

For your initial post, imagine the following scenario: As a psychology professional, you have been asked to provide a caregiver with your professional opinion regarding how issues related to your chosen topic may influence short and long-term physical, cognitive, or psychosocial development in his or her child. Choose one of the following topics in the area of development to research and discuss:

Corporal punishment

Focus your discussion around one of the following stages: the prenatal period, infancy, or toddlerhood (conception – 3 years).

Using the Ashford University Library, research at least three peer-reviewed articles on your chosen topic that either support or challenge aspects of your chosen issue. Strive to find recent work, but seminal research on the topic should be considered as well. Evaluate the unique scholarly perspectives found in your research. Based on the research you reviewed, identify your professional position on the topic; specifically, will incorporation of this element have a positive or negative impact on the child's development? Apply this research to major themes of development influenced by your chosen topic (i.e., physical, cognitive, and/or social) and explain how the literature supports your chosen stance. Point out how your stance compares or contrasts with prevailing popular wisdom on the topic. Your explanation should take the form of a persuasive discussion intended to help the caregiver respond positively to your advice as a psychology professional. Analyze any ethical considerations discussed in the research and their effect(s) on the trends related to your topic. Include the complete references for your selected articles at the end of your initial post.

The effect of corporal punishment on antisocial behavior in children

Andrew Grogan-Kaylor

This study was conducted to examine the effect of corporal punishment on antisocial behavior of children using stronger statistical controls than earlier literature in this area; to examine whether the effect of corporal punishment on antisocial behavior is nonlinear; and to investigate whether the effects of corporal punishment on antisocial behavior differ across racial and ethnic groups. The author used a nonexperimental design and data from the National Longitudinal Survey of Youth. The analysis was conducted using fixed-effects methods to control for observed independent variables and unobserved time-invariant variables. Corporal punishment had a nontrivial effect on children's antisocial behavior in later years despite the strong controls introduced by the fixed-effects models. The analysis provides no evidence for differences in the effect of corporal punishment across racial and ethnic groups.

Key words: antisocial behavior; corporal punishment; fixed-effects model

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Researchers studying parenting and family life have long been interested in studying the ways in which parents discipline their children. A particular focus of empirical research has been parental use of corporal punishment. Although many U.S. parents believe in spanking their children when their children misbehave (Gershoff, 2002; Straus & Donnelly, 2001; Straus, Sugarman, & Giles-Sims, 1997), some research suggests that the use of corporal punishment may increase behavior problems among children (Eamon, 2001; Gershoff, Straus & Donnelly; Straus et al.).

In a seminal article, Straus and colleagues (1997) examined the effect of corporal punishment on a cohort of six- to nine-year-olds drawn from the National Longitudinal Survey of Youth (NLSY). Despite introducing several control variables into their model, these authors found that the use of corporal punishment predicted an increase in later antisocial behavior among children. In response to this contention that the use of corporal punishment is harmful, other authors have suggested that corporal punishment is either not always harmful (Gunnore & Mariner, 1997) or is only harmful when it is excessive (Larzelere, 2000).

In this study recent data from the NLSY were used to re-examine the effect of corporal punishment on antisocial behavior. Analytic methods, with more rigorous statistical controls than those that have been used in earlier research in this area, were used. Fixed-effects regression methods were used with appropriate independent variables to develop a model with strong statistical controls for factors whose effects could be confounded with the effects of corporal punishment.

BACKGROUND AND SIGNIFICANCE

Theoretically, research on the relationship of corporal punishment and children's antisocial behavior may be seen as part of a broad agenda of developmental research that focuses on the relationship between children and their parents (Gershoff, 2002).

Davies (1999) observed that the use of physical punishment has an effect on children's working model of their relationship with their parents, and that "when the child is exposed to harsh and inconsistent discipline in infancy and toddlerhood, she is likely to model her behavior after the parent's" (p. 57). A similar perspective was expressed by Vuchinich and colleagues (1992) who suggested that parents who use harsh discipline may "unintentionally promote antisocial behavior in their children through inept discipline practices and erratic expressions of anger toward the child" (p. 511). Strassberg and colleagues (1994) echoed these concerns.

A number of researchers have examined the relationship between corporal punishment and later antisocial behavior among children. Straus and Donnelly (2001) suggested that parents may use corporal punishment in an attempt to enforce compliance with desired behaviors among their children. However, the empirical work of Straus and his colleagues (Straus et al., 1997) implies that corporal punishment is likely to have an opposite and undesired effect. They concluded that rather than reducing inappropriate behaviors among children, the use of corporal punishment teaches children that the use of physical aggression is normative and is an appropriate method to solve conflicts.

Straus and his colleagues (1997) recognized that children might differ in their initial temperament, and that parents might make greater use of corporal punishment with children who exhibited higher levels of antisocial behavior. Thus, these authors used ordinary least squares (OLS) regression and ANOVA models to estimate the effect of corporal punishment on children's antisocial behavior while controlling for children's prior level of antisocial behavior. Even in the presence of the statistical controls afforded by these models, they found that the parental use of corporal punishment increased children's antisocial behavior.

Straus and colleagues' (1997) finding that corporal punishment has detrimental effects on children has been echoed by other researchers, many of whom have also used the NLSY. Eamon and Zuehl (2001) and Eamon (2001) analyzed samples of four- to nine-year-olds from the 1992 and 1994 waves of the NLSY. In both cases, the authors found that physical punishment had adverse effects on children's levels of socioemotional problems. McLeod and Shanahan (1993) used data from the 1986 NLSY and McLeod and Nonnemaker (2000) used data from the 1992 NLSY; they found that the mother's

use of physical punishment tended to increase children's socioemotional problems.

Simons and colleagues (1994) found that "corporal punishment was negatively related to quality of parental involvement" (p. 600). This research points to the importance of considering other indicators of parenting in any analysis of corporal punishment. Straus and colleagues (1997) investigated the relationship of the cognitive stimulation that parents provide their children with children's antisocial behavior and found that this relationship was not statistically significant. Bradley and colleagues (2001) investigated the relationship of learning stimulation with an overall behavior problems score. These authors found that increases in learning stimulation were associated with decreases in children's behavior problems.

Some researchers have questioned the association between corporal punishment and children's behavior problems. In a recent presentation to the American Psychological Association, Baumrind (2001) suggested that methodologically rigorous research had not firmly established the case against corporal punishment. In a series of analyses using samples ranging in size from 79 to 164, Baumrind found conflicting evidence on the effects of spanking. However, firm conclusions based on this research may be limited by the small sample size and the fact that the monograph reporting these results did not detail the method of sample selection used. Thus, it is impossible to determine the degree to which the sample may have been influenced by selection bias.

Some attention has also been given to the idea that corporal punishment may have different effects on child behavior outcomes for members of different ethnic and racial groups. Gunnoe and Mariner (1997) used the National Survey of Families and Households to examine the effects of corporal punishment on children's antisocial behavior and found that corporal punishment increased antisocial behavior for children of some ethnic groups and decreased antisocial behavior for children in other ethnic groups. For example, Gunnoe and Mariner found that "the associations between spanking and subsequent aggression obtained for black children were primarily negative" (p. 768). According to these authors, this suggests that "spanking may deter aggression among black children" (p. 768).

In contrast, McLeod and Shanahan (1993) found no evidence that the relationship of corporal punishment with antisocial behavior in children varied by race. Eamon (2001), McLeod and Nonnemaker (2000), and Bradley and colleagues (2001) found

evidence of differing relationships between corporal punishment and children's behavior problems across different races and ethnicities. For example, in an examination of the relationship of parental use of corporal punishment and increases in children's behavior problems across African American, Hispanic, and European American families that were both poor and not poor, Bradley and colleagues found that spanking had the strongest relationship with increases in behavior problems for European Americans and the weakest relationship with behavior problems for African Americans. However, for every racial or ethnic group, corporal punishment was associated with an increase in the incidence of children's behavior problems.

DATA AND SAMPLE

This study used data from the 1979 segment of the NLSY (Center for Human Resource Research [CHRR], 2000). Begun in 1979 the NLSY follows a cohort of young women over time. The original NLSY surveyed a nationally representative sample of respondents who were ages "14 to 21 as of December 31, 1978" (CHRR, 1999, p. 15). Data in each wave are collected on women's demographic characteristics, labor market experiences, housing status, and family circumstances. The data are prepared for public use by the staff of the CHRR at Ohio State University. The most recent wave of data collection was in 1998. In 1986 the NLSY began collecting data on children born to the original young women of the NLSY. The children of the NLSY "approximately represents a cross-section of children born to a nationally representative sample of women who were between the ages of 31 and 38 on January 1, 1998" (CHRR, 2000, p. 3). This combined mother-child information provided the data for this analysis.

The sample used in this analysis was created in a multistep process. Child data from the NLSY were merged with the mother data by using the identification number for the mother as a unique identifier across data sets. All observations with valid data on the variables used in the analysis were then selected from these data. In many cases there were data on multiple children born to each mother. Because data on both mothers and children are part of this analysis, including data from more than one child of the same mother would violate assumptions about the statistical independence of observations that are crucial to many statistical methods. Therefore, one child from each family group was randomly selected for this analysis.

To focus on recent observations, data from 1994, 1996, and 1998 were used. As a result, only children observed in these years were included in the sample. The sample was also restricted because many of the measures included in the analysis were collected only for particular age ranges. For example, information on behavior problems was collected only for children between ages four and 14 years (CHRR, 2000). These procedures and limitations resulted in a final sample size of 1,811 children.

MEASURES

Variables used in this analysis were chosen on the basis of their use in the earlier empirical literature on the effects of corporal punishment and for their availability in the NLSY data set. Children's demographic characteristics, such as gender, age at the time of interview, and race, were readily available from the NLSY. The NLSY also provides a measure of the total net family income received by a family during the preceding calendar year.

The NLSY data include a measure of children's behavior problems from the Behavior Problems Index (BPI) developed by Zill (1990). The BPI was designed primarily as an abbreviated form of the Child Behavior Checklist (Achenbach & Edelbrock, 1981), although some questions are adapted from other child behavior measures (Zill, 1990). Factor analysis suggests that the items of the BPI factor well into six subscales (Parcel & Menaghan, 1988; Zill, 1985, 1990), one of which measures antisocial behavior. This subscale, composed of six items (Table 1), was used as the dependent variable for this analysis (CHRR, 2000).

