

# Spanking and Child Development Across the First Decade of Life



**WHAT'S KNOWN ON THIS SUBJECT:** A large and growing literature has demonstrated significant associations between the use of spanking and later child aggression, but we know less about paternal spanking, effects of spanking on cognitive development, and longer-term effects.



**WHAT THIS STUDY ADDS:** Accounting for a broad array of risk factors, spanking predicts both aggression and receptive vocabulary across the first decade of life. Importantly, we include paternal spanking, cognitive outcomes, and a longitudinal span longer than that of much of the literature.

## abstract



**OBJECTIVE:** To examine the prevalence of maternal and paternal spanking of children at 3 and 5 years of age and the associations between spanking and children's externalizing behavior and receptive vocabulary through age 9.

**METHODS:** The Fragile Families and Child Well-Being Study, a longitudinal birth cohort study of children in 20 medium to large US cities, was used. Parental reports of spanking were assessed at age 3 and 5, along with child externalizing behavior and receptive vocabulary at age 9 ( $N = 1933$ ). The data set also included an extensive set of child and family controls (including earlier measures of the child outcomes).

**RESULTS:** Overall, 57% of mothers and 40% of fathers engaged in spanking when children were age 3, and 52% of mothers and 33% of fathers engaged in spanking at age 5. Maternal spanking at age 5, even at low levels, was associated with higher levels of child externalizing behavior at age 9, even after an array of risks and earlier child behavior were controlled for. Father's high-frequency spanking at age 5 was associated with lower child receptive vocabulary scores at age 9.

**CONCLUSIONS:** Spanking remains a typical rearing experience for American children. These results demonstrate negative effects of spanking on child behavioral and cognitive development in a longitudinal sample from birth through 9 years of age. *Pediatrics* 2013;132:e1118–e1125

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### KEY WORDS

spanking, corporal punishment, physical discipline, harsh parenting, aggression, externalizing behavior, cognitive development, receptive vocabulary

### ABBREVIATIONS

CBCL—Child Behavior Checklist

CIDI-SF—Composite International Diagnostic Interview–Short Form

FFCW—Fragile Families and Child Well-Being

IPV—intimate partner violence

PPVT—Peabody Picture Vocabulary Test

WAIS-R—Wechsler Adult Intelligence Subscale–Revised

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Corporal punishment remains a widely endorsed parenting tool in US families,<sup>1,2</sup> and the United States stands out as one of the few high-income countries that have not followed Sweden's lead in banning spanking.<sup>3</sup> This is despite the warnings of the American Academy of Pediatrics about the potentially deleterious effects of spanking and recommendations for families to use other methods of discipline.<sup>4</sup> The use of spanking is highest for preschoolers and school-age children, but even in the first year of life recent evidence finds 11%<sup>5</sup> to 15%<sup>6</sup> of children spanked and as many as 34% of 1-year-old children in impoverished families in the Early Head Start National Research and Evaluation Project.<sup>7</sup>

In a seminal meta-analysis of 88 studies, Gershoff<sup>2</sup> demonstrated an association between corporal punishment and 10 of the 11 child outcomes examined across childhood. In particular, a large and growing literature points toward an association between spanking and higher levels of aggression among children.<sup>2,7–13</sup> However, there remain some limitations in the research to date.<sup>14,15</sup> First, few studies have used longitudinal samples to address the temporal sequencing of spanking and child outcomes.<sup>8</sup> Second, analysts have called for greater inclusion of measures of stress and socioeconomic variables, especially in light of mixed results on the extent to which characteristics of parents, such as race or ethnicity, moderate the relationship between spanking and child aggression. Third, almost all studies have focused on maternal spanking to the exclusion of paternal spanking, which limits our capacity to understand whether parents are making differential decisions on corporal punishment and whether their spanking may be having differential effects on child outcomes. To the extent that mothers spend more time with children and are typically the

primary caregivers, we might expect maternal spanking to be more strongly associated with behavioral outcomes.

A fourth limitation is that much of the focus in the literature has been on child aggressive behavior, whereas cognitive developmental outcomes have received less attention.<sup>16–18</sup> Two studies have examined spanking and cognitive outcomes prospectively but only in very young children. Berlin et al<sup>7</sup> found links between spanking and early child Bayley scores in a large sample of low-income preschoolers and toddlers, and MacKenzie et al<sup>10</sup> found evidence of associations between early spanking and lower child vocabulary scores at age 5.

