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Maternal Use of Corporal Punishment for 3-year-old Children and Subsequent Risk for Child Aggressive Behavior

Catherine A. Taylor, PhD, MSW, MPH,

Tulane University School of Public Health and Tropical Medicine, Department of Community Health Sciences, 1440 Canal St. Suite 2301 TW19, New Orleans, LA 70112

Jennifer A. Manganello, PhD, MPH,

University at Albany, SUNY, School of Public Health, Department of Health Policy, Management & Behavior

Shawna J. Lee, PhD, MSW, MPP, and

Wayne State University, School of Social Work, Merrill-Palmer Skillman Institute for Child and Family Development

Janet C. Rice, PhD

Tulane University School of Public Health and Tropical Medicine, Department of Biostatistics

Abstract

OBJECTIVE—To examine the association between maternal use of corporal punishment (CP) against their 3-year-old children and subsequent aggressive behavior among those children two years later.

METHODS—Respondents participated in waves 1, 3, and 5 of the Fragile Families and Child Wellbeing Study (1998–2005), a population-based longitudinal birth cohort study of children (and their parents) born in one of 20 large U.S. cities ($n=2,461$), with oversampling of unmarried couples. Maternal reports of CP, children's aggressive behaviors at 3 and 5 years of age, and a host of key demographics and potential confounding factors were assessed including: child physical maltreatment, psychological maltreatment, and neglect, intimate partner aggression and violence, and maternal stress, depression, substance use, and consideration of abortion.

RESULTS—Multiple logistic regression analyses revealed that frequent use of CP (i.e., maternal use of spanking more than twice in the prior month) when the child was 3 years-old was associated with increased risk for higher levels of child aggression when the child was 5 years-old (adjusted odds ratio = 1.49 [CI=1.2–1.8] $p<0.0001$), even after simultaneously controlling for the child's level of aggression at 3 years of age as well as all of the aforementioned confounding factors and key demographics.

CONCLUSIONS—Despite American Academy of Pediatrics recommendations to the contrary, most parents in the U.S. approve of and have used CP as a form of child discipline. The current findings support a growing body of evidence that even minor forms of CP, such as spanking, raise

Corresponding author: Catherine A. Taylor, PhD, MSW, MPH, ctaylor5@tulane.edu.

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risk for increased subsequent child aggressive behavior. Importantly, these findings cannot be attributed to the possible confounding effects of a host of other maternal parenting risk factors. Increased and improved efforts to reduce the use of CP and promote the use of alternative, effective non-physical forms of child discipline among U.S. parents are warranted.

Keywords

corporal punishment; physical punishment; spank; childhood aggression; child aggressive behavior

When parents discipline their children, they generally do so in order to teach their children a lesson, instill values, and/or improve their children's current and future behavior. Corporal punishment (CP) is one disciplinary strategy that remains highly prevalent in the U.S. despite controversy surrounding its use.¹ CP can be defined as "the use of physical force with the intention of causing a child to experience pain, but not injury, for the purpose of correcting or controlling the child's behavior (p. 3)."² Percent estimates of U.S. parents who have used CP vary from 35–90% depending on key modifiers such as age and gender of the child and type of punishment specified (e.g., spanking, slapping).^{3–5} In a highly diverse, U.S. population-based sample of parents with 3-year old children, a majority of the mothers reported spanking their 3 year-old children at least once in the month prior to the interview.⁶ Furthermore, in a 2005 U.S. poll, 72% of adults reported that it was "OK to spank a child," with approval ratings being highest in the South and lowest in the Northeast.⁷

The normativeness of CP in the U.S. stands in contrast with the American Academy of Pediatrics (AAP) recommendations, which are consistent those of other professional organizations, e.g.,^{8, 9, 10} that "parents be encouraged and assisted in the development of methods other than spanking for managing undesired behavior (p. 723)."¹¹ Such concerns are rooted in the increasing body of empirical evidence suggesting that the risks of using CP against children are likely to outweigh the potential benefits. A 2002 meta-analysis showed linkages between CP of children and risk for poor outcomes in childhood including aggressive and/or anti-social behavior, mental health problems, and physical maltreatment; most of these risks carried into adulthood as well.¹²