Mothers were asked whether it was "often true," "sometimes true," or "not true" that their children engaged in a particular behavior. The responses to these six items were then summed into a score for antisocial behavior. To facilitate comparison of the BPI over different waves of data, the CHRR (2000) developed standardized scores that are normed to have a mean of 100 and a standard deviation of 15. This antisocial behavior scale is often used in the empirical research literature on child and family outcomes (for example, Curran & Hussong, 2000; McLeod, Kruttschnitt, & Dornfeld, 1994; Straus et al., 1997). According to NLSY documentation the antisocial behavior scale has an average internal consistency reliability of .62 (Baker, Keck, Mott, & Quinlan, 1993).

Questions about spanking are asked as part of the Home Observation Measure of the Environment (HOME) inventory (CHRR, 2000). For the years

TABLE 1—Items in Antisocial Behavior Scale

1. Cheats or tells lies
3. Bullies or is cruel/mean to others
4. Does not feel sorry for misbehaving
5. Breaks things deliberately (Administered to children less than 12 years old)
6. Disobedient at school (Administered to children more than five years old)
7. Has trouble getting along with teachers (Administered to children greater than five years old)

Adapted from Center for Human Resource Research. (2000). *Child and young adult data user's guide*. (2000). Columbus: Ohio State University, CHRR NLS User Services.

in this study, mothers were asked the number of times they had spanked their child in the past week. For this analysis, two measures were used. First, a dichotomous measure of corporal punishment was constructed, indicating whether or not mothers had spanked their child in the past week. In other analyses a categorical measure of corporal punishment was used, which divided the use of corporal punishment into three groups—never, once, or more than once—on the basis of the mother's self-report of how often she used corporal punishment with a particular child in the past week. Recoding the use of corporal punishment as a categorical variable allowed for the exploration of the potentially nonlinear nature of the effect of corporal punishment on children's antisocial behavior.

As part of the HOME series of instruments, the NLSY provides a subscale of cognitive stimulation (CHRR, 2000). The cognitive stimulation subscale records the degree to which parents provide intellectual stimulation and educational experiences for their children (CHRR, 2000). The scale includes items that measure constructs such as how often a parent reads to a child, whether or not the parents encourage children's linguistic development, and the degree to which parents provide children with opportunities to visit places outside the home. This subscale of the NLSY has been used in a broad range of empirical research on children (CHRR, 2000), including research on corporal punishment (Bradley et al., 2001; Straus et al. 1997). According to NLSY documentation (Baker et al., 1993), the cognitive stimulation subscale has an average internal consistency reliability of .63. Cognitive stimulation was included in this analysis as an independent variable.

METHOD

Many analyses of the relationship between corporal punishment and antisocial behavior have made

use of either ANOVA (Baumrind, 2001; Straus et al., 1997) or OLS regression (Baumrind; Larzelere, 2000; McLeod & Nonnemaker, 2000; Straus et al.) and have examined one or two waves of data from the NLSY. Other analyses have used structural equation modeling (Eamon, 2001; Eamon & Zuehl, 2001; Gunnoe & Mariner, 1997; McLeod & Shanahan, 1993) and have generally examined two waves of data. We used fixed-effects analysis to examine three waves of the NLSY. Fixed-effects analysis is particularly useful to answer questions about the effects of corporal punishment on later antisocial behavior because the methods are designed to consider information provided by the multiple waves of data available in panel data sets. Fixed-effects methods are also well suited to situations in which ruling out potential confounding variables is important.

The standard statistical literature in the social sciences suggests that to make strong conclusions about the relationship of an independent variable with a dependent variable, a researcher must be able to rule out, or statistically account for, the relationship of any other independent variable with the dependent variable (Agresti & Finlay, 1997; Holland, 1986; Mirer, 1995). Thus, if a researcher wishes to examine whether corporal punishment by parents is associated with changes in children's antisocial behavior, he or she should adequately account for the effects of other variables that might account for any observed relationship. In her recent address to the American Psychological Association, Baumrind (2001) echoed this concern. In the social sciences, the effects of other independent variables are controlled for using a variety of regression methods, the most common being OLS regression (Agresti & Finlay; Mirer). The work of Straus and colleagues (1997) is an excellent example of how OLS regression models can be applied to the study of the effects of corporal punishment.

However, an essential weakness of standard regression methods such as OLS is that they only account for the effects of observed variables. It is conceivable that unobserved variables might have an effect on the relationship between corporal punishment and later antisocial behavior among children. For example, in a particular family, the parents might have a lower ability to control their anger than members of the general population. Conceivably, this decreased ability to manage anger might not be observed or measured by a researcher. Parents in such a family might transmit their low ability to control their anger to their children. In this family it is likely that parents would exhibit a greater tendency to use corporal punishment and that their children would manifest higher levels of antisocial behavior. The relationship between greater use of corporal punishment would then not be a direct relationship between the use of corporal punishment and antisocial behavior, but rather an artifact of the overall effect of decreased ability to manage anger among the members of the family. Such unobserved variables would pose a problem to the standard regression methods used in the study of the effects of corporal punishment (Baumrind, 2001; Larzelere, 2000; McLeod & Nonnemaker, 2000; Straus et al., 1997).

Fixed-effects methods are superior in this regard because they can control for both observed covariates and unobserved covariates that are time invariant. Fixed-effects methods do not appear in the empirical literature on the effects of corporal punishment. In a series of unpublished papers, Hao and Matsueda (1999) used fixed-effects models to examine the effects of corporal punishment. However, these authors did not address some of the issues addressed in this analysis (for example, the potential nonlinear effects of corporal punishment on antisocial behavior, or the effect of the interaction of racial or ethnic identity and corporal punishment on antisocial behavior).

In nonmathematical terms, fixed-effects methods may be thought of as a regression method that adds a dummy variable for each individual in the sample. Through this procedure, the model can control for constant or time-invariant characteristics of individuals, even when those variables have not explicitly been measured. In OLS regression, such a procedure would not be possible because it would require the estimation of a model in which the number of parameters was greater than the number of sample members. However, when there are multiple observations for each sample member, the fixed-effects strategy can be used.

Mathematically, exploiting the longitudinal nature of panel data allows fixed-effects to estimate the effect of a person-specific time-invariant variable. Following Wooldridge (2000) or Greene (1997), the structure for a fixed effects model may be written as:

$$y_{it} = \beta_0 + \Sigma \beta x_{it} + a_i + u_{it}$$

Here, y_{it} is the value of the dependent variable for subject i at time t . β_0 is the value of the intercept. $\Sigma \beta x_{it}$ represents the set of independent variables measured for each subject i at time t . u_{it} is the "usual" error term, familiar to users of methods such as OLS regression, with an expected value of zero and distributed normally, and a_i is an individual-specific term that is constant over all time periods (Stata Corporation, 2001; Wooldridge, 2000). In effect, the individual-specific term a_i provides a unique regression intercept for each study subject.

Using fixed-effects models thus allows the researcher to control not only for the observed variables that have been included in the model, but also for all unobserved factors that are time invariant. Although this is a powerful advantage, a disadvantage is that any time-invariant characteristic, such as a child's sex or race, is subsumed into the a_i term. Thus, separate coefficient estimates for the effects of time-invariant independent variables, such as gender and race, on the outcome of interest are not readily available from a fixed-effects model, which only provides specific parameter estimates of the effects of independent variables whose values change over time. Therefore, although fixed-effects models typically provide stronger statistical controls than OLS regression models (Wooldridge, 2000), they include fewer parameters than OLS regression models estimated using the same data.

Because fixed-effects models do not provide estimates of the effects of specific time-invariant independent variables such as a child's race and child's age, I estimated OLS regression models to provide estimates of the effects of those variables on children's level of antisocial behavior and then used fixed-effects methods to evaluate the effect of these variables on children's antisocial behaviors while controlling for time-invariant characteristics of children and their families. I used the software Stata 7.0 to estimate the fixed-effects models.

FINDINGS

Descriptive Statistics

As described earlier in this article, the major dependent variable—the measure of antisocial behavior

contained within the NLSY—is normed to have a mean of 100 and a standard deviation of 15. However, subsamples of the NLSY (such as the one used in this study) may have slightly different characteristics. For the sample in this analysis, the mean antisocial behavior score was 106.9 and the standard deviation was 13.99.

The major independent variable was whether or not parents used corporal punishment. Approximately 80% of the mothers indicated that they had not spanked their child in the past week, 11% indicated that they had spanked their child once in the past week, and the remaining 9% indicated that they had spanked their child more than once in the past week (Table 2).

TABLE 2—Descriptive Statistics for a Subset of the NLSY

Variable		
Continuous variables		
	<i>M</i>	<i>SD</i>
Antisocial behavior standardized score	106.90	13.99
Use of corporal punishment	0.22	0.42
Cognitive stimulation	986.25	151.22
Per capita income (in 1998 dollars)	12,925.60	18,000.26
Child's age (in months)	121.45	37.48
Categorical variables		
		%
Gender		
Female		50.08
Male		49.92
Race		
Hispanic		20.49
Black		28.55
White		50.97
Number of times corporal punishment used in past week		
		%
0		80.87
1		11.32
2		3.70
3		1.89
4		0.82
5		0.52
6		0.20
7		0.17
8		0.09
10 or more		0.41
Total		100.00

The demographic characteristics of the sample reflected a wide range of diversity. The mean income was \$12,925 per family member. The gender of children of the sample was approximately half girls and half boys. The average age of the children in months was 121.45, representing an average age of slightly over 10 years. Twenty percent of the children were Latino, 29% were African American, and 51% were white. The mean of the cognitive stimulation score was 986.25 with a standard deviation of 151.22.