In this study, we analyze the links between maternal and paternal spanking and child behavioral and cognitive development, taking advantage of a longitudinal data set that follows a large and diverse sample of children from birth through 9 years of age, a wider time span than has been typically examined to date. The data set is extremely rich, allowing us to control for many possible confounds in family characteristics and risks with the potential to affect parenting stress and family functioning. Unusually for this topic, we are able to include data on paternal as well as maternal spanking in a longitudinal analysis. And we go beyond most previous studies in examining cognitive development as well as aggression.

## METHODS

### Data and Analysis Strategy

We use data from the Fragile Families and Child Well-Being (FFCW) Study.<sup>19</sup> FFCW is a longitudinal birth cohort study of ~4200 children drawn from 20 US cities and representative of children born between 1998 and 2000 in medium to large US cities. FFCW placed special emphasis on tracking both mothers and fathers, and therefore we

have data on both maternal and paternal spanking practices.

We use the data from FFCW to analyze the association between spanking at age 3 and 5 and Child Behavior Checklist (CBCL) externalizing behavior and receptive vocabulary scores on the Peabody Picture Vocabulary Test (PPVT) at 9 years of age. Our analytic sample is limited to families in which there were valid responses on the key variables from these interviews including the outcome variables, and the use of a control variable for father absent in all regression models allowed us to maintain the full analytic sample and avoid dropping children whose fathers may have been absent at any 1 time. The resultant sample included 1933 families for the child externalizing behavior analyses and a subsample of 1532 families for the PPVT analyses. The families in our analytic sample do differ from the total FFCW study sample in some respects. For example, the families in the analytic samples were less likely to have babies with a low birth weight, and the child was less likely to be the mother's first. Based on this comparison, the families making up the analytic sample have more resources in general and appear more stable at baseline than the rest of the FFCW sample. Nevertheless, as shown in the descriptive statistics in Table 1, they remain a fairly disadvantaged urban sample.

## Measures

### Maternal and Paternal Spanking

Spanking was measured by a question asked of the mother and the father at the age 3 and 5 assessments regarding frequency of spanking in the past month because child was misbehaving or acting up. Specifically, the mother was asked, "In the past month, have you spanked (child) because (he/she) was misbehaving or acting up?" The parent's responses were coded as no spanking in the past month, spanking once

**TABLE 1** Descriptive Statistics for Sample From the FFCW

	Sample (N = 1933), OLS	
	Age 3	Age 5
% Mothers report spanking child $\geq 2\times$ /wk	12.6	5.5
% Mothers report spanking child $< 2\times$ /wk	44.4	46.6
% Mothers report not spanking child	43.0	47.9
% Fathers report spanking child $\geq 2\times$ /wk	7.3	3.0
% Fathers report spanking child $< 2\times$ /wk	33.0	30.2
% Fathers report not spanking child	59.7	66.8
% Girls		47.6
Average age of child at year 9 assessment, mo (SD)	111.4 (3.7)	
% Born low birth wt		9.2
% First born		38.7
Average emotional temperament score at age 1 (SD)	8.4 (3.1)	
Average age of mother at birth, y (SD)	25.0 (6.0)	
% Married at baseline and age 5		20.6
% Cohabiting at baseline and married or cohabiting at age 5		17.2
% Not living together at baseline or age 5		32.6
% Living together at baseline, not at age 5		22.0
% Living separate at baseline, together at age 5		7.5
% White, non-Hispanic		23.5
% Black, non-Hispanic		51.9
% Hispanic		21.4
% Other		3.2
% Not completed high school		34.4
% Completed high school or GED only		27.2
% Attended some college or trade school		26.8
% With BA or BS degree or more		11.6
Household income/needs ratio at baseline (SD)	2.4 (2.5)	
% Mothers not US born		10.7
% Mothers lived w/ both parents when they were age 15		39.7
% Mothers reported working in past wk at age 9		63.5
Average number of other adults in household at age 9 (SD)	2.0 (0.8)	
Average number of other children in household at age 9 (SD)	2.7 (1.3)	
% Prenatal drug use, moderate or high alcohol, or smoking		21.2
% Mothers reported IPV before child's birth		6.5
Mothers' rating of fathers' supportiveness during pregnancy (SD)	10.5 (1.6)	
% Late starting or no prenatal care		17.3
Average mothers' parental stress score at age 9 (SD)	12.0 (2.7)	
% Maternal depression or general anxiety disorder by age 9		41.4
Average impulsivity score for mothers at age 5 (SD)	6.7 (1.3)	
Average WAIS-R Similarities subtest score at age 3 for mother (SD)	6.9 (2.6)	
Average CBCL Externalizing Behavior score for child at age 3 (SD)	14.8 (8.1)	
Average Maternal Pro-Cognition Activities score at age 1 (SD)	5.4 (1.4)	
Average PPVT score for child at age 3 (SD)	86.4 (16.4)	

