organized attachment strategy, developmental tasks important for school-aged children likely include skills necessary for success in the classroom, including being able to regulate their emotions, being able to relate well to peers, and being able to use prosocial skills with classmates and teachers. For example, being able to manage frustration (one dimension of emotion regulation) has important implications for a child's ability to develop functional relationships with peers and for their ability to persist while struggling with new or challenging course material. Similarly, displaying prosocial behaviors, such as helping others or cooperating

with classmates, has potential implications for the child's ability to participate in group-based activities or for their ability to form friendships. A child's peer relationships also have implications for their development and school success, as children who are rejected by their peers have been shown to have greater behavioral problems, to display more aggression, and to be less academically skilled than their non-rejected peers (Kupersmidt, Burchinal, & Patterson, 1995; Pettit, Clawson, Dodge, & Bates, 1996; Wentzel & McNamara, 1999). Indeed, past research has found that a child's functioning within these three domains (i.e., emotion regulation, peer relations, and prosocial skills) predicts their short- and long-term success in school (Ladd, 1990; McClelland, Morrison, & Holmes, 2000; McClelland, Acock, & Morrison, 2006; Neuenschwander, Röthlisberger, Cimeli, & Roebbers, 2012; Wentzel & McNamara, 1999). Although there is some empirical evidence linking IPV with child competence in younger children (e.g., Fantuzzo, DePaola, Lambert, Martino, Anderson, & Sutton, 1991; Howell, Graham-Bermann, Czyz, & Lilly, 2010), less is known about how IPV may undermine competence during the early school years, particularly among children living in low-income community based samples.

Embedded in EST's description of how interparental conflict influences children is the notion that repeated exposure to IPV impacts children more severely than fleeting instances of conflict, as it has a larger likelihood of undermining children's sense of security in the family, in addition to the fact that it has the potential to more pervasively impact family functioning (Davies & Cummings, 1994). Despite general consensus that chronic risks are more likely to have damaging long-term effects than transient risks (Garmezy & Masten, 1994), few extant studies have explored the extent to which the chronicity of the IPV may play a role in influencing children's outcomes. Although indices of the frequency of

IPV in some ways captures chronicity (i.e., individuals experiencing chronic IPV would likely report a higher frequency of IPV during the reference period), we are unaware of any research that has examined the chronicity of IPV over several years, nor how this chronicity may moderate the link between IPV and children's functioning.

In order to address these gaps in our knowledge of IPV and child competence, the goal of Study Two of this dissertation was to examine the extent to which IPV occurring early in the child's life was linked with his or her competence during the early school years. Additionally, Study Two explored whether the chronicity of the violence moderated this relation.

#### *Parenting as a Mediator*

In addition to negatively impacting children, IPV has been shown to negatively impact parents and their parenting behaviors. Physical violence perpetrated among parents has been associated with less sensitive maternal parenting behaviors (Levendosky & Graham-Bermann, 2000), more harsh and controlling maternal parenting behaviors, as well as more severe maternal discipline strategies (Huang, Wang, & Warrenner, 2010; Levendosky & Graham-Bermann, 2000; Levendosky, Huth-Bocks, Shapiro, & Semel, 2003). According to the *spillover hypothesis*, emotions engendered in the adult-adult relationship can carry over into the parent-child relationship, and it is at least in part through disturbances in the parent-child relationship that IPV impacts children (Cox & Paley, 1997; Cummings & Davies, 2002; Krishnakumar & Buehler, 2000). That is, feelings of anger, stress, and hopelessness produced during spousal conflict can spill over into parental interactions with children, resulting in harsh, controlling, or disengaged parenting behaviors. These behaviors, in turn, impact children's functioning, either because parental disengagement denies children

the support, scaffolding, and modeling necessary for children to acquire competency in these skills, or because parental displays of aggression further undermine their child's ability to acquire these skills. Supporting this notion is research that demonstrates that parenting behaviors are important contributors to the three core components of competence described here, children's emotion regulation (Grolnick & Farkas, 2002; Karreman, van Tuijl, van Aken, & Deković, 2006), their prosocial skills (Eisenberg & Valiente, 2002; Lengua, Honorado & Bush, 2007), and their peer relations (Hart, Newell, & Olsen, 2003; Ladd & Pettit, 2002). Given that IPV has been shown to undermine the development of children's competence (Fantuzzo et al., 1991; Howell et al., 2010), that parenting behaviors have been shown to contribute to children's competence (Hart, Newell, & Olsen, 2003; Masten & Coatsworth, 1998), and that IPV negatively impacts parenting behaviors (Huang, Wang, & Warrener, 2010; Levendosky & Graham-Bermann, 2000), further investigating the nature of the relations among these three variables in understudied community samples seems important. As such, the second aim of Study Two was to explore the role of maternal parenting behaviors as a mediator of the relation between IPV and child competence during the early school years.

### *The Current Dissertation*

The goal of the current dissertation was to address some of the aforementioned gaps in our understanding of the prevalence, nature, and consequences of IPV occurring in community based samples. The primary goal of Study One was to characterize IPV occurring in rural, low-income families who have given birth to a child. Specifically, we examined the prevalence, severity, and chronicity of IPV occurring in this high-risk sample, as well as the demographic correlates thereof. Using data from multiple assessments across

the first five years of their child's life, we also examined changes in the prevalence of IPV across this time.

Study Two focused on linking IPV with children's competence during the early school years, defined here as their ability to regulate their emotions, to effectively interact with peers, and to demonstrate prosocial skills in their elementary school classroom. After establishing this link, we examined the extent to which the chronicity of the IPV moderated the relation between IPV and children's competence. Last, we examined whether maternal parenting behaviors mediated this relation.

## **CHAPTER TWO**

### **Study One: Characterizing IPV in Rural, Low-Income Households**

Several decades of research suggests that IPV is a pervasive public health concern. Not only is IPV relatively common in the general population (Caetano, Ramisetty-Mikler, & Field, 2005; Straus & Gelles, 1990; Tjaden & Thoennes, 2000), but IPV has been shown to impact individuals from all socioeconomic and racial backgrounds. Several large scale research studies have been initiated with the goal of quantifying the prevalence of IPV in the general population. For example, the National Family Violence Surveys (Straus & Gelles, 1986; 1990), using nationally representative random samples of couples living in the United States, reported that 10% to 12% of couples experienced at least one instance of IPV in the previous year, and that 28% to 30% of couples had experienced some domestic violence during the course of their relationship. Similarly, the 1995 National Alcohol Survey, using a multistage random probability sample representative of married and cohabitating couples in the 48 contiguous states, reported that 21% of couples reported at least one instance of IPV in the previous year (McDonald, Jouriles, Ramisetty-Mikler, Caetano, & Green, 2006). Although these surveys lend insight into the prevalence of IPV on a national level, additional research is needed in order to better understand the prevalence and nature of IPV in communities that may be at heightened risk for IPV, such as those characterized by poverty.

There are a number of reasons why it is important to investigate IPV in low-income communities. Individuals living in neighborhoods characterized by poverty (Cunradi, Caetano, Clark, & Shafer, 2000; O'Campo et al., 1995), as well those living in economically

disadvantaged households (Cunradi, Caetano, & Schafer, 2002; Gelles, 1997; Thompson et al., 2006; Tolman & Raphael, 2002) have consistently been shown to be at heightened risk of IPV. Additionally, many stressors that have been linked with marital discord are more common among low-income families. Most obviously, low-income families are more likely to experience economic stress, which has been shown to contribute to marital conflict (e.g., Conger et al., 1990). According to the *family stress model* (Conger et al., 2002; Conger & Elder, 1994), economic disadvantage, by increasing economic pressure, induces feelings of frustration, anger, and emotional distress in caregivers. These feelings, in turn, contribute to conflict among family members, including conflict between parents. Given that interparental conflict has been suggested to be an even stronger predictor of family functioning when family stress is high (Cummings & Davies, 2010), in addition to the fact that links between marital conflict and child adjustment have been shown to be significantly stronger in the face of other risks, including low-income status (Jouriles, Bourg, & Farris, 1991), better understanding the nature and prevalence of IPV in low-income samples is an important extension of previous work.

Studying IPV in rural low-income communities may be particularly important, both because individuals living in rural areas have been shown to be at heightened risk of IPV relative to those living in urban areas (Peek-Asa, Waalis, Harland, Beyer, Dickey, & Saftlas, 2011) and because rural communities have been shown to have fewer resources and services for helping victims of IPV, despite evidence that they have an increased need for these services (Goeckermann, Hamberger, & Barber, 1994; Grossman, Hinkley, Kawalski, & Margrave 2005; Tiefenthaler, Farmer, & Sambira, 2005). For example, Peek-Asa and colleagues (2011) found that the prevalence of IPV among women living in rural areas was



higher than it was for women living in urban areas, that the violence they reported was significantly more severe, and that the mean distance to the nearest IPV resource was three times greater than it was for women living in urban areas. These findings, in conjunction with the aforementioned evidence that income and IPV are linked, suggest that rural, low-income populations may be at particular risk for the negative consequences of IPV, and thus further research investigating the prevalence of IPV in these communities is warranted.

#### *Changes in Prevalence over Time*

In addition to providing little information about IPV in high-risk communities, previous research investigating the prevalence of IPV has also been limited in that it has almost exclusively employed cross-sectional research designs. Although creating a point estimate of the prevalence of IPV in part necessitates this type of design, these studies are unable to provide information about changes in IPV prevalence as families develop or as children age. This is a notable limitation, as knowing whether there are points in development when IPV is more prevalent has implications for intervention and treatment programs aimed at helping families in which IPV has occurred. There is some evidence that children under the age of five are more likely than older children to live in homes characterized by IPV (a fact which makes examining IPV in this age range important; Fantuzzo, Boruch, Berima, Atkins, & Marcus, 1997), however it remains unclear if there are population-level changes in the prevalence of IPV over this timeframe.

There are a number of reasons that one might expect the prevalence of IPV to vary across the first five years of a child's life. For example, the transition to parenthood has been shown to be a particularly stressful time for parents. The rapid and extreme reorganization of the family system that is required in order to care for an infant has been shown to contribute

to parental stress, resulting in decreased marital satisfaction and increased marital conflict (Cowan, Cowan, Herring, Miller, 1991; Cox, 1985; Cox & Paley, 1997; Cox, Paley, Burchinal, & Payne, 1999; Lawrence, Cobb, Rothman, & Bradbury, 2008). For example, using data from a sample of 140 first time parents who were first assessed prenatally and subsequently followed until their child was two years old, Cox and colleagues (1999) found that negative behaviors observed during a mother-father problem solving task increased over the first year of their child's life. Similarly, Belsky, Spanier, and Rovine (1983), using data from a sample of 72 couples recruited before the birth of a child, concluded that the addition of a child into the family had a negative impact on the marital relationship, regardless of whether it was the couple's first- or later-born child. Although evidence that marital conflict typically increases after the birth of a child is unambiguous, it remains unclear if this translates into higher IPV prevalence rates during the early months of a child's life.

Although much of the extant literature suggests that marital conflict peaks after the birth of a child, there are a number of other times during the first five years of the child's life that may be trying for couples. For example, the toddler years have been shown to be a challenging time for parents. Increases in child negative affectivity contribute to parenting stress, as it increases and broadens the types of demands placed on parents at this time (Maccoby, 2000; Verhoeven, Junger, Van Aken, Deković, & Van Aken, 2007). This parenting stress, in turn, contributes to conflict among parents, which in some cases may escalate into IPV (Moore, Probst, Tompkins, Cuffe, & Martin, 2007). Alternatively, couples may experience increased stress as their child enters school, as this transition requires additional reorganization of the family system in order to meet the challenges of beginning formal schooling (Cox & Paley, 1997). As these examples illustrate, there is compelling

evidence that different times during the first five years of a child's life may be more or less taxing for couples. Whether these fluctuations in family stress are associated with varying rates of IPV across this age range, however, remains unknown. In order to address this gap in knowledge, the current study examined the prevalence of IPV that was reported at several times across the first five years of a child's life.

### *Demographic Correlates and Characteristics of IPV in Community Samples*

In addition to examining the frequency of IPV, a more complete characterization of physical violence occurring in low-income, rural communities requires an investigation of a number of qualities of the IPV, as well as the demographic correlates thereof. For example, it is important to index the severity of IPV reported, as minor and severe acts of violence likely have different correlates, sequelae, and implications for intervention. It is also important to investigate whether the violence perpetrated is chronic and to what extent it is exclusively male-to-female, female-to-male, or dual-perpetrated, as different typologies of violence have been shown to have different consequences and correlates (Johnson, 1995; 2006; Johnson & Leone, 2005). Investigating individual- and family-level demographic variables that may be associated with an increased incidence of IPV is also important, as this information has the potential to inform policy decisions and targeted interventions. Past research has identified a number of these variables, such that IPV has been shown to be more common among African American, low-income, less educated, and younger individuals (Caetano, Cunradi, Clark, & Schaefer, 2000; Frias & Angel, 2005; Moore, Probst, Tompkins, Cuffe, & Martin, 2007; Stets & Henderson, 1991; Thompson et al., 2006; Tolman & Raphael, 2002). A couple's marital status has also been associated with IPV, such that unmarried-cohabitating couples report more IPV than married couples (Brownridge & Halli,

2002; Stets, 1991), and the prevalence of IPV among nonresidential, dating couples is higher than the prevalence among both married and unmarried-cohabitating couples (Straus, 2004; Thompson et al., 2006). The extent to which these previous findings extend to IPV occurring in the rural, low-income sample used in the current study, in addition to the extent to which these demographic variables are linked with the qualities of IPV described above (i.e., the severity, chronicity, and the perpetrator of the IPV) was explored in the current study.

