

Parental Corporal Punishment Predicts Behavior Problems in Early Childhood

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Using data from the National Institute of Child Health and Human Development Study of Early Child Care and Youth Development (Research Triangle Institute, 2002), this study examined the impact of corporal punishment (CP) on children's behavior problems. Longitudinal analyses were specified that controlled for covarying contextual and parenting variables and that partialled child effects. The results indicate that parental CP uniquely contributes to negative behavioral adjustment in children at both 36 months and at 1st grade, with the effects at the earlier age more pronounced in children with difficult temperaments. Parents and mental health professionals who work to modify children's negative behavior should be aware of the unique impact that CP likely plays in triggering and maintaining children's behavior problems. Broad-based family policies that reduce the use of this parenting behavior would potentially increase children's mental health and decrease the incidence of children's behavior problems.

Keywords: corporal punishment, physical punishment, parental discipline, behavior problems

Corporal punishment (CP) is defined as “the use of physical force with the intention of causing a child pain, but not injury, for the purposes of correction or control of the child's behavior” (Straus, 2001, p. 4). More than 90% of children and approximately 50% of adolescents during their adolescent years have experienced parental CP at least once (Straus & Stewart, 1999). This form of discipline is administered frequently—an average of three times per week during the toddler years (Straus, 2001)—and it is used more often with male, African American, and poor children (Straus & Stewart, 1999). Thus, for many children, CP represents an important component of their socialization experiences within the family. However, because of limitations in most of the relevant research, relatively few definitive conclusions can be drawn about the effects of CP on child adjustment.

Most available research indicates that there are few, if any, positive developmental outcomes associated with CP beyond immediate compliance with a parent's directive (Gershoff, 2002). In fact, a growing body of research suggests there may be unintended negative consequences, including increasing children's aggressive behavior and their likelihood of becoming delinquent and contributing to

poorer psychological and cognitive functioning (e.g., Gershoff, 2002; Smith & Brooks-Gunn, 1997). The strongest link is between CP and externalizing behavior problems, especially aggression (e.g., Strassberg, Dodge, Pettit, & Bates, 1994; Straus & Kantor, 1994). Internalizing problems, such as depression and lower self-esteem, have also been linked to CP (e.g., Turner & Finkelhor, 1996). Although there are some contrary findings (e.g., Simons, Johnson, & Conger, 1994), most available evidence indicates that CP represents a risk factor for the development of negative behavioral, psychological, and cognitive characteristics.

Despite the many studies linking parental CP to negative developmental outcomes, there is continuing debate among social scientists and policymakers regarding the interpretation of these studies and the overall conclusions that can be drawn about the unique, specific impact of CP (e.g., Baumrind, 1996; Baumrind, Larzelere, & Cowan, 2002). A major factor underlying the controversy is that there are aspects of the research that limit interpretations, including the nonexperimental, correlational methodology that must be employed to examine outcomes. As is the case with most research concerning the effects of parental socialization practices, third variables and child effects may explain the reported associations between CP and child outcomes.

Several parenting variables covary with the use of CP and therefore generally are not controlled in examinations of the relation between CP and child outcomes. Although CP is used within all parenting-style groups described by Baumrind (1973), its use varies reliably between groups. Many authoritative parents use CP, but authoritarian parents use it much more frequently; permissive parents use it less fre-

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quently but more harshly (Parke & Collmer, 1975). The link between CP and negative developmental outcomes may thus be reflecting the influence of the broader parenting style rather than CP specifically. Supporting this notion, Simons et al. (1994) found that CP significantly predicted aggressiveness and delinquency but that the effects became nonsignificant after controlling for parental involvement. Similarly, Larzelere, Kleinn, Schumm, and Alibrando (1989) found that the amount of CP received in adolescence negatively predicted self-esteem but that the association became nonsignificant after controlling for the amount of positive communication in the parent-child relationship. However, not all research supports the notion that the effects of CP are epiphenomenal to broader parenting styles. For instance, Buehler and Gerard (2002) reported that CP influenced global psychological functioning, even after controlling for parental involvement. The issue of whether CP influences development beyond the parenting context in which it is used is far from resolved, but it is evident that models examining the influence of CP must simultaneously consider the parenting style in which it occurs.

An additional problem with the reliance on correlational methods is that it is difficult to identify the direction of the effects (e.g., Baumrind, 1997). Most studies assume a parent-to-child effect, although it is clear that within-child characteristics play an important role in evoking different kinds of parenting behaviors (Lengua & Kovacs, 2005; Scarr & McCartney, 1983). Distinguishing the direction of effects between physical discipline and child outcomes is imperative. An effective way to deal with this issue is to employ developmental designs in which the outcome behavior of interest is statistically controlled at the initial time point (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000). That is, the behavior of interest, along with the measure of parental behavior, is measured at the initial assessment. The prediction equation then controls for the initial level of the outcome variable so that the actual influence of parental behavior can be determined. Recent studies of CP have incorporated such designs and have provided more convincing evidence for a parent-to-child effect in antisocial and other problem behavior (e.g., Lengua & Kovacs, 2005; Straus, Sugarman, & Giles-Sims, 1997).