OLS, ordinary least squares.

a week or less, and spanking twice or more each week.

### Child Externalizing Behavior

The externalizing behavior scores at age 3 and age 9 drew on items asked of the mother from Achenbach and Rescorla's<sup>20</sup> CBCL. At age 9, the externalizing measure drew on 35 items that make up the aggression and rule-breaking subscales in the CBCL. At age 3, the measure

was based on 24 items from the in-home interview, including the 19-item aggression subscale and the 5 unique items from the destructive subscale not included in the aggression subscale.

### Child Receptive Vocabulary

The PPVT was available in the data set at multiple time points and is a well validated and widely used measure of child receptive verbal capacity, crucial to

understanding an area of cognitive development associated with parenting behavior, and it has been standardized against a national sample of children based on age as a measure of receptive vocabulary.<sup>21</sup> The mean PPVT score was 86.4 (SD = 16.4) at age 3 and 93.2 at age 9 (SD = 14.4).

### Child-Level Control Variables

Five child-level demographic variables were included in the models: gender, age in months, low birth weight indicator ( $< 2500$  g), if child was first born, and mother's report about the infant's temperament assessed at age 1. The temperament measure used 3 items rated on a 5-point scale ("not at all" to "very much"): whether the child often fusses or cries, is easily upset, and reacts strongly when upset. The responses are summed to derive 1 score (range 3–15, with 15 indicating a highly difficult temperament), and the measure has been used to predict earlier spanking behavior in this data set.<sup>10</sup> Table 1 provides descriptive statistics for all controls.

### Maternal and Family Characteristics

The next set of controls focus on maternal and family characteristics that are key to understanding the potential risk and protective factors in the child's environment. These include a continuous variable for the mother's age at the time of the birth (in years); the family marital structure over the 9-year period, from baseline to the age 9 phone interview; the mother's racial or ethnic affiliation (these include white, non-Hispanic; black, non-Hispanic; Hispanic; and other, comprising Asian Pacific Islander and American Indian); the mother's level of education at baseline; household income-to-needs ratio at baseline (ie, the household's annual income divided by the relevant family size poverty line level); maternal foreign-born status; a dummy variable for whether the mother reported living with both her

parents when she herself was 15 years of age; whether the mother was employed in the week before the age 9 phone interview; the number of other adults living in the household at age 9; and the number of other children living in the household at 9 years of age.

### *Prenatal Risks*

Four variables measure factors from the prenatal period: late onset of prenatal care (if care was initiated after the first trimester or not initiated at all), risky health behavior (if the mother reported either smoking, taking any drugs, or moderate to heavy alcohol use during pregnancy), whether the mother reported intimate partner violence (IPV) at the hands of the father before the child's birth, and mother's rating of the birth father's supportiveness during pregnancy based on 4 questions.

### *Maternal Risk Factors*

The next 4 control variables capture factors reported by the mother that may be associated with increased risk for both maternal spanking and child developmental problems.

