



## Risk factors for paternal physical child abuse<sup>☆,☆☆</sup>

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### ABSTRACT

**Objective:** This study uses the developmental–ecological framework to examine a comprehensive set of paternal factors hypothesized to be linked to risk for paternal child abuse (PCA) among a diverse sample of fathers. Attention was given to fathers' marital status and their race/ethnicity (White, African American, and Hispanic).

**Methods:** Interviews were conducted with 1257 married or cohabiting biological fathers who participated in the Fragile Families and Child Wellbeing Study. PCA was assessed when the index children were 3 years old. Analyses included a comprehensive set of self-reported paternal variables as well as controls for maternal variables linked to child maltreatment. PCA was measured using proxy variables: two questions assessing the frequency of spanking in the past month and Parent–Child Conflict Tactics Scales (CTS-PC) [Straus, M., Hamby, S., Finkelhor, D., Moore, D., & Runyan, D. (1998). Identification of child maltreatment with the parent–child conflict tactics scales: Development and psychometric data for a national sample of American parents. *Child Abuse & Neglect*, 22, 249–270] psychological and physical aggression subscales.

**Results:** Bivariate results indicated that Hispanic fathers were the least likely to spank or engage in psychological or physical aggression. Multiple regression analyses indicated that paternal employment and earnings were not significantly associated with PCA. Compared to cohabiting African American fathers, married African American fathers were found to be at greater risk for some forms of PCA. This pattern was not found for White or Hispanic families.

**Conclusions:** In this diverse sample of involved, biological fathers, there appear to be multiple potential risk-heightening pathways that vary across race/ethnic groups. With the proper control variables, paternal employment and earnings may not be as directly linked to fathers' physical abuse risk as has been previously thought.

**Practice implications:** There is a need for interventions within the child welfare system that better promote family wellbeing by including fathers in services. Patterns linking paternal socio-demographic and psychosocial factors to psychological and physical child abuse varied as a function of paternal race/ethnicity, indicating that race/ethnic differences are among the important factors that intervention efforts should take into account.

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## Introduction

Although mothers spend more time caring for children, recent research indicates that fathers are more commonly responsible for severe child abuse, including child homicide (Brewster et al., 1998; Dubowitz, 2006; Krugman, 1996; Margolin, 1992; Nobes & Smith, 2000; Stiffman, Schnitzer, Adam, Kruse, & Ewigman, 2002). Although fathers are disproportionately implicated as perpetrators, little is known about the risk or protective factors that are related to paternal psychological or physical child abuse (Dubowitz, 2006; Dubowitz et al., 2001; Guterman & Lee, 2005). Research to date has primarily focused on maternal characteristics linked to child maltreatment, risk associated with living in a father-absent home (Berger, 2005), or the risk posed when non-related males are present in the home (Daly & Wilson, 1996; Holden & Barker, 2004; Margolin, 1992; Radhakrishna, Bou-Saada, Hunter, Catellier, & Kotch, 2001; Stiffman et al., 2002). Few studies have used father-reported data assessing both economic and psychosocial variables to investigate risk for paternal child abuse (PCA) among married or cohabiting biological fathers.

To address this gap, the current study uses the Fragile Families and Child Wellbeing Study to examine the unique characteristics of involved fathers that are associated with risk for PCA, and includes a comprehensive set of variables measuring demographic factors, contextual factors such as aspects of the father–mother relationship, paternal earnings and employment, and psychosocial variables measuring paternal parenting stress, perceived support from the child's mother, and paternal involvement with the child. We also analyze how these relationships may differ as a function of paternal marital status and race/ethnicity.

### *The developmental–ecological framework*

Both the consequences and the etiology of child maltreatment have been most often understood through the lens of a developmental–ecological model (Belsky, 1993; Bronfenbrenner, 1979), which proposes that parenting behaviors and processes are directly and indirectly influenced by factors across multiple levels, including *parental characteristics* (e.g., age at the time of the child's birth; race/ethnicity of father), the *characteristics of the child* (e.g., gestational age, child sex), and the *broader context* (e.g., marital relationships, employment, community and cultural influences). Prior research with mothers supports the tenets of the developmental–ecological framework. Demographic factors such as age, poverty and single-parent status (Berger & Waldfogel, 2004; Connelly & Straus, 1992; Coulton, Korbin, & Su, 1999; Daro & Gelles, 1992; Drake & Pandey, 1996), family variables such as large households (Eckenrode, Powers, Doris, Munsch, & Bolger, 1988; Wolfner & Gelles, 1993), and psychosocial characteristics including depression and parenting stress (Berger, 2005; Berger & Brooks-Gunn, 2005; Chaffin, Kelleher, & Hollenberg, 1996; Coohy, 2000; Windham et al., 2004) have been associated with maternal child maltreatment. In a companion article we report detailed analyses of mothers at-risk for physical child abuse, as well as models estimating how fathers shape mothers' risk for physical child abuse (Guterman, Lee, Lee, Waldfogel, & Rathouz, submitted for publication). In this paper we focus on the characteristics of fathers that are uniquely related to their risk for child abuse.

One advantage of using the Fragile Families and Child Wellbeing Study is that it is a prospective, population-based sample using indicators believed to foreshadow risk for future physical child abuse. This provides an opportunity to understand preventively those factors that may contribute to or lessen risk for PCA. Maltreatment proxies are measured using the Parent–Child Conflict Tactics Scales (CTS-PC) (Straus, Hamby, Finkelhor, Moore, & Runyan, 1998) subscales that indicate psychological and physical aggression directed at the child in the past year, and two additional questions assessing the frequency of spanking the child in the past month. The CTS-PC proxy variables are intercorrelated but distinct indicators of coercive parenting behaviors that have been shown to be reliable indicators of parenting practices placing one at risk for physical abuse of a child (Straus, 2000; Straus et al., 1998; Straus & Mouradian, 1998).

Following is a review of the relevant literature examining factors across the levels of the developmental–ecological model that may be related to increased risk for PCA.