Whether or not CP causes aggression is of particular relevance for public health interests in short-circuiting the cycle of violence. Gershoff's meta-analysis included 27 studies that examined the link between CP and aggression and found a positive effect ($d = 0.36$); however, most of these studies were not longitudinal.^{12, 13} In order to more strongly assert that CP is a causal determinant of aggression, it is necessary to: 1) demonstrate a statistically significant link between CP and aggression as well as, 2) temporality of this link, and to 3) control for the child's initial level of aggression as well as 4) key potential confounders.^{12, 13} Other researchers have aimed to meet most of these conditions.^{e.g., 14–23} However, the current study accounts for all four conditions, has a larger sample size and therefore more statistical power than all but two of the aforementioned studies,^{22, 23} and controls for key potential maternal parenting risk confounders and that have not previously been examined simultaneously. The current study was designed to answer the following question: Does maternal use of corporal punishment on a 3 year-old child lead to increased risk of

aggression when that child is 5 years of age, even after controlling for the child's initial level of aggression and other important maternal parenting risk factors and demographics?

METHODS

Participants

The sample for this study was obtained from the Fragile Families and Child Well-being Study (FFCWS), which oversampled for non-marital births. FFCWS is a population-based cohort study of families from 20 large US cities. The original sample (n = 4898) was obtained from 1998 to 2000 by sampling births within hospitals from cities with populations over 200,000 in 1994; a detailed description of the FFCWS study design was published previously.²⁴ Four waves of data are available: baseline (around the time of the index child's birth), and when the index child was one, three, and five years old. Two interviews were conducted when the child was age three and age five: a core interview (analogous to those from the first three waves) and an interview conducted with a sub-sample of mothers for the add-on "In-Home Longitudinal Study of Pre-School Aged Children." Questions about child aggression and maltreatment were included in the latter interview. Most mothers (79%) who completed the core interview also completed the "In-home" interview.

Mothers who met at least one of the following criteria were excluded from the study sample: 1) did not participate in the 3 year "In-home" interview (n=1610), 2) did not participate in the 5 year "In-home" interview (n=799), 3) answered fewer than 50% of the child aggression scale items so that a valid score could not be calculated (missing item values were imputed when 50% or fewer of the scale items were missing) (n=21), or 4) did not report whether or not they had spanked the index child at age 3 (n=7). Study participants (n=2461) differed demographically from non-participants (n=2437) in that participants were: more likely to have some college education, be Black, be U.S. born, and be Christian (non-Catholic) or non-religious. Participants and non-participants did not differ according to child's gender, maternal age, household income, or parents' marital status at child's birth.

The Institutional Review Board (IRB) of the Tulane University Health Sciences Center reviewed this secondary data analysis study of publicly available data and considered it exempt. All participant recruitment procedures were approved by the IRBs at the academic homes to the FFCWS: Columbia University and Princeton University. Study participants were compensated and informed consent was obtained at each interview. Again, further details pertaining to the original study have been published elsewhere.²⁴

Measures

All data were provided via self-report from the mother. All child-related questions were asked in regard to the identified index child.

Predictor Variable

Maternal use of CP: This variable reflects how frequently the mother spanked her 3-year old child, a peak age for its use,^{3, 25} for "misbehaving or acting up" in the month prior to the

interview. Responses were coded and analyzed ordinally as: never (0), once or twice (1), or more than two times (2).

Dependent Variable

Index Child Aggression at Age Five: This variable was assessed using 12 items from the Child Behavior Checklist version for age five,²⁶ which asked if the child: argues a lot; is cruel, bullies and shows meanness to others; destroys (his/her) own things; destroys things belonging to family or others; is disobedient at home; is disobedient at school or in childcare gets in many fights; physically attacks people; screams a lot; teases a lot; threatens people; and is unusually loud ($\alpha = 0.82$). Response options were: not true (0), somewhat or sometimes true (1), or very true or often true (2). An average score for the 12 items was obtained (mean=0.40, median=0.33, standard deviation=0.33). Because the variable was highly skewed, it was dichotomized at the median and analyzed as “lower aggression” (score = 0–0.32) versus “higher aggression” (score = 0.33 to 1.83).