Mother's parenting stress at age 5 was measured by using a 16-point scale based on 4 items from the Panel Study of Income Dynamics–Child Development Supplement's Aggravation in Parenting Scale.<sup>22</sup> Items are measured on a 4-point scale ascertaining the extent to which the mother agrees that being a parent is harder than she expected, she feels trapped by her responsibilities as a parent, she finds taking care of her children much more work than pleasure, and she often feels tired, worn out, or exhausted from raising a family. The scale is coded such that a higher score indicates lower levels of parental stress, and it has been shown to predict harsh parenting of preschoolers in this data set.<sup>10</sup>

Mother's mental health risk was assessed by symptoms indicating depression or

generalized anxiety disorder at any of the interviews where these concerns were included. At age 1 and 3, items assessing both depression and anxiety were included, whereas at ages 5 and 9, the interviews contained only items pertaining to depression. Maternal depressive symptoms are measured using an 8-point scale drawn from the Composite International Diagnostic Interview–Short Form (CIDI-SF)<sup>23</sup> and scored by assigning 1 point for each affirmative response. The CIDI-SF depression measure has been widely used in previous research and can be coded as a dichotomous measure of major depression “caseness” for scores of 3 or higher. Mothers' symptoms of anxiety are measured by using the CIDI-SF for generalized anxiety disorder.<sup>24</sup> The stem conditions coupled with affirmative responses on at least 3 physiologic symptoms result in the respondent being coded with potential generalized anxiety disorder.<sup>25</sup> Finally, we create a single summary mental health flag variable, which we set to 1 if the mother is identified as potentially suffering from either depression or anxiety at any point in time, and 0 otherwise.

Mother's impulsivity was based on 2 questions asked in the age 5 phone interview about whether she often says or does things without considering the consequences and whether she often gets in trouble for acting before thinking.<sup>26</sup> The response options use a 4-point scale, with a resulting score range from 2 to 8, where the higher the score, the less impulsive is the mother.

Mother's cognitive level is based on a modified version of the Similarities subtest of the Wechsler Adult Intelligence Subscale–Revised (WAIS-R) administered to the mother at year 3. This subtest asks the respondent to identify how 2 objects or concepts are comparable. The values of the modified subscale for the mother range from 0 (lowest functioning) to 15 (highest functioning).

The final variable in this group is the measure of mother's frequency of potentially cognitively stimulating activities with the child at age 1. Specifically, the age 1 phone interview includes items asking the mother how many days a week she played peek-a-boo with her child, sang songs or nursery rhymes to her child, and read to her child. The positive parenting score reflects the average of the mother's responses to these items. The values, then, range from 0 (the mother reports never doing any of these things with her child) to 7 (the mother reports doing all of these things every day with her child).

## RESULTS

### **Prevalence of Maternal and Paternal Spanking at Age 3 and 5**

As shown in Table 1, use of any spanking in the past month decreased from age 3 to age 5. At age 3, 57% of children were spanked by their mother and 40% by their father. By age 5, maternal spanking rates were 52% (with 5.5% spanking  $\geq 2$  times a week and 46%  $< 2$  times a week). At age 5, 33% of fathers reported spanking (with 3% in the more frequent group and 30.2% less than twice per week).

### **Association Between Parental Spanking and Subsequent Child Externalizing Problems**

Table 2 displays the results of a series of 4 progressively more complex multivariate regression models predicting child externalizing behavior problems at age 9. In Model 1, high-frequency maternal spanking ( $\geq 2$  times a week) at age 3 and 5 and less frequent maternal spanking ( $< 2$  times a week) at age 5 were associated with significantly higher levels of externalizing behavior at age 9 (as compared with the reference category of no spanking). Paternal spanking of any frequency at age 3 and 5 and maternal low-frequency spanking at age 3 were not significantly associated with externalizing at age 9.