Ordinary Least Squares Regression

The OLS analysis relied mainly on data from the 1998 wave of the NLSY. Results of the OLS analysis are contained in Table 3. Because Straus and his colleagues (1997) controlled for children's prior levels of antisocial behavior, such a measure was included in the model. The findings indicated that children's prior level of antisocial behavior had a statistically significant effect on children's later antisocial behavior. However, even controlling for this variable, the current use of corporal punishment increased children's antisocial behavior to a degree that was statistically significant. The parameter estimate for the use of corporal punishment indicates that, on average, the use of corporal punishment in the past week increased children's antisocial behavior scores two years later by just more than one-quarter of a standard deviation.

Children's age had an effect on levels of antisocial behavior, in that older children exhibited higher levels of antisocial behavior. Children's race and children's sex did not have a statistically significant effect on antisocial behavior when controlling for other independent variables. However, like Straus and colleagues' (1997), this model found that higher levels of cognitive stimulation in the home were associated with lower levels of antisocial behavior.

Fixed-Effects Models

Results from the fixed-effects models are contained in Table 4. As noted, this model controlled for all time-invariant characteristics of children and their families, such as any time-invariant tendency of a child to be more or less antisocial over time. Because the fixed-effects model is designed specifically for panel data, levels of antisocial behavior from earlier years were not included in the same fashion they would be in an OLS regression model. However, a tendency to be above or below the mean level of antisocial behavior is included in the constant term estimated as part of the model. Thus, the model incorporates a statistical adjustment for children's prior

TABLE 3—Ordinary Least Squares Regression

Variable	Parameter Estimate	SE	t	p
Antisocial behavior standardized score in 1996	0.50	0.027	18.74	<0.01
Use of corporal punishment	3.55	1.058	3.35	<0.01
Cognitive stimulation	-0.01	0.003	-5.79	<0.01
Per capita income (in 1998 1,000s of dollars)	0.00	0.031	0.08	0.94
Child's age (in months)	0.03	0.013	2.37	0.02
Female	-0.39	0.702	-0.56	0.58
Hispanic	0.88	0.956	0.92	0.36
Black	-0.36	0.863	-0.41	0.68
Constant	64.02	4.680	13.68	<0.01

$F(8, 1071) = 72.94, p < .01$

NOTE: All data from 1998 wave of NLSY unless otherwise specified.

levels of antisocial behavior, and it can be assumed to control for any characteristics of children's families that remain constant over time and that have an effect on children's level of antisocial behaviors.

Despite the statistical controls in this fixed-effects regression, increases in the use of corporal punishment were clearly associated with increases in the level of children's antisocial behavior (Table 4). The effect of corporal punishment on children's antisocial behavior was almost as large as the effect of corporal punishment found in the OLS regression model. Bearing in mind that the scores on the antisocial behavior measure are normed to have a stan-

dard deviation of 15, the coefficient for the effect of corporal punishment on antisocial behavior indicates that the use of corporal punishment is associated with an increase in antisocial behavior by almost a fifth of a standard deviation. Following the guidelines set forth by Cohen (1988), this can be considered a small effect size.

The per capita income in the families in which children lived did not have a statistically significant effect on children's antisocial behavior while controlling for other variables, nor did increases in cognitive stimulation. Examination of the fixed effects (which included children's race and gender) revealed

TABLE 4—Fixed-Effects Regression

Antisocial Behavior Standardized Score	Parameter Estimate	SE	t	p
Corporal punishment used in past week	3.157	0.890	3.55	<.01
Cognitive stimulation	-0.003	0.002	-1.28	0.20
Per capita income (in 1998 1,000s of dollars)	-0.013	0.000	-1.05	0.29
Child's age (in months)	0.041	0.009	4.51	<.01
Interaction of use of corporal punishment and child is black	-0.352	1.270	-0.28	0.78
Interaction of use of corporal punishment and child is Hispanic	-1.302	1.481	-0.88	0.38
Constant	104.048	2.307	45.09	<.01
σ_u	11.692			
σ_e	9.330			
Rho	0.611 (fraction of variance due to u_i)			

NOTE: Data from 1994, 1996, and 1998 waves of NLSY.

that they were statistically significant [$F(1810, 2377) = 3.29; p < .01$].

To test the possibility that parental use of corporal punishment might have different effects for children in different racial and ethnic groups, I created an interaction of race and the use of corporal punishment and entered this interaction term into the fixed-effect models to examine whether the relationship of corporal punishment and antisocial behavior differed by race. White children served as the reference category, and terms that measured the interaction between use of corporal punishment and African American or Latino minority status were created. Neither of these interaction terms was statistically significant in the analysis, indicating no discernible differences in the effects of corporal punishment on antisocial behavior for members of different racial and ethnic groups. Because these interaction terms were not initially statistically significant, they were dropped from subsequent models.

Preliminary graphical analyses conducted for this research suggested that the relationship of corporal punishment and antisocial behavior in children was not linear, and therefore a continuous variable measuring the use of corporal punishment could not be used. To compare the effect of higher and lower levels of corporal punishment, a single application of corporal punishment in the past week was coded as low corporal punishment, and more than a single use of corporal punishment in the past week was coded as high corporal punishment. As discussed earlier, the division of the variable measuring the use of corporal punishment into variables measuring high and low levels of corporal punishment al-

lowed for the modeling of the nonlinear relationship between the use of corporal punishment and increases in antisocial behavior.

A fixed-effects estimate of the effects of different levels of corporal punishment on children's antisocial behavior is presented in Table 5. It is interesting to note that the coefficients for low and high levels of corporal punishment were of similar magnitude, suggesting that even low levels of corporal punishment have an effect on antisocial behavior and that this effect is nearly equivalent to the effect of higher levels of corporal punishment. Although the coefficient for lower levels of corporal punishment was slightly smaller than the coefficient for higher levels of corporal punishment, an F test of the equivalence of these two levels of corporal punishment was unable to reject the hypothesis that higher levels of corporal punishment had the same effect on antisocial behavior as lower levels of corporal punishment [$F(1, 2403) = 0.63, p = 0.43$]. Thus, the results of this model indicate that low levels of corporal punishment may have the same effect on increases in children's antisocial behavior as higher levels.

DISCUSSION

The findings of this research suggest that corporal punishment has an adverse effect on children's level of antisocial behavior, even when statistical controls for observed variables and for all unobserved time-invariant variables are used. Thus, it confirms findings of a number of studies in this area.

This study makes an analytic contribution to the literature on the effects of corporal punishment. As was noted, many studies have modeled the use of

TABLE 5—Fixed-Effects Regression

Antisocial Behavior Standardized Score	Parameter Estimate	SE	t	p
One instance of corporal punishment in past week	2.402	0.665	3.61	<.01
Two or more instances of corporal punishment in past week	3.073	0.763	4.03	<.01
Cognitive stimulation	-0.002	0.002	-1.18	0.24
Per capita income (in 1998 1,000s of dollars)	0.000	0.000	-1.01	0.31
Child's age (in months)	0.042	0.009	4.6	<.01
Constant	103.761	2.293	45.25	<.01
σ_u	11.671			
σ_e	9.329			
Rho	0.610 (fraction of variance due to u_i)			

NOTE: Data from 1994, 1996 and 1998 waves of NLSY.

corporal punishment as either a dichotomous variable or a continuous variable. Both measures are potentially problematic. Modeling the use of corporal punishment as a dichotomous variable means that any information on whether corporal punishment is used frequently or infrequently is lost. Modeling the use of corporal punishment as a continuous variable is an improvement over coding the use of corporal punishment as a dichotomous variable in that it preserves the information on the degree to which a particular child's parents use corporal punishment. However, the use of a continuous covariate in a regression model means that it is assumed that the functional form of the relationship between corporal punishment and antisocial behavior is essentially linear.

This research found that the effect of corporal punishment on antisocial behavior is nonlinear—that is, the effect of parental use of corporal punishment on increases in children's antisocial behavior does not appear to depend on the frequency of use of corporal punishment.

These analyses thus provide further confirmation for earlier empirical work that suggest that corporal punishment does not deter antisocial behavior in children, but rather may increase it (Eamon 2001; Eamon & Zuchl, 2001; Straus & Donnelly, 2001; Straus et al., 1997). Although some researchers have suggested that only higher levels of corporal punishment are associated with antisocial behavior (Larzelere, 1996, 2000; Simons et al., 1994), these findings indicate that even relatively low and common applications of corporal punishment are associated with increases in children's antisocial behavior.

IMPLICATIONS

This research, along with other published empirical research, suggests that there might be more appropriate forms of parental discipline of children. For example, organizations such as the American Academy of Pediatrics suggest the use of "time outs" as a way of shaping children's behavior (American Academy of Pediatrics, 1998; American Academy of Pediatrics, Committee on Psychosocial Aspects of Child and Family Health, 1998). The research also suggests that professionals and advocates working in parent education programs are correct when they encourage parents to develop methods of discipline other than corporal punishment.

Those concerned about the effects of corporal punishment would do well to pay attention to the social and environmental context of parenting. In her review of the corporal punishment literature,

Gershoff (2002) noted that the relationship between lower incomes and higher use of corporal punishment pervades the empirical research literature in this area. In a time of increasing income inequality and decreasing supports for low-income families, child and family advocates troubled by the consequences of corporal punishment should be concerned about the economic situation of families at the bottom of the economic spectrum.

In the area of the effects of parental discipline on children's behavior, several research directions appear promising. As Simons and colleagues (1994) noted, most of the research on the effects of corporal punishment has focused on the effects of corporal punishment on antisocial behavior. As both Simons and colleagues and Gunnoe and Mariner (1997) observed, more detailed research is necessary to examine the effects of corporal punishment on other child outcomes, such as social competence. In addition, the precise functional form of the growth of antisocial behavior within children remains unclear. Further research examining the growth trajectory of antisocial behavior in children who are parented and disciplined in different ways is warranted. ■

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Infant Spanking : Attitudes and Past Experiences

By Esther K. Chung, MD, MPH

Corporal punishment in infancy is common in the U.S., with prevalence rates of 14% to 35%. Experts agree, however, that any form of physical punishment, including spanking, during infancy is inappropriate, ineffective in changing behavior, and potentially harmful.

Use of corporal punishment, including infant spanking, crosses socioeconomic boundaries, although research shows that it occurs more commonly among disadvantaged populations. Maternal young age, single marital status, low education and socioeconomic status, parental frustration, maternal depression and a history of physical or sexual abuse, or family violence, are risk factors for corporal punishment use.