*Fathers' employment and earnings.* Community indicators of poverty have consistently been associated with higher rates of Child Protective Services (CPS) reported child maltreatment (Coulton et al., 1999; Coulton, Korbin, Su, & Chow, 1995; Drake & Pandey, 1996). However, evidence is less conclusive with regard to how socioeconomic indicators such as paternal unemployment and income might influence PCA (Jones, 1990; Wolfner & Gelles, 1993). Building on the family stress model, research has found that economic strain heightens the emotional distress of caregivers, which increases parental irritability and hostility toward children (Conger et al., 1992, 1993; Conger, Ge, Elder, Lorenz, & Simons, 1994; McLoyd, 1990). The family stress model, which has been replicated with families from a variety of race/ethnic and socioeconomic backgrounds (Conger et al., 2002), suggests that the influence of fathers' employment or low earnings on risk for PCA may be mediated or accounted for by psychosocial factors that are closely associated with fathers' economic role in the family, such as their age, prior educational attainment, and level of parenting stress.

While studies point to the strong link between macro-level indicators of poverty (e.g., welfare receipt, state- and census-tract level indicators of poverty) and involvement with CPS (Paxson & Waldfogel, 1999, 2002, 2003), questions remain regarding exactly how low socioeconomic status and poverty contribute to risk for child maltreatment. In one study, parenting behaviors and socioeconomic status independently and significantly contributed to perceived risk for maternal maltreatment (Berger & Brooks-Gunn, 2005). Another study indicates that low socioeconomic status may contribute to child abuse, but only among single-parent families (Berger, 2005). Others have suggested that race/ethnic differences in child abuse rates

may largely be explained by socioeconomic variables, specifically the high rates of poverty among African Americans (Schuck & Widom, 2005). Prior research has not yet carefully examined how paternal socioeconomic variables might be related to PCA with large samples of White, African American, and Latino fathers, particularly after accounting for potential confounds such as educational status.

*Marital status and the father–mother relationship.* Consistent with the developmental–ecological framework’s emphasis on the importance of proximal relationships, aspects of the father’s relationship with the mother is another mechanism hypothesized to influence paternal parenting behavior.

With regard to marital status, research has often focused on the increased risk for child maltreatment in single-parent homes (Berger, 2005; Gelles, 1989), intimating “father absence” as a risk factor for child maltreatment rather than assessing the implications of the quality of the father–mother relationship. Emerging evidence from the Fragile Families and Child Wellbeing Study provides important insights into how married and cohabiting parental relationships may differ, for example, providing strong indication that the emotional quality of the relationship affects the formation and stability of marital and cohabiting unions (Carlson, McLanahan, & England, 2004).

With regard to child maltreatment, studies addressing fathers’ relational patterns within the family indicate, although indirectly and not uniformly, that the quality of the father–mother relationship may influence mothers’ maltreating behaviors (Brunelli, Wasserman, Rauh, & Alvarado, 1995; Jackson, 1999; Unger & Wandersman, 1988). Furthermore, in general, a more conflicted parental relationship is associated with less paternal child involvement (Coley & Chase-Lansdale, 1999). In one study of 55 unmarried, low-income African American couples, fathers were more involved with their infants when couples perceived more supportive relationships (Fragile Families Research Brief, 2004).

While pointing to the importance of both marital status and the quality of the marital aspects of the parental relationship, prior research does not indicate how these specific aspects of the father–mother relationship may shape risk for PCA. Further, it is not known how these variables may interact with the race/ethnic status of the father, an important factor to consider given that African Americans and Hispanics couples are more likely to cohabit than White couples (Carlson et al., 2004; Smock, 2000).

*Direct involvement in child care.* Prior studies have indicated that father involvement with the child is another aspect of the home environment related to child maltreatment (Cutrona, Hessling, Bacon, & Russell, 1998; Dubowitz, Black, Kerr, Starr, & Harrington, 2000). Broadly speaking, fathers’ emotional and financial investment in their children is related to optimal cognitive development (Alpert, Shannon, Velonis, Georges, & Rich, 2002; Black, Dubowitz, & Starr, 1999; Fagan & Iglesias, 1999; Yogman, Kindlon, & Earls, 1995), better educational outcomes, overall improved child wellbeing, and it may buffer youth from delinquent behavior (Cabrerá, Tamis-Lemonda, Bradley, Hofferth, & Lamb, 2000; Coley, 2004; Marshall, English, & Stewart, 2001).

Yet, the extent to which father involvement may serve as a protective factor is likely closely connected to the nature of his involvement. The presence of fathers who experience high levels of parenting stress or who have mental health problems may be deleterious to child wellbeing. Fathers presence has been shown to buffer children from the negative consequences of mothers’ mental illness; but the involvement of fathers in poor mental health actually exacerbates the negative consequences for children of maternal mental illness (Bronte-Tinkew, Moore, Matthews, & Carrano, 2007; Kahn, Brandt, & Whitaker, 2004). In another study of abusive and non-abusive mothers and fathers, higher levels of parenting stress were predictive of being in the subsample of abusive parents (Haskett, Ahern, Ward, & Allaire, 2006). In sum, the positive aspects of father involvement are likely to be compromised when a father is present but brings negative qualities into the family context (Dunn, 2004).

### *Purpose of the current study*

The present empirical base implicates a broad set of factors that may be associated with risk for PCA. The current study is exploratory and uses the developmental–ecological framework to examine the extent to which risk for PCA is predicted by demographic factors (fathers’ age, educational background, and marital status), contextual factors (aspects of the father–mother relationship, paternal earnings and employment) as well as psychosocial variables measuring paternal parenting stress, perceived support from the child’s mother, and paternal involvement with the child. We control for variables measuring mothers’ characteristics (age, education, and parenting stress) that previous studies have linked to risk for physical child abuse (e.g., Guterman et al., submitted for publication). The relationships in these models are examined by marital status and race/ethnicity, to gain a better sense of how fathers may differ in terms of their parenting strategies and factors linked to risk for PCA.

