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Intimate Partner Violence in Rural Low-Income Families: Correlates and Change in Prevalence Over the First 5 Years of a Child's Life

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Abstract

Despite evidence that individuals living in low-income and rural communities may be at heightened risk for intimate partner violence (IPV), little is known about the prevalence and nature of IPV occurring in these communities. The goal of the current study, therefore, was to characterize IPV occurring in a population-based sample of families living in communities characterized by rural poverty. 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. Results indicate that IPV was most prevalent around the birth of the target child and that the population-level prevalence of IPV decreased significantly over the subsequent five years. Although previous research suggests that children under the age of five are at heightened risk for IPV relative to older children, 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.

Keywords

Domestic Violence; Incidence; Rural Poverty; Early Childhood; Family Life Project

Several decades of research suggests that intimate partner violence (IPV) is a pervasive public health concern. Not only is IPV relatively common in the general population (Black, Basile, Breiding, Smith, Walters, Merrick, Chen, & Stevens, 2011; 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

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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). The more recent National Intimate Partner and Sexual Violence Survey (Black et al., 2011) reported that 3.6% of US women and 4.5% of US men had been the victim of IPV in the 12 months preceding their survey. 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 rural poverty.

There are a number of reasons why it is important to investigate IPV in low-income communities. Individuals living in neighborhoods or households characterized by poverty have consistently been shown to be at heightened risk of IPV (Capaldi, Knoble, Shortt, & Kim, 2012; Cunradi, Caetano, Clark, & Shafer, 2000; Cunradi, Caetano, & Schafer, 2002; Thompson et al., 2006; Tolman & Raphael, 2002). 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, 2011), 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; Logan, Walker, Cole, Ratliff, & Leukefeld, 2003) 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 (Grossman, Hinkley, Kawalski, & Margrave 2005; Shannon, Logan, Cole, & Medley, 2006; 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. Further, several studies have found that rates of intimate partner homicide are significant higher among rural populations, relative to both urban and suburban communities (Edwards, in press; Gallup-Black, 2005). 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 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 & Paley, 1997; Cox, Paley, Burchinal, & Payne, 1999; Kan & Feinberg, 2014; Lawrence, Rothman, Cobb, & 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 (Cowan, Cowan, Ablow, Johnson, & Measelle, 2005; 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, 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; 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 those estimated by national surveys. 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. Last, 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. Specifically, three counties in eastern North Carolina (Sampson, Wayne, and Wilson) and three counties in central Pennsylvania (Blair, Cambria, and Huntington) were selected to represent two of the four major geographic areas with high rates of rural poverty (the "African American South" and the Appalachian Mountains, respectively; Dill, 1999). This study's definition of rurality at the county level was a broad one that included Beale Rural-Urban Continuum Codes 3, 4, and 5 (Butler & Beale, 1994) - where rural was synonymous with counties that contained mid-size and small towns somewhat distant from urban centers. This study only included counties where there was no town with a population of greater than 50,000; counties that were adjacent to large metropolitan areas were excluded so that our target counties could not be considered suburban. 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 two months old. African American and low-income families were oversampled. See Vernon-Feagans, Cox, & The Family Life Project Key Investigators (2013) 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 six 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 six 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.

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 six month assessment was his or her biological mother, 2. The child's biological mother had a romantic partner at the six 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 old, 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 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 sex of all respondents (0 = *Female*, 1 = *Male*) was also

collected, as was information about the primary caregiver's age and education (both indexed in years).

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* and 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 is computed by taking the mean of these items) 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. The severity of the IPV was determined via scoring described by Straus and Gelles (1986). 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. 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 reported 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 IPV 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.

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, 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 six 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, severe, and minor and severe), 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 (SAS Institute Inc., 2008).

Results

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

Table 1 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 six 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 (3.35%-5.92% at the different assessments) 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 2 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 six 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), 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 2, therefore, is simply meant to provide the reader with 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. Additionally, there were significant changes in the percentage of 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 1, 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 six- 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 that was statistically significant, χ^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, χ^2 (1, N = 1841) = .29, p = .59, however it did decrease significantly between the 24 and 36 month assessment, χ^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, χ^2 (1, N = 1735) = 3.64, p = .06.

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 six 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 asssessment, 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, χ^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 five year window differed on their CTS-R scores from those who did not stay together over time) 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, χ^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, χ^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, χ^2 (1, N = 490) = 3.44, p = .06).

This proportion did not change significantly between the 36 and 60 month assessment timepoints, χ^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, χ^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, χ^2 (1, N = 404) = .