Evidence shows that maternal experience of physical and sexual abuse, and domestic violence are risks for subsequent use of corporal punishment on their children. Corporal punishment use raises questions about whether other adverse childhood experiences predispose women to use corporal punishment on their offspring.

The Adverse Childhood Experiences (ACE) Study of the Centers for Disease Control and Prevention showed that ACEs individually and in a dose-response manner were associated with adverse health outcomes including depressive disorders, obesity and ischemic heart disease.

Negative consequences of corporal punishment include an increased risk for behavioral problems, delinquent behaviors, low self-esteem, depression, substance abuse and physical abuse of their own children among those exposed to corporal

punishment. Others found that parents that experienced corporal punishment as children were more likely to have attitudes that value corporal punishment, and that such attitudes were associated with later corporal punishment use.

In a recent study, published in *Pediatrics*, we looked at attitudes toward corporal punishment early in infancy, when the babies were approximately three months old, and found that mothers who valued corporal punishment early on were twice as likely to report spanking their 11-month old infants than mothers who did not value corporal punishment.

Among the 1,265 women in our study, 19% valued corporal punishment as a means of discipline and 14% reported use of infant spanking. Exposure to more than two ACEs was associated with a 1.6 times likelihood of using infant spanking. This suggests that, in addition to childhood physical abuse, cumulative violence exposure, including sexual abuse, verbal hostility, domestic violence, witnessing a shooting or knowing a victim of shooting, predisposes mothers to infant spanking use. Mothers who had experienced physical abuse as a child, when compared to those who had not, were 1.5 times more likely to use infant spanking, demonstrating how use of physical punishment can be passed from one generation to the next.

New parents and families should discuss child discipline attitudes and childhood experiences early in parenting in order to prevent use of infant spanking. New parents may especially be unfamiliar with the harmful effects of infant spank-

ing. Attitudes toward discipline are established early in parenting and disciplinary strategy is maintained throughout early childhood so it is essential to discuss views on discipline with a health care professional when the baby is very young.

Our findings call for greater efforts to prevent childhood adversity including physical and sexual abuse, verbal hostility, and domestic and gun violence. In 2000, the American Academy of Pediatrics recommended that corporal punishment be abolished from schools, but 21 states have yet to implement laws banning this practice. National standards for out-of-home child care prohibits corporal punishment use by stating, "the following behaviors shall be prohibited in all child care settings and by all caregivers: corporal punishment, including beating, hitting, spanking, shaking, pinching, excessive exercise, exposure to extreme temperatures, and other measures producing physical pain." In state-regulated child care centers, 48 states have laws prohibiting corporal punishment use.

As a parent and a pediatrician, I advise parents to set limits for their children, varying their approach depending on the child's developmental needs, and avoid the use of physical punishment. In general, it is important to be consistent in one's approach and with other family members and caregivers, and to make clear expectations that are appropriate for a child's developmental stage.

Parents should avoid physical punishment for many reasons, including the following:

- Parents should set the example to not hit others as it is

confusing that the child is not allowed to hit others but that the parent can hit the child for undesired behavior.

- Might does not make right
- Physical punishment may lead to lifelong physical and emotional problems.
- There is no evidence that physical punishment is more effective in improving or changing behavior than other forms of discipline.

Child discipline should be discussed with all families since one in ten mothers reported spanking their infants, even among those

without a history of violence. We found it hopeful that the majority (84%) of participants who experienced childhood physical punishment did not report spanking their infants. Negative parenting practices, like spanking, may occur at the expense of positive parenting practices, such as reading, listening to music, playing and hugging. Parents should be aware of this and take every opportunity to engage in positive parenting practices with their child(ren).

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Order in the House!

By Anna Johnson and Anne Martin, DrPH

The home environment is the primary context for children's early learning. Scholars employ the term "home literacy environment" (HLE) to refer to the set of environmental factors thought to be most relevant for literacy growth in the home.

Numerous studies substantiate an association between the HLE and children's early literacy skills. In particular, parent/child shared reading (i.e. parents reading aloud to their children) is often promoted as the best way for parents to help their young children learn how to read.

We wondered whether there are in fact many different kinds of ways parents can help their children's early reading. For parents who may not have the time or inclination to read to their children, are there in fact alternatives to a one-size-fits-all approach?

With our colleagues at Teachers College, Columbia University and the Ohio State University, we ex-

amined various characteristics of the home environment and their associations with children's early reading development. We paid particular attention to the role of household chaos or disorder.

A handful of prior studies have found associations between aspects of chaos such as outside environmental noise and household crowding (the number of people living in a dwelling), and children's cognitive and school achievement. However, our study is the first to examine whether chaos in the home, determined by the amount of noise and disorganization in the home, is related to children's early reading skills in particular.

We used data from 455 kindergarten and first-grade children, and their families, enrolled in a large reading study in Ohio and Western Pennsylvania. For our analysis, we created two measures of household chaos—quiet and order.

Our "quiet" measure captured parents' amount of agreement with

statements such as "Sometimes I can't hear myself think," and "It's a real zoo in our home." Our "order" measure captured parents' agreement with statements such as "The children have a regular bedtime routine," and "We are usually able to stay on top of things."

Our study also tested a long list of aspects of HLE. Along with a measure of the amount of time parents spend reading to their children, we included measures of activities of the HLE that rely less on parental involvement and more on child initiative, such as the parents' reports of how often the child amuses herself alone with books, and how many books the child owns or borrows. Children's reading ability was assessed using standardized measures of phonological awareness, expressive vocabulary, and reading comprehension. Mothers' reading ability was also evaluated.

We had three main findings. First, the amount of time parents spent

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What Is the Link Between Corporal Punishment and Child Physical Abuse?

Sabrina Fréchette · Michael Zoratti · Elisa Romano

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Abstract This study aimed to contribute to the literature on corporal punishment by examining the link between spanking and child physical abuse. First, we examined the extent to which individuals who experienced spanking in childhood were at greater risk of also experiencing physical abuse by their parents. Second, we examined various parenting and family factors that could distinguish between spanking that occurred within and without a physically abusive context. A sample of 370 university students completed a questionnaire on disciplinary experiences at age 10. Results suggested that individuals who indicated having experienced spanking during childhood were at greater risk of also having experienced physical abuse. Among individuals who indicated having experienced spanking, greater spanking frequency, perceptions of impulsiveness in parental discipline, and reports of physical violence between parents significantly increased the risk of physical abuse. This research contributes to the growing evidence on the risks associated with child corporal punishment.

Keywords Discipline · Parenting · Spanking · Family violence · Maltreatment

Discipline is an inherent part of parenting that targets children's socialization. It is often seen as a multidimensional concept that includes specific parenting behaviors or practices expressed in a particular social and emotional context (Darling

and Steinberg 1993). To encourage desired and minimize undesired behaviors, parents will choose, depending on their knowledge, experiences, and beliefs, among a wide array of discipline strategies (Gershoff et al. 2010; Regalado et al. 2004; Socolar et al. 2007).

Corporal Punishment

Corporal punishment (CP) is a form of discipline often defined as the “use of physical force with the intention of causing a child to experience pain, but not injury, for the purposes of correction or control of the child's behavior” (Straus and Donnelly 2001, p.4). The most commonly used forms of CP include spanking, slapping, shoving a child roughly, and hitting with certain objects (e.g., hair brush, belt; Straus and Donnelly 2001). There are various perspectives on the use of CP, the first of which is pro-CP. This perspective, which is largely unrepresented in the empirical literature and found primarily in public opinion, holds that CP teaches respect for authority and is essential for maintaining control over a child (Benjet and Kazdin 2003).

Conditional CP is another perspective, which claims that the use of physical force for disciplinary purposes may be beneficial under certain conditions. Specifically, through literature reviews and meta-analyses, Larzelere (1996; 2000; Larzelere and Kuhn 2005) found that mild and occasional spanking, when used under certain circumstances, had positive effects on children's immediate compliance as well as on oppositional and antisocial behaviors. Mild and occasional spanking were also found to enhance the effectiveness of other disciplinary strategies, such as explanation and time-out. Larzelere (2000) suggested that the following conditions characterize effective and appropriate CP: (a) it is not overly severe; (b) it is motivated by concern for the child; (c) it is used between the ages of 2 to 6 years; (d) it is under control;

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(e) it is used privately; (f) it is used flexibly; (g) it occurs after a single warning; and (h) it is combined with reasoning or other disciplinary strategies. Proponents of the conditional CP perspective suggest that the literature on detrimental effects of CP focuses too heavily on severe forms of physical discipline. Therefore, this research may not apply to the more common scenario in which parents occasionally use milder CP, such as spanking (Larzelere and Kuhn 2005). According to Baumrind and her collaborators (2002), what continues to be controversial around CP is whether mild to moderate spanking is harmful to the child.

The final perspective, the anti-CP view, maintains that the use of physical force (even minor) is not justified under any circumstances (Benjet and Kazdin 2003). Proponents state that CP violates children's basic rights and compromises a range of short- and long-term developmental outcomes (Benjet and Kazdin 2003; Canadian Psychological Association 2004; Durrant and Ensom 2012; Gershoff 2002a). Indeed, many researchers have identified CP as a developmental risk factor that has been associated with greater social and emotional problems in children and youth, such as impaired parent-child relationships, antisocial behaviors, and internalizing (e.g., anxiety, depression) and externalizing (e.g., aggression, impulsiveness) behaviors (Durrant and Ensom 2012; Gershoff 2002a). Results on the detrimental impact of mild and more severe forms of CP have been replicated across different age groups and cultures in several cross-sectional studies (Bordin et al. 2009; Eamon 2001; Gamez-Guadix et al. 2010; Gershoff et al. 2010; Ma et al. 2012; Stormshak et al. 2000; Verhoeven et al. 2010; De Zoysa et al. 2008) as well as in a more limited number of longitudinal studies (Gershoff et al. 2012; Lansford et al. 2012; MacKenzie et al. 2012; McLoyd and Smith 2002; Mulvaney and Mebert 2007; Olson et al. 2011; Stacks et al. 2009; Taylor et al. 2010). In addition to the impact on children's developmental outcomes, the effect of CP has been suggested to continue through adulthood (Gershoff 2002a). In fact, a U.S. epidemiological survey conducted in 2004–2005 with more than 34,000 adults revealed that, even after controlling for socio-demographic factors and family dysfunction (e.g., family member with alcohol/drug problems, family member with a history of mental illness), experiences of harsh physical punishment in childhood were associated with an increased risk of mood and anxiety disorders, alcohol/drug abuse, and personality disorders in adulthood (Afifi et al. 2012).