## **Method**

### *Procedure*

This study uses data from the Fragile Families and Child Wellbeing Study, a birth cohort study of marital and non-marital births in 20 US cities with populations over 200,000 people, chosen by a random sampling method and stratified so as to maximize cross-city variation in their economic and policy environments. All subject recruitment procedures were approved by the Institutional Review Boards (IRB) at Columbia University and Princeton University. Verbal and written informed

consent was obtained from participants at each interview, and participants were compensated for participating in the study. A complete description of the cities included in the study, the sampling strategy, and related issues can be found in Reichman, Teitler, Garfinkel, and McLanahan (2001).

Participants were informed of the interviewers' obligation to report observations of child abuse at multiple time periods. Most relevant to this study, at the baseline interview participants were told that the interviewers would not ask anyone about child abuse, but that they did have an obligation to report any child abuse that was disclosed to them. When the maltreatment proxy questions were asked during the in-home interview, participants were provided with standard consent reassurances, including their right to refuse to answer any questions that they did not want to answer and their right to decide to not take part in the study at any time, and they were provided with information to contact the Institutional Review Board from Human Subjects at Princeton University. Participants were additionally told that the research team had obtained a Certificate of Confidentiality from the Federal Government and the implications of this Certificate. Following this, participants were clearly informed that "if the interviewer observes child abuse during the visit, it will be reported to the appropriate authorities."

### Participants

The total Fragile Families and Child Wellbeing Study sample size is 4898 families with an over-sampling of non-marital births. Data from both mothers and fathers were obtained at multiple time periods. Most baseline interviews took place in the hospital at the time of the child's birth (Reichman et al., 2001). Approximately 75% of all fathers (including those who had a "visiting" relationship or no ongoing relationship with the mother) participated at baseline, with 90% of cohabiting and married fathers participating. Analyses of the 86% of couples who were romantically involved at baseline (married, cohabiting, or visiting relationships) indicated unmarried parents were younger in age and had lower levels of education. Non-married fathers were also less likely to be employed than married fathers (Fragile Families Research Brief, 2002).

Subsequent interviews were conducted in-person or over the phone at 1 and 3 years following the child's birth. In this study father self-reported data were taken from the baseline and 3-year interviews. Of the 3830 fathers who participated at baseline, 77% ( $n = 2966$ ) were interviewed again 3 years later. An additional 333 fathers not interviewed at baseline were interviewed at the 3-year follow up, resulting in 3299 fathers providing some data at 3 years.

A subset of Fragile Families and Child Wellbeing Study mothers participated in an in-home interview following the 3-year interview ( $n = 3356$ ), the point at which mothers provided data on the maltreatment proxies for the other primary caregiver in the home. In order to be eligible for the in-home assessment mothers had to have completed the 3-year follow up interview. Of the approximately 4140 respondents who were eligible to participate in the in-home survey, 3288 cases (79%) completed either the full survey or a component of the survey.

Although the Fragile Families and Child Wellbeing Study is a nationally representative study of non-marital births in the United States (Reichman et al., 2001) the authors of this study do not claim that the participants in this sample were representative of all US fathers. Due to the structure of the interview format, the maltreatment proxy variables are available only for biological fathers who the mother reported lived in the home when the target child was 3 years of age. Therefore, the current study utilizes a specific subsample of Fragile Families and Child Wellbeing Study fathers—biological fathers who were married or cohabiting with the child's mother, and for whom data were gathered on PCA proxies ( $n = 1414$ ) during the in-home interview. We were unable to conduct analyses of fathers in any non-residential or "visiting" relationships because maltreatment data was not collected for those fathers. Of those fathers for whom PCA maltreatment proxy data was collected, 95 fathers were excluded from analyses because they did not participate in the 3-year interview and thus did not provide demographic and psychosocial variables included in these analyses. Additionally, because one of the central goals of this study was to examine paternal ethnic status, 61 fathers whose race was "other" and 1 father who did not indicate race were dropped, resulting in a final study sample of 1257 fathers. Sample sizes for specific analyses vary due to variations in missing data for the independent variables.

Focusing on those descriptive statistics (Table 1) of most relevance to this paper, the sample was 40% African American, 31% White, and 29% Hispanic. The sample consisted of 60% married and 40% cohabiting fathers. Approximately one-quarter of the fathers had less than a high school degree (26%), 27% had a high school degree or GED, and 47% reported some college or technical school or higher. Most of the fathers had worked in the past year, with annual earnings averaging \$35,127.

### Measures

Baseline data was used for paternal ethnic status, maternal and paternal age at the time of the child's birth, and maternal education level. PCA variables were obtained from the mother-reported in-home assessment, when the reference child was 3 years old. Maternal parenting stress was based on her 3-year follow-up interview. All other variables were based on paternal self-reported data based on his 3-year follow-up interview.