Index Child Aggression at Age Three: This variable was assessed using 19 items from the Child Behavior Checklist version for age three,²⁶ which asked if the child: Is defiant; demands must be met immediately; is disobedient; doesn't seem to feel guilty after misbehaving; is easily frustrated; gets in many fights; hits others; has angry moods; Punishment doesn't change (his/her) behavior; screams a lot; is selfish or won't share; is stubborn, sullen, or irritable; has temper tantrums or hot temper; is uncooperative; wants a lot of attention; can't stand waiting, wants everything now; destroys things belonging to family or other children; hurts animals or people without meaning to; physically attacks people ($\alpha=0.88$). Response options were: not true (0), somewhat or sometimes true (1), or very true or often true (2). An average score for the 19 items was then obtained (mean=0.62, median=0.58, standard deviation=0.36). Because the variable was highly skewed, it was dichotomized at the median value and analyzed as “lower aggression” (score = 0–0.57) versus “higher aggression” (score = 0.58 to 1.95).

Potential Confounders—The following variables were included because they may potentially confound the association between parental use of CP and child aggression. All were assessed when the child was 3 years of age so as to be consistent with the main predictor variable.

Maternal Parenting Risks: We have shown previously that maternal use of CP against her 3-year old child is associated with her use of other harsh parenting (physical and psychological maltreatment^a), child neglect, intimate partner aggression and violence, and maternal parenting stress, depression, and consideration of abortion;⁶ use of alcohol and/or drugs also is linked with use of CP²⁷ and parental punitiveness.²⁸ Prior literature also has shown links between most of these variables (especially harsh parenting, exposure to intimate partner aggression and violence, parental depression and stress) and childhood aggression.^{29–34}

^aThe term “maltreatment” will be used throughout for these variables rather than the more commonly used “aggression” term so that this variable will not be confused with the outcome variable (child aggression).

Child maltreatment and intimate partner aggression and violence (IPAV): Three child maltreatment proxies were assessed with the Parent-Child Conflict Tactics Scale (PC-CTS):³⁵ physical maltreatment (4 items), psychological maltreatment (5 items), and neglect (5 items). (The physical maltreatment scale usually contains a fifth item regarding spanking; however, this item was removed so that it would not overlap with our main predictor variable.) IPAV experienced by the mother since the index child's birth, either from the father or from a current partner, was assessed using seven items: three items from the Conflict Tactics Scale³⁶ were adapted to assess physical aggression and four from the Spouse Observation Checklist³⁷ and Lloyd³⁸ were adapted to assess psychological aggression. Because child physical and psychological maltreatment each were highly skewed, they each were dichotomized at their median values (shown in Table 1) for analysis. Child neglect and IPAV also were dichotomized (any vs. none).

Other maternal risks: Maternal parenting stress, major depression, use of alcohol and/or drugs, and unwantedness of the index child pregnancy were assessed. Stress was measured using eleven items from the Parenting Stress Index³⁹ ($\alpha=0.86$). Depression was measured based on criteria from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition,⁴⁰ for major depression using Section A of the Composite International Diagnostic Interview – Short Form;⁴¹ detailed scoring methods have been described previously.⁴² “Unwantedness” of the index child pregnancy was approximated based on the mother's response to this baseline question: “When you found out you were pregnant, did you think about having an abortion?” Parenting stress was analyzed as a continuous variable. All of the other maternal risk variables were dichotomized (yes vs. no).

Maternal and Family Demographics: These variables were selected based on their availability in the FFCWS dataset and previous empirical evidence suggesting their association with parenting risk and/or use of CP.

Statistical Analysis

Descriptive and bivariate statistics were conducted to examine associations between all assessed maternal parenting risk factors/demographic characteristics and maternal use of CP (Table 1) and child aggression at age 5 (Table 2). The Kruskal-Wallis test was used for the continuous variables because the equal variances assumption generally was not met. Chi-square tests were used with binary and categorical variables.