A final issue is how best to conceptualize the impact of CP on children's development. Given the array of outcomes associated with CP, a simple social learning model does not provide a sufficient explanation. Rather, as Turner and Finkelhor (1996) have argued, the effect of CP may best be understood from a stress-process framework. Receiving physical discipline from a parent is likely to be stressful for a child, and children who are continuously exposed to stressors in their environment (and perceive them as stressful) show increased internalizing and externalizing behaviors (e.g., Cicchetti & Toth, 1991; Grant et al., 2003). Repetti, Taylor, and Seeman (2002) suggested that ongoing stress within the family environment will have long-term effects on mental health via changes in the biological self-regulatory systems of the child. Repetti et al. also describe, beyond physiological changes that increase susceptibility to mental health disorders, a transactional process in which

family stressors lead to additional developmental problems, including decreased emotion processing and poorer peer relationships. These, in turn, contribute to poorer mental health. The effects may also be cumulative, with CP that extends throughout childhood being the most detrimental.

Contextual variables may contribute to the stress response of children to their parents' discipline and moderate the impact of that discipline. Supporting this notion is the work on parenting style mentioned above, as well as research on ethnic group differences in the effects of CP. Specifically, CP has been found to be associated with aggression in European American children but not in African American children, even though CP is used with greater frequency by African American parents (Deater-Deckard & Dodge, 1997; Gunnoe & Mariner, 1997). This may reflect both a greater degree of cultural acceptance of CP within African American communities, including the view that it is a legitimate parental behavior, and differing interpretations of such punishment by African American and European American children. However, following a review of the relevant studies, Horn, Joseph, and Cheng (2004) cautioned that additional research, particularly longitudinal studies controlling for potentially confounding variables (e.g., socioeconomic status, child effects), is necessary before conclusions can be drawn about ethnic or racial differences in the effects of CP.

In the present study, the effects of parental CP on toddlers' and young children's behavior problems were examined in the large, longitudinal, and diverse data set of the National Institute of Child Health and Human Development Study of Early Child Care and Youth Development (NICHD SECCYD; Research Triangle Institute, 2002). The primary focus of the analyses was to clarify the existence and direction of influence of parental behavior on developmental outcomes. It was hypothesized that CP would be associated with both broadband categories of problem behaviors (externalizing and internalizing behaviors) at 36 months and first grade. The developmental analyses that were performed included controlling for outcome variables at an initial time point, which allowed for stronger claims to be made about the direction of effects (Collins et al., 2000). Because of the myriad parenting and contextual variables assessed, it was possible to control for a substantial number of factors implicated in the relation between CP and negative child outcomes (e.g., parenting style, income, maternal depression, and ethnicity). A test of the moderating effect of intrapersonal and contextual variables on the impact of CP was also included. It was hypothesized that child temperament and African American ethnicity would moderate the influence of CP on these developmental outcomes.

Method

Sample

Data collection for the NICHD SECCYD (Research Triangle Institute, 2002), a multisite longitudinal study designed to examine the effects of child care on children's development, began in 1991 and continues presently. The

sample originally consisted of 705 male (51.7%) and 659 (48.3%) female children. There were 1,014 non-Hispanic Caucasian (74.34%), 176 African American (12.9%), 83 Hispanic (6.09%), and 93 otherwise classified (6.82%) children. The mean age of the mothers at their child's birth was 28.11 years ($SD = 5.63$). Twenty-four percent of the families were classified as living in poverty, as indicated by an income-to-needs ratio of less than 1. For more detailed recruitment procedures of the NICHD SECCYD, see the NICHD Early Child Care Research Network (2001).

At the first-grade assessment, 1,028 mothers (75.37% of the original sample) completed the outcome measure of interest in the present study (the Child Behavior Checklist [CBCL]; Achenbach, 1991). As is the case with most longitudinal studies, participant attrition occurred in a nonrandom fashion. Independent-sample t tests, with status in first grade as the between-subjects factor (still participating or not), were computed to assess group differences in maternal education and average income. Families that completed the first-grade outcome measure had a higher average income-to-needs ratio ($M = 3.55$, $SD = 2.68$) than did families that did not ($M = 2.67$, $SD = 2.92$), $t(1353) = 5.05$, $p < .001$, $d = .27$. Mothers in families participating at the first-grade level had more years of education ($M = 14.46$, $SD = 2.45$) than did those who were not ($M = 13.56$, $SD = 2.57$), $t(1361) = 5.76$, $p < .001$, $d = .31$. Ethnicity was also associated with subject attrition, $\chi^2(5, N = 1,364) = 12.69$, $p < .05$, $\phi = .10$. There were more Caucasian families than African American families in the first-grade sample relative to the initial sample.

Measures

CP. The CP variable was derived from the Home Observation for the Measurement of the Environment (HOME; Caldwell & Bradley, 1984), administered when the children were 15, 36, and 54 months of age. HOME assesses the overall quality of the family environment by both interviewing the mother and observing the family in a naturalistic setting during an extensive observation process. Two items from HOME were used: (a) an interview with the mother, to determine whether the children had been spanked more than once in the previous week, and (b) the test administrators' observation of whether the children were spanked in their presence. Scores could range from 0 to 2, depending on whether the answer to neither, one, or both of the items was a yes. Because this composite variable included both self-report and observations of the parenting behavior, the validity of the measure should be better than either alone, although a two-item measure is not ideal with respect to reliability. Despite the potentially decreased reliability, researchers have been able to employ this measure, or very similar measures, to investigate the impact of CP on developmental outcomes (McLoyd & Smith, 2002; Smith & Brooks-Gunn, 1997).