**Table 1**  
Characteristics of fathers at 3-year follow-up.

	Full sample ( <i>n</i> = 1257) % or mean (S.D.)	White ( <i>n</i> = 394) ( <i>M</i> , S.D.)	Black ( <i>n</i> = 496) ( <i>M</i> , S.D.)	Hispanic ( <i>n</i> = 367) ( <i>M</i> , S.D.)
One-way ANOVA				
Mother's age at birth	26.61 (6.24)	–	–	–
Mother's parenting stress	2.23 (.64)	–	–	–
# of adults in the home	2.22 (.73)	2.13 (.47) <sup>a</sup>	2.16 (.64) <sup>b</sup>	2.40 (.94) <sup>a,b</sup>
# of children in the home	2.12 (1.29)	2.03 (1.14)	2.20 (1.41)	2.11 (1.27)
Father age at child's birth	29.09 (6.97)	31.38 (6.49) <sup>a,b</sup>	28.37 (7.09) <sup>a</sup>	27.61 (6.72) <sup>b</sup>
Father earnings (LN)	35,127 (30,523)	54,393 (37,417) <sup>a,b</sup>	25,742 (22,578) <sup>a</sup>	26,779 (20,193) <sup>b</sup>
Father parenting stress	2.06 (.67)	2.08 (.57)	2.06 (.70)	2.05 (.73)
Father involvement with child	4.49 (1.05)	4.51 (1.01)	4.50 (1.08)	4.45 (1.06)
Support from mother	2.85 (.24)	2.85 (.22)	2.82 (.27) <sup>a</sup>	2.87 (.20) <sup>a</sup>
$\chi^2$ tests				
Mother's education				
Less than HS	26%	–	–	–
HS degree/GED	29%	–	–	–
Some college/technical school or higher	45%	–	–	–
Father's education <sup>****</sup>				
Less than HS	26%	9%	26%	44%
HS degree/GED	27%	18%	37%	24%
Some college/technical school or higher	47%	73%	37%	32%
Father's marital status <sup>****</sup>				
Married	60%	84%	43%	56%
Cohabiting/other	40%	16%	57%	44%
Father's race				
White	31%	–	–	–
African American	40%	–	–	–
Hispanic	29%	–	–	–
Regular employment <sup>*</sup>				
Job >26 weeks in last year	92%	95%	90%	91%
No regular job	8%	5%	10%	9%

Notes: HS: high school; GED: General Equivalency Diploma.  $\chi^2$  tests significant results are denoted \* $p < .05$  and \*\*\*\* $p < .0001$  for the omnibus test.

<sup>a</sup> When one-way ANOVA was conducted, significant differences ( $p < .05$ ) between cell pairs are denoted by letter superscript pairs, from Bonferroni post hoc comparisons.

<sup>b</sup> When one-way ANOVA was conducted, significant differences ( $p < .05$ ) between cell pairs are denoted by letter superscript pairs, from Bonferroni post hoc comparisons.

### Background control variables

Background control variables measured mothers' characteristics and aspects of the home environment that previous research indicates are related to child maltreatment, including maternal *age* and *education level* at the time of the child's birth (less than high school coded "1," high school degree or GED coded "2," and some college/technical school or more coded "3") reported by the mother at baseline interview; and maternal perceived *parenting stress*, measured at the 3-year follow-up interview using the *Parenting Stress Index (PSI)* (Abidin, 1995). Mothers were asked the extent to which they agreed, from 1 (strongly disagree) to 4 (strongly agree), with four statements including "Being a parent is harder than I thought it would be" and "I feel trapped by my responsibilities as a parent" ( $\alpha = .71$ ). Additional variables included the *number of adults* and *number of children* in the household, based on fathers' 3-year follow-up interview. These variables were included in the regression models in Tables 3 and 4. Very few of them were significant, and because they are not the focus of the current study they are omitted from Tables 3 and 4 for ease of presentation and interpretation of the study's key findings.

### Socio-demographic factors

Paternal socio-demographic factors included the *father's age at the time of the child's birth*; *marital status* entered as a dummy variable for married (coded "0") or cohabiting (coded "1"). *Fathers' education level* was based on fathers' baseline report of their education and then updated at each of the following waves if the father reported a change in his educational status (e.g., "high school degree" at baseline changed to "some college" if the father reported currently being in college at the 3-year interview) (less than high school coded "1," high school degree or GED coded "2," and some college/technical school or more coded "3"). *Paternal race/ethnicity* included non-Hispanic White (coded "1"), non-Hispanic Black (coded "2"), and Hispanic (coded "3").

### Regular employment and annual earnings

*Regular employment* was a dichotomous variable based on fathers' self-report at the 3-year interview of whether he had had a regular job for more than 26 weeks in the last year (no coded "0", yes coded "1"). *Annual earnings* (excluding "off the books" earnings) were constructed using two questions. First, fathers were asked to report, "How much did you earn from (all of) your regular job(s) in the last 12 months, not including "off the books" or "under the table" jobs?" Respondents who declined to answer this question or who did not know the answer were asked in a second question to indicate their income based on a selection of ranges. Missing responses to provide exact earnings were median-filled based on the range provided in the second question, and then natural log transformed for regression analyses.

### Paternal psychosocial factors

*Perceived Support from Child's Mother* was assessed with six questions created for the Fragile Families and Child Wellbeing Study that measure the father's sense of coparental supportiveness from the child's mother. Fathers indicated how often from 1 (never) to 4 (often) the mother provided emotional support to father with regard to raising the child, including "When mother is with child, she acts like the mother you want for your child" and "She respects the schedules and rules you make for child" ( $\alpha = .63$ ).

Fathers' parenting stress was assessed with questions from the *Parenting Stress Index Short Form (PSI-SF)* (Abidin, 1995), with reported satisfactory psychometric properties (Deater-Deckard & Scarr, 1996; Haskett et al., 2006). Fathers were asked the extent to which they agreed, from 1 (strongly disagree) to 4 (strongly agree), with four statements such as "Being a parent is harder than I thought it would be" and "I feel trapped by my responsibilities as a parent" ( $\alpha = .62$ ).

*Father Involvement with the Child* was based on father reports using a scale from 0 (never) to 7 (every day) of the number of days he provided 13 different types of care to the child, including: sing songs or nursery rhymes with child; hugs or shows physical affection to child; tells child that he loves him/her; reads stories to child; assists child with eating; puts child to bed. A score was created to indicate the average number of days per week the father said he was involved in those activities ( $\alpha = .73$ ).