**TABLE 2** Effect of Parental Spanking on Child's Externalizing CBCL Scores at Age 9

Variable	Model 1: Spanking (SE)	Model 2: Child and Family Characteristics (SE)	Model 3: Maternal Mental Health and Cognition (SE)	Model 4: Earlier Child Behavior (SE)
Mother spanking $\geq$ twice/wk at age 3 <sup>a</sup>	1.25* (0.55)	1.02 <sup>+</sup> (0.54)	0.81 (0.53)	0.21 (0.50)
Mother spanking <twice/wk at age 3 <sup>a</sup>	0.38 (0.36)	0.28 (0.35)	0.14 (0.34)	-0.04 (0.33)
Mother spanking $\geq$ twice/wk at age 5 <sup>a</sup>	3.79*** (0.74)	3.15*** (0.73)	2.66*** (0.72)	1.83** (0.68)
Mother spanking <twice/wk at age 5 <sup>a</sup>	1.59*** (0.35)	1.42*** (0.34)	1.17** (0.34)	0.65* (0.32)
Father spanking $\geq$ twice/wk at age 3 <sup>a</sup>	0.26 (0.74)	0.23 (0.73)	0.02 (0.72)	-0.24 (0.68)
Father spanking <twice/wk at age 3 <sup>a</sup>	0.36 (0.40)	0.31 (0.40)	0.21 (0.39)	-0.19 (0.37)
Father spanking $\geq$ twice/wk at age 5 <sup>a</sup>	-0.31 (1.12)	-0.33 (1.10)	-0.33 (1.07)	0.18 (1.02)
Father spanking <twice/wk at age 5 <sup>a</sup>	-0.14 (0.43)	0.01 (0.42)	0.17 (0.41)	0.25 (0.39)
Control variables included in model				
Child and family characteristics		✓	✓	✓
Maternal mental health and cognition			✓	✓
Earlier child externalizing at age 3				✓
Constant	4.78*** (0.31)	6.11 (4.86)	11.39* (4.91)	4.32 (4.68)
Observations	1933	1933	1933	1933
R <sup>2</sup>	0.04	0.10	0.14	0.23

Model 1: Includes only the parental spanking variables.

Model 2: Introduces controls for child and family characteristics: child gender; child's age; child first born; child emotional temperament at age 1; maternal age at birth; marital status at baseline and at age 9; maternal race or ethnicity; maternal education; household income to needs ratio; mother foreign born; mother lived with both her parents at age 15; maternal employment in past 2 wk; number of adults in household at age 9; number of other children in household at age 9; maternal prenatal drugs, alcohol, or smoking; maternal prenatal IPV exposure; supportive birth father; and late starting or no prenatal care.

Model 3: Includes same controls as Model 2 and adds controls for low maternal stress at age 5, indication of maternal depression of general anxiety disorder over past 9 y, mother's impulsivity at year 5, and mother's WAIS-R similarities score at year 3.

Model 4: Includes same controls as Model 3 and adds a control for the child's earlier externalizing CBCL score at age 3.

<sup>a</sup> Omitted category is parent not spanking (all models also include controls for father absent at age 3 and father absent at age 5 interviews).

\*\*\*  $P < .001$ ;

\*\*  $P < .01$ ;

\*  $P < .05$ ;

<sup>+</sup>  $P < .07$ .

In Model 2 we added child characteristics including child gender, age in months at the year 9 assessment, if the child was low birth weight, birth order, and child temperament at age 1 as well as indicators of family sociodemographics and risk behaviors. Although the same maternal spanking variables continued to be significant predictors of later externalizing behavior, we can begin to see the predictive power being somewhat diminished by the addition of controls, such as child gender and early temperament, which were significant predictors of age 9 externalizing (for full results including coefficients for the control variables, see Supplemental Table 4).

In Model 3, additional controls were added to the variables from Model 2, including measures of maternal functioning and well-being, including parental stress, indication of depression or anxiety over the past 9 years, mother's impulsivity, and mother's cognitive

capacity. Maternal high- and low-frequency spanking at age 5 remained as significant predictors of later externalizing behavior in Model 3, but maternal low-frequency spanking at age 3 no longer significantly predicted externalizing behavior at age 9. Finally, Model 4 built on Model 3 to add in an important control of earlier child externalizing behavior at age 3, which was, as expected, a significant predictor of later externalizing behavior at age 9, indicating continuity in child behavior. Despite the addition of this control to the existing broad battery of variables, however, both high- and low-frequency maternal spanking at age 5 remained significant predictors of greater externalizing problems at age 9.