In line with the anti-CP perspective, numerous organizations, including Canadian and U.S. pediatric and psychological bodies, have made formal statements against the use of physical force for purposes of child discipline (e.g., American Academy of Pediatrics Committee on the Psychosocial Aspects of Child and Family Health 1998; American Psychological Association 2012; Canadian Paediatric Society 2004; Canadian Psychological Association 2004). In

a similar vein, a number of countries worldwide (not including Canada and the U.S.) have followed Sweden's lead (the first country to make CP illegal) to prohibit child CP (Durrant 2003). However, in Canada, Section 43 of the Criminal Code continues to give parents, parent substitutes, and teachers, permission to use reasonable force for purposes of correcting children's behavior. Similarly, in the U.S., CP by parents is legal in 49 states and the constitutionality of school CP was upheld by the Supreme Court of the United States (Gershoff 2008).

Despite the various efforts against the use of child CP, it remains a common disciplinary strategy in North American homes. Canadian national surveys conducted in 1998–1999 (Oldershaw 2002) and in 2002 (Canadian Press and Leger Marketing 2002) indicated that approximately 50 % of parents reported using child CP, such as spanking, during the previous year. Furthermore, a more recent Quebec, Canada, population-based survey revealed that, during the previous year, 35 % of mothers reported using CP, which was defined as spanking, shaking a child older than 2 years or pinching (Clément et al. 2013). In the U.S., a 1995 survey of 991 parents revealed that 94 % had used, in the previous year, some form of CP (i.e., slaps on the hand or leg, spanking on the buttocks, pinching, shaking, hitting on the buttocks with a belt or paddle, and/or slapping in the face) to discipline their 3 to 4 year-old child (Straus and Stewart 1999). More recent U.S. epidemiological studies suggest that between 26 and 67 % of parents use CP, which was defined as spanking, to discipline their child (Berlin et al. 2009; Regalado et al. 2004; Runyan et al. 2010; Slade and Wissow 2004; Taylor et al. 2010; Wissow 2001).

It should be noted that rates of CP reported in the literature are most likely underestimates (Straus 2010; Straus and Stewart 1999). Self-reports of CP use may be influenced by the limits of recall accuracy and also by the fact that CP is a controversial form of discipline which has repeatedly been challenged (so parents may be reluctant to report using it). Still, a significant percentage of parents report using CP as part of their disciplinary array. Holding favorable attitudes towards CP has been consistently found to be one of the strongest predictors of report of its use (Ateah and Durrant 2005; Gagné et al. 2007; Vittrup et al. 2006). Indeed, parents report using CP more often with their preschool-age children as they believe it is a more appropriate disciplinary strategy for this age group (Gershoff 2002a). Furthermore, boys seem to be at greater risk of experiencing CP because, among other things, parents may have specific sex-based beliefs and expectations that lead to different parenting attitudes and behaviours for boys and girls (Gershoff 2002a). Moreover, CP attitudes and use were found to vary across different racial and ethnic groups (Day et al. 1998; Gershoff et al. 2012; Giles-Sims et al. 1995; Grogan-Kaylor and Otis 2007; Lansford et al. 2010; Lansford et al. 2005; Pinderhughes

et al. 2000; Regalado et al. 2004; Straus and Stewart 1999; Wissow 2001).

Risk of Child Physical Abuse

Proponents of the anti-CP perspective cite a number of negative consequences, one of which is that the use of CP increases the risk of child physical abuse (Gonzalez et al. 2008; Zolotor et al. 2008). According to the Canadian Department of Justice (2012), child physical abuse involves the deliberate use of force against a child, such that it causes injury or puts the child at risk for injury. This force may include such acts as beating, hitting, shaking, pushing, choking, biting, burning, kicking, or assaulting a child with a weapon. In a recent nationally representative Canadian study (Durrant et al. 2009), 1286 substantiated and 1173 unsubstantiated investigations of physical abuse were compared on variables targeting the Supreme Court of Canada criteria for reasonable force (e.g., perpetrator, child age, type of force). Results indicated that the use of non-minor force (i.e., physical and/or emotional harm sustained, therapeutic treatment required) and spanking were the two best predictors of case substantiation. Specifically, cases where non-minor force was used were 6.29 times more likely to be substantiated while cases where spanking represented a typical form of discipline were 3.14 times more likely to be substantiated. Taken together, 24 % of the variance in substantiation decisions was explained by the use of non-minor force and spanking. Furthermore, findings indicated that in approximately three-quarters (76.8 %) of the substantiated cases, physical abuse occurred within a corrective context, specifically as a form of punishment to correct a child's misbehavior (Durrant et al. 2009). These statistics highlight the need to develop a better understanding of the abuse risk that seems to be associated with CP, especially because experiences of child physical abuse have been identified as a negative developmental factor in multiple domains of functioning, including psychological well-being, behavioral- and social-development, and cognitive skills (Kaplan et al. 1999; Manly et al. 1994; Petrenko et al. 2012).

What can be perceived as normative CP and appropriate parenting, such as spanking, can also be considered abusive when taken to its extreme (e.g., spanking on the face, multiple episodes of spanking per day; Gershoff 2002b). Research indicates that the greater the frequency and severity (e.g., use of objects) of CP, the greater the likelihood that parents will use harsher punishments, which approach and potentially meet current definitions of child physical abuse (Belsky 1993; Gershoff 2002a; Straus and Stewart 1999; Zolotor et al. 2008). In an anonymous telephone survey of U.S. mothers of children under the age of 18 years, Zolotor et al. (2008) found that the likelihood of physical abuse increased by 3 % with every

additional occurrence of spanking. Moreover, parents who used an object to strike their child on the buttocks were found to be nearly nine times more likely to also report physically abusive behaviors. Such results are consistent with a continuum of violence position, according to which punishment and abuse are only quantitatively different, varying in terms of severity or degree of physical harm to the child (Gershoff 2010; Gonzalez et al. 2008). It should be acknowledged, however, that there is no clear and agreed-upon point where CP crosses the threshold to physical abuse (Durrant 2005; Gonzalez et al. 2008). Indeed, one of the major limitations of the literature on CP is the lack of consensus about its definition (Benjet and Kazdin 2003; Ripoll-Nunez and Rohner 2006). Different terms (e.g., physical punishment, harsh punishment, spanking, striking, hit with object, beat) have been used interchangeably in the research literature (Benjet and Kazdin 2003; Gershoff 2002a; Hicks-Pass 2009), and these terms target physical discipline behaviors ranging from mild to severe forms of punishment that approach physical abuse. Gonzalez and colleagues (2008) suggested that attempts to specifically target CP and draw the line between CP and physical abuse according, for example, to the parent's intent or use of objects, have not proven useful. Still, the presence of physical injury (or risk of injury) has been used to distinguish CP and physical abuse in the medical community and in identifying children in need of protection (Durrant et al. 2009; Gonzalez et al. 2008).

According to the typologies of violence position (Gonzalez et al. 2008), injurious and non-injurious incidents, besides being on the same continuum of violence, could also be qualitatively differentiated by distinct patterns of factors. According to this point of view, different factors would predict injurious (i.e., physical abuse) and non-injurious (i.e., CP) acts of violence toward a child (Gonzalez et al. 2008; Straus and Gelles 1990). In their review of the literature, Gonzalez and colleagues (2008) noted that a limited number of studies examined factors contributing to the prediction of injury or injury severity in cases of child maltreatment, and that research has focused on child characteristics (e.g., age, sex, race, behavioral functioning), perpetrator characteristics (e.g., sex, relationship to the child, general functioning, socio-economic stress), and case characteristics (e.g., source of report, nature of allegations). According to Gonzalez and colleagues' (2008) review, only the child's age and the perpetrator's sex have been found to be significant predictors of injury severity. Moreover, in an effort to add to the existing literature and distinguish CP from substantiated physical abuse cases, Gonzalez and colleagues (2008) examined 7672 child maltreatment investigations from the Canadian Incidence Study of Reported Child Abuse and Neglect (CIS) and found that none of the examined child, perpetrator, and socio-economic variables predicted the presence of injury or physical harm to the child (e.g., bruises, cuts, burns).

To explain the increased risk of child physical abuse associated with the use of CP, it is possible to turn to Gershoff's (2002a) process-context model, which offers an explanation of CP effects. This model proposes that variables from different contextual layers, such as the interactional context (e.g., characteristics of child's misbehavior, parent and child emotional state), the stable individual and relational context (e.g., age, sex, family structure), and the social-cultural context (e.g., stress, social support, socioeconomic status), can determine when, whether, and for whom CP has beneficial or detrimental outcomes (Gershoff 2002a). With regards to the association between child CP and child physical abuse, not only does Gershoff's (2002a) model illustrate the presence of a direct link between the two variables, but it also states that factors can moderate this association and distinguish children who experience CP and physical abuse from those who only experience CP. The current study therefore attempted to confirm the presence of this association between childhood CP and physical abuse. Based on Gershoff's model (2002a), the current study assessed the different factors that could differentiate the two groups of children, namely those who experienced CP alone and those who also experienced physical abuse from their parents.