### *The Current Study*

Using data from a population-based sample of families living in communities characterized by rural poverty, the current study sought to address some of the aforementioned gaps in our understanding of the prevalence and nature of IPV in communities at heightened risk for IPV. Specifically, this study had three primary research aims: (1) To characterize IPV occurring in rural, low-income families who have given birth to a child (specifically, the prevalence, severity, and perpetrator of the IPV), (2) To examine if these prevalence rates and qualities of IPV change over the first five years of their child's life, and (3) To examine the extent to which demographic variables identified by earlier research (i.e., the child's race, the family's income, maternal education, maternal age, and the couple's marital status) are related to the prevalence, severity, chronicity, and perpetrator of the IPV. Although the current study is largely descriptive in nature, past research supports the following predictions. Given that this population was selected for the current study because low-income and rural populations have been shown to be at heightened risk for IPV, we predicted that the prevalence of IPV in this sample would be higher than the 10-21% estimated by national surveys (McDonald et al., 2006; Straus & Gelles, 1990). With regard to changes in the prevalence of IPV over the first five years of the child's life, we expected

that IPV would be particularly prevalent after the birth of a child. Lastly, we predicted that the demographic variables identified by previous research would also be linked to IPV in the current sample, such that African American, lower income, less educated, younger, and nonresidential couples would report more IPV.

## Method

### *Participants*

The participants in this study were a subsample of The Family Life Project (FLP), an ongoing longitudinal study that recruited a stratified random sample of 1,292 families who were representative of families who gave birth to a child between September 15, 2003 and September 14, 2004 in six predominantly low-income, rural communities in eastern North Carolina and central Pennsylvania. Families were recruited in local hospitals and via birth records shortly after the birth of the target child, and were visited in their home beginning when the child was 2 months old. African American and low-income families were oversampled. See Vernon-Feagans, Cox, & The Family Life Project Key Investigators (in press) for additional information about the recruitment and sampling procedures.

The current study utilized two subsamples of the complete FLP sample. For the purpose of addressing research aims one and two, data came from families in which the child's primary caregiver had a romantic partner when the family was assessed by the FLP. This resulted in the inclusion of 981 couples at the 6 month assessment, 936 couples at the 15 month assessment, 905 couples at the 24 month assessment, 877 couples at the 36 month assessment, and 858 couples at the 60 month assessment. Although there was considerable overlap in the composition of these groups, inclusion in one subsample was not contingent upon inclusion in another. The majority of these primary caregivers were the child's

biological mother (99%, 99%, 98%, 96%, and 93% for the 6, 15, 24, 36, and 60 month assessments, respectively), but also include biological fathers, adoptive parents, foster parents, step-parents, grandparents, and unrelated adults. Including all primary caregivers in these subsamples allowed us to include data for the largest number of families, thereby enhancing our ability to generalize our findings to the communities in question.

At the 6 month assessment, the subsample included 587 (59.84%) married, 217 (22.12%) cohabitating but unmarried, and 177 (18.04%) non-cohabitating partners. The average household income was \$39,306 (with a range from \$0 to \$250,657), and the mean primary caregiver age was 27.05 years ( $SD = 5.92$ ; with a range from 14.70 to 50.04). The average primary caregiver had completed 14.75 years of schooling ( $SD = 2.79$ ; range from 7 - 22), indicating graduation from high school with some additional training. Of these children, 399 (34.56%) were African American, and 505 (51.48%) were male. These proportions and values were similar across all five assessments (see Table 1).

For the purpose of addressing research aim three, a different subsample of families enrolled in the FLP was used. Specifically, only families who met the following three criteria were included in this subsample: 1. the child's primary caregiver at the 6 month assessment was his or her biological mother, 2. the child's biological mother had a romantic partner at the 6 month assessment timepoint, and 3. the child resided with their biological mother at each of the assessment timepoints included in the current study (i.e., 6, 15, 24, 36, and 60 month assessment timepoints). These criteria resulted in the inclusion of 938 families. This subsample did not differ significantly from the first subsample on any of the aforementioned variables.

### *Procedure*

When the target child was 6, 15, 24, 36 and 60 months of age, two research assistants visited families in their homes, where they administered a series of interviews and questionnaires to household members. In order to minimize the possibility that respondents would be intimidated or somehow coerced by the presence of other individuals in their home, respondents completed questionnaires via laptop computer while seated in a quiet space away from the other household members. At each visit, all participants were given a document which listed county specific resources, including domestic violence and other counseling services, and were instructed that these resources were available to them or anyone that they knew. All study procedures were approved by the Institutional Review Board at the University of North Carolina at Chapel Hill.

### *Measures*

*Demographic variables.* At each timepoint, mothers reported information about a variety of demographic variables. Among these variables were the total household income from all possible sources (e.g., income from all household members, unemployment insurance, social security retirement, pension, welfare, child support, regular help from relatives or friends, etc.) and the number of individuals living in the home. Income-to-needs ratios were calculated by dividing the total household income from all possible sources by the federally determined poverty threshold for the number of people living in the household for that year. Income-to-needs ratios above 1.0 indicate that a family is able to provide for basic needs, whereas values below 1.0 indicate that they are not. Information about the couple's marital status (0 = *unmarried non-cohabitating*, 1 = *unmarried but cohabitating*, 3 = *married*), the child's race (0 = *White*, 1 = *African American*), and the sex of all respondents (0 = *Female*, 1 = *Male*) was also collected, as was information about the mother's age. The

primary caregiver's education was assessed using a 23 point scale where values 0-11 indicate the highest grade level that they had completed, and values 12-22 include milestones including obtaining a Graduate Equivalency Diploma (GED) (12), graduating from high school (14), completing a four year college degree (18), and obtaining a PhD (22).

*Intimate partner violence.* IPV was assessed using the Conflict Tactics Scale – Couple Form R (CTS-R; Straus & Gelles, 1990), a 19 item self-report measure completed by the child's primary and secondary caregivers when he or she was 6, 15, 24, 36 and 60 months old. Each of these items lists a possible response to conflict in the romantic relationship; respondents were asked to rate on a seven point likert-type scale (where 0 = *Never*, 1 = *Once*, 2 = *Twice*, 3 = 3 - 5 times, 4 = 6 - 10 times, 5 = 11 - 20 times, 6 = *More than 20 times*) how often in the past 12 months they engaged in specific behaviors. They were also asked to rate how often in the past 12 months their partner engaged in each behavior. The 9-item Physical Violence subscale of this measure (which captures incidences of physical aggression and violence) was used in the current study. A sample item reads “[how often has your partner] kicked, bit, or hit you with a fist.” Chronbach's alpha for our subsamples range from .89 to .95 for primary caregiver-reported IPV and from .83 to .87 for partner-reported IPV at the various timepoints. In accordance with previously published reports (e.g., Leonard & Quigley, 1999; McDonald, Jouriles, Ramisetty-Mikler, Caetano, & Green, 2006), if at least one respondent reported an instance of IPV, the couple was designated as having been physically violent.

A number of additional variables were computed using the CTS-R scores. Specifically, the severity, the chronicity, and the perpetrator of the IPV were indexed. Following the direction of Straus and Gelles (1986), a couple was designated as having



perpetrated minor violence if either partner reported that one of the following behaviors had occurred over the past 12 months: ‘threw something,’ ‘pushed, grabbed, or shoved,’ or ‘slapped.’ A couple was designated as having perpetrated severe violence if either partner reported one or more of the following behaviors had occurred over the past 12 months: ‘kicked, bit, or hit with a fist,’ ‘hit or tried to hit with something,’ ‘beat up,’ ‘choked,’ ‘threatened with a knife or gun,’ or ‘used a knife or gun.’ A couple was designated as having perpetrated both minor and severe violence if either partner endorsed at least one of the minor items and one of the severe items. In order to capture the chronic nature of the IPV occurring in some of these households, families for whom IPV was reported (by either partner) at two or more assessment timepoints was considered having experienced chronic IPV. Preliminary examination of the data suggested that this was a meaningful and appropriate cutoff point. In order to characterize whether the IPV was exclusively male-to-female, exclusively female-to-male or dual-perpetrated (i.e. both partners were physically violent), the sex of the perpetrator was also noted. If between the two respondents, both the female and male members of the couple were reported to have engaged in physically violent behaviors (i.e., if at least one respondent reports that the female partner was physically violent *and* at least one partner reports that the male partner was physically violent), the couple was designated as experiencing dual-perpetrated IPV. For couples not designated as experiencing dual-perpetrated IPV, if either partner reported that only the male member of the couple had engaged in physically violent behaviors, the couple was designated as experiencing exclusively male-to-female IPV. Similarly, if either partner reports that only the female member of the dyad was physically violent (and the couple is not designated as experiencing dual-perpetrated IPV), then the couple was designated as experiencing

exclusively female-to-male IPV. When only one member of the dyad completed the CTS-R, that individual's report was used to determine if the IPV was male-to-female, female-to-male, or dual-perpetrated.

### *Analytic Strategy*

*Research aim one.* In order to address the first research aim (i.e., to describe IPV in rural, low-income communities), the prevalence of IPV at each assessment timepoint was computed. Specifically, the total number of couples in which any violence was reported by either partner was divided by the total number of coupled primary caregivers enrolled in the FLP at that assessment timepoint. In order to characterize the quality of the IPV occurring in these families, we also present the percentage of physically violent couples who reported engaging in minor IPV, those who reported engaging in severe IPV, and those who reported engaging in both minor and severe IPV. Additionally, we calculated the percentage of physically violent couples who reported that the IPV was exclusively male-to-female, exclusively female-to-male, and dual-perpetrated.

It is important to note that the prevalence estimates calculated using this method can only be generalized to the families assessed by the FLP, and may not reflect the prevalence of IPV occurring in all families residing in the six counties that these families were recruited to represent. That is, because the FLP oversampled for low-income and African American families, this method of estimating the prevalence of IPV could be biased. In order to provide context for these prevalence estimates, we also used the *surveyfreq* procedure in SAS 9.2, which uses survey weights and stratification variables to produce estimates of the total number of physically violent couples in the six counties sampled by the FLP who gave birth to a child during the recruitment period.

*Research aim two.* In order to address the second research aim (i.e., to examine changes in the prevalence of IPV over the first five years of life), we compared the proportion of families reporting IPV at each assessment timepoint using a series of chi-squared tests. Specifically, we examined changes in the proportion of couples reporting any IPV, the proportion of couples reporting minor IPV, severe IPV, and both minor and severe IPV, as well as exclusively male-to-female, exclusively female-to-male, and dual-perpetrated IPV.

*Research aim three.* In order to investigate the extent to which the selected demographic variables were related to whether or not a couple is physically violent (i.e., research aim three), a series of multivariate logistic regression models were conducted. Specifically, the family's income-to-needs ratio, the mother's age and highest level of completed education, the child's race and sex, and the couple's marital status (all assessed at the 6 month assessment timepoint) were entered as predictors of: (a) the presence of violence at any of the assessment timepoints, (b) the perpetrator of this violence (male-to-female, female-to-male, and dual-perpetrated violence), (c) the severity of this violence (minor IPV, severe IPV, and minor and severe IPV), and (d) the chronicity of this IPV (defined here as whether IPV was reported at two or more assessment timepoints). All analyses were conducted using the SAS 9.2 software package.

## Results

### *Research Aim One: To Describe IPV in Rural, Low-Income Communities*

Table 2 presents the proportion of couples enrolled in the FLP who reported that they or their partner had perpetrated at least one physically violent act during the previous 12 months, calculated separately for each assessment timepoint. At the 6 month assessment

timepoint, 403 (41.08%) couples reported that they had been the victim or perpetrator of at least one incident of physical violence during the previous year, compared to 289 (30.88%) at the 15 month assessment, 269 (29.72%) at the 24 month assessment, 221 (25.20%) at the 36 month assessment, and 183 (21.33%) at the 60 month assessment.

Of these violent couples, the plurality reported both minor and severe instances of IPV (the proportion of couples reporting both minor and severe IPV ranged from 42.63% to 54.84% for the various assessment timepoints), followed by couples reporting only minor incidents of IPV (proportions at the various assessment timepoints ranged from 40.94% to 53.39% of physically violent couples). A small minority of couples (4.22%, 3.81%, 3.35%, 3.62%, and 5.92% of physically violent couples at the 6, 15, 24, 36, and 60 month assessments, respectively) reported only severe incidents of IPV.

Consistent with other studies of IPV in community samples (e.g., Capaldi & Owen, 2001; Johnson, 2006), most of the IPV reported by these couples was dual-perpetrated (the proportion of violent couples who report that the IPV was dual-perpetrated ranged from 54.67% to 58.37% at the various assessment timepoints), followed by exclusively female-perpetrated IPV (proportions ranged from 30.86% to 36.68% at the various assessment timepoints), and last by exclusively male-perpetrated IPV (proportions ranged from 7.20% to 13.18% at the various assessment timepoints).