Behavior problems. The CBCL (Achenbach, 1991, 1992) was used as an index of children's behavior problems. The CBCL for Ages 2–3 (CBCL/2–3; Achenbach, 1992) was administered at 36 months, and the CBCL for Ages

4–18 (CBCL/4–18; Achenbach, 1991) was administered when the children were in first grade. Mothers completed the scale in their homes at 36 months and in the lab during the first-grade assessment. The broadband Externalizing and Internalizing scales were used at both ages. Although these scales assess conceptually similar constructs across the two ages, the overlap in the actual items is modest, reflecting age-related differences in behavioral characteristics. Standardized T scores were used in the following analyses:

Demographic characteristics and temperament. At the 1-month assessment, the mothers reported on their children's ethnicity and sex. When the children were 6 months of age, the mothers completed the Activity, Adaptability, Approach, Mood, and Intensity subscales of the Infant Temperament Questionnaire—Revised (Carey & McDevitt, 1978). The scores of the nonmissing items for all subscales were combined into a single variable, called difficult child temperament, by averaging across the items. Higher scores represent a more "difficult" temperament. The measure has been found to have good test-retest reliability (Carey & McDevitt, 1978). Cronbach's alpha for this sample was .81.

Maternal depression. When the children were 1, 6, 15, 24, 36, and 54 months of age, as well as during the first-grade assessment, the mothers completed the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977), a well-known measure with good psychometric properties. Cronbach's alpha for this sample was equal to or greater than .88 for each assessment.

Income-to-needs. Income-to-needs information was obtained when children were 1, 6, 15, 24, 36, and 54 months old, as well as when they were in first grade, via interviews with the parents. At each age, the income of the total household from all sources was divided by the cutoff point for poverty for that particular year, as based on the number of people in the household, with guidelines established by the U.S. Bureau of the Census (2004).

Maternal sensitivity. Maternal sensitivity was assessed when children were 6, 15, 24, 36, and 54 months old, as well as when they were in first grade, with a semistructured observational procedure. This procedure, specifically designed for the NICHD SECCYD by D. L. Vandell and M. T. Owen, consists of observing a mother and her child playing with age-appropriate toys. For detailed information about the development and administration of the scale, see NICHD Early Child Care Research Network (1999). The 6- and 15-month measures were assessed in the family's home. The 24-, 36-, and 54-month and first-grade measures were assessed in a laboratory. For the 6-, 15-, and 24-month assessments, a composite measure of sensitivity was created by summing global ratings of sensitivity to nondistress, intrusiveness (reverse scored), and positive regard. For measures at 36 and 54 months, as well as in first grade, the sensitivity composite was constructed by summing supportive presence, hostility (reverse-scored), and respect for autonomy. All interactions were videotaped and coded at a central location. At all ages, approximately 20% of the interactions were coded by a second coder and yielded the following interrater reliability coefficients: .87, .83, .84, .84, .79, and .84 for the 6-, 15-, 24-, 36-, and 54-month and

first-grade composite measures, respectively. Higher scores indicate more sensitive parenting. Scores on this measure are significantly related to attachment, suggesting moderate construct validity (NICHD Early Child Care Research Network, 1997).

Results

Data Analysis Plan

To isolate the unique and directional influence of parental CP on developmental outcomes in infancy and early childhood, we specified two sets of hierarchical multiple-regression models. The first set assessed the impact of CP in infancy and toddlerhood by examining the associations between the 15-month CP variable and the 36-month Internalizing and Externalizing scores. The second set of analyses examined the associations between internalizing and externalizing behavior problems in first grade and a composite CP variable constructed from the 36- and 54-month assessments. Because of the temporal precedence of the CP variable in these analyses, its unique contribution to the prediction of the subsequently measured behaviors would strengthen a causal argument for the directional influence of CP on developmental outcomes. All analyses were carried out with the actual sample and with the sample weighted to account for the relation between ethnicity and attrition. These analyses yielded virtually identical results, so only the unweighted versions are presented.

For each model, the child's gender, ethnicity, and temperament and the aggregate variables maternal sensitivity, maternal depression, and family income-to-needs were included as control variables. The wide array of control variables included in these analyses should decrease the likelihood of omitted-variables bias. The maternal depression, family income, and maternal sensitivity variables were obtained over the course of earlier assessments and collapsed into a single measure for each analysis by averaging across all the assessments. The internal consistency for each of these composite measures was acceptable (Cronbach's $\alpha > .69$).

CP and Behavior Problems at 36 Months

The correlation matrix and descriptive statistics for all variables in the first set of analyses are in Table 1. The CP variable was modestly associated with both of the outcome variables (36-month externalizing and internalizing behaviors). The matrix also indicated substantial covariation between the CP, control, and outcome variables. Maternal depression had the strongest association with the variables of interest, likely reflecting the fact that many of the child variables were measured through maternal report. Thus, controlling for depression is important for all analyses, not only because of the influence of maternal mental health on children's development but also because mothers' perceptions of children's behavior are influenced by their own mental health (e.g., Fergusson, Lynskey, Horwood, 1993; Mebert, 1991).

For the regression analyses, the control variables were entered in the first step. In the second step, the CP variable was entered. A product of the standardized CP and difficult child temperament variables, which assessed the moderating role of difficult child temperament, was also entered in the second step. The results of the analyses predicting both externalizing and internalizing behaviors at 36 months are in Table 2. This table contains the standardized and unstandardized regression coefficients, the standard errors, and the partial correlations for each model. For internalizing behaviors, the first step was significant, $F(6, 1131) = 49.38, p < .001$, adjusted $R^2 = .20$. Maternal depression and sensitivity and difficult child temperament were unique predictors. At the second step, CP, but not the interaction term, contributed significantly to the proportion of variance accounted for, $F(2, 1129) = 3.62, p < .05, \Delta R^2 = .005$. All variables that had been associated with internalizing in the first step remained significant in the second step.