Among characteristics of CP that can influence child outcomes, Gershoff's (2002a) process-context model not only identified the frequency and severity of punishment, but also co-occurring discipline. Research to date has mainly focused on parents' use of CP, but it should be conceptualised as being part of a broader disciplinary response (Gershoff 2002a). In fact, parents jointly use a wide array of practices to encourage desired behaviors and to decrease undesired behaviors, such as diverting, reasoning, ignoring, negotiating, taking away privileges, yelling, and/or spanking (Gershoff et al. 2010; Regalado et al. 2004; Socolar et al. 2007). Several correlational studies have examined the link between CP and the different parental disciplinary strategies. For example, a retrospective study on the parenting practices of Spanish parents (Gamez-Guadix et al. 2010) indicated that CP tended to be accompanied by psychological aggression, such as yelling, making the child feel bad, or acting cold. The association between psychological aggression (a form of punishment that could escalate into emotional abuse depending on its frequency and severity of use) and CP suggests the presence of co-occurring intra-familial forms of violence. However, another study (Wissow 2001) found that, even though the correlation with yelling and hitting was stronger, CP was also positively correlated with all the other examined forms of discipline (i.e., time out, taking things away and explaining). Therefore, research studies should examine the co-occurrence of CP with positive discipline, that is nonviolent discipline that gives information to children and help their growth and success (Durrant 2007).

While many discipline strategies co-occur, they can also independently influence child outcomes. For example, harsh verbal punishment has been found to be a more important predictor of conduct problems than CP (Evans et al. 2012). Furthermore, co-occurring strategies can interact with CP in a way that moderates CP's effect. Such interaction effects between CP and co-occurring disciplinary strategies (e.g., psychological aggression, positive discipline) on child externalizing behaviors, for example, have been found in several studies (Vissing et al. 1991), but not in others (Gamez-Guadix et al. 2010). As for the proposed association between CP and child physical abuse, no studies to our knowledge have examined the moderating effect of co-occurring disciplinary strategies.

In a revision of the process-context model, Gershoff (2002b) specified that the direct association between child CP and child physical abuse can also be moderated by parental state when disciplining the child (e.g., level of anger) and by stable parental characteristics, such as level of impulsivity and parenting style (e.g., warm, responsive, controlling; Gershoff 2002a). Parental anger and parental impulsivity during disciplinary moments appear to go hand-in-hand, in that CP might be used in an impulsive manner (and with little planning, unlike the intentional use of CP) when parental anger and frustration is high and when there is little perceived parental control during a moment of discipline (Straus and Mouradian 1998). Moreover, Vasta's (1982) dual-component analysis of child physical abuse indicates that impulsivity may lead to the escalation of CP toward physical abuse, especially when a parent is emotionally and physiologically aroused, as there is a greater likelihood of reacting to internal and external stimulation. Similarly, arousal in the form of anger may lead to a failure to monitor and adjust one's reaction in the disciplinary moment (Russa and Rodriguez 2010).

With regard to parenting styles, there appear to be different associations between CP and risk of abuse (Dufour et al. 2011; Thompson et al. 1999; Wissow 2001). For example, Wissow (2001) found that parents who reported higher use of CP also reported fewer acts of warmth toward their child (e.g., reading and playing) and limited physical affection (e.g., hugging). As for physical abuse, Thompson et al. (1999) found that the riskiest type of parents, referring to parents who are prone to be harsher and more abusive toward their child, used more CP, were more neglectful, engaged in more verbal abuse, and maintained negative attitudes toward their child. Similarly, Dufour and her collaborators (2011) found that parents who reported physically assaulting their child endorsed higher levels of psychological aggression and CP. They also identified a group of harsh, yet not abusive, parents who reported using psychological aggression and CP, but on a less frequent basis.

Gershoff's process-context model (2002a, b) proposed that, among distal factors, characteristics of the family can

have an impact on parent–child interactions in any given moment by influencing the state of the parent and that of the child. Domestic violence or intimate partner violence, even though not explicitly identified in Gershoff's model as a predictor of child physical abuse, could foster violent interactions within the family and, as such, have been associated in the literature with child violence. Research has suggested that the amount of violence directed toward a child is associated with the level of intimate partner violence that exists between the caretakers (Button 2008; Slep and O'Leary 2005; Wolfe 1985). For example, in a representative sample of 453 U.S. families, approximately one fourth (24 %) of adult participants reported severe intimate partner aggression (e.g., choking) and 5 % of families were characterized by the co-occurrence of severe partner and child-directed aggression (Slep and O'Leary 2005). Similarly, Zolotor and colleagues (2007) found that over half (55 %) of U.S. families who reported a history of intimate partner violence also reported some form of current child maltreatment, including child physical abuse. Such findings demonstrating a link between intimate partner violence and child physical abuse have been replicated in a number of other studies (e.g., Button 2008; Shlonsky and Friend 2007; Wolfe 1985).

Objectives

Past research has tended to focus on characteristics of the child (e.g., age, sex, behavioral functioning) and parent (e.g., age, sex, level of functioning) to differentiate between CP and physical abuse, but results have been inconclusive. Moreover, past research has examined the influence of parenting (e.g., impulsivity, parenting style) and family (e.g., violence in the home) variables on the use of CP and/or on the risk of child physical abuse. However, these variables have not frequently been examined within a conceptual framework and with regard to their potential role in understanding the link between child CP and physical abuse.

As such, the current study relied on Gershoff's (2002a, b) process-context model to examine the potential influence of parenting and family variables in differentiating individuals who reported childhood experiences of CP and physical abuse from individuals who only reported experiences of CP. In particular, we examined CP frequency, co-occurring disciplinary strategies (i.e., psychological aggression, positive discipline), level of parental impulsiveness and anger in discipline, parenting style (i.e., consistency, warmth/support), and exposure to intimate partner violence. Furthermore, we addressed one of the limitations of past research cited by proponents of conditional CP, namely that research tends to lump together various types of CP behavior (i.e., severe and non-severe types) and so it is difficult to draw definitive conclusions about its effects (i.e., negative effects being associated to severe rather than to non-severe types of CP). Specifically,

the current study focused exclusively on spanking, which is the most frequently-used and most widely-accepted form of CP.

Based on existing findings, we hypothesized that the use of spanking would be associated with an increased likelihood of child physical abuse (Gonzalez et al. 2008; Zolotor et al. 2008). We also expected higher frequency of spanking, higher frequency of ineffective disciplinary strategies (i.e., psychological aggression), higher parental impulsivity and anger, lower frequency of positive disciplinary strategy, lower parental consistency and warmth/support, and greater intimate partner violence to increase the likelihood of child physical abuse among individuals who experienced child CP. In line with Gershoff's (2002a, b) process-context model suggesting a moderating effect of the different parenting variables, we also tested interactions between the frequency of spanking and the other parenting variables included in our study (i.e., co-occurring disciplinary strategies and parenting style, parental impulsiveness and anger).

Method

Participants and Procedure

The sample consisted of 370 university students enrolled in a first year undergraduate psychology course at a Canadian University. Participants were recruited through a university web-based system, which gives students the opportunity to participate in psychological research in partial fulfillment of course requirements. Interested individuals were directed to the on-line questionnaire, which was available in either English or French and which took approximately 60 min to complete. Prior to beginning the study, individuals provided consent by indicating that they understood and accepted the terms of a consent form, which was also presented on-line. Data were collected during Fall 2011 and Winter 2012. Ethical approval was received from the Research Ethics Board of the University prior to the start of the study.

The majority of participants (75.6 %) were female and answered the questionnaire in English (80.3 %). The vast majority of participants (92.4 %) were aged 18–24 years, followed by 30–39 years (4.1 %), 25–29 years (1.9 %), and ≥40 years (1.6 %). Most participants were single (59.2 %) and nearly all had no children (94.0 %). In terms of ethnicity, the majority of participants were European/North-American (59.8 %), followed by African Canadian/Black (12.1 %), Asian/Pacific Islander (10.7 %), Middle Eastern (7.2 %), Other (4.7 %), Hispanic/Latino (3.3 %), and Native Aboriginal (2.2 %). Various levels of current household income were equally represented in the sample. Specifically, 11.5 % of the participants reported an income of \$0–\$29 999,

23.5 % reported an income of \$30 000–\$59 999, 28.9 % reported an income of \$60 000–\$99 999, and 36.1 % reported an income of \$100,000 and over. Finally, more than half of participants (65.7 %) reported being from an intact family whereas 17.6 % reported that their parents had separated before they were aged 10 years, 2.0 % when they were aged 10, and 14.7 % when they were older than 10 years.

Measures

Data were collected using a questionnaire package previously developed for the International Parenting Study (IPS), which involves a research consortium of approximately 20 nations together representing all of the major world regions (<http://pubpages.unh.edu/~mas2/IPS.htm>). In the current study, we included data from three questionnaires of the IPS package, namely the Dimensions of Discipline Inventory (DDI; Straus and Fauchier 2007), the Conflict Tactics Scale Parent–child Version (CTSPC; Straus et al. 1998), and the Revised Conflict Tactics Scale–Short Form (CTS2-Short Form; Straus and Douglas 2004). These questionnaires asked participants about disciplinary experiences that occurred at around age 10. This age was selected because it represented a good inflection point between the earliest age of good perceived recall accuracy and sufficient frequency of disciplinary experiences (Fauchier 2007; Straus and Fauchier 2007). While child physical abuse often begins in early childhood and CP is more prevalent in the preschool years (Straus and Stewart 1999; Vittrup et al. 2006), this disciplinary strategy still remains common even in older children and adolescents. In fact, Canadian nationally representative data revealed that, in 2002–2003, about 25 % of parents reported using CP to correct their 8–11 year-old child's misbehavior (Fréchette and Romano 2013). Similarly, statistics from U.S. surveys conducted in 1995 and 2006 found that 1 in 4 parents reported hitting their 14–16 year-olds (Straus 2010). As well, in regards to retrospective recall, most participants do not believe that they could accurately report about the preschool age period, so retrospective recall about an earlier age-period could increase the risk of inaccuracy and missing data (Fauchier 2007).

Participants answered each questionnaire separately for their mother and father. If participants were not raised by their biological parents or if they were raised in a single-parent family, they were asked to identify a mother-figure and a father-figure who had the biggest role in raising them at around age 10 and to answer the questions with regard to those individuals. The vast majority of participants (92.7 %) answered the questions for both of their biological parents, whereas other participants identified the following parent-figures: biological mother and step-father (3.2 %); step-mother and biological father (0.5 %); biological mother and mother's partner (0.5 %); adoptive mother and adoptive father

(1.1 %); biological mother and other female relative (0.3 %); biological mother and male relative (0.8 %); female relative and male relative (0.5 %); biological mother and no father-figure specified (0.3 %). Finally, in order to increase statistical power and because a moderate to strong agreement was found between experiences with mother and father (Intraclass Correlation Coefficient ≥ 0.60), items answered for both parents were collapsed together to create family variables.