Four multivariate logistic regression models were conducted to examine prediction of child aggression at 5 years of age (Table 3). All four models controlled for parents' marital status at birth as well as interview city because these variables were part of the sampling design. Model 1 tested maternal use of CP when the child was 3 years of age as the sole predictor. Model 2 added the child's initial level of aggression at 3 years of age. Model 3 added the eight assessed maternal parenting risk factors that may confound the association between CP and child aggression. Model 4 added all of the assessed maternal and family demographic characteristics.

RESULTS

Almost half of the mothers reported no use of spanking (45.6%), 27.9% reported spanking 1 to 2 times in the past month, and 26.5% reported spanking more than 2 times. All of the examined risk factors and demographics, except for parental relationship status and income, were significantly associated with CP in bivariate analyses (Table 1). Use of CP was significantly associated with other maternal parenting risks, including proxies for child psychological and physical maltreatment and neglect, IPAV victimization, stress, depression, substance use, and consideration of abortion. Respondents who were Hispanic, foreign born, or Catholic all were at lower than average risk for using CP. Respondents who had a male index child or a high school education, or who were younger, Black, or Christian (non-Catholics) were at higher than average risk for using CP.

As with CP, all of the examined risk and demographic factors, except for race/ethnicity and nativity, were associated with child aggression (Table 2). These findings confirmed that most of the examined factors might indeed confound the link between CP and child aggression and therefore should be controlled for in the final analysis. As with CP, higher levels of each of the assessed maternal parenting risks were associated with risk for higher levels of child aggression. In addition, a few demographics also were relevant: children who were male or whose mothers were younger, had lower education levels or household income, had no religious preference, or had just a “visiting” relationship with the father were at risk for higher levels of aggression.

Table 3 presents results from four logistic regression models predicting higher levels of child aggression at age 5. Across all four models, mothers’ more frequent use of CP (more than twice in the prior month) when the child was age 3 was a statistically significant predictor of higher levels of aggression when the child was age 5. At the bivariate level (model 1), more frequent use of CP more than doubled the odds of higher aggression levels and less frequent use of CP (1 to 2 times in the prior month) raised the odds by almost 40%. When the child’s level of aggression at age 3 was included (model 2), the impact of CP use on subsequent aggression was cut almost in half; this was because, as expected, having a higher level of aggression at age 3 was a strong predictor of a higher level of aggression at age 5. When the assessed maternal parenting risks were included (model 3) the impact of more frequent CP use was cut by another 27% and less frequent CP use was no longer statistically significant. The final model (4), which included all assessed demographics as well, suggests that the odds of the child having a higher level of aggression at age 5 were raised by about 49% with more frequent use of CP at age 3.

DISCUSSION

Our study accounted for eight key “maternal parenting risks” for child aggression, including other forms of harsh parenting besides use of CP (i.e., physical and psychological maltreatment proxies), child neglect, IPAV, and maternal parenting stress, depression, use of substances, and consideration of abortion. As anticipated, all of these factors were found to be associated both with CP use and with child aggression and therefore had the potential to be important confounders of this association. Although prior studies on this topic have

accounted for parenting risks such as maternal psychopathology,²³ parental marital adjustment or conflict,^{15, 16} and/or relevant demographics, no studies to date to the authors' knowledge have accounted simultaneously for all of the confounds addressed in this study, while also addressing the other key conditions (statistical significance, temporality, initial levels of child aggression) that must be met in order to more strongly assert that use of CP leads to higher levels of aggression in children.

We found that even after all of these potential "maternal parenting risk" confounds were controlled for, more frequent maternal use of CP with their 3-year-old children raised the odds of these children being more aggressive at age 5. This finding is consistent with dozens of other studies that also have shown a significant statistical link between the use of CP and child aggression including those summarized by Gershoff¹² (e.g., 18, 20, 43, 44–53) and other studies conducted since the time of her meta-analysis;^{e.g., 23, 54–57} it also is consistent with studies that similarly controlled for child's initial level of aggression.^{e.g., 15–23} Interestingly, once all of the demographics were accounted for in our final model, CP was the only examined parenting risk factor that remained statistically linked (after a Bonferroni correction) with subsequent child aggression. This finding seems to support a social learning approach to understanding the cycle of violence,⁵⁸ whereby the child learns to be aggressive by being treated directly with aggression.