### Dependent measures: paternal physical child abuse proxies

*Parent-Child Conflict Tactics Scales (CTS-PC)* (Straus et al., 1998) is designed to measure psychological and physical aggression directed toward the child, regardless of whether the child was actually injured. The *psychological aggression subscale* measures mothers' reports of how many times in the past year the father engaged in verbal and symbolic acts intended to cause the child psychological pain or fear, including: yelled or screamed at child, swore or cursed at him/her, and threatened to spank or hit but did not actually do it ( $\alpha = .50$ ). The *physical aggression subscale* includes items assessing mothers' report of a range of physically aggressive father-to-child behaviors including how many times in the past year he: shook the child, or hit him/her on the bottom with a hard object ( $\alpha = .60$ ). Higher scores reflect greater incidence of aggressive parenting behaviors. Subscale items measuring severe physical aggression were dropped at the request of one of the Institutional Review Board committees overseeing the study. Mother's reports of paternal physical and psychological aggression were used for several reasons. First, fathers were not interviewed for the in-home study. Second, it may be more desirable to use mothers' report to avoid social desirability concerns. Fathers may be disinclined to reveal to research staff aggressive or abusive tendencies. Paternal reports of spanking were used because of fewer concerns with self-report bias given that spanking is often considered an appropriate parenting strategy (Gershoff, 2002).

*Spanking* was assessed based on fathers' self-report at the 3-year follow-up interview: "In the past month have you spanked child because he/she was misbehaving or acting up?" A dummy variable was created if the father never spanked the child in the past month (coded "0") or spanked the child at all in the past month (coded "1"). A dichotomous variable was created to facilitate ease of interpretation. Analyses using an ordinal variable of spanking (0 = never, 1 = only once or twice/a few times this past month, 2 = a few times a week/every day or nearly every day) produced nearly identical results and were more difficult to interpret.

### Analysis plan

One-way analyses of variance (ANOVA) and chi-square tests were conducted to examine ethnic status differences in study variables (Tables 1 and 2). Negative binomial regression was used for multiple regression analyses, with the  $\exp(b)$  coefficient presented in Tables 3 and 4. To reduce the number of tests being conducted, omnibus tests were conducted for the categorical variables of paternal education and race/ethnicity (when applicable). Logistic regression was used to analyze the dichotomous spanking variable, with odds ratios presented in Tables 3 and 4.

Negative binomial regression is a maximum-likelihood regression used for Poisson-type analyses with over-dispersed data (Gardner, Mulvey, & Shaw, 1995). Poisson models are appropriate when the independent variable consists of nonnegative integer count of relatively uncommon events (e.g., criminal offenses) (Osgood, 2000) and were used because parental report of psychological and physical aggression was uncommon, and CTS-PC items were non-normally distributed and positively skewed. To interpret the marginal effects of the predictor variables using negative binomial regression, the  $\exp(b)$  coefficient is reported along with its associated  $p$  value, which takes into account a logarithmic transformation in the regression equation

**Table 2**

Physical child abuse proxies by ethnic status of the father.

	Full sample (M, S.D.)	White (M, S.D.)	Black (M, S.D.)	Hispanic (M, S.D.)
One-way ANOVA				
Psychological aggression	16.76 (16.93)	17.36 (16.64) <sup>a</sup>	19.17 (17.66) <sup>b</sup>	12.85 (15.54) <sup>a,b</sup>
Physical aggression	9.89 (13.79)	10.39 (14.12) <sup>a</sup>	11.64 (14.76) <sup>b</sup>	6.94 (11.42) <sup>a,b</sup>
$\chi^2$ test				
Spanking <sup>*</sup>				
None in last month	55%	58%	46%	63%
At least one instance of spanking in past month	45%	42%	54%	37%

Notes:  $\chi^2$  tests significant results are denoted \* $p < .05$  for the omnibus test.

<sup>a</sup> One-way ANOVA significant differences ( $p < .05$ ) between cell pairs are denoted by letter superscript pairs, from Bonferroni adjusted post hoc comparisons.

<sup>b</sup> One-way ANOVA significant differences ( $p < .05$ ) between cell pairs are denoted by letter superscript pairs, from Bonferroni adjusted post hoc comparisons.

between the predictor variables and the PCA proxies. The  $\exp(b)$  coefficient operates and can be interpreted similar to an odds ratio in that an  $\exp(b)$  coefficient greater than 1 represents the degree (in percentage) of higher risk associated with one positive unit of change in the predictor variable, and an  $\exp(b)$  below 1 represents the degree (in percentage) of lower risk associated with one positive unit of change in the predictor variable (Liao, 1994; Osgood, 2000).

Mothers' ethnicity was omitted from all regression because it was highly correlated with fathers' ethnicity, which might cause multicollinearity. No multicollinearity problems were detected in our full variable models, with Variance Inflation Factors (VIF) no higher than 2.99. Initially the models were tested in blocks. Using this approach did not change the pattern of background or maternal predictors, therefore results are reported for the full models only.

## Results

### Descriptive results

The first column of Table 1 displays descriptive statistics for all fathers in the study ( $n = 1257$ ), as well as for the mother-reported variables for the full sample only. Other columns present the one-way ANOVA Bonferroni post hoc and chi-square

**Table 3**

Regression results predicting paternal physical child abuse proxies at 3-year follow-up.

	Negative binomial regression ( $\exp(b)$ )		Odds ratio
	Psychological	Physical	Spanking
Socio-demographic factors			
Father's age at birth	.97 <sup>*</sup>	.97 <sup>**</sup>	.95 <sup>**</sup>
Marital status <sup>a</sup>			
Cohabit	1.00	.78	.73 <sup>*</sup>
Father's education			
Less than high school <sup>b</sup>	–	–	– <sup>**</sup>
High school	.99	1.05	1.67
Some college or higher	1.03	1.12	1.83
Race/ethnicity			
White <sup>c</sup>	– <sup>**</sup>	– <sup>***</sup>	– <sup>****</sup>
African American	1.06	1.06	1.92
Hispanic	.69	.56	.94
Employment and earnings			
Regular employment	.93	.87	.62
Annual earnings (LN)	.97	.94	1.01
Psychosocial factors			
Parenting stress	1.01	1.03	1.30 <sup>**</sup>
Involvement with child	1.02	.99	.89
Support from mother	.84	.79	.44 <sup>**</sup>
<i>n</i>	1041	1042	1043
LR $\chi^2$ (17)	45.37	66.70	95.37

Notes: Background control variables (mother's age at child's birth, mother's parenting stress, mother's education, # of adults in the household, and # of children in the household) were included in the regression models, but are excluded from the table for ease of presentation. Omnibus chi-square tests were used to test for any differences due to father's education or race. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ; \*\*\*\* $p < .0001$ .