In the analysis of externalizing behaviors, the first step was also significant, $F(6, 1131) = 39.83, p < .001$, adjusted $R^2 = .17$. As shown in Table 2, both maternal depression and difficult child temperament were associated with increased externalizing behavior. In the second step, the CP variable and the interaction term were found to add signif-

Table 1
Descriptives and Correlation Matrix for Variables Used in the 36-Month Analysis ($N = 1,138$)

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1. 36-month externalizing behaviors	51.07	8.49	—	.70***	-.04	.07**	.24***	.38***	-.18***	-.20***	.20***
2. 36-month internalizing behaviors	51.16	9.50		—	.04	.10***	.26***	.41***	-.18***	-.23***	.16***
3. Gender (female)	1.49	0.50			—	.00	.04	.02	.04	.10***	-.11***
4. Ethnicity (African American)	0.11	0.32				—	.17***	.16***	-.27***	-.40***	.11***
5. Difficult child temperament	-0.01	0.99					—	.23***	-.14***	-.18***	.08**
6. Average maternal depression	9.43	6.40						—	-.29***	-.33***	.19***
7. Average income-to-needs	3.47	2.74							—	.44***	-.25***
8. Average maternal sensitivity	0.02	0.74								—	-.34***
9. Corporal punishment	-0.01	1.00									—

Note. The average maternal depression, income-to-needs, and maternal sensitivity variables are aggregates of all assessments up to and including the 36-month assessment. The difficult child temperament, average maternal sensitivity, and corporal punishment variables are standardized (*Z* scores).

** $p < .01$. *** $p < .001$.

Table 2
 Summary of Hierarchical Regression Analyses Predicting 36-Month Behavior Problems

Variable	Externalizing behaviors				Internalizing behaviors			
	<i>B</i>	<i>SE</i>	β	<i>Sr</i>	<i>B</i>	<i>SE</i>	β	<i>Sr</i>
Step 1								
Gender (female)	-0.71	0.46	-.04		0.61	0.51	.03	
Ethnicity (African American)	-1.19	0.81	-.04		-0.85	0.88	-.03	
Difficult child temperament	1.36	0.24	.16***		1.56	0.26	.17***	
Average maternal depression	0.41	0.04	.31***		0.51	0.04	.34***	
Average income-to-needs	-0.16	0.10	-.05		-0.09	0.10	-.03	
Average maternal sensitivity	-0.68	0.38	-.06		-1.12	0.41	-.09**	
Step 2								
Gender (female)	-0.57	0.46	-.03	-.03	0.70	0.51	.04	.04
Ethnicity (African American)	-1.09	0.80	-.04	-.04	-0.79	0.88	-.03	-.02
Difficult child temperament	1.39	0.24	.16***	.16	1.56	0.26	.17***	.16
Average maternal depression	0.40	0.04	.30***	.27	0.50	0.04	.34***	.30
Average income-to-needs	-0.13	0.10	-.04	-.04	-0.08	0.11	-.02	-.02
Average maternal sensitivity	-0.28	0.39	-.03	-.02	-0.85	0.43	-.07*	-.05
Corporal punishment	0.93	0.25	.11***	.10	0.59	0.27	.06*	.06
Corporal Punishment \times Difficult Child Temperament	0.47	0.24	.06*	.05	0.43	0.26	.04	.04

Note. The difficult child temperament and corporal punishment variables are standardized. The gender and ethnicity variables are dichotomous variables. The average maternal depression, income-to-needs and maternal sensitivity variables are aggregated from all assessments prior to and inclusive of the 36-month assessment.

* $p < .05$. ** $p < .01$. *** $p < .001$.

icantly to the prediction equation, $F(2, 1129) = 8.87, p < .001, \Delta R^2 = .01$. Figure 1 displays the interaction. In this figure, the externalizing scores at 36 months were regressed onto the 15-month CP raw scores separately for children with "easy" and "difficult" temperaments, as designated by a median split. CP was more strongly associated with externalizing behavior problems for children with more difficult temperaments.

CP and Behavior Problems in First Grade

Correlations and descriptive statistics for the variables used in the first-grade analyses are in Table 3. CP was associated with all control and outcome variables used in these analyses. The 36-month broadband factors were strongly correlated with the same broadband factors at first grade.

The first-grade regression models employed residualized change analysis in which the outcome variable of interest was statistically controlled at an earlier time (36 months). That is, mothers' 36-month ratings of internalizing (or externalizing) behaviors were included as a control variable in predicting internalizing (or externalizing) behavior at first grade. Although this method of analysis is correlational and constrained by limitations in causal interpretation, it can provide strong evidence of a parent-to-child effect (e.g., Collins et al., 2000). The other control variables that were entered in the first step were the child's gender, ethnicity, and temperament and the aggregate variables maternal sensitivity, maternal depression, and family income-to-needs. In the second step, CP and an interaction variable representing the moderating impact of African American ethnicity on CP was tested. The CP variable used in these analyses was a standardized average of the 36- and 54-month measures. Two interaction variables were constructed and tested as

moderators. The first interaction variable was constructed by multiplying the standardized 6-month difficult child temperament variable by the aggregate CP variable. The second interaction variable was constructed by multiplying the African American status variable by the aggregate CP variable.