Outcome

Physical Abuse Participants responded to the five following CTSPC questions on their childhood experiences of physical abuse: *How often did your mother (father) do each of the following to you when you were about 10 years old?* (1) *Hit you with a fist or kicked you hard*, (2) *Grabbed you around the neck and choked you*, (3) *Beat you up, that is, hit you over and over as hard as they could*, (4) *Hit you on some other part of the body besides the bottom with something like a belt, hairbrush, a stick or some other hard object*, and (5) *Threw or knocked you down*. Responses were on a 7-point scale from 0 to 6 (e.g., 0 = *Never*; 6 = *More than 20 times in that year*). Scores for the five questions, answered for mothers and fathers, were summed and could range from 0 to 60, with higher scores indicating greater frequency of physically abusive incidents. For our sample, Cronbach $\alpha=0.89$.

Predictors

Spanking Participants' spanking experiences were assessed with the following question from the DDI: *When you misbehaved at around age 10, how often did your parents spank, smack, or swat you?* Responses were on a 10-point scale from 0 to 9 (e.g., 0 = *Never*; 9 = *Two or more times a day*). Scores on the question answered for mothers and fathers were summed and could range from 0 to 18, with higher scores indicating greater spanking frequency. For our sample, Cronbach $\alpha=0.66$.

Psychological Aggression Participants responded to four questions from the DDI to examine the frequency of psychological aggression experienced at around age 10 (e.g., *How often your parents shout or yell at you? How often did your parents try to make you feel ashamed or guilty?*). Responses were on a 10-point scale from 0 to 9 (e.g., 0 = *Never*; 9 = *Two or more times a day*). Scores for the four questions, answered for mothers and fathers, were summed and could range from 0 to 72, with higher scores indicating higher frequency of psychological aggression. For our sample, Cronbach $\alpha=0.85$.

Positive Discipline Seven questions from the DDI were used to examine the frequency of positive discipline experiences at around age 10 (e.g., *How often did you parents explain the*

rules to you to try to prevent you from repeating misbehavior? How often did your parents praise you for finally stopping bad behavior or for behaving well?). Responses were on a 10-point scale from 0 to 9 (e.g., 0 = *Never*; 9 = *Two or more times a day*). Scores for the seven questions, answered for mothers and fathers, were summed and could range from 0 to 126, with higher scores indicating higher frequency of positive discipline. For our sample, Cronbach $\alpha=0.87$.

Consistency of Discipline Participants answered three questions from the DDI on the perceived consistency of their discipline during childhood (e.g., *Your parents followed through on what they said they would do; Your parents corrected you again if you repeated misbehavior*). Responses were on a 5-point scale from 0 (*Never*) to 4 (*Always or almost always*). Scores for the three questions, answered for mothers and fathers, were summed and could range from 0 to 24, with higher scores indicating more consistent discipline. For our sample, Cronbach $\alpha=0.78$.

Warmth and Support Three questions from the DDI were used to examine the perceived level of parental warmth and support received during childhood (e.g., *When your parents corrected misbehavior, you knew they still loved you; When your parents corrected misbehavior, you still felt encouraged and supported*). Responses were on a 5-point scale from 0 (*Never*) to 4 (*Always or almost always*). Scores for the three questions, answered for mothers and fathers, were summed and could range from 0 to 24, with higher scores indicating greater parental warmth and support. For our sample, Cronbach $\alpha=0.91$.

Impulsiveness Participants responded to two questions from the DDI to examine the perceived level of impulsiveness that characterized parental discipline (i.e., *When you misbehaved, your parents tended to act on the spur of the moment; Your parents seemed to “lose it” when you misbehaved*). Responses were on a 5-point scale from 0 (*Never*) to 4 (*Always or almost always*). Scores for the two questions, answered for mothers and fathers, were summed and could range from 0 to 16, with higher scores indicating a higher level of perceived impulsiveness. For our sample, Cronbach $\alpha=0.76$.

Parental Anger One question from the DDI was used to examine the perceived level of anger that characterized parental discipline, namely, *“Your parents got very angry when you misbehaved.”* Responses were on a 5-point scale from 0 (*Never*) to 4 (*Always or almost always*). Scores for the question answered for mothers and fathers were summed and could range from 0 to 8, with higher scores indicating higher level of perceived anger. For our sample, with Cronbach $\alpha=0.71$.

Intimate Partner Violence The level of intimate partner violence to which participants were exposed during childhood was assessed using the CTS2-Short Form. Participants answered four questions on mother-to-father aggression and four questions on father-to-mother aggression (e.g., *How often did your mother/father insult, swear, shout, or yell at the other parent?*). Responses were on a 7-point scale from 0 to 6 (e.g., 0 = *Never*; 6 = *More than 20 times in that year*). Scores from the items were summed to create a physical aggression score (6 items with a range from 0 to 36) and a verbal aggression score (2 items with a range from 0 to 12). For our sample, Cronbach $\alpha=0.89$ for physical aggression and 0.89 for verbal aggression.

Statistical Analysis

We relied on descriptive analyses to determine the frequency of spanking and physical abuse experiences that participants reported during childhood. To determine whether physical abuse reports differed according to reports of spanking experiences, a chi-square analysis was performed. Furthermore, to quantify the risk of experiencing physical abuse associated with spanking experiences, a logistic regression was conducted. Both variables were dichotomized for these analyses in order to meet study objectives. In addition, it was important to dichotomize the physical abuse variable because of its skewed distribution. In order to be conservative in our definition of physical abuse, any response equal to or above 1 S.D. ($SD=3.82$; $N=359$) of the mean ($M=1.46$; $N=359$) was coded as indicating the presence of physical abuse whereas any response lower than 1 S.D. above the mean was coded as indicating the absence of physical abuse. As for spanking, consistent with previous research in the literature (e.g., Vittrup et al. 2006; Wissow 2001), any response other than 0 (*Never*) was coded as indicating the presence of spanking.

To examine variables which might contribute to spanking being associated with the risk of physical abuse, a second logistic regression was conducted. The logistic regression helped identify the variables that differentiated individuals reporting experiences of spanking without physical abuse from those reporting both types of experiences. To do so, only those participants who indicated having been spanked (score of ≥ 1 on the scale) were included in this analysis. In addition, the physical abuse variable was kept dichotomous in order to create the two groups of participants. Based on Gershoff's (2002a, b) model and its layers of contextual factors, the following potential predictors of physical abuse experiences were entered in five blocks in the regression model: (1) spanking frequency; (2) psychological aggression frequency, and frequency of positive discipline; (3) perceived consistency, perceived parental warmth/support, perceived impulsiveness of discipline, and perceived parental anger; (4) level of intimate partner verbal violence, and level of intimate partner

physical violence; and (5) interaction terms of spanking with other parenting variables. As mentioned previously, these interaction terms were specifically tested in order to examine Gershoff's hypothesis that co-occurring discipline as well as the context in which CP is used (e.g., impulsive, warm) can moderate its effect. Socio-economic status was not considered in the analysis, as the demographic data collected focused on the present and not during childhood when the disciplinary experiences occurred. Nonetheless, since they were identified in the literature as influencing rates of CP (Gershoff 2002a), participant sex and race/ethnicity (i.e., European-Canadian vs. Other) were included in the logistic regression as control variables.

Missing data on the variables was low ($\leq 6\%$). Nevertheless, Markov Chain Monte Carlo (MCMC) was used to impute missing data. Participants with missing data on the outcome variable (3 %) were removed from the analyses. Assumptions for the logistic regressions (Tabachnick and Fidell 2007) were tested and met. Transformation of the predictor variables to ensure a normal distribution did not improve the statistical model and, therefore, they were kept untransformed for the analyses. Analyses were conducted using SPSS 19.0, and a probability level of 0.05 was used to establish statistical significance.

Results

Experiences of Spanking and Child Physical Abuse

Reported frequency of spanking and physical abuse experiences are presented in Table 1. About half of participants (45.4 %; $n=163$) indicated having been spanked at around the age of 10 by their parents, with 1 in 10 (10.9 %; $n=39$) indicated having experienced physically abusive behaviors from their parents at around the age of 10. Out of the participants who reported experiences of physical abuse in childhood, the vast majority (97.4 %; $n=38$) also reported experiences of spanking—only one participant reported no such experience.

Result from the chi-square analysis confirmed the presence of a relationship between experiences of having been spanked

Table 1 Frequency of spanking and physical abuse experiences

		Spanking	
		No	Yes
Physical abuse	No	195 (54.3 %)	125 (34.8 %)
	Yes	1 (0.3 %)	38 (10.6 %)

Eleven participants were removed from the analyses due to missing data on the physical abuse scale

and child physical abuse. In particular, participants who reported experiences of spanking had a higher than expected risk of also reporting physical abuse in childhood ($\chi^2(1, N=359)=47.79, p<0.001$). Logistic regression also confirmed this significant relationship ($\beta=4.082, p<0.001, OR=59.28$). Specifically, according to the odds ratio, participants who reported experiencing spanking at about age 10 were almost 60 times more likely to also report having experienced physical abuse by their parents at the same age.

Factors Explaining the Escalation Risk Between Spanking and Child Physical Abuse

Table 2 presents information on the study variables for those participants who reported having experienced childhood spanking ($n=163$). Descriptive data are presented separately for the subsample of individuals who reported experiences of spanking and physical abuse and for the subsample of individuals who only reported experiences of spanking. It should be noted that for physical abuse, spanking, psychological aggression, positive discipline, and intimate partner verbal and physical violence, the obtained mean scores appeared at the lower end of the possible range of scores.