One may wonder, then, why maternal use of child physical maltreatment was not related to child aggression. The physical maltreatment subscale of the PC-CTS contained five items (Shook; Hit on the bottom with something like a belt, hairbrush, a stick or some other hard object; Slapped on the hand, arm, or leg; Pinched; and Spanked on the bottom with your bare hand). However, when the latter item was removed, there was a substantial drop in the reliability coefficient for this subscale (from $\alpha = 0.63$ to 0.48). Further, two of the remaining four items were reported very rarely (5 % (shook) and 8% (pinched)); in contrast, spanking was much more common. Thus, the lack of association between maternal use of child physical maltreatment and subsequent child aggression may be an issue of statistical power rather than one of theoretical inconsistency.

There are several limitations to our study. First, this study focused on maternal use of CP only and does not account for the father's or other caregivers' use of CP with the child. Further, all variables in this study are based on mothers' self reports; there is no observational data and reports may be subject to biases related to recall and/or social desirability. Also, there is always concern in observational studies that unmeasured confounders may explain the associations found; however, even when this concern was addressed to some extent in a prior study using hierarchical linear modeling, the link between CP and child aggression remained.²²

Given the problem of unmeasured confounders, it is not possible to assert causality between CP and child aggression in observational studies such as this. And, as with other studies of risk behaviors (e.g., smoking), it would be unethical to randomize parents to either use CP or not use CP given the existing evidence linking CP with associated harm in children. Thus we must rely largely on evidence from observational studies, such as the current one, that aim to

account for as many other possible explanations of the association between CP and child aggression as possible.

CONCLUSIONS

This study adds strength to the growing body of literature suggesting that parental use of CP leads to increased child aggression. This evidence-base suggests that primary prevention of violence can start with efforts to prevent the use of CP against children. Pediatricians and others concerned with children's well-being know that CP is not a necessary form of child discipline and that other more or equally effective, non-physical forms of discipline exist. Reductions in parents' use of CP (demonstrated in randomized clinical trials of parenting interventions designed to treat conduct disorder in children) have been shown to reduce children's subsequent aggression;⁵⁹ additional studies of this nature could aid in addressing the question of CP as a causal agent in subsequent aggression. However, efforts to teach non-physical discipline strategies to parents via general pediatric office visits have met with mixed success.^{60, 61} Research to further such efforts is needed given that parents cite pediatricians as the professionals they are most likely to seek advice from regarding child discipline.⁶² In addition, broader population-based efforts, such as social marketing campaigns, are needed to shift perceived norms regarding CP⁶² and strengthen the AAP's message that other effective and less risky child discipline strategies should be used instead of CP.

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Abbreviations

AAP	American Academy of Pediatrics
CP	Corporal Punishment
FFCWS	Fragile Families and Child Well-being Study
IPAV	Intimate partner aggression and violence
PC-CTS	Parent-Child Conflict Tactics Scale

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Descriptive and Bivariate Statistics of Maternal Characteristics by Mothers' Use of Corporal Punishment (CP) during the Month Prior to Interview when Child was 3 Years of Age

TABLE 1

	Total sample (n = 2461)	Did not Spank (n=1123)	Spanked 1-2x (n = 686)	Spanked 3x or more (n=652)	
Maternal Parenting Risks					
Psychological maltreatment against child, past year incident freq [range=0-115]	25	16	25	33	***
Physical maltreatment against child (spanking not included), past year incident freq [range=0-108]	12	4	16	26	***
Any neglect of child, past year %	11.3	8.5	13.3	14.3	***
Victim of intimate partner aggression and/or violence, since birth of index child %	53.2	47.4	57.9	58.4	***
Parenting stress, Parenting Stress Index score [range=0-44]	12	11	13	13	***
Major depression, %	21.3	18.2	21.4	26.5	***
Use of drugs and/or alcohol, %	16.1	13.0	16.6	20.9	***
Considered aborting this child, %	27.7	24.8	29.3	30.8	*
Maternal and Family Demographics					
Child gender (boy), %	51.9	48.9	53.4	55.5	*
Maternal Age, years [range=16-50]	27	28	27	26	***
Maternal Education, %					**
< high school	32.7	34.9	34.1	27.5	**
High school	30.6	29.1	29.2	34.8	*
Some college	25.6	23.9	26.2	27.8	
College grad	11.0	12.1	10.2	9.8	
Maternal Race / Ethnicity, %					***
Black	50.7	45.3	53.6	56.8	***
Hispanic	24.2	29.2	23.3	16.4	***
White	21.9	21.9	19.7	24.1	