<sup>a</sup> Married is reference group.

<sup>b</sup> Less than high school is reference group.

<sup>c</sup> White is reference group.

**Table 4**  
Regression results predicting paternal physical child abuse proxies at 3-year follow-up, by race/ethnic group.

	Negative binomial regression (exp( <i>b</i> ))						Odds ratio		
	Psychological aggression			Physical aggression			Spanking		
	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic
Socio-demographic variables									
Father's age at birth	1.00	.97*	.96	.96	.97	.98	.96	.98	.90**
Marital status <sup>a</sup>									
Cohabit	1.02	.79	1.36	.67	.67*	1.11	.67	.62*	.87
Father's education									
Less than high school <sup>b</sup>	–	–	–	–	–	–	–	–	–**
High school	1.12	.83	.86	.77	1.13	.95	.68	1.37	2.81
Some college or higher	.91	.82	1.46	.85	1.08	1.21	.56	1.59	3.60
Employment and earnings									
Regular employment	.98	1.28	.60	.69	1.17	.68	.95	.65	.52
Annual earnings (LN)	.87	.98	1.01	.86	.99	.92	.89	.95	1.11
Psychosocial factors									
Parenting stress	.85	1.06	1.13	.90	.93	1.42	1.25	1.57**	1.04
Involvement with child	.99	1.04	.99	.86	1.02	.94	.68**	.94	1.02
Support from mother	.82	.99	.56	.79	.79	.75	.73	.70	.15**
<i>n</i>	348	376	317	348	377	317	353	370	320
LR $\chi^2$ (15)	10.88	21.27	24.33	22.52	16.37	38.62	29.21	17.28	65.86

Notes: Background control variables (mother's age at child's birth, mother's parenting stress, mother's education, # of adults in the household, and # of children in the household) were included in the regression models, but are excluded from the table for ease of presentation. Omnibus chi-square tests were used to test for any differences due to father's education. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ; \*\*\*\* $p < .0001$ .

<sup>a</sup> Married is reference group.

<sup>b</sup> Less than high school is reference group.

tests for the dependent variables for fathers' ethnic status. Hispanic fathers had significantly more adults in their households compared to White and African American fathers. White fathers were significantly older at the time of the child's birth and had higher earnings than African American and Hispanic fathers. For the most part ethnic status did not differentiate fathers on the psychosocial variables, although Hispanic fathers reported more support from mothers than did African American fathers. Further bivariate analyses, not shown in Table 1, indicated that married fathers self-reported the same mean score for activities spent on a weekly basis with their child ( $M = 4.49$ ,  $S.D. = 1.02$ ) as did cohabiting fathers ( $M = 4.49$ ,  $S.D. = 1.09$ ).

Chi-square tests revealed significant ethnic differences for having a regular job, education level, and marital status. White fathers had the highest levels of education and higher rates of being married than African American or Hispanic fathers. Although White fathers also had higher levels of employment, rates were roughly similar across all fathers.

Table 2 presents the bivariate analyses of the PCA proxies, by race/ethnic status. Hispanic fathers directed significantly less psychological and physical aggression towards their children than both White and African American fathers. Hispanic fathers were least likely to report spanking in the last month. Additional analyses not reported in the table revealed that marital status did not significantly differentiate fathers on the abuse proxies.

#### Multiple regression analyses

Table 3 presents the regression analyses with the full sample of fathers, with omnibus tests conducted for the categorical variables of education and race/ethnicity. Results indicated that being older at the time of the child's birth was consistently linked to less psychological and physical aggression, and spanking. Cohabitation in reference to being married was associated with a decreased likelihood of having spanked in the past month. Omnibus tests revealed a significant effect for race across all three abuse proxies, and also showed a significant effect for education and spanking, with better educated fathers self-reporting greater likelihood of spanking. Annual earnings and regular employment were not significantly related to any of the physical abuse proxies. Paternal parenting stress was associated with greater likelihood of spanking, whereas higher levels of maternal support were linked to less likelihood of having spanked in the past month.

#### Regression results by ethnic group status

Given the significant omnibus findings for race/ethnicity, in the next set of analyses (presented in Table 4), we present subsample analyses by paternal race/ethnicity (White, African American, and Hispanic).

*Paternal socio-demographic factors.* Although inconsistent across the outcome variables, being older at the time of the child's birth was associated with less use of psychological aggression among African American fathers, and decreased likelihood of having spanked among Hispanic fathers. Interestingly, African American fathers in cohabiting relationships used less



physical aggression and were less likely to spank than married African American fathers (they were also less likely to use psychological aggression at trend level,  $p < .10$ ). This pattern did not hold for White or Hispanic fathers. For Hispanic fathers, those with higher levels of education (compared to the reference group of less than a high school degree) were more likely to have spanked their child in the past month. Again, paternal employment and earnings were not significantly related to any PCA proxies for White, African American, or Hispanic fathers.

*Paternal psychosocial factors.* More parenting stress predicted higher levels of spanking for African American fathers. Paternal child involvement was protective for White fathers only, with results indicating a significant relationship between higher levels of child involvement and decreased spanking behavior. For African American and Hispanic fathers there were no significant associations between child involvement and PCA. For Hispanic fathers, more maternal support was linked to less likelihood of spanking in the past month.

## Discussion

To date, research addressing the role of fathers in physical child abuse has primarily focused on the risk posed to children in father-absent homes or homes with a non-related male caregiver (Daly & Wilson, 1996; Holden & Barker, 2004; Margolin, 1992; Radhakrishna et al., 2001; Stiffman et al., 2002). This study uses data from a diverse birth cohort of urban families to illuminate factors linked to PCA among married and cohabiting biological fathers.