Only control variables contributed to the prediction of internalizing behaviors at first grade. Neither CP nor the moderator terms were significantly associated with change in internalizing behaviors.

CP was, however, associated with increased externalizing behaviors from 36 months to first grade. These results are presented in Table 4. The first step was significant, $F(7, 971) = 77.68, p < .001, \text{adjusted } R^2 = .35$. Not surprisingly, externalizing behavior at 36 months was strongly associated with externalizing behavior in first grade. The child's gender predicted change in externalizing behavior, as did maternal depression and family income. In the second step, CP, but not the interaction terms, contributed significantly to the variance accounted for, $F(3, 968) = 2.93, p < .05, \Delta R^2 = .006$. The control variables that had been significant in the first step remained significant with the inclusion of CP and the interaction variables. We also respecified this model to test an additional moderating hypothesis. A term representing the interaction between the 36-month externalizing behavior and the CP variables was entered in the second step. It was not significantly associated with first-grade externalizing behavior.

Discussion

The primary goal of this study was to address the concerns of researchers (e.g., Baumrind, 1996; Baumrind et al. 2002) who have argued that normative CP does not have detrimental effects on children's adjustment. Although this study does not address all of the concerns of these research-

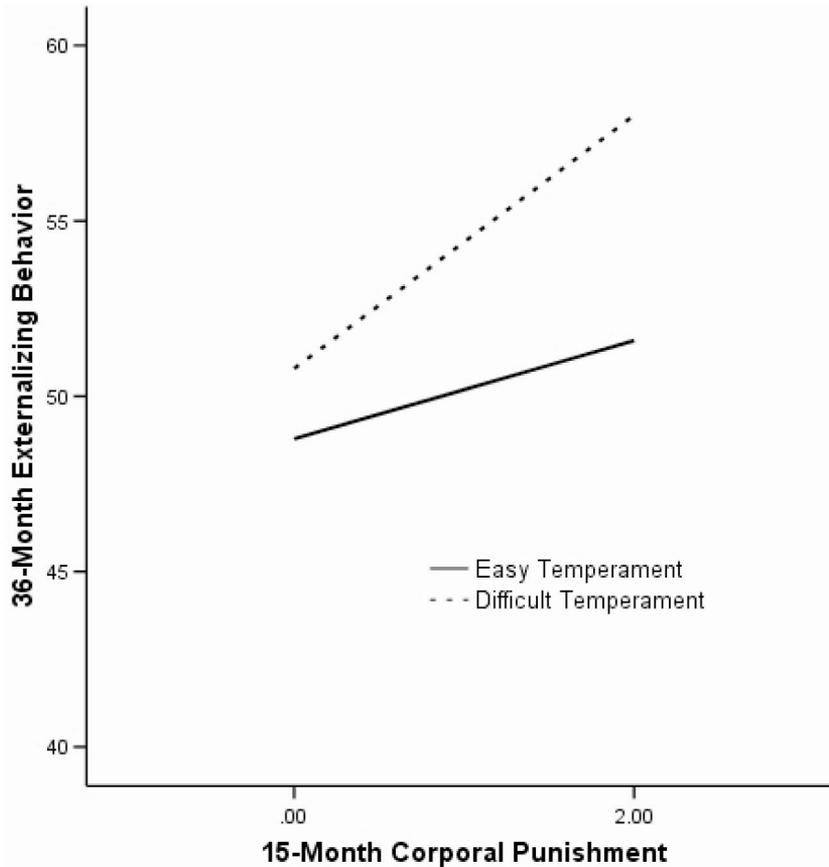


Figure 1. Moderating effect of difficult temperament on the association between corporal punishment scores and externalizing behavior scores at 36 months.

ers and certainly does not conclusively establish a causal link between CP and child adjustment, the results extend and complement the growing body of literature suggesting that there is a unique negative impact of CP on children’s behavior problems. CP was associated with increased internalizing behaviors during toddlerhood and with increased externalizing behavior problems both in toddlerhood and at

first grade. Although this research was correlational, several features of the analyses strengthen a causal argument regarding the impact of CP on behavioral outcomes. First, the presumed causal variable (i.e., CP) was assessed temporally prior to the outcome variable. Temporal precedence is necessary, although not sufficient, for establishing a causal relation (e.g., Baumrind et al., 2002; Huston & Robins,

Table 3
Descriptives and Correlation Matrix for Variables Used in the First-Grade Analyses (N = 979)

Variable	M	SD	1	2	3	4	5	6	7	8	9
1. First-grade externalizing behaviors	48.66	9.84	—	.57***	.03	.07*	.13***	.35***	-.20***	-.20***	.22***
2. 36-month externalizing behaviors	-0.01	1.00		—	-.05	.08**	.24***	.36***	-.17***	-.22***	.23***
3. Gender (female)	1.50	0.50			—	-.02	.04	.01	.05	.07*	-.07*
4. Ethnicity (African American)	0.10	0.31				—	.17***	.20***	-.27***	-.42***	.13***
5. Difficult child temperament	-0.03	0.99					—	.23***	-.15***	-.19***	.08**
6. Average maternal depression	9.29	6.11						—	-.32***	-.37***	.22***
7. Average income-to-needs	3.62	2.69							—	.42***	-.25***
8. Average maternal sensitivity	0.05	0.68								—	-.32***
9. Average corporal punishment	0.03	0.34									—

Note. The average maternal depression, income-to-needs, and maternal sensitivity variables are aggregates of all assessments up to and including the first-grade assessment. The average corporal punishment variable is an average of the 36- and 54-month corporal punishment variables.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4
Summary of Hierarchical Regression Analysis Predicting Externalizing Behaviors in First Grade