Because the FLP is a stratified random sample, it is not appropriate to simply extrapolate the estimates of IPV prevalence in the observed sample to the population of mothers who gave birth during the recruitment period in the six counties sampled by the FLP. In order to account for the oversampling of certain demographic groups (i.e., low-income and African American families), survey weights can be utilized to create a less biased estimate of

IPV prevalence in these rural, low-income communities. Table 3 presents population estimates that were created using such survey weighting methods. This table includes estimates of the total number of couples who were physically violent during the previous year, out of a total population comprised of families who gave birth to a child between September 15, 2003 and September 14, 2004 in the six counties from which the FLP was recruited. Of the estimated 4,863 couples who gave birth in the six counties sampled by the FLP during the recruitment year, we estimate that 1,478 experienced at least one incident of IPV during the 12 month window ending when the child was 6 months old. An estimated 1,017 couples experienced at least one incident of IPV at the 15 month assessment timepoint, compared to 938 couples at the 24 month assessment timepoint, 802 couples at the 36 month assessment, and 606 at the 60 month assessment. Because the sample weights created for this dataset were created for use with the entire sample (and not for use with subsamples, such as families in which the mother had a romantic partner at a given timepoint), it is not appropriate to divide the estimated number of physically violent couples by the estimated number of families in which the mother had a romantic partner in order to calculate an overall proportion of families impacted by IPV. Table 3, therefore, is simply meant to provide the reader with some additional context for interpreting the prevalence estimates presented above, as well as some additional information about the burden of IPV in these six counties.

*Research Aim Two: To Examine Changes in the Prevalence of IPV Over the First Five Years*

Results from a series of chi-squared tests revealed that there were significant changes in the prevalence of IPV across the five assessment timepoints, as well as changes in the

percentage of this IPV that was reported to be exclusively minor versus both minor and severe in nature.

*Changes in overall prevalence.* As can be seen in Table 2, the proportion of couples who reported IPV decreased over the first five years of a child's life. Specifically, the proportion of couples reporting at least one incident of IPV during the previous year was highest at the 6 month assessment timepoint, with 41.08% of couples reporting that they or their partner had perpetrated at least one physically violent act during the previous year. This proportion decreased by more than 10% between the 6 and 15 month assessment timepoints, a difference which was statistically significant,  $\chi^2(1, N = 1917) = 21.62, p < .01$ . The proportion of couples reporting IPV did not change significantly between the 15 and 24 month assessment,  $\chi^2(1, N = 1841) = .29, p = .59$ , however it did decrease significantly between the 24 and 36 month assessment,  $\chi^2(1, N = 1782) = 4.57, p = .04$ , such that 25.20% of couples reported at least one incident of IPV at the 36 month assessment. The percentage of physically violent couples at the 60 month assessment was not significantly lower than at the 36 month assessment,  $\chi^2(1, N = 1735) = 3.64, p = .06$ . Figure 1 presents a visual depiction of this change in prevalence over time.

In posthoc analyses aimed at investigating whether this change in prevalence over time was exclusively due to the decreasing number of couples at each assessment timepoint, we recalculated prevalence estimates for each assessment timepoint, assuming that the difference in the number of couples that were assessed at a given timepoint (e.g., the 15 month timepoint) and the number of couples that were assessed at the previous timepoint (e.g., the 6 month timepoint) represented the maximum number of additional families in which IPV may have occurred. We then took this number (in the case of the 15 month

assessment, 45 additional couples), added it to the already known number of physically violent couples at that timepoint (in this example, 289), and created new prevalence estimates for each assessment timepoint. After calculating these new proportions, we re-ran all chi-squared comparisons described above, and found the same pattern of results, with one exception: the difference between the proportion of physically violent couples at the 60 month assessment timepoint was now significantly different from the proportion of couples who reported being physically violent at the 36 month assessment timepoint,  $\chi^2(1, N = 1782) = 4.73, p = .04$ , a figure which was previously non-significant,  $p = .06$ . Although not entirely conclusive, this similar pattern of results (in addition to the fact that we did not find evidence that the group of caregivers who stayed in the same relationship over the 5 year window differed on their CTS-R scores from those who did not stay together over this time period) supports the idea that the observed changes in prevalence over the first five years of the child's life are not exclusively due to differential attrition of violent versus non-violent couples.

*Changes in qualities of the IPV.* Although there were no significant changes in the proportion of physically violent couples that reported only severe IPV over time,  $\chi^2(4, N = 1365) = .87, p = .93$ , there were changes in the proportion of violent couples reporting only minor instances IPV, as well as those reporting both minor and severe instances of IPV. Specifically, the proportion of couples reporting only minor IPV increased by over 10 percent between the 15 month and 36 month assessment timepoints,  $\chi^2(1, N = 510) = 6.28, p = .01$  (this proportion was not statistically significantly different between the 6, 15, and 24 month assessments; the difference between 24 months and 36 months was also non-

significant,  $\chi^2(1, N = 490) = 3.44, p = .06$ ). This proportion did not change significantly between the 36 and 60 month assessment timepoints,  $\chi^2(1, N = 404) = .04, p = .93$ .

The proportion of physically violent couples who reported both minor and severe violence also changed over time, such that this figure decreased by over 10% between the 15 month and 36 month assessment timepoints,  $\chi^2(1, N = 510) = 6.06, p = .01$  (while, again, not changing significantly between the 6, 15, and 24 month timepoints, or between the 24 and 36 month timepoints). This proportion did not change significantly between the 36 and 60 month assessment timepoints,  $\chi^2(1, N = 404) = .01, p = .94$ .

There were no significant changes in the proportion of couples who reported exclusively female-to-male ( $\chi^2(4, N = 1365) = 2.40, p = .66$ ), exclusively male-to-female ( $\chi^2(4, N = 1365) = 5.56, p = .23$ ) or dual-perpetrated IPV ( $\chi^2(4, N = 1365) = 1.08, p = .90$ ) over the five assessment timepoints.

#### *Research aim three: Examining demographic predictors of IPV*

Table 4 presents bivariate correlations among the focal demographic variables and a variable that captured whether any IPV was reported over the five year reference period; correlations were calculated using data from the subsample created to address research aim three ( $n = 938$ ). Associations among these variables were largely as expected, such that the mother's age at the 6 month assessment timepoint was negatively associated with whether or not she was in a physically violent relationship ( $r = -.17, p < .01$ ), as was her highest level of completed education ( $r = -.21, p < .01$ ), and the family's income-to-needs ratio ( $r = -.14, p < .01$ ). The mother's marital status ( $r = -.20, p < .01$ ) and the child's race ( $r = .19, p < .01$ ) were also significantly correlated with IPV, such that mothers of African American



children and unmarried mothers were more likely to be in physically violent relationships than were mothers of White children and those who were married, respectively.

When considered longitudinally (such that information from all five assessment timepoints were considered simultaneously), 532 (56.72%) couples in this subsample reported that either they or their partner had been physically violent at one or more assessment timepoints. Of the mothers in physically violent relationships, 324 (60.90%) reported both minor and severe instances of IPV, 193 (36.28%) reported only minor instances of IPV, and 15 (2.82%) reported only severe instances of IPV. With regard to the perpetrator of the physical violence, 353 (66.35%) mothers reported that both she and her partner had been physically violent at some point over the five year window, while 138 (25.93%) reported that only the mother had been physically violent, and 41 (7.71%) reported that only the mother's partner had been physically violent. 256 (57.27%) of violent couples reported that this IPV was chronic, defined here as IPV reported at two or more assessment timepoints.

Results from a series of multivariate logistic regressions are presented in Table 5. In each of these logistic regressions, the demographic variables identified by previous research (i.e., the child's race, the family's income-to-needs ratio, the mother's age, her highest level of completed education, and the couple's marital status) were entered as predictors of the individual's risk for that type of IPV (e.g., dual-perpetrated IPV, exclusively minor IPV, chronic IPV). In each of these models, the comparison group was all other observations (e.g., for the logistic regression predicting chronic IPV, the comparison group was individuals reporting non-chronic IPV and those reporting no IPV, combined). Although we initially considered the couple's marital status as a three-level categorical variable (with

unmarried cohabitating, married, and unmarried non-cohabitating couples as the three categories), no differences were found between unmarried non-cohabitating couples and either married or unmarried cohabitating couples. For the sake of parsimonious presentation, we, therefore, only present the results from models that examined the contrast between married and unmarried couples.

As can be seen in Table 5, although there is some variation in which demographic variables emerged as significant predictors of increased risk for the different qualities or types of IPV, there appears to be a general pattern. That is, the child's race and the mother's highest level of completed education seem to be fairly consistently related to risk for IPV. The mother's marital status and her age at the 6 month assessment timepoint were also related to her risk for IPV, although less consistently so. Mothers of African American children were 74% more likely than those of White children to be in physically violent romantic relationships (OR = 1.74, 95% CI = 1.26-2.41,  $p < .01$ ), were 98% more likely to be in chronically violent relationships (OR = 1.98, 95% CI = 1.41-2.78,  $p < .01$ ), and were 51% more like to be in a relationship in which both she and her partner were physically violent (OR = 1.51, 95% CI = 1.10-2.09,  $p < .05$ ). Interestingly, although African American mothers were more likely to be in romantic relationships characterized by physical violence, the violence that they reported was often less severe than the IPV reported by their White counterparts, as evidenced by a 230% increased risk for being in a relationship characterized by exclusively minor IPV (OR = 2.30, 95% CI = 1.66-3.20,  $p < .01$ ) and a 34% decreased risk for being in a relationship characterized by both minor and severe IPV (OR = .66, 95% CI = .44-.99,  $p < .05$ ).

The mother's highest level of completed education was also associated with her risk for being in a physically violent relationship (OR = .90, 95% CI = .84-.96,  $p < .01$ ), as well as with her risk for being in a chronically violent relationship (OR = .92, 95% CI = .86-.99,  $p < .05$ ), a relationship in which the IPV was dual-perpetrated (OR = .90, 95% CI = .84-.96,  $p < .01$ ), and one in which only minor IPV was perpetrated (OR = .90, 95% CI = .84-.97,  $p < .01$ ). That is, for every year older the mother was when the target child was 6 months old, she was 8-10% less likely to be in a romantic relationship characterized by these various qualities of IPV. The mother's marital status was also related to increased risk for any IPV and for IPV that was both minor and severe in nature, such that married couples were 30% less likely than their unmarried counterparts to be in a physically violent relationship (OR = .70, 95% CI = .50-1.00,  $p < .05$ ), as well as 35% less likely to be in a relationship in which both minor and severe IPV had occurred (OR = .65, 95% CI = .43-1.00,  $p < .05$ ).

Models predicting an individual's risk for exclusively female-to-male IPV, exclusively male-to-female IPV, and exclusively severe IPV were non-significant ( $p = .51$ ,  $.05$ , and  $.20$ , respectively), and, thus, were not presented here.

### Discussion

The current study investigated the prevalence of IPV occurring in a population-based sample of families living in rural, low-income communities. Using multi-informant, longitudinal data from an at-risk yet understudied population, this study documents the striking prevalence of IPV occurring in this sample of families who recently gave birth to a child, as well as changes in this prevalence over the first five years of that child's life. The current study also examined the extent to which select demographic variables (e.g., the child's race, the mother's highest level of education, the mother's age, and her marital status)

were linked with increased risk for IPV. These findings (discussed in greater detail below) add to the field's limited understanding of the prevalence and nature of IPV occurring in communities that are at heightened risk for IPV, and provide compelling evidence that additional research investigating IPV occurring in rural, low-income populations is needed.

### *Prevalence of IPV*

A striking number of individuals enrolled in the FLP reported that either they or their partner had engaged in at least one incident of physical violence. Point estimates of IPV prevalence in this sample ranged from 21.33% to 41.08% of couples, depending on the assessment timepoint in question. These figures, not unexpectedly, are quite a bit higher than those found by the National Family Violence Survey, which reported that 10% to 12% of couples experienced at least one instance of IPV in the previous year (Straus & Gelles, 1990), as well as the figures reported by the 1995 National Alcohol Survey (McDonald, Jouriles, Ramisetty-Mikler, Caetano, & Green, 2006; 21%). When considered longitudinally (such that for a given individual, all reports of IPV at all five assessment timepoints were considered simultaneously), 56.72% of mothers reported that either they or their partner had been physically violent at some point over the five year reference window. Although the subsample that was used in the current study to examine IPV longitudinally was not representative of all mothers enrolled in the FLP (i.e., this subsample only included mothers who were partnered at the 6 month assessment timepoint, and who were their child's primary caregiver at all five assessment timepoints), this proportion of physically violent couples is still informative, particularly given that most mothers in this sample remained the target child's primary caregiver over time. The heightened prevalence of IPV in this sample (relative to nationally representative samples) illustrates the importance of assessing, treating,

and targeting IPV occurring in high-risk populations like the one described by the current study. The stark contrast between the prevalence estimates produced when examining IPV scores at each assessment timepoint and those created while examining the data longitudinally underscores the importance and added benefit of studying IPV over time, rather than exclusively cross-sectionally.

The plurality of IPV reported in this sample was both minor and severe in nature, meaning that couples commonly endorsed behaviors such as shoving or slapping one's partner in conjunction with more severe behaviors such as beating up or choking one's partner. This finding (that severe violence is commonly occurring, even in community samples like this one) is concerning, given the particularly negative consequences that severe IPV has been shown to have for both parents and children. Consistent with previous research conducted with community samples (Archer, 2000; Capaldi & Owen, 2001; Johnson, 2006), this study found that most of the violence in this sample was dual-perpetrated, meaning that in the majority of cases, both the female and the male partners had engaged in physically violent acts. This finding, which is not unique to our study, reiterates the importance of simultaneously examining both male-perpetrated and female-perpetrated IPV when investigating physical violence occurring in community-based samples.