### Association Between Parental Spanking and Child Receptive Language Development

Table 3 displays the results of the multivariate regressions, with spanking

predicting child receptive language capacity as assessed by the PPVT at age 9 (for full results including coefficients for all control variables, see Supplemental Table 5). In Model 1, only high-frequency paternal spanking at age 5 was significantly associated with lower PPVT scores at age 9. In Model 2, after controls were added for the child characteristics and family sociodemographic variables, high-frequency paternal spanking at age 5 continued to significantly predict later reduced PPVT scores. Similarly, in Model 3, even with the addition of the control for maternal cognitive capacity (WAIS-R Similarities score), high-frequency paternal spanking continued to be a more powerful predictor of later PPVT scores. Model 4 added in the final controls of child externalizing behavior and PPVT score at age 3, which as expected were both significant predictors of age 9 PPVT performance. Here we see a decrease in the estimated effect of high-frequency

**TABLE 3** Effects of Parental Spanking on Child's Standardized PPVT Score at Age 9

Variables	Model 1: Spanking (SE)	Model 2: Child and Family Characteristics (SE)	Model 3: Maternal Mental Health and Cognition (SE)	Model 4: Earlier Child Behavior (SE)
Mother spanking $\geq$ twice/wk at age 3 <sup>a</sup>	-1.20 (1.32)	-1.31 (1.15)	-0.95 (1.15)	-0.37 (1.09)
Mother spanking <twice/wk at age 3 <sup>a</sup>	0.65 (0.86)	0.49 (0.75)	0.54 (0.75)	0.30 (0.71)
Mother spanking $\geq$ twice/wk at age 5 <sup>a</sup>	-1.40 (1.82)	-1.65 (1.61)	-1.09 (1.61)	-0.92 (1.52)
Mother spanking <twice/wk at age 5 <sup>a</sup>	-1.11 (0.83)	-0.00 (0.73)	0.22 (0.73)	0.22 (0.69)
Father spanking $\geq$ twice/wk at age 3 <sup>a</sup>	0.92 (1.77)	0.32 (1.56)	0.20 (1.55)	-0.56 (1.46)
Father spanking <twice/wk at age 3 <sup>a</sup>	0.36 (0.97)	0.22 (0.85)	0.24 (0.85)	0.26 (0.80)
Father spanking $\geq$ twice/wk at age 5 <sup>a</sup>	-5.06 <sup>+</sup> (2.78)	-5.65* (2.44)	-5.70* (2.42)	-4.21 <sup>+</sup> (2.29)
Father spanking <twice/wk at age 5 <sup>a</sup>	-0.70 (1.02)	-1.42 (0.90)	-1.32 (0.89)	-0.79 (0.84)
Control variables included in model				
Child & family characteristics		√	√	√
Maternal mental health and cognition			√	√
Earlier child externalizing and PPVT scores at age 3				√
Constant	95.51*** (0.74)	106.75*** (10.64)	99.10*** (10.89)	75.96*** (10.49)
Observations	1532	1532	1532	1532
R <sup>2</sup>	0.031	0.28	0.30	0.38

Model 1: Includes only the parental spanking variables.

Model 2: Introduces controls for child and family characteristics: child gender; child's age; child first born; child emotional temperament at age 1; maternal age at birth; marital status at baseline and at age 9; maternal race or ethnicity; maternal education; household income to needs ratio; mother foreign born; mother lived with both her parents at age 15; maternal employment in past 2 wk; number of adults in household at age 9; number of other children in household at age 9; maternal prenatal drugs, alcohol, or smoking; maternal prenatal IPV exposure; supportive birth father; and late starting or no prenatal care.

Model 3: Includes same controls as Model 2 and adds controls for low maternal stress at age 5, indication of maternal depression or general anxiety disorder over past 9 y, mother's impulsivity at year 5, mother's WAIS-R similarities score at year 3, and cognitively stimulating parenting at age 1.

Model 4: Includes same controls as Model 3 and adds a control for the child's earlier externalizing CBCL score at age 3 and the child's PPVT score at age 3.

<sup>a</sup> Omitted category is parent not spanking (all models also include controls for father absent at age 3 and father absent at age 5 interviews).

\*\*\*  $P < .001$ ;

\*\*  $P < .01$ ;

\*  $P < .05$ ;

+  $P < .07$ .

paternal spanking, but it continued to be marginally significant ( $P < .07$ ).

### Interaction Results

In data not shown but available upon request, we tested a series of interactions in the models for both externalizing and PPVT scores, including spanking by gender and, importantly, spanking by race or ethnicity. Although gender and race or ethnicity were significant predictors of the outcomes, we did not find that they significantly moderated the association between spanking and later externalizing or receptive verbal ability.