	Total sample (n = 2461)	Did not Spank (n=1123)	Spanked 1-2x (n= 686)	Spanked 3x or more (n=652)	
Other	3.1	3.2	3.2	2.6	
Maternal Nativity (Foreign Born), %	12.6	17.5	10.5	6.1	***
Maternal Religion, %					***
Catholic	26.4	32.3	26.8	15.8	***
Protestant	39.9	36.0	40.2	46.3	***
Other Christian	12.7	11.0	12.4	16.1	**
No religious preference	17.0	16.6	16.8	17.9	
Other	3.1	3.5	2.9	2.8	
Mother and father relationship status, %					NS
Married	32.1	33.6	31.5	30.4	
Cohabiting	27.7	28.0	26.7	28.2	
Visiting	29.6	27.8	30.9	31.3	
No relationship	10.6	10.6	10.9	10.1	
Maternal Annual Household Income, natural log of \$ [range=0-13.8] (actual median = \$23,721)	10	10	10	10	NS

NS = Not statistically significant;

* P < .05;

** P < .01;

*** P < .001

Note: Kruskal-Wallis tests were conducted for continuous variables, for which ranges and medians are presented, because equal variance assumptions generally were not met. Chi Squared tests were conducted for binary and categorical variables, for which % of mothers occupying each category are presented. Missing data for each variable equaled less than 1%.

TABLE 2

Descriptive and Bivariate Statistics of Maternal Characteristics by Child Aggressive Behavior when Child was 5 Years of Age

	Total sample (n = 2461)	Lower aggression (n= 1,137)	Higher aggression (n= 1,324)	
Maternal Parenting Risks				
Psychological maltreatment against child, past year freq [range=0–115]	25	18	27	***
Physical maltreatment against child (spanking not included), past year freq [range=0–108]	12	9	16	***
Any neglect of child, past year %	11.3	8.1	14.1	***
Victim of intimate partner aggression and/or violence, since birth of index child %	53.2	47.9	57.8	***
Parenting stress, Parenting Stress Index score [range=0–44]	12	11	13	***
Major depression, %	21.3	17.5	24.6	***
Use of drugs and/or alcohol, %	16.1	13.9	18.0	**
Considered aborting this child, %	27.7	25.0	30.0	**
Maternal and Family Demographics				
Child gender (boy), %	51.9	47.5	55.7	***
Maternal Age, years [range=17–50]	28	28	26	***
Maternal Education, %				***
< high school	32.7	29.4	35.6	**
High school	30.6	28.5	32.5	*
Some college	25.6	28.0	23.5	*
College grad	11.0	14.1	8.3	***
Maternal Race / Ethnicity, %				NS
Black	50.7	49.3	51.9	
Hispanic	24.2	24.4	24.0	
White	21.9	23.3	20.6	
Other	3.1	2.9	3.2	
Maternal Nativity (Foreign Born), %	12.6	13.5	11.7	NS
Maternal Religion, %				*
Catholic	26.4	27.7	25.3	
Protestant	39.9	41.3	38.7	
Other Christian	12.7	12.7	12.8	
No religious preference	17.0	14.5	19.1	**
Other	3.1	3.1	3.2	
Mother and father relationship status, %				***
Married	32.1	36.6	28.3	***
Cohabiting	27.7	27.1	28.2	
Visiting	29.6	25.9	32.8	***

	Total sample	Lower aggression	Higher aggression	
	(n = 2461)	(n= 1,137)	(n= 1,324)	
No relationship	10.6	10.4	10.7	
Maternal Annual Household Income, natural log of \$ [range=0–13.8] (actual median = \$23,721)	10.1	10.1	10.0	***

NS = Not statistically significant;

*
P < .05;

**
P < .01;

P < .001

Note: Kruskal-Wallis tests were conducted for continuous variables, for which ranges and medians are presented, because equal variance assumptions generally were not met. Chi Squared tests were conducted for binary and categorical variables, for which % of mothers occupying each category are presented. Missing data for each variable equaled less than 1%.