#### *Changes in Prevalence over the First Five Years of the Child's Life*

The current study also found evidence that the population-level prevalence of IPV changes as families develop and children age. When comparing multiple point estimates of IPV prevalence assessed at various times over the first five years of the child's life, we found that the largest number (and the largest proportion; 41.08%) of individuals reported at least one incident of IPV at the 6 month assessment timepoint, meaning that the IPV occurred

either during the first six months of the target child's life, or while the mother was pregnant with the target child. This value decreased significantly to around 30-31% at the 15 and 24 month assessment timepoints, and then decreased significantly again at the 36 and 58 month assessment timepoint, to about 21-25%. This downward trend in the prevalence of IPV (a pattern of findings that cannot be attributed to differential attrition alone) supports the notion that the integration of a new child into the family system is a particularly challenging time for couples (e.g., Cox, Paley, Burchinal, & Payne, 1999) and suggests that screening efforts or interventions aimed at helping families who are the victims of IPV may want to target families around the birth of a new child, as prevention efforts conducted at this time likely will be particularly high-yield.

The findings of this study also suggest that there may be age-related changes in the proportion of IPV that is reported to be exclusively minor and that which is reported to be both severe and minor. Specifically, it appears that between the 15 and 36 month assessment timepoints the proportion of couples who report both minor and severe IPV decreased, and the proportion of couple who report exclusively minor incidents increased by roughly the same percentage. Although these are simply population-level changes in the prevalence of IPV over time (versus changes within a given individual or couple), it seems possible that this simultaneous increase in the proportion of couples who report exclusively minor IPV and a decrease in the proportion of couples who report both minor and severe IPV reflects that, as their child ages, some couples are no longer engaging in both severe and minor instances of IPV, but rather are only engaging in minor IPV. These findings are consistent with the idea that there may be fluctuations in the prevalence and severity of IPV at the same time that there are fluctuations in family stress (a notion supported by the literature on marital conflict;

Conger et al., 1990), however future research should explicitly investigate whether this is the case, given that this study simply investigated population-changes in IPV prevalence over time, rather than changes in IPV perpetrated by a specific individual or couple.

### *Demographic Variables*

Using a subsample of the families enrolled in the FLP (in which the child's mother had a romantic partner at the 6 month assessment, and in which the child resided with their biological mother at all five assessment timepoints), this study also investigated demographic variables that may be linked with increased risk for IPV in this understudied population. Results from logistic regressions suggest that mothers of African American children were at increased risk for IPV (including increased risk for chronic IPV and dual-perpetrated IPV), as were mothers who were less educated, younger, and those who were unmarried at the 6 month assessment timepoint. Interestingly, in the current study, the family's income-to-needs ratio was not a significant predictor of any of these dimensions or types of physical violence, a fact which runs contrary to previous work examining family income and risk for IPV (e.g., Gelles, 1997; Thompson et al., 2006; Tolman & Raphael, 2002). This lack of finding may be due to the fact that we examined risk for IPV within a generally low-income sample, rather than across a wider range of economic groups.

Although these relations should be explored in further analyses and with additional samples before being interpreted with any type of certainty, this information and line of research has the potential to inform policy decisions and targeted interventions aimed at helping families who are at particular risk for exposure to IPV.

### *Strengths and Limitations of This Study*

The current study adds to the extant literature examining the prevalence and nature of IPV occurring in the United States in a number of ways. Although several studies have investigated the prevalence of IPV in the general population, less is known about IPV occurring in high-risk populations, such as couples living in rural, low-income communities who have given birth to a child. The large, population-based sample used in the current study, which was specifically recruited to study families living in counties characterized by rural poverty, therefore, offered a unique opportunity to investigate and to provide some quantification of the burden of IPV occurring in this population. This study's investigation of both the presence of IPV as well as the qualities of said IPV (i.e., the severity, chronicity, and perpetrator of the IPV) also represents a contribution to this field, as examination of these dimensions of IPV has largely been neglected in previous studies of IPV prevalence. Additionally unique to this study is the fact that IPV was reported by both the child's primary caregiver and his or her caregiver's romantic partner, and that IPV was assessed at several times over the first five years of the child's life (i.e., at 6 months, 15 months, 24 months, 36 months, and 58 months). Given that most of the extant research devoted to characterizing IPV prevalence rates has relied on responses from a single reporter assessed at a single assessment timepoint, these attributes represent a strength of the current study.

Despite these strengths, this study also had a number of limitations. These findings can only be generalized to parents living in rural, low-income communities who recently gave birth to a child, which means that these figures are not representative of all couples residing in the counties that the FLP was recruited from, nor do they extend to individuals residing in counties that are dissimilar to those studied here. Although focusing on this specific population allowed us to investigate more nuanced aspects of IPV prevalence



(including change over time, and the severity, chronicity, and perpetrator of the IPV), these findings are only generalizable to the population specified above. Future research, therefore, may want to reproduce these efforts in other high-risk samples, or among couples who live in these same communities but who are not parents. Additionally limiting is the fact that these findings do not speak to changes within the same person over time (only changes in prevalence on the population-level), nor do they speak to change in these dimensions of IPV within the same relationship. Future research may want to use person-centered approaches to investigate these outstanding questions.

### *Summary of Findings*

The results of this study illustrate a number of broad points, including the following:

1. IPV is a large public health concern, especially in communities at heightened risk for IPV, such as those characterized by rural poverty. Reports of IPV were strikingly prevalent in this sample, such that 56.72% of couples included in our longitudinal subsample reported being the victim or perpetrator of at least one incident of IPV over the five year reference window. This figure (in conjunction with the point estimates of prevalence produced for each assessment timepoint in the current study) demonstrates the great need for domestic violence resources in low-income, rural counties like those described in the current study.

2. The number and proportion of couples reporting IPV changed over time. The largest proportion of IPV was reported shortly after the birth of the target child (41.08% of couples reported at least one incident of IPV at the 6 month assessment). This proportion decreased significantly over the first five years of the child's life. Although previous research suggests that children under the age of five are at heightened risk for IPV relative to

older children (Fantuzzo et al., 1997), this is the first study to our knowledge to demonstrate that there are changes in the prevalence of IPV within this high-risk age period. These findings have obvious implications for the timing and target of intervention programs aimed at preventing or reducing the impact of IPV.

3. Within the low-income, rural sample used in the current study, certain demographic groups may be at heightened risk for IPV. Specifically, the current study found that mothers of African American children and those who had completed fewer years of education were at increased risk for a number of dimensions and types of IPV (e.g., chronic IPV, dual-perpetrated IPV). The mother's age and marital status at the 6 month assessment timepoint were also significant predictors of certain dimensions of IPV (such that younger and unmarried women were at increased risk), however these demographic variables were less consistently related to increased risk for IPV. Although these findings should be interpreted with caution before they are replicated using additional samples, they are a first step toward identifying information that might facilitate targeted intervention.

## **CHAPTER THREE**

### **Study Two: Linking IPV and Child Competence**

A large body of literature suggests that children living in homes characterized by IPV are at greater risk for maladaptive outcomes than are children who do not live with such violence. Exposure to physical violence perpetrated among parents has been linked with problematic outcomes for children in a variety of domains, including increased internalizing and externalizing problems, heightened risk for developing conduct disorders, and greater mental health problems (Fantuzzo & Mohr, 1999; Jaffe, Wolfe, & Wilson, 1990; Kitzmann, Gaylord, Holt, & Kenny, 2000; Margolin & Gordis, 2000; Wolfe, Crooks, Lee, McIntyre-Smith, & Jaffee, 2003). As these examples illustrate, quite a bit of literature has linked IPV with the development of problematic or maladaptive behaviors in children. Few studies, however, have examined the development of adaptive skills in the context of IPV, including the development of competence in age-salient tasks. This is a notable oversight, as simply not exhibiting problematic behaviors does not indicate that a child is showing effective adaptation or having success with major developmental tasks. For example, a school-aged child who does not display aggressive or hostile behaviors is not necessarily able to effectively relate to their peers, a skill which has implications for their school success (Kochenderfer & Ladd, 1996; Ladd, 1990). Similarly, just because a child does not meet criteria for a conduct disorder does not mean that they are able to manage frustration or cooperate with other children, skills which are also essential for functioning in a classroom setting (McClelland, Morrison, & Holmes, 2000; McClelland, Acock, & Morrison, 2006;

Neuenschwander, Röthlisberger, Cimeli, & Roebbers, 2012). Given the implications that demonstrating competence with age-salient tasks has for children's short and long-term functioning, it is important to investigate factors, such as IPV, that may undermine its development.

### *IPV and Child Competence*

As detailed earlier in this proposal, the term competence refers to a pattern of effective adaptation to the environment, defined by reasonable success with major age-salient developmental tasks (Masten & Coatsworth, 1998). As this definition implies, the tasks relevant for demonstrating competence vary as a function of the child's age, as different developmental periods confront children with different challenges. The central challenge for school-aged children, for example, is to be able to function in a classroom setting. Acquiring skills relevant to confronting this challenge, therefore, constitutes the developmental task for children of this age. Being able to regulate one's emotions, to relate well to peers, and to exhibit prosocial behaviors are three such skills, as the ability to manage frustration and disappointment, as well as the ability to cooperate and effectively interact with peers, has implications for children's participation and success in the classroom setting. Supporting this assertion is research that demonstrates that children's functioning in these three domains is associated with their school success, both concurrently and several years later (Ladd, 1990; McClelland, Morrison, & Holmes, 2000; McClelland, Acock, & Morrison, 2006; Neuenschwander, Röthlisberger, Cimeli, & Roebbers, 2012; Wentzel & McNamara, 1999). Given the importance of children's ability to function in the classroom for their general success, in addition to the importance of these skills for achieving such success during the

early school years, children's emotion regulation, peer relations, and prosocial skills were the focus of the current study.

Despite limited empirical research specifically investigating a link between IPV and competence in school-aged children, there are a number of reasons to believe that IPV may undermine children's emotion regulation, peer relations, and prosocial skills. According to emotional security theory (EST; Davies & Cummings, 1994), witnessing violence is distressing and dysregulating for children, and repeated exposure to inter-parental conflict undermines their sense of safety and security in the family. These security concerns, in turn, interfere with children's ability to effectively cope with the stresses and challenges of everyday life, including achieving competence in age-salient developmental tasks. Indeed, research guided by EST suggests that exposure to IPV undermines children's ability to regulate their emotions (Maughan & Cicchetti, 2002; Thompson & Calkins, 1996), and that marital conflict is negatively associated with their peer relations and prosocial skills (Du Rocher Schudlich, Shamir, & Cummings, 2004; McCoy, Cummings, & Davies, 2009). Research guided by other theoretical frameworks has also found linkages between IPV and children's emotion regulation (El-Sheikh, 1994), their prosocial skills (Fantuzzo, DePaola, Lambert, Martino, Anderson, & Sutton, 1991; Kitzmann, Gaylord, Holt, & Kenny, 2003), and their peer relationships (Cantrell, MacIntyre, Sharkey, & Thompson, 1995); however, the majority of this literature has been conducted with either younger (e.g., preschool-aged) or older (e.g., adolescent) children. It, therefore, remains unclear to what extent these findings extend to the functioning of school-aged children, a population that is generally underrepresented in the IPV literature (DeBoard-Lucas & Grych, 2011), yet for whom these skills may be particularly important.

### *The Role of Chronic IPV*

Embedded in EST's description of how IPV impacts child and family functioning is the notion that repeated exposure to IPV impacts children more severely than less chronic exposure to interparental conflict (Davies & Cummings, 1994). Research investigating the impact of more general marital conflict supports this proposition, such that chronic interparental conflict, relative to more transient conflict among parents, has been associated with more negative effects on children (Grych & Fincham, 1990). These findings are consistent with research that shows that chronic risks (more broadly defined) are more likely to have damaging effects on children than more transient risks (Garmezy & Masten, 1994), and yet, remarkably little research has been devoted to exploring the role of the chronicity of IPV in influencing child outcomes.

There are a number of reasons that one would predict that chronic exposure to IPV would be worse for children than non-chronic exposure to IPV. Most obviously, chronic IPV has a larger likelihood of disrupting children's emotional security, as well as a larger likelihood of undermining adaptive family functioning (Davies & Cummings, 1994). Also compelling is research that suggests that children who have previously been exposed to marital aggression show more behavioral and physiological distress when exposed to future conflict, relative to those who have not been exposed to marital aggression (El-Sheikh, 1994; Thompson & Calkins, 1996). This heightened reactivity to subsequent conflict is hypothesized to have a snowballing effect for these children, in that their increased sensitivity to future conflict magnifies the negative effect of later interparental conflict. Although certainly not conclusive, these findings suggest two important points. First, they suggest that early experiences with IPV may be particularly detrimental to children's

functioning (in that these early experiences make them more susceptible to the negative impact of future conflict), and thus the impact of IPV occurring early in the child's life should be investigated. Second, it suggests that one should investigate whether this increased sensitivity to conflict manifests in worse outcomes for children who are reared in chronically violent homes, as this may have implications for interventions aimed at helping these children. As such, the current study focused on the impact of IPV occurring early in the child's life on their competence during the early school years, as well as the role that the chronicity of the IPV may play in this link.