### *Bivariate analyses*

Although White fathers had the highest levels of education and income, consistent with previous research there were no race/ethnic differences in self-reported levels of fathers' involvement in daily activities with the child (Fagan, 2000; Hossain, Field, Pickens, Malphurs, & DelValle, 1997).

Ethnic status did differentiate fathers in their parenting strategies more broadly and provided further support for the notion that Hispanic fathers are less likely than White or African American fathers to use psychologically and physically aggressive parenting behaviors (Caughy & Franzini, 2005; Fagan, 2000). Others have posited that Hispanic parents demonstrate less strict parenting styles than African American parents (Fagan, 2000), and in one study Hispanic parents were less likely than White parents to endorse parenting behaviors such as yelling at or threatening children (Caughy & Franzini, 2005). In contrast to White and Hispanic parents, African American fathers were the most likely to have spanked their children (Tables 2 and 3). African American fathers may adapt their parenting style to the demands of more stressful environments, for example, using spanking to exert more control over their children and reinforcing parental mandates that are meant to protect children from harsh conditions, such as racism, poverty, and unsafe communities (Baumrind, 1994; Hofferth, 2003; Kruttschnitt, McLeod, & Dornfeld, 1994; McLeod, Kruttschnitt, & Dornfeld, 1994; Pinderhughes, Nix, Foster, & Jones, 2001). However, it is important to note that many studies documenting racial differences in parenting strategies often do not disentangle the confounded relationship between race and socioeconomic status. While it has been suggested that properly accounting for socioeconomic factors may account for differences among White and African American (Hill & Bush, 2001; McLeod et al., 1994; McLoyd, 1990; Pinderhughes, Dodge, Pettit, & Zelli, 2000), in this study we include a rich set of variables measuring income, employment, and maternal and paternal education, and African American fathers remain more likely to spank their children.

### *The developmental–ecological framework*

Consistent with the developmental–ecological framework, there appear to be multiple pathways related to increased risk for PCA (Belsky, 1993), particularly when accounting for race/ethnic subgroup differences. Below we focus the discussion on those findings that were most significant in light of past research on risk and protective factors associated with PCA.

*Fathers' employment and earnings.* First, regression analyses indicated no significant relationship between fathers' limited earnings or unemployment and risk for PCA (e.g., Jones, 1990; Wolfner & Gelles, 1993). The lack of significant findings for employment and earnings are consistent with at least one other probabilistic community sample where individual socioeconomic factors did not play a role in risk for onset of child maltreatment (Chaffin et al., 1996) but stand in contrast to recent research indicating that paternal unemployment was one factor strongly related to increased maltreatment recidivism among families previously reported to CPS (Coohey, 2006). One possible explanation arises from the nature of the sample used in the current study. The link between poverty, unemployment, and physical abuse has often been found using data from families already indicated for abuse (e.g., Coohey, 2006), suggesting that in high-risk samples, unemployment—particularly when combined with other risk factors such as not being the child's biological father (Daly & Wilson, 1996) and the severity of the previous abuse (Coohey, 2006)—places families at much greater risk for abuse. However, in a normative and diverse urban community sample, and after accounting for variables such as parenting stress and education, employment and annual earnings may be less strongly linked to risk for PCA than previously found in research focusing on families indicated for abuse, such as cases of families reported to Child Protective Services, or research relying on clinic-based. Furthermore, following from studies indicating that low income heightens violence against children only in single-parent families (Berger, 2005),

fathers' economic contribution to the family may be less important than his presence and other factors he brings into the family setting.

Furthermore, the non-significant findings for the predictive effect of fathers' employment and earnings are consistent with another study examining fathers and maternal risk for physical child abuse (Guterman et al., submitted for publication). It may be that fathers' social and human capital characteristics (e.g., education level, parenting stress, marital status) mediate the link between socioeconomic variables and risk for maternal and paternal physical child abuse, a hypothesis that is consistent with previous studies that link economic strain to harsher parenting of adolescents via the effect of economic hardship on parents' emotional wellbeing, depression, and warmth (Conger et al., 1992, 1993, 1994, 2002). An implication for further research is that fathers' economic contributions to their family should be viewed in light of a range of other human and social capital characteristics that may be more directly predictive of child abuse than employment and earnings per se.

*Marital status and the father–mother relationship.* One of the most surprising findings of the current study has to do with marital status. In the full sample (Table 3), being in a cohabiting relationship compared to being married was linked to decreased likelihood of spanking. Subgroup analyses demonstrated that this association held only among African American fathers, for both physical aggression and spanking. This finding parallels other research showing that married mothers are at higher risk for maternal physical child abuse, even after accounting for maternal demographic factors and paternal economic and psychosocial variables (Guterman et al., submitted for publication). Although initially counterintuitive, it is possible that married African American fathers are spending more time with their children than cohabiting fathers, and thus discipline their children more frequently. Although we attempt to account for this by measuring fathers' involvement with their child, the questions used in this study may not adequately capture the depth and range of father involvement, nor may it capture paternal involvement in a manner that is culturally relevant to African American fathers.

Another possible explanation comes from ethnic differences in rates of cohabitation and marriage. In the United States, African Americans are less likely to marry than Whites (Smock, 2000) and may view cohabitation as a normative alternative to marriage rather than a step towards marriage (Smock, 2000). Although not directly evident in this study, African American parents that chose to marry rather than cohabit may be more "traditional" and use more authoritarian forms of parenting. Some past research lends support to this claim, indicating that married mothers in the Fragile Families and Child Wellbeing Study tend to hold more traditional views on male/female roles (Fragile Families Research Brief, 2002).

Other variables measuring the quality of the parental relationship produced limited results, with perceived maternal support decreasing fathers' spanking for Hispanic fathers only.