Variable	<i>B</i>	<i>SE</i>	β	<i>Sr</i>
Step 1				
Externalizing behaviors (36 months)	5.10	.28	.52***	
Gender (female)	1.19	.51	.06*	
Ethnicity (African American)	-0.68	.92	-.02	
Difficult child temperament	-0.42	.27	-.04	
Average maternal depression	0.23	.05	.14***	
Average income-to-needs	-0.25	.11	-.07*	
Average maternal sensitivity	-0.45	.45	-.03	
Step 2				
Externalizing behaviors (36 months)	5.01	.28	.51***	.46
Gender (female)	1.23	.51	.06*	.06
Ethnicity (African American)	-0.79	.93	-.02	-.02
Difficult child temperament	-0.44	.27	-.05	-.04
Average maternal depression	0.22	.05	.14***	.12
Average income-to-needs	-0.22	.11	-.06*	-.05
Average maternal sensitivity	-0.24	.46	-.02	-.01
Average corporal punishment	0.64	.32	.06*	.05
Average Corporal Punishment \times Difficult Child Temperament	-0.44	.28	-.04	-.04
Average Corporal Punishment \times African American	0.91	.84	.03	.03

Note. The corporal punishment, difficult child temperament, and 36-month externalizing variables are standardized. The gender and ethnicity variables are dichotomous variables.
 * $p < .05$. *** $p < .001$.

1982). An even stronger design was employed in the first-grade analyses, wherein a prior assessment of the outcome was used as a control variable, enhancing the likelihood that the associations identified were parent- rather than child-driven. It is also important to note that many of the parental characteristics known to be associated with the use of CP (e.g., depression, insensitive parenting, low socioeconomic status) were controlled in these analyses, substantially decreasing the likelihood of omitted variables bias.

The results of this study are both theoretically and practically meaningful. The effects reported are small by conventional effect size standards, but there are several reasons to interpret these findings as demonstrating an important influence on children's adjustment. It is very likely that the reported associations were reduced as a result of accumulated error across the different assessments (McCartney & Rosenthal, 2000; Muchinsky, 1996). Even with measures that have strong psychometric properties, such as the CBCL, there is inevitable measurement error. The CP variable, which is aggregated from only two items, likely suffers from particularly low reliability and certainly suffers from restriction in range. Given the nature of these items, it is also likely that CP was not detected in some families in which it occurs. Although relations between CP and developmental outcomes were found despite the measurement error, the effects of CP appear smaller than they may really be.

Considering that 90% of American children experience this form of discipline (Straus, 2001), the small effects of this discipline on individual children's behavior problems may manifest into more considerable cause for concern at the societal level. That is, although the size of the association between CP and each variable suggests small influence,

when one considers the cumulative effect on a child's overall well-being, including increased aggression and decreased mental health, there is reason to interpret the practical significance of the effects of CP as meaningful. Considering the other realms in which CP has been found to impact development (e.g., cognitive skills; Smith & Brooks-Gunn, 1997), the overall effect on development may be quite substantial. In addition, although the effect sizes reported are average effects across all sampled children, the impact of CP may be even greater on particular children and in particular contexts. For instance, the results of this study indicate that temperament plays a role in determining the influence of CP, supporting the results of other studies (e.g., Morris et al., 2002). For children with difficult temperaments, CP may be an especially notable risk factor contributing to the development of behavior problems.

This study examined the effects of CP only up to first grade, but the results indicate cumulative effects across infancy and early childhood. The impact on children who experience CP throughout middle childhood and adolescence, around 22% (Day, Peterson, & McCracken, 1998), may be even greater. The effects of CP may also be transactional in that they are further exacerbated via the mediated pathways of other variables. For instance, children with poorer mental health and who are more aggressive are more at risk for peer rejection and peer victimization (e.g., Johnson et al., 2002), which in turn negatively impacts children's mental health. Therefore, the overall net effect of physical discipline may be much larger than would be indicated by interpreting the effect sizes of this study in isolation.

There was no evidence in this study for a moderating effect of African American ethnicity on the association between CP and problem behaviors. This finding is contrary

to prior work that suggests that African American families are contexts in which CP does not have a negative effect (e.g., Deater-Deckard & Dodge, 1997; Gunnoe & Mariner, 1997) but is consistent with other studies (e.g., Barnett, Kidwell, & Leung, 1998; McLoyd & Smith, 2002), which suggest that CP is detrimental to the development of both African American and Caucasian children. It is clear that further empirical work is needed to directly test the hypothesis that African American ethnicity diminishes negative outcomes associated with CP. It would also be beneficial to examine contextual features of families of other ethnic groups that might potentially moderate the negative effects of CP. To fully understand the contextual moderators of outcomes associated with CP, including ethnicity, direct measures of prevalence of CP within the community (e.g., Simons et al., 2002) and children's acceptance of it as a normative parental behavior would be valuable.