#### *Parenting as a Mediator*

In addition to proposing a direct link between IPV and children's competence, EST also suggests that marital conflict may impact child development through indirect means, specifically through its influence on parenting practices. According to the *spillover hypothesis*, emotions engendered in the adult-adult relationship can carry over into the parent-child relationship, and it is at least in part through disturbances in the parent-child relationship that IPV influences child outcomes (Cox & Paley, 1997; Cox, Paley, & Harter, 2001; Cummings & Davies, 2002; Krishnakumar & Buehler, 2000). Supporting this notion is research that suggests that IPV is associated with less sensitive and more harsh, controlling parenting behaviors (Levendosky & Graham-Bermann, 2000; Levendosky, Huth-Bocks, Shapiro, & Semel, 2003), as well as research that links these same dimensions of parenting with children's emotion regulation (Grolnick & Farkas, 2002; Karreman, van Tuijl, van Aken, & Deković, 2006), their prosocial skills (Eisenberg & Valiente, 2002; Lengua, Honorado & Bush, 2007), and their peer relations (Hart, Newell, & Olsen, 2003; Ladd & Pettit, 2002).

Interacting with sensitive parents who consistently recognize and respond to their cues has been shown to be important for children's developing emotion regulation (Kochanska et al., 2000; Sroufe, 1996; Tronick, 1989), as these experiences provide children with appropriate guidance, structure, and encouragement when needed, behaviors which have been shown to scaffold their emotional development. Similarly, sensitive parenting has been shown to promote the acquisition of prosocial skills (e.g. Lengua, Honorado & Bush, 2007; Spinrad et al., 2007), as sensitive parents model and encourage behaviors such as cooperation and listening to the point of view of others. Children's peer relationships may also be affected by interactions with sensitive parents, as these interactions can encourage children to acquire abilities central to forming functional peer relationships, including emotion regulatory and prosocial skills (Wentzel & McNamara, 1999). Indeed, peer relationships have been shown to have their roots in family relationships (Sroufe, Egeland, & Carlson, 1999).

Harsh and controlling parenting behaviors have also been associated with children's demonstration of competence. Children of negative, controlling parents are not only denied structured opportunities to learn to regulate their emotions, but displays of parental hostility can also result in children becoming overaroused, thereby undermining their ability to regulate their emotions (Thompson & Calkins, 1996). The behaviors that these parents engage in not only provide a model for poor emotional regulatory strategies, but these parents may also serve as models of dysfunctional interpersonal relations and interactive styles, a fact that has obvious implications for the three dimensions of children's competence investigated here. Although both sensitive and harsh controlling parenting behaviors have been related to these three dimensions of child competence (i.e., self-regulatory skills,



prosocial skills, and peer relations) in isolation, few studies have tested the effect of both of these parenting simultaneously. The third goal of the current study, therefore, was to explore whether one or both of these types of maternal parenting behaviors mediated the relation between IPV and child competence during the early school years.

Although there is emerging evidence that the parenting of men in physically violent intimate relationships is also compromised by IPV (Guille, 2004; Holden & Barker, 2004), most of this literature has focused on the role of mothering in the link between IPV and children's outcomes (e.g., Huang, Wang, & Warrenner, 2010; Levendosky & Graham-Bermann, 2001). This focus on mothering likely is in part because mothers are typically the primary caregivers of young children, such that, particularly during the early years, they tend to spend more time caring for their children relative to fathers (Hofferth, Stueve, Pleck, Bianchi, & Sayer, 2002; Pleck & Masciadrelli, 2004). Given that mothers generally play a larger role in the rearing of young children, in addition to the fact that maternal caregiving during early childhood has been shown to be uniquely and particularly important for children's later development (Maccoby, 2000; Verhoeven, Junger, Van Aken, Deković & Van Aken, 2007), disturbances in maternal parenting during this time may be particularly detrimental for children's long term functioning. As such, the current study focused on maternal parenting behaviors occurring over the toddler years as a mediator of the relation between IPV occurring early in the child's life and their competence when they are school-aged.

### *The Current Study*

In an effort to address these gaps in our knowledge about the impact of IPV on children's competence, the goal of the current study was to explore the influence of living in

a physically violent home on children's competence during the early school years, operationalized here as their ability to regulate their emotions, to effectively interact with peers, and to demonstrate prosocial skills in their elementary school classroom. Guided by family systems theory (Cox & Paley, 1997) which emphasizes the importance of considering the dynamic interplay between the multiple relationships in the family to better understand development, the current study examined the following research questions: (1) *Is IPV occurring early in the child's life related to children's competence during the early school years (i.e., their ability to regulate their emotions, to relate well to peers, and to exhibit prosocial skills in the classroom context)*, (2) *Does the strength of this association vary based on whether the IPV was chronic?*, and (3) *Do maternal parenting behaviors over the toddler years mediate the relation between IPV and child competence?* We hypothesized that IPV would be negatively associated with children's competence during the early years and that chronic IPV would have a stronger effect on children's development than non-chronic IPV. We also hypothesized that maternal parenting behaviors over the toddler years would partially mediate this relation.

A number of demographic covariates were incorporated into the current investigation in order to account for the possibility that these factors are partially responsible for any observed relation between IPV, maternal parenting behaviors, and child competence. Specifically, the family's income-to-needs ratio, the mother's age and highest level of completed education, the child's race and age at the classroom assessment, the couple's marital status, and the data collection site were included as control variables in all analyses.

## Method

### *Participants*

The participants included in the current study were drawn from the Family Life Project, an ongoing longitudinal study of families living in low-income, rural communities. Please see Study One of this dissertation for additional information about the recruitment procedures and general demographics of the overall sample.

The subsample used in the current analyses included families that met three criteria:

1. the child's primary caregiver at the 6 month assessment was his or her biological mother,
2. the child's biological mother had a romantic partner at the 6 month assessment timepoint,
- and 3. the child resided with their biological mother at each of the assessment timepoints included in the current study (i.e., 6, 15, 24, 36, and 60 month assessment timepoints). These criteria resulted in the inclusion of 938 families. This is the same subsample used to address the third research aim of the previous study of this dissertation (see Study One for additional information about this subsample).

### *Procedure*

Data for the current study came from a series of home and school-based visits completed when the target child was 6, 15, 24, 36, and 60 months of age, in addition to when they were enrolled in their second year of formal schooling. When the child was 6, 15, 24, 36, and 60 months of age, two research assistants visited families in their homes, where they administered a series of questionnaires to mothers via laptop computer and videotaped parent-child interactions for later coding. When the target child was enrolled in their second year of school, the child's teachers completed questionnaires about his or her behaviors via a secure online survey site.

### *Measures*

*Intimate partner violence.* IPV was assessed using the Conflict Tactics Scale - Couple Form R (CTS-R; Straus & Gelles, 1990), a 19 item self-report measure completed by the child's mother when he or she was 6, 15, 24, 36 and 60 months old. Please see Study One for further details about the administration and reliability of this measure, as well as for example items for behaviors indexed by the physical violence subscale. In contrast to Study One (which used both maternal and paternal report of IPV), the current study only used maternal report of IPV. This was done for a number of reasons, most prominently because a large number of fathers in this study were either unable or unwilling to participate in the visit, and thus there is quite a bit of missing father data for all measures. This missingness, combined with the fact that women have been shown to be more accurate reporters of physical aggression than men (Stets & Straus, 1989; Straus & Sweet, 1992) suggest that exclusively using maternal report may be a good choice for the current study. In an effort to more accurately capture the violent climate of the mother's relationship at each assessment timepoint, the mother's report of her own IPV and her report of her partner's IPV were summed to create a total score which represents the total amount of physical violence occurring in the interparental relationship.

A number of additional variables were computed using these total CTS-R scores. For example, these total IPV scores at each of the five assessment timepoints were summed in order to create a variable that captured all of the IPV reported by the mother during the first five years of her child's life. A variable which captured whether the mother reported any IPV at any of the five timepoints was also computed (0 = *No IPV*, 1 = *IPV*). Consistent with its treatment in Study One, families for whom IPV was reported at two or more assessment

timepoints were considered having experienced chronic IPV (0 = *Non-Chronic*, 1 = *Chronic*).

*Child competence.* Child competence was measured using a number of questionnaires that were completed by the child's teacher when the child was in his or her second year of formal schooling. For most children enrolled in this study, the second year of formal schooling was the year that they were in the first grade, however a subset of the children in this subsample were enrolled in Kindergarten ( $n = 53$ ) or the second grade ( $n = 3$ ) during this year. In order to account for these differences, the child's age at the time of the classroom visit (measured in years and fractions thereof) was incorporated as a control variable into all analyses. The measures of child competence that these teachers completed are listed below, organized by measure rather than by dimension of child competence (i.e., emotion regulation, prosocial skills, peer relations), as some of these measures assess multiple dimensions of school-aged children's competence. The six subscales described below were used as indicators of the child competence latent variable in all analyses.

*Social competence scale.* When the child was enrolled in their second year of school, their teachers completed the Social Competence Scale (SCS; Conduct Problems Prevention Research Group, 2002), a 12 item teacher-reported measure which asks respondents to rate on a seven point likert-type scale (where 1 = *Almost Never* and 6 = *Almost Always*) the frequency with which the target child exhibited a number of behaviors over the last 6 months. Two of the measure's subscales, emotion regulation and prosocial skills, were used in the current study. Example items include "copes well with disappointment or frustration" (emotion regulation subscale) and "listens to other people's point of view" (prosocial skills subscale). Higher scores on these subscales indicate greater competence.

*Social skills rating scales.* Also when the child was enrolled in their second year of school, teachers completed the Social Skills Rating Scales - Teacher Version (SSRS; Gresham & Elliott, 1990). This 57 item questionnaire asks teachers to report on a three point likert-type scale (where 0 = *Never* and 2 = *Always*) how often in the past 1-2 months the target child engaged in certain behaviors. Two of this measure's subscales, assertion (which includes items such as "makes friends easily" and "gives compliments to peers") and self-control (e.g., "cooperates with peers without prompting" and "compromises in conflict situations by changing own ideas to reach agreement") were included in the current study. Higher scores on these subscales indicate greater competence.

*Strengths and difficulties questionnaire.* The child's teacher also completed the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001), a 25 item behavioral screening questionnaire designed to assess the psychological adjustment of children. Teachers were presented with a list of statements, and were asked to rate on a three point likert-type scale (where 0 = *Not True* and 2 = *Certainly True*) how true that statement was of the target child's behavior over the last six months. The peer problems and prosocial skills subscales of this measure were used in the current study. Example items include "[was] picked on or bullied by other children" and "[was] considerate of other people's feelings," respectively. Higher scores on the peer problems subscale indicate less competent behavior, whereas higher scores on the prosocial skills subscale indicate greater competence.

*Maternal parenting behaviors.* Maternal sensitive and harsh-intrusive parenting behaviors were assessed during a series of parent-child interactions when the target child was 15, 24, and 36 months old. When the child was 15 months old, mothers and children completed a free-play activity in which they were presented with a standard set of toys.

Mothers were instructed to interact with their children as they typically would if given some free time during the day. When the child was 24 and 36 months old, the same mother-child dyads completed a puzzle task, in which they were presented with three developmentally appropriate puzzles of increasing difficulty. Parents were told that this was a task for the child to complete, but that they could provide any assistance that they deemed necessary. All interactions lasted 10 minutes, and were videotaped for later coding by an ethnically diverse team of coders who were blind to other information about the families. Using seven global rating scales (Cox & Crnic, 2002; sensitivity/supportive presence, detachment/disengagement, intrusiveness, stimulation of cognitive development, positive regard, negative regard, and animation) adapted from those used by the NICHD Study of Early Child Care (NICHD ECCRN, 1999), coders rated parenting behaviors on a 5 point scale (where 1 = *not at all characteristic* and 5 = *very characteristic*). Informed by an exploratory factor analysis with an oblique rotation (i.e., promax), the individual subscales were composited in order to obtain overall sensitive parenting (the mean of sensitivity, stimulation for cognitive development, positive regard, animation, and reverse scored detachment) and harsh-intrusive parenting scores (the mean of intrusiveness and negative regard). Inter-rater reliability for the composites, assessed using Intraclass Correlations (ICCs) across each pair of coders at each timepoint, were .89, .91, and .90 for sensitive parenting, and .79, .86, and .85 for harsh-intrusive parenting, for the 15, 24, and 36 month timepoints, respectively. At each timepoint, coders underwent training until acceptable reliability ( $ICC > .80$ ) was achieved and maintained for each coder on every scale. Once acceptable reliability was established, coders began coding in pairs while continuing to code at least 20% of their weekly cases with a criterion coder. Each coding pair met biweekly to

reconcile scoring discrepancies; the final scores that they arrived at by consensus were used in all analyses. The three timepoints of sensitive parenting were used as indicators of the latent variable maternal sensitive parenting, and the three timepoints of harsh-intrusive parenting were used as indicators of the latent variable maternal harsh-intrusive parenting.

*Covariates.* At each assessment timepoint, mothers reported information about a variety of demographic variables. Among these variables were the total household income from all possible sources (e.g., income from all household members, unemployment insurance, social security retirement, pension, welfare, child support, regular help from relatives or friends, etc.) and the number of individuals living in the home. Income-to-needs ratios were calculated by dividing the total household income from all possible sources by the federally determined poverty threshold for the number of people living in the household for that year. Income-to-needs ratios above 1.0 indicate that a family is able to provide for basic needs, whereas values below 1.0 indicate that they are not. Information about the couple's marital status (0 = *Unmarried*, 1 = *Married*), the child's race (0 = *White*, 1 = *African American*), and the mother's and child's age (both measured in years) was also collected at each assessment. The primary caregiver's education was assessed using a 23 point scale where values 0-11 indicate the highest grade level that they had completed, and values 12-22 include milestones including obtaining a Graduate Equivalency Diploma (GED) (12), graduating from high school (14), completing a four year college degree (18), and obtaining a PhD (22). Each of these variables, in addition to the data collection site (0 = *NC*, 1 = *PA*), were used as covariates in all analyses. Because the family's income-to-needs ratio, the mother's marital status, maternal education, and maternal age each showed great stability over time, the 6 month assessment of these four variables were used in all analyses.