01, $p = .94$. There were no significant changes in the proportion of couples who reported exclusively female-to-male (χ^2 (4, $N = 1365$) = 2.40, $p = .66$), exclusively male-to-female (χ^2 (4, $N = 1365$) = 5.56, $p = .23$) or dual-perpetrated IPV (χ^2 (4, $N = 1365$) = 1.08, $p = .90$) over the five assessment timepoints.

Research aim three: Examining demographic predictors of IPV

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. Two hundred and fifty-six (57.27%) 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 3. 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).

As can be seen in Table 3, 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 six 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 six 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 reported by nationally representative studies (e.g., Black et al., 2011; McDonald et al., 2006; Straus & Gelles, 1990). 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 six 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 almost all 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 consistent with previous studies that have found that IPV in rural samples tends to be more chronic and severe than in urban and suburban areas (e.g., Logan, Walker, Cole, Ratliff, & Leukefeld, 2003; Peek-Asa et al., 2011), as well as with studies that have found that rates of lethal IPV are significantly higher in rural communities, relative to non-rural communities (Edwards, in press; Gallup-Black, 2005). 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 six 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 finding complements previous work that has found that IPV is more common during pregnancy, among both rural and non-rural populations (Bailey & Daugherty, 2007; Silverman, Decker, Reed, & Raj, 2006). The population-level prevalence of IPV 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 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 as 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 that the proportion of couples 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 six 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 six 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., 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 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, therefore, offered a unique opportunity 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. 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 (e.g., change over time, severity, chronicity), 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. Similarly, some of these results only generalize to families in which the mother was the child's primary caregiver for the first five years of the child's life. Although the vast majority of families in this study met these criteria, these results do not apply to families in which the child's biological mother does not consistently live with the child. 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. Last, IPV was assessed using a self-report questionnaire administered to the child's mother and her partner. Although the CTS is a widely used measure that has been shown to be highly reliable and valid (e.g., Straus, Hamby, Boney-McCoy, & Sugarman, 1996), this measure nonetheless relies on respondents' willingness to report incidents of IPV as well as their ability to accurately recall the frequency of IPV that occurred over a relatively large span of time. It is, therefore, possible that the prevalence figures reported in the current study are an underestimate of the burden of IPV in these communities.

Intervention and Policy Implications

These findings have a number of implications for clinicians and policymakers concerned with IPV prevention and intervention. The heightened incidence of IPV in this sample suggests that additional resources (e.g., screening and treatment programs) need to be implemented in rural, low-income communities. Given that this population has been shown to have fewer IPV resources and to have more difficulty accessing the resources that they do have (Peek-Asa et al., 2011), these programs may need to be specifically tailored to this population and its unique geographic challenges. Screening and intervention efforts that are able to be integrated into systems that this community is already able to access (e.g., medical, educational, religious) may be particularly effective. Our finding that IPV was most prevalent around the birth of a child points to one such opportunity, namely perinatal healthcare. That is, increased attention to IPV screening during routine prenatal and newborn medical visits may help to identify and address IPV in this at-risk population. Last, our finding that the majority of IPV in this sample was both severe and minor has

implications for the nature of IPV intervention programs and the types of behaviors that they should target. That is, to be effective with this population (and to attenuate this group's established risk for lethal IPV; Gallup-Black, 2005), intervention programs may need to target severe IPV behaviors, in addition to more minor physical or verbal aggression.

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Table 1

Proportion of Couples Reporting Intimate Partner Violence at Each Assessment Timepoint

	6 months (*n* = 981)		15 months (*n* = 936)		24 months (*n* = 905)		36 months (*n* = 877)		60 months (*n* = 858)	
Variable	***n***	**% of couples**	***n***	**% of couples**	***n***	**% of couples**	***n***	**% of couples**	***n***	**% of couples**
Any Violence	403	41.08%	289	30.88%	269	29.72%	221	25.20%	183	21.33%
Perpetrator of the IPV										
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%
Severity of the IPV										
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 2

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

	6 months			15 months			24 months			36 months			60 months		
Number of Couples	***n***	**95% Confidence Limit for Weighted Frequency**		***n***	**95% Confidence Limit for Weighted Frequency**		***n***	**95% Confidence Limit for Weighted Frequency**		***n***	**95% Confidence Limit for Weighted Frequency**		***n***	**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
Perpetrator of IPV															
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
Severity of IPV															
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 3

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[a]	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[b]	.70*	.50–1.00	.86	.60–1.25	.82	.58–1.15	.97	.68–1.38	.65*	.43–1.00

Note:

* $p < .05$,

** $p < .01$;

[a] 0 = *White*, 1 = *African American*;

[b] 0 = *Unmarried*, 1 = *Married*.

CL = Confidence Limits