Future research should also be directed at the development, implementation, and evaluation of programmatic efforts to decrease CP. Such studies would provide an even stronger and more definitive test of the causal link between CP and psychological outcomes (Rutter, Pickles, Murray, & Eaves, 2001). Practical benefits would also be derived from the successful development of intervention programs. Several studies have pointed to the malleability of parental discipline strategies and demonstrated that targeted intervention can reduce the use of harsh discipline (Webster-Stratton, 1998). Intervention efforts should especially be aimed at families that may be more at risk for engaging in CP, such as low-income families and those in which a child is temperamentally difficult. Such programs have the potential for broadly reducing children's noncompliant and aggressive behavior as well as enhancing their overall mental health. Even small changes in this parenting behavior brought about by programmatic intervention would likely be beneficial. To illustrate the potential economic benefits of small increases in child adjustment, Foster, Dodge, and Jones (2003) suggest that programmatic interventions to reduce criminality, costing \$40,000/child, would be recouped if a 3% decrease in incidence was achieved. Such increases in child adjustment would likely be observed by reducing the incidence of CP, which potentially could be done at a much more modest cost per individual child.

The most effective intervention may simply be to disseminate the growing body of empirical research that demonstrates negative outcomes associated with CP to parents and health care professionals. Many parents actively seek advice on child rearing (Walker, 2005), and Walsh (2002) found that fewer than 50% of mothers were advised against spanking by their primary sources of parenting information (books, magazines, and pediatricians). Pediatricians and other professionals to whom parents look for advice should know that the evidence linking CP with behavior problems in children is growing and that evidence for positive outcomes associated with CP is scant. Data are also converging on the characteristics of parents who are likely to use CP, and this information should be useful for clinicians and parent educators to more effectively target messages about positive approaches to discipline.

References

- Achenbach, T. M. (1991). *Manual for the Child Behavior Checklist/4-18 and 1991 Profile*. Burlington: Department of Psychiatry, University of Vermont.
- Achenbach, T. M. (1992). *Manual for the Child Behavior Checklist/2-3 and 1992 Profile*. Burlington: Department of Psychiatry, University of Vermont.
- Barnett, D., Kidwell, S., & Leung, K. (1998). Parenting and preschooler attachment among low-income urban African American families. *Child Development, 69*, 1657-1671.
- Baumrind, D. (1973). The development of instrumental competence through socialization. In A. D. Pick (Ed.), *Minnesota Symposium on Child Psychology: Vol. 7. Physical punishment* (pp. 3-46). Minneapolis: University of Minnesota Press.
- Baumrind, D. (1996). A blanket injunction against disciplinary use of spanking is not warranted by the data. *Pediatrics, 98*, 828-832.
- Baumrind, D. (1997). Necessary distinctions. *Psychological Inquiry, 8*, 176-182.
- Baumrind, D., Larzelere, R. E., & Cowan, P. A. (2002). Ordinary physical punishment: Is it harmful? Comment on Gershoff (2002). *Psychological Bulletin, 128*, 580-589.
- Buehler, C., & Gerard, J. M. (2002). Marital conflict, ineffective parenting, and children's and adolescents' maladjustment. *Journal of Marriage and the Family, 64*, 78-92.
- Caldwell, B., & Bradley, R. (1984). *Home Observation for Measurement of the Environment*. Little Rock: University of Arkansas at Little Rock.
- Carey, W., & McDevitt, S. (1978). Revision of the Infant Temperament Questionnaire. *Pediatrics, 61*, 735-739.
- Cicchetti, D., & Toth, S. L. (1991). A developmental perspective on internalizing and externalizing disorders. In D. Cicchetti & S. L. Toth (Eds.), *Internalizing and externalizing expressions of dysfunction* (pp. 1-19). Mahwah, NJ: Erlbaum.
- Collins, W., Maccoby, E., Steinberg, L., Hetherington, E., & Bornstein, M. (2000). Contemporary research on parenting: The case for nature and nurture. *American Psychologist, 55*, 218-232.
- Day, R. D., Peterson, G. W., & McCracken, C. (1998). Predicting spanking of younger and older children by mothers and fathers. *Journal of Marriage and the Family, 60*, 79-94.
- Deater-Deckard, K., & Dodge, K. (1997). Externalizing behavior problems and discipline revisited: Nonlinear effects and variation by culture, context, and gender. *Psychological Inquiry, 8*, 161-175.
- Fergusson, D., Lynskey, M., & Horwood, L. (1993). The effect of maternal depression on maternal ratings of child behavior. *Journal of Abnormal Child Psychology, 21*, 245-269.
- Foster, E. M., Dodge, K. A., & Jones, D. (2003). Issues in the economic evaluation of prevention programs. *Applied Developmental Science, 7*, 76-86.
- Gershoff, E. T. (2002). Physical punishment by parents and associated child behaviors and experiences: A meta-analytic and theoretical review. *Psychological Bulletin, 128*, 539-579.
- Grant, K., Compas, B., Stuhlmacher, A., Thurm, A., McMahon, S., & Halpert, J. (2003). Stressors and child and adolescent psychopathology: Moving from markers to mechanisms of risk. *Psychological Bulletin, 129*, 447-466.
- Gunnoe, M. L., & Mariner, C. L. (1997). Toward a developmental-contextual model of the effects of parental spanking on children's aggression. *Archives of Pediatric and Adolescent Medicine, 151*, 768-775.
- Horn, I. B., Joseph, J. G., & Cheng, T. L. (2004). Nonabusive physical punishment and child behavior among African-