### *Analytic Strategy*

Structural equation modeling (SEM) was used to test our research questions (Schumacker & Lomax, 1996). Models were parameterized using the *Mplus* 6.0 software package (Muthén & Muthén, 1998-2010), using the robust maximum likelihood estimator. This estimator accommodates non-normal data by adjusting standard errors using the Huber-White sandwich estimator. Missing data were managed using full information maximum likelihood methods (FIML; Arbuckle, 1996). Model fit was examined using a number of fit indices, including the comparative fit index (CFI; Bentler, 1990), the Tucker-Lewis index (TLI; Tucker & Lewis, 1973), and the root mean squared error of approximation (RMSEA; Browne & Cudeck, 1993). CFI and TLI values above .90 and RMSEA values below .05 indicate adequate model fit.

*Research question one.* The lack of extant research that has considered several assessments of IPV over time provides us with little guidance about the best approach to our longitudinal data when testing the first research question (i.e., *Is IPV occurring early in the child's life related to children's competence during the early school years?*). There are a number of theoretically sound ways that one could composite the five assessments of IPV included in the current study in order to capture IPV occurring early in the child's life. For example, it is plausible that creating a variable which indexes the total amount of IPV that the mother reports over the five years (i.e., the sum of her report of IPV at each assessment timepoint) might be an appropriate way to aggregate this data. This summation is similar to how the CTS-R indexes IPV occurring over a smaller reference period (in the current study, the previous year). Although we are unaware of any research that has asked respondents to report about behaviors occurring over such a large period of time, it seems that extending an

already well-validated method of capturing IPV (i.e., aggregating the frequency of IPV over a reference period) could be informative.

The literature investigating the effects of maltreatment on child development suggests that a different method of using this longitudinal IPV data may be useful. Researchers investigating the impact of maltreatment often dichotomize their data, so that they compare the performance of children who have a history of any maltreatment (a classification that often includes exposure to IPV) with children who have not been maltreated. Although one loses quite a bit of variability in IPV scores when adopting such an analytic strategy, this literature has documented robust differences between these groups of children, and thus their method may help to inform our research.

Last, it is possible that constructing a latent variable that uses the five timepoints of the CTS-R as indicators of an IPV latent variable (a practice often used in the marital conflict literature) might be a useful approach to our data. Although there are undoubtedly additional ways in which these scores could be aggregated so that our research question could be tested, the current study considered the three preceding possibilities, by testing the following three models:

1. *The total amount of IPV over the first five years.* The child competence latent variable was regressed on the total amount of IPV reported by the child's mother over the five year window measured in the current study (i.e., the sum of her reports of IPV at the 6, 15, 24, 36, and 58 month assessments).
2. *The presence or absence of IPV.* The child competence latent variable was regressed on a variable which captured whether or not the mother reported any IPV at any of the five assessment timepoints (0 = *No IPV*, 1 = *IPV*).

3. *A latent variable of IPV at all five timepoints.* The child competence latent variable was regressed on the IPV latent variable, which used the 6, 15, 24, 36, and 58 month assessments of IPV as indicators.

In each of these models, the aforementioned covariates were included as control variables, such that the child competence latent variable was also regressed on the family's income-to-needs ratio, the mother's age and highest level of completed education, the child's race and age at the classroom assessment, the couple's marital status, and the data collection site.

*Research question two.* In order to address the second research question (i.e., *Does the strength of this association vary based on whether the IPV was chronic?*), moderation analyses were conducted. Two variables were added to the first and second models described in Research Question One: a variable which captured whether the IPV was chronic (0 = *Non-Chronic*, 1 = *Chronic*, defined here as IPV reported at two or more assessment timepoints) and a term which captured the interaction between the specific compositing of IPV and whether or not the IPV was chronic. In the case of the third model described under Research Question One (i.e., the model in which the latent variable IPV was used to predict child competence), we did not explore the moderating role of the chronicity of the IPV. Because a latent variable captures the common variance across its indicators, our IPV latent variable (which was indicated by the five assessment timepoints of IPV) captured IPV that was stable over time. As stable IPV in this context is by definition occurring at multiple assessment timepoints (i.e., the current study's operationalization of chronicity), this latent variable inherently incorporates some metric of chronicity. Investigating whether the chronicity of the IPV moderates the relation between this latent variable of IPV and child

competence, therefore, would yield results that would be interpretable, and that could potentially result in misleading conclusions (i.e., if this interaction term does not emerge as significant, one might erroneously conclude that chronic IPV is not related to worse outcomes for children, relative to non-chronic IPV).

*Research question three.* In order to address the third research question (i.e., *Do maternal parenting behaviors over the toddler years mediate the relation between IPV and child competence?*) three mediation models were tested, one model for each method of compositing the IPV scores. When investigating the mediating role of maternal parenting behaviors in each of these models, the maternal sensitive parenting and maternal harsh-intrusive parenting latent variables were added as competing mediators of the relation between IPV and child competence. Specifically, the child competence latent variable was regressed on the specific compositing of IPV, the maternal harsh-intrusive parenting latent variable, and the maternal sensitive parenting latent variable. The maternal harsh-intrusive parenting and the maternal sensitive parenting latent variables were also regressed on the IPV variable. Additionally, paths were estimated between each of the covariates (i.e., the family's income-to-needs ratio, the child's race and age at the classroom assessment, the mother's age and highest level of completed education, the mother's marital status, and the data collection site) and the three exogenous latent variables. Non-significant paths from control variables to the exogenous latent variables were removed from the final models in order to preserve model parsimony.

## Results

Descriptive statistics and bivariate correlations among the study variables are presented in Table 6. Associations among the study variables were largely as expected, such

that the various assessments of IPV were negatively correlated with the child competence measures and the various assessments of maternal sensitive parenting behaviors. Not all of the correlations between IPV and child competence were statistically significant, however they were all in the predicted direction. IPV was also positively associated with the various assessments of maternal harsh-intrusive parenting behaviors. Maternal sensitive parenting behaviors were negatively associated with the various measures of child competence, as well as the multiple assessments of maternal harsh-intrusive parenting behaviors. Maternal harsh-intrusive parenting behaviors were negatively correlated with the measures of child competence. The various measures of child competence were highly correlated with one another, and IPV, maternal sensitive parenting behaviors, and maternal harsh-intrusive parenting behaviors all showed moderate stability over time.

#### *Research Question One*

As described above, we approached the first research question (i.e., *Is IPV occurring early in the child's life related to children's competence during the early school years?*) in three ways. In our first approach, we regressed the child competence latent variable on the total amount of IPV that occurred over the first five years of the child's life (i.e., the sum of the mother's report of IPV at all five assessment timepoints). Unexpectedly, when considered in a model with each of the control variables (i.e., the family's income-to-needs ratio, the mother's age and highest level of completed education, the child's race and age at the classroom assessment, the couple's marital status, and the data collection site), the total amount of IPV that the mother reported did not predict child competence ( $p = .32$ ).

In our second approach, we regressed the child competence latent variable on a variable which captured whether or not the mother reported at least one incident of IPV at

any of the five assessment timepoints. This variable was also not statistically significantly related to child competence ( $p = .58$ ), when considered in a model with each of the aforementioned control variables.

Our third approach, in which the latent variable child competence was regressed on the latent variable IPV (which captured the common variance across all five assessments of IPV), yielded a significant association. As depicted in Figure 2 (where all results are standardized and only statistically significant paths are depicted,  $p < .05$ ), even after controlling for the family's income-to-needs ratio, the mother's age and highest level of completed education, the child's race and age at the classroom assessment, the couple's marital status, and the data collection site, IPV was negatively associated with child competence ( $\beta = -.08$ ,  $p = .04$ ). This model adequately fit the data,  $\chi^2 = (99, N = 938) = 315.55$ ,  $p = .00$ , CFI = .93, TLI = .91, RMSEA = .048.

### *Research Question Two*

Despite the fact that we did not find a main effect of IPV on child competence for either the first or second models tested as part of Research Question One (i.e., the models in which the total amount of IPV was used to predict child competence, as well as the model in which the presence of any IPV was used to predict child competence), we conducted the moderation analyses described above. Not surprisingly, the interaction term (which captured the interaction between the specific compositing of IPV and the chronicity of the IPV) did not predict child competence,  $p = .62$  and  $p = .52$ , for the first and second models, respectively. As described above, we did not investigate the moderating role of chronicity for the model that included the latent variable IPV as a predictor of child competence, as this latent variable inherently captured stable IPV over time.

### *Research Question Three*

In order to address our third research question, three mediated models were tested, one model for each method of compositing the IPV scores. Because significant indirect effects can occur in the absence of significant direct effects (MacKinnon, Fairchild, & Fritz, 2007; Rucker, Preacher, Tormala, & Petty, 2011), mediation analyses were conducted for all three methods of compositing IPV scores used in the current study, regardless of whether a direct effect was observed when testing Research Question One.

Results from the first model (i.e., the model in which the total amount of IPV occurring over the five years was used to predict child competence) revealed that this compositing of IPV was not related to either sensitive maternal parenting behaviors ( $p = .16$ ) or harsh-intrusive maternal parenting behaviors ( $p = .16$ ). Not surprisingly, neither of these indirect pathways were statistically significant ( $p = .31$  and  $p = .23$ , for the paths through sensitive and harsh-intrusive maternal parenting behaviors, respectively), indicating that maternal parenting behaviors over the toddler years did not mediate the effect of IPV and child competence in this model.

IPV in the second model (i.e., the model in which the presence or absence of IPV was used as the metric of IPV), IPV was significantly associated with both sensitive maternal parenting behaviors ( $\beta = -.10, p < .01$ ) and harsh-intrusive maternal parenting behaviors ( $\beta = .11, p < .01$ ) over the toddler years. These indirect effects, however, were not statistically significant ( $p = .07$  for the indirect paths through harsh-intrusive maternal parenting behaviors, and  $p = .19$  for the indirect path through sensitive maternal parenting behaviors) indicating that maternal parenting behaviors over the toddler years did not mediate the relation between IPV and child competence in this model either.

The results from the third model (in which the five indicators of IPV were used as indicators of the IPV latent variable) are presented in Figure 3, where only significant paths are depicted ( $p < .05$ ) and all results are standardized. As can be seen in this figure, when considered in a model with maternal parenting behaviors, the relation between the latent variable IPV and child competence was no longer significant ( $p = .31$ ). Although IPV was associated with both lower levels of maternal sensitive parenting behaviors ( $\beta = -.10, p < .01$ ) and higher levels of maternal harsh-intrusive parenting behaviors ( $\beta = .11, p < .05$ ), only maternal harsh-intrusive parenting behaviors predicted child competence ( $\beta = .21, p < .05$ ). This indirect path (from IPV to child competence, through maternal harsh-intrusive parenting) was statistically significant ( $\beta = -.05, p = .02$ ), indicating full mediation. This model fit the data well,  $\chi^2 = (179, N = 938) = 392.84, p = .00$ , CFI = .96, TLI = .95, RMSEA = .04 and accounted for 11% of the variance in children's competence scores.

Of the paths from the control variables to the three exogenous latent variables, the following were significant, and were thus retained in the final model. The family's income-to-needs ratio was positively associated with maternal sensitive parenting ( $\beta = .14, p < .01$ ) and negatively associated with maternal harsh-intrusive parenting ( $\beta = -.09, p < .05$ ). The mother's highest level of completed education was also positively associated with maternal sensitive parenting ( $\beta = .35, p < .01$ ) and negatively associated with harsh-intrusive parenting ( $\beta = -.34, p < .01$ ). The child's race was negatively associated with sensitive parenting ( $\beta = -.24, p < .01$ ) and positively associated with harsh-intrusive parenting ( $\beta = .33, p < .01$ ), such that African American mothers, on average, displayed lower levels of sensitive parenting behaviors and higher levels of harsh-intrusive parenting behaviors. The mother's age at the 6



month assessment was positively associated with maternal sensitive parenting ( $\beta = .14, p < .01$ ).

## Discussion

Using data from a longitudinal study of families living in rural, low-income communities, the goal of the current study was to examine the extent to which IPV occurring early in the child's life was associated with his or her competence during the early school years. Consistent with expectation, this study found support for the idea that IPV occurring over the first five years of the child's life was related to the child's ability to demonstrate competence with age salient tasks when enrolled in his or her second year of formal schooling. That is, the current study found that, even after controlling for a number of demographic covariates (i.e., the family's income-to-needs ratio, the child's race and age at the classroom assessment, the mother's education and age, the couple's marital status, and the data collection site), IPV occurring over the first five years of the child's life was significantly associated with their ability to regulate their emotions, to display prosocial skills, and to relate well with peers. This association, despite being modest in magnitude, has implications for researchers and clinicians working with children whose parents have been physically violent, as it appears that IPV is not only associated with negative dimensions of school-aged children's functioning, but also with their ability to acquire adaptive skills that are important for their long-term success.