TABLE 3

Odds Ratios of Corporal Punishment (CP) and other Family Characteristics Predicting a Higher Level of Child Aggression at Age 5

	Model 1 (n=2461)			Model 2 (n=2461)			Model 3 (n=2432)			Model 4 (n=2432)		
	OR	95% CI	P>	OR	95% CI	P>	OR	95% CI	P>	OR	95% CI	P>
Mother's Use of CP												
Mother spanked >2 times	2.03	(1.82 – 2.26)	0.000	1.59	(1.42 – 1.79)	0.000	1.43	(1.22 – 1.69)	0.000	1.49	(1.24 – 1.78)	0.000
Mother spanked 1–2 times	1.37	(1.17 – 1.61)	0.000	1.21	(1.02 – 1.45)	0.032	1.15	(0.93 – 1.40)	ns	1.17	(0.94 – 1.44)	ns
Higher Level of Child Aggression at Age 3				3.79	(3.43 – 4.19)	0.000	3.34	(3.05 – 3.66)	0.000	3.35	(3.06 – 3.67)	0.000
Maternal Parenting Risks												
Psychological maltreatment against child							0.98	(0.81 – 1.18)	ns	0.97	(0.80 – 1.19)	ns
Physical maltreatment against child (spanking not included)							1.11	(0.95 – 1.28)	ns	1.10	(0.93 – 1.29)	ns
Neglect of child						1.14	(0.84 – 1.55)	ns	1.13	(0.83 – 1.53)	ns	
Victim of intimate partner aggression and/or violence							1.14	(0.94 – 1.38)	ns	1.15	(0.94 – 1.39)	ns
Parenting stress							1.02	(1.01 – 1.04)	0.001	1.02	(1.01 – 1.04)	0.006
Major depression							1.07	(0.91 – 1.26)	ns	1.07	(0.92 – 1.25)	ns
Use of drugs and/or alcohol							1.14	(0.87 – 1.50)	ns	1.15	(0.88 – 1.51)	ns
Considered aborting this child							1.04	(0.79 – 1.37)	ns	1.04	(0.77 – 1.40)	ns
Demographics												
Child gender, boy										1.31	(1.09 – 1.58)	0.004
Maternal Age, y										1.00	(0.97 – 1.03)	ns
Maternal Education												
< high school (Ref)										1.00		
High school										0.97	(0.80 – 1.19)	ns
Some college										0.78	(0.65 – 0.94)	0.009
College grad										0.66	(0.44 – 0.99)	0.043
Maternal Race / Ethnicity												
Black (Ref)										1.00		

	Model 1 (n=2461)			Model 2 (n=2461)			Model 3 (n=2432)			Model 4 (n=2432)		
	OR	95% CI	P>	OR	95% CI	P>	OR	95% CI	P>	OR	95% CI	P>
Hispanic										0.99	(0.80 – 1.22)	ns
White										1.07	(0.85 – 1.34)	ns
Other										1.13	(0.72 – 1.80)	ns
Foreign Born										1.04	(0.77 – 1.41)	ns
Maternal Religion												
Protestant (Ref)										1.00		
Catholic										1.10	(0.75 – 1.60)	ns
Other Christian										0.99	(0.64 – 1.55)	ns
No religious preference										1.24	(1.02 – 1.50)	0.030
Other										1.32	(0.77 – 2.26)	ns
Mother and father relationship status												
Married (Ref)										1.00		
Cohabiting										0.99	(0.70 – 1.39)	ns
Visiting										1.18	(0.89 – 1.56)	ns
No relationship										1.00	(0.65 – 1.54)	ns
Maternal Annual Household Income										0.96	(0.90 – 1.04)	ns

Note: Missing data for each variable equaled 1.2 % or less. All models were adjusted for two key variables used in the sampling design: parents' marital status at birth (married or unmarried) and city. In Model 4, a Bonferroni correction for multiple tests suggests that only those findings with $P < 0.002$ should be considered.