### DISCUSSION

These results provide additional evidence as to the prevalence of spanking among US families and the effects on child behavioral and cognitive development. Our analysis is distinctive in the breadth of control variables included

in the analysis, drawing on a transactional perspective in conceptualizing how stressors and risks in the family and environment affect parental disciplinary practices and the risk for poor child outcomes.<sup>10,11,27</sup> The current analysis also builds on recent work that has moved to improve our understanding of the antecedents and sequelae associated with paternal spanking in addition to maternal spanking.<sup>10,28–30</sup>

Our most fully specified regression model indicates that age 5 maternal spanking, at both low and high frequency, is a significant predictor of higher downstream age 9 externalizing behavior, even after an extensive set of child and family characteristics were controlled for, including earlier externalizing behavior and father spanking. The extensive set of covariates we were able to include in this model increases our confidence that this association is indicative of an effect of spanking on child

behavior rather than simply a spurious correlation.

One remaining limitation in the current study, however, is that we rely on maternal report of child externalizing behavior, which does not allow us to rule out the possibility that negative perceptions of the child have the potential to influence both the decision to spank and maternal ratings of child externalizing behavior. Three factors give us reason to believe this limitation was not a major factor in the data. First, the CBCL asks about specific child behaviors rather than just overall impressions of the child that would be more susceptible to bias from negative parental perceptions. Second, the effects in the broader spanking literature, which also suffer from this limitation, seem focused on externalizing behavior and not on a broader array of behaviors reported on by mothers, so if this were simply negative perceptions carrying

the weight, we would not expect the associations with spanking to be domain specific. And finally, our results are in keeping with the recent findings of Gershoff et al,<sup>11</sup> who used teacher reports of child behavioral problems.

Building on recent work by MacKenzie et al<sup>10</sup> on associations between spanking and lower receptive vocabulary in the preschool period, we also find evidence of an effect of paternal spanking at age 5 on the development of child verbal capacity at age 9, as measured by the PPVT. This is an important finding because fewer studies have examined cognitive outcomes,<sup>16</sup> and it raises questions for future work, including whether spanking is having a direct effect on cognitive development through stress, trauma, and other physiologic or neural processes, or whether spanking is simply an indirect proxy for other unmeasured parenting practices that negatively affect cognitive development. However, our inclusion of controls such as maternal depression, maternal intelligence, and observations of cognitive stimulation in the home environment during earlier home visits gives us some confidence that these are in part direct effects that cannot be simply explained away as spanking families being also

less likely to speak to or engage their child in ways important for cognitive development. These findings on the importance of paternal spanking to cognitive outcomes in middle childhood stand in contrast to work in the preschool period, where maternal spanking was associated with reduced receptive vocabulary,<sup>10</sup> perhaps speaking to differential parent effects across periods of child development. Replication and additional examination of this association in future work will be important, as will attempts to better understand why the spanking behavior of mothers and fathers may be having differential impacts on child receptive vocabulary in different developmental periods.

One unresolved question in the literature is whether the effects of spanking on child development are similar or different across groups. In line with some recent work,<sup>7,10,11</sup> our analysis of interactions did not find a significant moderating role for race or ethnicity and gender. This result suggests that the adverse developmental consequences of spanking are not confined to particular groups of children. And although our models had controls for both family structure and the number of other adults in the home, we

were not able to address the potential roles the disciplinary practices of other adult caregivers in the home (eg, grandparents, other extended family members) may have played in these developmental outcomes. This would be an important area for future exploration.

## CONCLUSIONS

These results represent a strong test of the links between spanking and a child's aggressive behavior and vocabulary, using prospective longitudinal models controlling for a number of family, child, and parent variables and earlier child aggression and vocabulary. We add novel information about the role of fathers' spanking and add to an emerging literature on the effect of spanking on cognitive outcomes.

Future work should focus on providing families a clearer picture of the outcomes associated with spanking and more information about what discipline practices may have the desired effect on improving functioning, so that they can move beyond punishment practices to the incorporation of positive parenting behaviors with the potential to encourage healthy child trajectories.

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