The current study used a number of approaches to investigate the extent to which IPV was associated with school-aged children's competence. Specifically, three models were tested, each of which considered a different compositing of the five assessments of IPV analyzed in the current study (i.e., one model considered the sum of all of the IPV reported

by the mother at all five assessment timepoints, one considered whether the mother reported at least one incident of IPV at any assessment timepoint, and one considered a latent variable that was indicated by the IPV scores at each of the five assessment timepoints). Although we anticipated that all three methods of compositing this data would produce a significant association between IPV and child competence, contrary to expectation, only one of these models did. That is, only the model in which the five assessments of IPV were considered as indicators of a latent variable yielded a significant association between IPV and child competence during the early school years. This finding, although not conclusive, suggests that IPV that is stable across these five assessment timepoints had a negative impact on children's competence during the early school years, with higher levels of stable IPV having a larger negative effect on child competence than lower levels of stable IPV.

The dearth of longitudinal research that has considered several assessments of IPV over time makes it difficult to discern if this study's lack of findings are a results of inappropriate compositing of this longitudinal data (such that we are not accurately capturing the experience of the child using the first two methods), or whether this lack of an association simply reflects a weak relationship between IPV and children's functioning in the classroom context. Although theory (and our one significant finding) suggests that the negative impact of IPV extends to children's functioning outside of the home, it seems likely that events occurring in the home (e.g., IPV) would have the most damaging effect on children's behavior occurring in the home, and it is, therefore, possible these effects do not extend to how children are behaving in the classroom, when they are not directly witnessing IPV or interacting with their parents. Future research should explore the possibility that IPV may be more strongly associated with children's behaviors occurring in the home (relative to those

occurring in the classroom context), as well as more explicitly investigate the best way to composite or jointly investigate multiple assessments of IPV over time.

The second goal of this study was to investigate whether IPV that was chronic in nature resulted in worse outcomes for children than IPV that was not chronic. Although the lack of significant direct effects of IPV on child competence (in the first and second models described above) made it difficult to test the moderating role of the chronicity of that IPV, the third, latent variable, approach that we used to test Research Question One inadvertently provided some insight into the role of the chronicity of IPV in explaining the link between IPV and child outcomes. Because a latent variable takes the common variance across all of its indicators, our IPV latent variable inherently captured stable levels of IPV over time. The fact that this model was the only one that predicted child competence (when compared to a model in which the total amount of IPV was considered, and one in which the presence or absence of IPV was considered) perhaps suggests that it is only under conditions of chronic IPV that children's competence is compromised. This assertion, however, was not explicitly tested in the current study, and, thus, this interpretation is speculative in nature. Future research should explore this possibility more explicitly, as well as further investigate the moderating role of the chronicity of IPV in the relation between IPV and child outcomes.

The third aim of this study was to investigate whether maternal parenting behaviors over the toddler years mediated the relation between IPV and child competence during the early school years. Although two of the three tested models did not yield significant indirect effects, results from our third model (in which the five assessments of IPV were used as indicators of the latent variable IPV) confirm that parenting behaviors over the toddler years mediated the relation between IPV and child competence. That is, the effect of IPV occurring

early in the child's life was fully mediated by maternal parenting behaviors over the toddler years, such that, once maternal parenting behaviors were taken into consideration, the effect of IPV on child competence was no longer significant. This lack of a direct effect of IPV on child competence was unexpected, but not inconsistent with previous research that indicates that parenting behaviors fully mediate the relationship between interparental discord and other child outcomes (Krishnakumar & Buheler, 2000). Although IPV occurring early in the child's life was associated with both higher levels of harsh-intrusive maternal parenting behaviors and lower levels of sensitive maternal parenting behaviors, when considered in the same model, only harsh-intrusive maternal parenting behaviors predicted child competence. These results suggest that IPV occurring early in the child's life affects school-aged children's competence through its effect on maternal parenting behaviors, specifically through its effect on harsh-intrusive parenting behaviors over the toddler years. These findings have implications for clinicians and interventions aimed at helping children exposed to IPV, as they suggest that specifically targeting harsh and controlling maternal parenting behaviors may enhance children's competence in the classroom.

This study had a number of strengths, above and beyond those outlined in the discussion section of Study One (e.g., the unique nature of this sample, the heightened prevalence of IPV in this population, the rich longitudinal data collected as part of the FLP). For example, this study included rich observational measures of parenting behaviors, as well as data obtained from multiple respondents (i.e., data were collected from both mothers and teachers). In addition to studying an understudied population (i.e., rural, low-income families who are at heightened risk for IPV) and an understudied age group (i.e., school-aged children), this study also investigated the impact of IPV on children's competence in the

classroom, a domain of child functioning that has received limited attention in the extant literature.

Despite these strengths, this study had a number of limitations. For example, although the relation between IPV and child competence was statistically significant, the magnitude of this association was quite small. These findings, therefore, should be interpreted with caution before they are replicated in other samples. In addition to replicating this association, future research should investigate child-level (e.g., fearful or negatively reactive temperament) or contextual (e.g., broader environmental stress) factors that may moderate the relationship between IPV and child competence, as the weak, but statistically significant, association observed in the current study may indicate that there are important moderators of this relation that were not considered here. Investigating for whom and under what circumstances IPV impacts young children's competence, therefore, may be an important future direction, both because these moderation analyses have the potential to help explain the weak association observed in the current study, and because this information may help to identify groups of children that may be at heightened risk for the negative consequences of IPV.

Additionally limiting is the fact that IPV was assessed only using maternal report. Although mothers may inaccurately or intentionally underreport IPV (Jouriles, McDonald, Norwood, & Ezell, 2001), women have been shown to be more accurate reporters of verbal and physical aggression than men (Stets & Straus, 1989; Straus & Sweet, 1992), making maternal report a reasonable method of assessing IPV in the current study. Future research, however, should use data from multiple informants. Also concerning is the fact that although we measured the total amount of IPV to which each mother was exposed, we did not measure

of how much of the IPV the child witnessed. Although past research suggests that the majority of children living in violent homes directly witness IPV (Fantuzzo & Fusco, 2007), future research should investigate whether these relations vary based on the amount of IPV to which the child was exposed. Last, our study was limited to families living in rural, low-income communities who had given birth to a child. Although the sample used in the current study was both economically and racial diverse, it likely is not representative of all children living in homes characterized by IPV, and thus, future research should explore these associations using data from different populations as well those exposed to IPV at different ages.

### *Summary of Findings*

The current study investigated the longitudinal association between IPV occurring early in the child's life and their competence during the early school years. Findings suggest that, even after controlling for a number of demographic variables, IPV occurring over the first five years of the child's life were negatively associated with children's self-regulatory skills, their prosocial skills, and their ability to relate well to peers. This association, however, was small in magnitude, and, therefore, should be interpreted with caution before being replicated in other samples.

This study also found evidence that maternal parenting behaviors mediated the relation between IPV and child competence during the early school years. Although IPV was associated with both decreases in maternal sensitive parenting behaviors and increases in harsh-intrusive parenting over the toddler years, only maternal harsh-intrusive parenting behaviors were related to children's competence when both types of parenting were considered in the same model. These findings suggest that interventions aimed at helping

children living in physically violent homes may want to specifically target maternal negative and controlling parenting behaviors in order to promote children's competence during the early school years.

Table 1

*Subsample One's Demographic Characteristics, Presented by Assessment Timepoint*

Variable	6 months ( <i>n</i> = 981)	15 months ( <i>n</i> = 936)	24 months ( <i>n</i> = 905)	36 months ( <i>n</i> = 877)	60 months ( <i>n</i> = 858)
<i>Marital Status (freq, %)</i>					
Married	587 (59.84%)	565 (60.36%)	570 (62.98%)	554 (62.14%)	544 (63.40%)
Unmarried Cohabiting	217 (22.12%)	192 (20.51%)	170 (18.78%)	161 (18.36%)	190 (22.14%)
Non-Cohabiting	177 (18.04%)	179 (19.12%)	165 (18.23%)	162 (18.47%)	124 (14.45%)
⌘ <i>Child-Level Variables (freq, %)</i>					
African American	339 (34.56%)	339 (36.22%)	319 (32.53%)	314 (35.80%)	300 (34.97%)
Male	505 (51.48%)	479 (51.15%)	464 (51.27%)	427 (48.69%)	430 (50.12%)
<i>Family-Level Variables (mean, SD)</i>					
Family Income	\$39,306 (30,425)	\$38,989 (31,511)	\$41,715 (33,184)	\$46,143 (34,783)	\$50,329 (40,110)
Primary Caregiver Age	27.05 (5.92)	27.70 (5.98)	28.48 (6.11)	29.68 (6.44)	31.57 (6.75)
Primary Caregiver Education	14.75 (2.79)	14.86 (2.74)	15.03 (2.68)	15.15 (2.62)	15.36 (2.57)



Table 2

*Proportion of Couples Reporting Intimate Partner Violence at Each Assessment Timepoint*

	6 months ( <i>n</i> = 981)		15 months ( <i>n</i> = 936)		24 months ( <i>n</i> = 905)		36 months ( <i>n</i> = 877)		60 months ( <i>n</i> = 858)	
Variable	<i>N</i>	% of couples	<i>n</i>	% of couples	<i>N</i>	% of couples	<i>n</i>	% of couples	<i>n</i>	% of couples
Any Violence	403	41.08%	289	30.88%	269	29.72%	221	25.20%	183	21.33%
<i>Perpetrator of the IPV</i>										
Dual-Perpetrated	233	57.82%	158	54.67%	155	57.62%	129	58.37%	102	55.74%
Female-to-Male	141	34.99%	106	36.68%	83	30.86%	75	33.94%	60	32.79%
Male-to-Female	29	7.20%	25	8.65%	31	11.52%	17	13.18%	21	11.48%
<i>Severity of the IPV</i>										
Only Minor	165	40.94%	122	42.21%	121	44.98%	118	53.39%	96	52.46%
Only Severe	17	4.22%	11	3.81%	9	3.35%	8	3.62%	9	5.92%
Both Minor and Severe	221	54.84%	156	53.98%	139	51.67%	95	42.99%	78	42.63%

Table 3

*Estimated Number of Couples In The Six Counties That The Family Life Project Was Recruited to Represent*

Number of Couples	6 months			15 months			24 months			36 months			60 months		
	<i>n</i>	95% Confidence Limit for Weighted Frequency		<i>n</i>	95% Confidence Limit for Weighted Frequency		<i>N</i>	95% Confidence Limit for Weighted Frequency		<i>n</i>	95% Confidence Limit for Weighted Frequency		<i>n</i>	95% Confidence Limit for Weighted Frequency	
In the Six Counties	3968			3750			3642			3517			3428		
Any Violence	1478	1351	1605	1017	905	1129	938	829	1048	802	697	907	606	517	695
<i>Perpetrator of IPV</i>															
Dual-Perpetrated	850	743	956	501	421	581	549	459	639	464	380	549	316	251	381
Female-to-Male	504	416	592	402	321	483	266	203	329	259	195	323	195	140	250
Male-to-Female	124	76	172	114	66	163	123	77	170	79	39	118	95	52	137
<i>Severity of IPV</i>															
Only Minor	681	575	786	471	382	559	453	367	539	490	399	580	333	261	406
Only Severe	51	23	78	40	14	66	34	9	59	20	5	36	37	12	62
Both Minor and Severe	740	644	836	494	414	574	451	373	524	282	219	346	236	180	292

*Note.* These are the estimated number of couples reporting various types of IPV, out of a total population comprised of families who gave birth to a child between September 15, 2003 and September 14, 2004 in the six counties from which the FLP was recruited.