- American Children: A systematic review. *Journal of the National Medical Association*, 96, 1162–1168.
- Huston, T. L., & Robins, E. (1982). Conceptual and methodological issues in studying close relationships. *Journal of Marriage and the Family*, 44, 901–925.
- Johnson, H. R., Thompson, M. J. J., Wilkinson, S., Walsh, L., Balding, J., & Wright, V. (2002). Vulnerability to bullying: Teacher-reported conduct and emotional problems, hyperactivity, peer relationship difficulties, and prosocial behaviour in primary school children. *Educational Psychology*, 22, 553–556.
- Larzelere, R. E., Kleinn, M., Schumm, W. R., & Alibrando, S. A. (1989). Relations of spanking and other childhood characteristics to self-esteem and perceived fairness of parental discipline. *Psychological Reports*, 64, 1140–1142.
- Lengua, L. J., & Kovacs, E. A. (2005). Bidirectional associations between temperament and parenting and the prediction of adjustment problems in middle childhood. *Journal of Applied Developmental Psychology*, 26, 21–38.
- McCartney, K., & Rosenthal, R. (2000). Effect size, practical importance, and social policy for children. *Child Development*, 71, 173–180.
- McLoyd, V. C., & Smith, J. (2002). Physical discipline and behavior problems in African American, European American, and Hispanic children: Emotional support as a moderator. *Journal of Marriage and the Family*, 64, 40–53.
- Mebert, C. J. (1991). Dimensions of subjectivity in parents' ratings of infant temperament. *Child Development*, 62, 352–361.
- Morris, A. S., Silk, J. S., Steinberg, L., Sessa, F. M., Avenevoli, S., & Essex, M. J. (2002). Temperamental vulnerability and negative parenting as interacting predictors of child adjustment. *Journal of Marriage and the Family*, 64, 461–471.
- Muchinsky, P. M. (1996). The correction for attenuation. *Education and Psychological Measurement*, 56, 63–75.
- NICHD Early Child Care Research Network. (1997). The effects of infant child care on infant-mother attachment security: Results from the NICHD study of early child care. *Child Development*, 68, 860–879.
- NICHD Early Child Care Research Network. (1999). Child care and mother-child interaction in the first three years of life. *Developmental Psychology*, 35, 1399–1413.
- NICHD Early Child Care Research Network. (2001). Nonmaternal care and family factors in early development: An overview of the NICHD Study of Early Child Care. *Journal of Applied Developmental Psychology*, 22, 457–492.
- Parke, R. D., & Collmer, C. (1975). Child abuse: An interdisciplinary analysis. In E. M. Hetherington (Ed.), *Review of child development research* (Vol. 5, pp. 509–590). Chicago: University of Chicago Press.
- Radloff, L. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385–410.
- Repetti, R. L., Taylor, S. E., & Seeman, T. E. (2002). Risky families: Family social environments and the mental and physical health of offspring. *Psychological Bulletin*, 128, 330–366.
- Research Triangle Institute. (2002). *The NICHD Study of Early Child Care and Youth Development: Data and documentation*. Research Triangle Park, NC: Author.
- Rutter, M., Pickles, A., Murray, R., & Eaves, L. (2001). Testing hypotheses on specific environmental causal effects on behavior. *Psychological Bulletin*, 127, 291–324.
- Scarr, S., & McCartney, K. (1983). How people make their own environments: A theory of genotype → environment effects. *Child Development*, 54, 424–435.
- Simons, R. L., Johnson, C., & Conger, R. D. (1994). Harsh physical punishment versus quality of parental involvement as an explanation of adolescent maladjustment. *Journal of Marriage and the Family*, 56, 591–607.
- Simons, R. L., Lin, K.-H., Gordon, L. C., Brody, G. H., Murry, V., & Conger, R. D. (2002). Community differences in the associations between parenting practices and child conduct problems. *Journal of Marriage and the Family*, 64, 331–345.
- Smith, J. R., & Brooks-Gunn, J. (1997). Correlates and consequences of harsh discipline for young children. *Archives of Pediatric and Adolescent Medicine*, 151, 777–786.
- Strassberg, Z., Dodge, K. A., Pettit, G. S., & Bates, J. E. (1994). Spanking in the home and children's subsequent aggression toward kindergarten peers. *Development and Psychopathology*, 6, 445–461.
- Straus, M. A. (2001). *Beating the devil out of them: Physical punishment in American families* (2nd ed.). New Brunswick, NJ: Transaction Publishers.
- Straus, M. A., & Kantor, G. K. (1994). Corporal punishment of adolescents by parents: A risk factor in the epidemiology of depression, suicide, alcohol abuse, child abuse, and wife beating. *Adolescence*, 29, 543–563.
- Straus, M. A., & Stewart, J. H. (1999). Physical punishment by American parents: National data on prevalence, chronicity, severity, and duration, in relation to child and family characteristics. *Clinical Child and Family Review*, 2(2), 55–70.
- Straus, M. A., Sugarman, D. B., & Giles-Sims, J. (1997). Spanking by parents and subsequent antisocial behavior by children. *Archives of Pediatrics and Adolescent Medicine*, 151, 761–767.
- Turner, H. A., & Finkelhor, D. (1996). Physical punishment as a stressor among youth. *Journal of Marriage and the Family*, 58, 155–166.
- U.S. Bureau of the Census. (2004, August). *Poverty thresholds*. Retrieved September 1, 2004, from <http://www.census.gov/hhes/poverty/threshld>
- Walker, S. K. (2005). Use of a parenting newsletter series and other child-rearing information sources by mothers of infants. *Family and Consumer Sciences Research Journal*, 34, 153–172.
- Walsh, W. (2002). Spankers and nonspankers: Where they get information on spanking. *Family Relations*, 51, 81–88.
- Webster-Stratton, C. (1998). Preventing conduct problems in Head Start children: Strengthening parenting competencies. *Journal of Consulting and Clinical Psychology*, 66, 715–730.

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