*Direct involvement in child care.* With regard to potential protective factors, spending more time involved in child caregiving activities was negatively associated with spanking among White fathers. Given that the subgroup of fathers in this study were presumably fairly involved with their children because they were living in the household, this suggests that above and beyond the question of father presence versus absence, spending more time involved in daily childrearing activities may act as a buffering factor for some fathers.

*Additional protective factors.* Consistent with previous research, being older at the time of the child's birth was consistently a buffering effect, particularly among minority fathers. Other studies have pointed to a range of negative outcomes associated with early entry into fatherhood (Chaffin et al., 1996; Coohy, 2006; Franzini, Caughy, Spears, & Esquer, 2005; Straus et al., 1998). Mothers' young age has also been linked to child maltreatment (Connelly & Straus, 1992; Day, Peterson, & McCracken, 1998; Lee & Goerge, 1999). The present study provides further evidence for the benefits of delayed fatherhood, particularly for minority fathers, and indicates that young parents are likely to be among those most in need of early intervention efforts to prevent child abuse.

*Paternal education.* In the full sample (Table 3), educated fathers were more likely to have spanked in the past month. Subgroup analyses indicated that this effect was among Hispanic fathers only. Although these findings are difficult to explain in light of the limitations of the current study, it may be that, similar to the findings for marital status among African Americans, educated Hispanic fathers are able to spend more time with their children, and thus have more opportunities to discipline their children. Assuming that higher levels of education are associated with acculturation, more educated Hispanic fathers may also be more likely to adapt to cultural beliefs that normalize physical spanking of children.

### *Strengths and limitations*

Given the exploratory nature of the study, these results should be interpreted with appropriate caution. First, analyses were cross-sectional and as such causation cannot be inferred. Second, results may not generalize to non-residential or non-biological fathers. Evidence points to declining involvement of cohabiting fathers over time (Cabrera et al., 2004; Carlson & McLanahan, 2004; Carlson et al., 2004), suggesting that men who are unmarried yet involved and cohabiting with the child's mother 3 years after a birth comprise a unique group of fathers. As noted previously, our subsample of fathers may be unique in numerous ways and we do not claim this study to be nationally representative of all fathers. Third, although the Fragile Families and Child Wellbeing Study has better measures of father involvement than most studies conducted to date, particularly given the large nature of the sample, a more comprehensive measure of father involvement

would assess quality as well as quantity of paternal engagement (Cabrera & Peters, 2000; Cabrera et al., 2000; Lamb, Pleck, Charnov, & Levine, 1987; Marsiglio & Cohan, 2000).

Two additional shortcomings of this study – and, indeed, these criticisms are relevant to many studies of child abuse – should be noted. One is that we use proxy measures to assess risk for physical child abuse, specifically fathers' self-reports of spanking and mothers' assessment of paternal psychological and physical aggression using the CTS-PC subscales. With this in mind, future research should seek to replicate these findings using measures of abuse that would unambiguously merit CPS involvement. An additional issue is the potential for bias introduced by using some non-self-reported measures to assess PCA. Although we conducted additional analyses (not reported in this paper) that indicate a fairly high degree of concordance between mothers and fathers on fathers' spanking in the past month, we cannot assess consistency in maternal and paternal reports for the CTS-PC variables because fathers were not asked these questions. While we suspect that mothers' reports of more serious physical and psychological will be less biased than fathers' reports of such behaviors, mothers may be biased in ways that are harder to predict. In future research, clearly it would be desirable to have data from multiple sources in order to more closely examine consistency in reports of paternal physical and psychological aggression.

However, this study has a number of strengths. The community-based Fragile Families and Child Wellbeing Study overcomes many selection bias problems endemic to clinical or risk-based samples (Coohey, 2006; Dubowitz et al., 2001) that may miss abusive fathers that escape detection (Guterman & Lee, 2005). Also, these studies do not provide normative participants against which to make comparisons regarding risk for physical child abuse. An additional related strength is that the Fragile Families Study allows us to examine a comprehensive set of variables that may be important predictors of PCA, including the psychosocial characteristics of fathers, which have largely been omitted in previous studies due to the limitations of data collection. Furthermore, research has relied almost entirely on mothers' reports of fathers' characteristics and behavior (Fitzgerald, Mann, & Barratt, 1999; Nobes & Smith, 2000; Phares, 1992). The current study represents an advance by using fathers' self-report of most parenting behaviors (with the exception of the CTS-PC variables); and provides the ability to control for important paternal demographic and background characteristics, as well as mothers' characteristics, that previously have been linked to heightened risk for PCA (Guterman & Lee, 2005).

### Implications for intervention

There is a pressing need for child abuse prevention programs that target the entire family, including fathers (Coohey, 2006). Although recent evidence has pointed to high levels of father involvement among fragile families, particularly when children are young (Coley & Chase-Lansdale, 1999), little is known about the ways in which involved fathers influence child wellbeing. In contrast to some prior theorizing, in this study paternal employment and earnings were not uniquely associated with risk for PCA. Although preliminary and in need of replication, this study suggests that intervention efforts should target a comprehensive set of factors in order to promote positive fathering. Parenting stress and young paternal age at the time of the child's birth may be potential points of intervention, especially for minority fathers. Another strategy may be to promote fathers' involvement in daily caregiving activities, which in this study was related to less PCA for White fathers.

This study also points to some important directions for further research. There is a strong need for research with diverse families (Chambers, Schmidt, & Wilson, 2006) to gain a better understanding of how and when cultural differences in parenting strategies are implicated as risk-heightening or protective factors for PCA. This study points to a particular set of factors – particularly paternal education, age, involvement with the child, and marital status – that were differentially predictive of spanking and psychologically and physically aggressive parenting strategies. Future studies should examine mediating pathways to further shed light on the intervention strategies that may be most effective for different groups of fathers. In addition, future research should continue to examine the processes related to the unique and unexpected association of marital status and risk for PCA among African American families, for example, using longitudinal data to assess how marital status and the quality of the parental relationship influence risk for paternal physical and psychological abuse over time.

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