Table 4

*Correlations Among Demographic Variables Used in Logistic Regression Analyses (n = 938)*

Variable	1	2	3	4	5	6
1. Mother's Age at 6 months	--					
2. Child's Race <sup>a</sup>	-.17**	--				
3. Maternal Education at 6 months	.48**	-.21**	--			
4. Marital Status at 6 months <sup>b</sup>	.47**	-.31**	.42**	--		
5. Family's 6 month Income-to-Needs Ratio	.35**	-.34**	.52**	.38**	--	
6. Any Violence <sup>c</sup>	-.17**	.19**	-.21**	-.20**	-.14**	--

*Note: \*p < .05, \*\*p < .01; <sup>a</sup>0 = White, 1 = African American, <sup>b</sup>0 = Unmarried, 1 = Married; <sup>c</sup>0 = Not*

*Physically Violent, 1 = Physically Violent*

Table 5  
Results from Significant Logistic Regression Models

	Any IPV		Chronic IPV		Dual-Perpetrated IPV		Only Minor IPV		Minor and Severe IPV	
	Odds Ratio	95% Wald CL	Odds Ratio	95% Wald CL	Odds Ratio	95% Wald CL	Odds Ratio	95% Wald CL	Odds Ratio	95% Wald CL
Child's Race <sup>a</sup>	1.74**	1.26-2.41	1.98**	1.41-2.78	1.51*	1.1.-2.09	2.30**	1.66-3.20	.66*	.44-.99
Income-to-Needs	1.03	.94-1.14	.89	.77-1.02	.94	.83-1.05	.88	.77-1.00	1.13	1.02-1.26
Maternal Education	.90**	.84-.96	.92*	.86-.99	.90**	.84-.96	.90**	.84-.97	1.01	.93-1.09
Maternal Age	.98	.95-1.00	.97	.94-1.00	.98	.95-1.01	.95**	.92-.98	1.01	.98-1.05
Marital Status <sup>b</sup>	.70*	.50-1.00	.86	.60-1.25	.82	.58-1.15	.97	.68-1.38	.65*	.43-1.00

*Note:* \* $p < .05$ , \*\* $p < .01$ ; <sup>a</sup>0 = White, 1 = African American; <sup>b</sup>0 = Unmarried, 1 = Married . CL = Confidence Limits

Table 6

Means, Standard Deviations, and Bivariate Correlations Among Focal Study Variables ( $n = 938$ )

		Intimate Partner Violence				Sensitive Parenting			Harsh-Intrusive Parenting		
	6m	15m	24m	36m	58m	15m	24m	36m	15m	24m	36m
<i>Intimate Partner Violence</i>											
6 months	--										
15 months	.59**	--									
24 months	.47**	.50**	--								
36 months	.48**	.58**	.52**	--							
58 months	.45**	.48**	.46**	.74**	--						
<i>Sensitive Parenting</i>											
15 months	-.17**	-.20**	-.17**	-.18**	-.13**	--					
24 months	-.26**	-.19**	-.20**	-.18**	-.15**	.62**	--				
36 months	-.20**	-.25**	-.21**	-.13**	-.12**	.61**	.63**	--			
<i>Harsh-Intrusive Parenting</i>											
15 months	.16**	.14**	.09*	.15**	.10**	-.35**	-.35**	-.31**	--		
24 months	.22**	.21**	.14**	.15**	.12**	-.37**	-.54**	-.40**	.46**	--	
36 months	.15**	.14**	.17**	.19**	.13**	-.38**	-.41**	-.50**	.41**	.52**	--
<i>Child Competence</i>											
SCS - Emotion Regulation	-.07	-.09*	-.14**	-.03	-.05	.14**	.12**	.14**	-.12**	-.16**	-.17**
SCS - Prosocial Skills	-.05	-.07	-.13**	-.07	-.1	.20**	.17**	.18**	-.12**	-.16**	-.22**
SSRS - Assertion	.01	-.03	-.05	-.10*	-.12**	.20**	.18**	.20**	-.11**	-.17**	-.19**
SSRS - Self-Control	-.09*	-.08*	-.09*	-.06	-.11*	.18**	.18**	.19**	-.11**	-.20**	-.23**
SDQ - Peer Problems	.04	.02	.06	.06	.10*	-.15**	-.10*	-.12**	.07	.14**	.15**
SDQ - Prosocial Skills	-.08*	-.07	-.11**	-.07	-.14**	.19**	.17**	.14**	-.11**	-.19**	-.16**
Means	.33	.26	.23	.17	.15	2.90	3.00	2.97	2.23	2.34	2.20
Standard Deviation	.80	.73	.69	.61	.77	.78	.80	.71	.70	.85	.80

Note: \* $p < .05$ , \*\* $p < .01$ . SCS = Social Competence Scale, SSRS = Social Skills Rating Scales, SDQ = Strengths and Difficulties Questionnaire, m = month.

Table 6 *Continued.*

	Child Competence					
	SCS - Emotion Regulation	SCS - Prosocial Skills	SSRS – Assertion	SSRS – Self- Control	SDQ – Peer Problems	SDQ – Prosocial Skills
<i>Child Competence</i>						
SCS - Emotion Regulation	--					
SCS - Prosocial Skills	.82**	--				
SSRS - Assertion	.51**	.65**	--			
SSRS - Self-Control	.75**	.89**	.71**	--		
SDQ - Peer Problems	-.42**	-.51**	-.52**	-.53**	--	
SDQ - Prosocial Skills	.64**	.75**	.66**	.74**	-.54**	--
Means	4.30	4.34	13.62	14.67	0.30	1.55
Standard Deviation	1.14	1.18	4.55	4.55	0.33	0.48

*Note:* \* $p < .05$ , \*\* $p < .01$ . SCS = Social Competence Scale, SSRS = Social Skills Rating Scales, SDQ = Strengths and Difficulties Questionnaire, m = month.

Figure 1. Visual Depiction of Changes in Prevalence of IPV over the First Five Years of the Child's Life

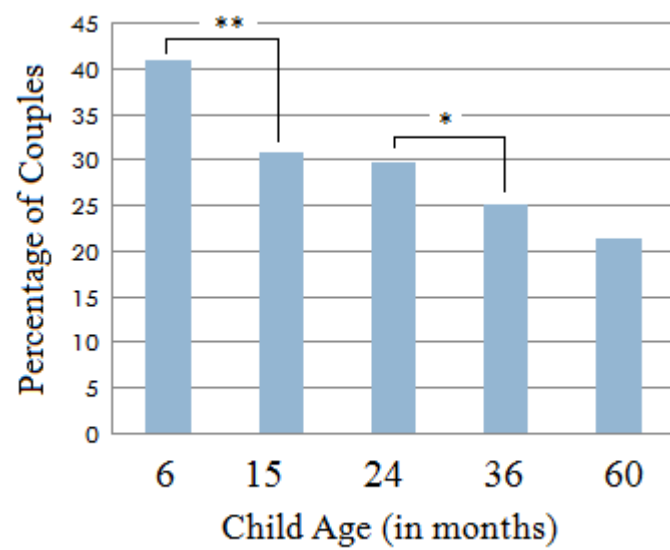
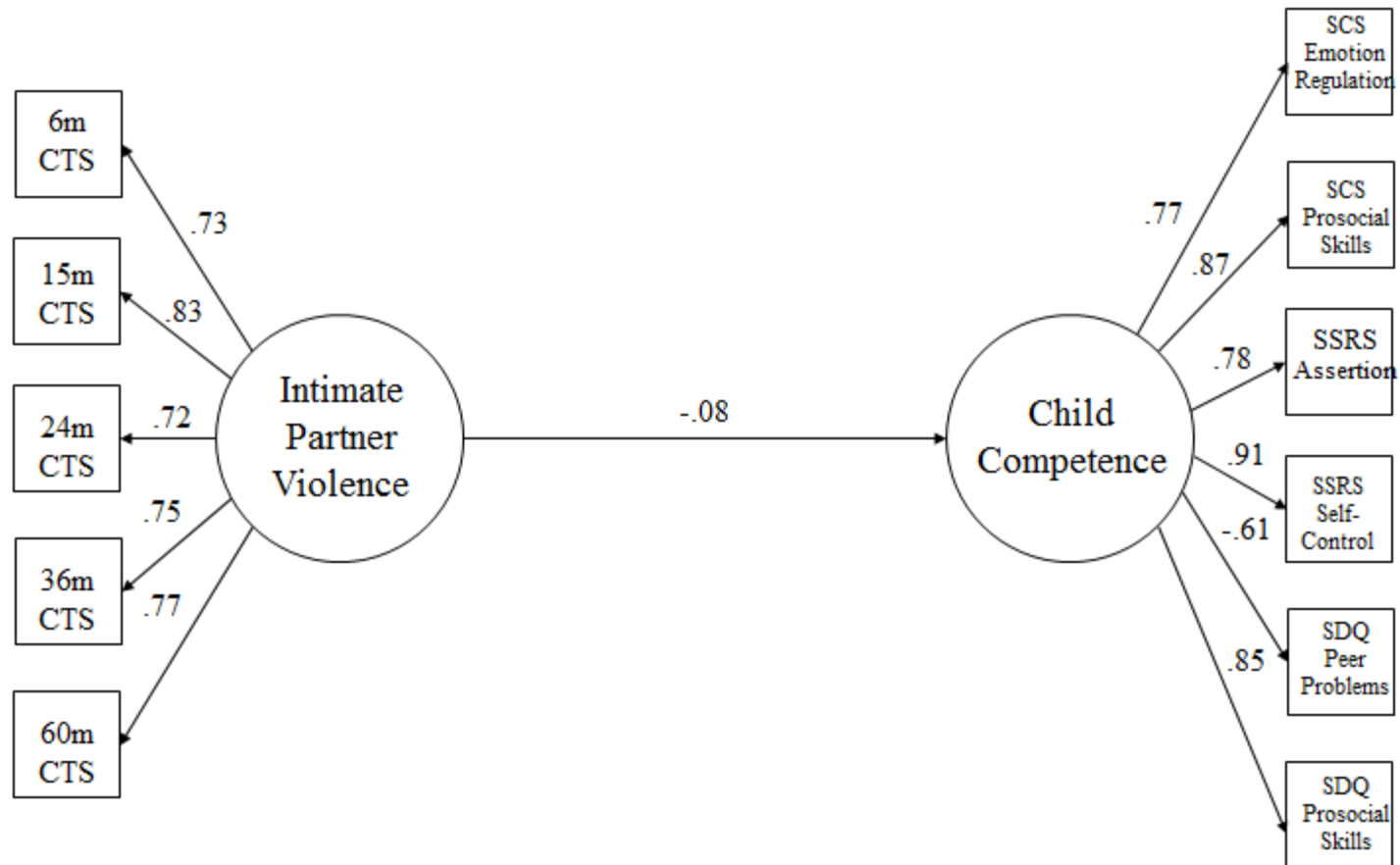


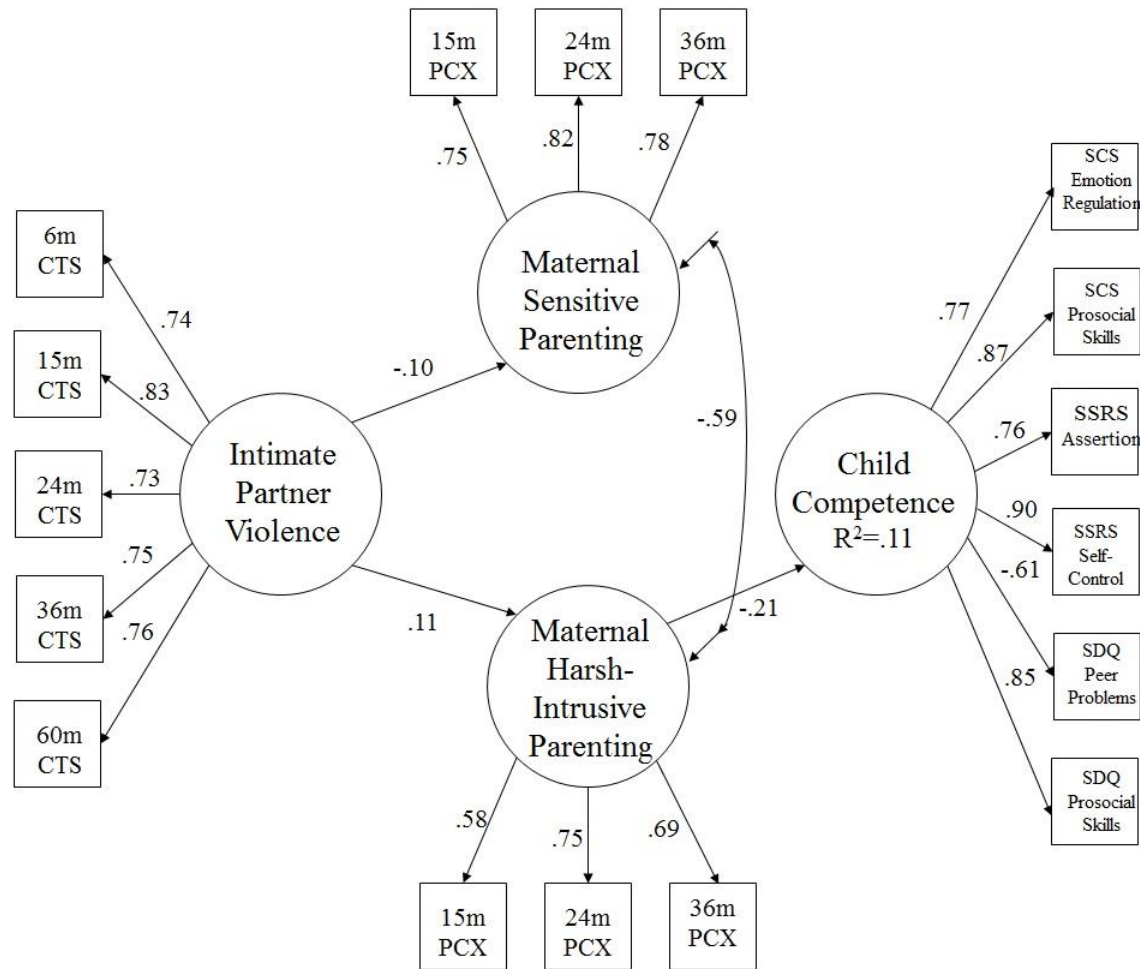
Figure 2. Model Relating IPV to Child Competence During the Second Year of School



Note:  $\chi^2 = (99, N = 938) = 315.55, p = .00, CFI = .93, TLI = .91, RMSEA = .048$ . All presented paths are standardized and significant,  $p < .05$ . CTS = Physical Violence Subscale of the Conflict Tactics Scale-Couple Form R, SCS = Social Competence Scale, SSRS = Social Skills Rating Scale, SDQ = Strengths and Difficulties Questionnaire.



Figure 3. Final Model in Which Parenting was Included as a Mediator of the Association between IPV and Child Competence



Note.  $\chi^2 = (179, N = 938) = 392.84, p = .00, CFI = .96, TLI = .95, RMSEA = .04$ . All presented paths are standardized and significant,  $p < .05$ . CTS = Physical Violence Subscale of the Conflict Tactics Scale-Couple Form R, SCS = Social Competence Scale, SSRS = Social Skills Rating Scale, SDQ = Strengths and Difficulties Questionnaire, PCX = Observational codes from the parent-child interaction.

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