The correlations between all predictor variables are presented in Table 3. Results revealed that the frequency of spanking experiences was positively associated with other disciplinary strategies (i.e., psychological aggression and positive discipline). In fact, the different disciplinary strategies appear all positively correlated, reflecting their co-occurrence

Table 2 Description of study variables for participants ($n=163$) who reported experiences of spanking

Variables	M			SD			Scale range
	Total	PA	No PA	Total	PA	No PA	
Physical abuse ^a	3.05	10.79	0.70	5.04	5.10	1.24	0–60
Spanking	4.15	6.29	3.50	2.99	3.01	2.68	0–18
Psychological aggression	19.99	26.58	17.98	12.62	12.73	11.94	0–72
Positive discipline	33.28	37.13	32.11	19.09	20.20	18.66	0–126
Consistency	16.71	15.76	16.99	4.08	4.63	3.87	0–24
Warmth & support	16.14	13.87	16.83	5.72	6.23	5.39	0–24
Impulsiveness	7.56	9.16	7.07	3.27	3.00	3.20	0–16
Anger	5.33	5.39	5.30	1.50	1.57	1.49	0–8
IPV verbal	3.51	4.79	3.12	3.72	3.99	3.56	0–12
IPV physical	1.87	6.05	0.60	4.20	6.05	2.26	0–36

Total subsample of participants who reported experiences of spanking, PA subsample of participants who reported experiences of spanking and physical abuse, No PA subsample of participants who reported experiences of spanking but no physical abuse, IPV Intimate partner violence

^aThe Physical abuse variable was dichotomized for the identification of the different subgroups and for the statistical analyses

Table 3 Pearson correlations among predictor variables for participants ($n=163$) who reported experiences of spanking

Variables	Frequency of spanking	Psychological aggression	Positive discipline	Consistency	Warmth/Support	Impulsiveness	Anger	IPV verbal	IPV physical
Frequency of spanking	1								
Psychological aggression	0.551***	1							
Positive discipline	0.260***	0.270***	1						
Consistency	0.040	-0.088	0.317***	1					
Warmth/Support	-0.168*	-0.483***	0.264***	0.520***	1				
Impulsiveness	0.237**	0.323***	-0.174*	-0.069	-0.437***	1			
Anger	0.103	0.221**	-0.198*	0.185*	-0.168*	0.480***	1		
IPV verbal	0.200*	0.393***	-0.035	-0.045	-0.249***	0.342***	0.153*	1	
IPV physical	0.338***	0.349***	0.038	-0.193*	-0.232**	0.251***	0.068	0.420***	1

IPV intimate partner violence

* $p<0.05$; ** $p<0.01$; *** $p<0.001$

as parental practices to control children's behaviors. Nevertheless, the highest correlation observed was between spanking frequency and psychological aggression, suggesting that negative forms of discipline tend to occur together. As for the other parenting variables, results revealed that the frequency of spanking was associated with more impulsive parental discipline and with less parental warmth/support. In fact, warm and supportive parenting appeared to be positively associated with consistency in discipline while negatively associated with impulsiveness and anger, two parental characteristics that seems to co-occur according to the correlation results. Finally, spanking frequency was associated with more intimate partner verbal and physical violence, two forms of family violence that also appear to co-occur based on our results.

Among participants who reported having experienced spanking at around the age of 10, results for variables that might distinguish the two subgroups of participants are presented in Table 4. Interaction terms of spanking with all other parenting variables were examined, but none were found to be statistically significant at the $\alpha=0.05$ level. Findings indicated that, after controlling for sex and ethnicity, the frequency of spanking reported by participants was a statistically significant predictor of reported experiences of physical abuse. The first regression model revealed that 24 % of the risk of experiencing physically abusive behaviors from a parent was explained by the frequency of spanking experiences. This relationship remained significant even when a number of additional parenting and family environment variables were included. Specifically, among participants who reported experiences of spanking at around age 10, the odds ratio obtained in the final regression model indicated that for every 1-point increase in spanking frequency, the risk of experiencing physical abuse increased by 23 %. In addition, results indicated that perceived parental impulsiveness in discipline and

physical violence between parents were significant predictors of childhood physical abuse among participants who reported childhood experiences of spanking. Specifically, according to odds ratios, for every 1-point increase in the parental impulsiveness scale, there was a 29 % increased risk of experiencing childhood physical abuse. Similarly, for every 1-point increase in the intimate partner physical violence scale, the risk of experiencing childhood physical abuse increased by 32 %. Taken together, the frequency of spanking experiences, parental impulsiveness, and intimate partner physical violence explained 50 % of the risk of participants also reporting experiences of abuse in childhood.

Discussion

CP is a controversial form of discipline that continues to be used by many parents even though it has been found to be associated with negative developmental outcomes, including an increased risk of childhood physical abuse (Durrant et al. 2009; Gonzalez et al. 2008; Straus and Stewart 1999; Zolotor et al. 2008). As such, one of the goals of the present study was to better understand the risk of physical abuse associated with experiences of childhood spanking, especially since physical abuse has been identified as a developmental risk factor. As hypothesized, findings indicated that individuals who reported experiences of spanking in childhood were almost 60 times more likely than those without spanking experiences to also report having experienced physically abusive behaviors as children. These findings, consistent with past results (Durrant et al. 2009; Gonzalez et al. 2008; Straus and Stewart 1999; Zolotor et al. 2008), call into question the conditional CP view, which states that milder forms of CP (such as spanking) may be beneficial rather than detrimental

Table 4 Predictors of childhood physical abuse among participants ($n=163$) who experienced childhood spanking

	Model 1		Model 2		Model 3		Model 4	
	OR	95 % CI	OR	95 % CI	OR	95 % CI	OR	95 % CI
Spanking frequency	1.33***	1.17–1.52	1.28**	1.10–1.49	1.25**	1.06–1.49	1.23*	1.02–1.49
Psychological aggression			1.02	0.98–1.06	1.00	0.95–1.05	0.99	0.93–1.05
Positive discipline			1.00	0.98–1.02	1.02	0.99–1.05	1.02	0.99–1.05
Consistency					0.96	0.83–1.11	1.04	0.88–1.23
Warmth & support					0.96	0.85–1.08	0.94	0.82–1.07
Impulsiveness					1.32*	1.09–1.59	1.29*	1.04–1.59
Anger					0.79	0.55–1.13	0.78	0.53–1.16
IPV verbal							0.96	0.82–1.12
IPV physical							1.32***	1.14–1.51
R^2	0.24		0.24		0.35		0.50	

OR odd ratio, CI confidence interval, IPV intimate partner violence, R^2 Nagelkerke R Square

Controlled for sex and ethnicity (i.e., European-Canadian vs. Other)

* $p<0.05$; ** $p<0.01$; *** $p<0.001$

for the child (Larzelere 2000). Furthermore, because of the associated risk of child physical abuse, our findings reinforce efforts to advocate against the use of any form of CP in order to promote children's healthy development and to protect their rights to integrity and dignity.

Our study's second goal was to understand variables contributing to the risk of child physical abuse among individuals who reported experiences of spanking in childhood. We chose our parenting and family environment variables in accordance with Gershoff's (2002a, b) process-context model. Findings provided partial support for our hypotheses. Specifically, risk of childhood physical abuse was predicted by increasing spanking frequency, increasing perceptions of parental impulsiveness during disciplinary moments, and increasing reports of physical violence between parents.

The observed association between spanking frequency and risk of childhood physical abuse is consistent with Gershoff's (2002a, b) process-context model, which suggested that the greater the frequency (and severity) of CP, the greater the likelihood that parents will use punishment which approaches definitions of child physical abuse. These findings are also consistent with the continuum of violence position, according to which physical punishment and physical abuse are quantitatively different, and vary only in terms of severity or frequency (Gonzalez et al. 2008). It is interesting to note that this relationship was significant even though the frequency of spanking was quite low among our participants. This is important because it suggests that self-report of spanking experiences, even when its frequency is relatively low, still increases the odds of experiencing physical abuse. Once again, this finding contradicts the conditional CP view, according to which occasional, mild spanking does not pose a significant risk to children (Larzelere and Kuhn 2005).

In line with our expectations and Gershoff's (2002b) process-context model, the risk of child physical abuse was predicted by an increase in perceived parental disciplinary impulsiveness. Specifically, individuals who experienced spanking and who perceived their parent as impulsive in discipline (i.e., reacting without control and/or planning) were at greater risk of experiencing childhood physical abuse. Vasta (1982) suggested that when parents are emotionally aroused, they may react impulsively to both external (e.g., child misbehavior) and internal (e.g., anger) stimulation. With regard to anger, it may lead to a failure to monitor, adjust, and/or control reactions in the disciplinary moment (Russa and Rodriguez 2010). In our analyses, perceived parental anger in discipline did not, as expected, appear as a significant predictor of physical abuse. However, its correlation with parental impulsiveness was positive and significant so it may be that the shared variance between constructs contributed to the lack of statistical significance for our variable of anger. Nevertheless, it seems important for future studies to investigate the potential mediating effect of parental anger in the relationship between parental disciplinary impulsiveness and childhood physical abuse.

Finally, in line with our hypotheses, the risk of child physical abuse among participants who reported spanking experiences was predicted by increasing physical violence between parents. This finding is consistent with research suggesting that the level of violence toward a child is linked with the amount of violence present within the intimate partner relationship (Button 2008; Slep and O'Leary 2005). It may be that physical abuse is fostered by an overall physically hostile family environment. Furthermore, we may hypothesize that verbal intimate partner violence did not emerge as significant because of the physical nature of both spanking

and the outcome variable (i.e., physical abuse). In particular, verbal violence between parents may contribute more specifically to an increased risk of child psychological aggression or verbal abuse rather than physical abuse. The contribution of verbal IPV (as defined by frequent belittling between partners) in predicting child psychological abuse, but not in predicting child physical abuse, was demonstrated in a study of 1232 American families (Zolotor et al. 2007).

The fact that the other variables (i.e., positive discipline, psychological aggression, parental consistency, parental warmth/support) were not significant predictors of child physical abuse might suggest that co-occurring disciplinary strategies and parenting style do not influence or counteract the abuse risk associated with spanking. Studies have suggested that parents who use CP differ according to their other parenting practices (e.g., Wissow 2001). In fact, Gershoff's (2002a) process-context model proposed that co-occurring disciplinary strategies could act as moderators of CP's developmental outcomes. This possible moderating effect was, however, never tested in the literature regarding the link between CP and physical abuse. Results from the present study therefore contribute to the literature by demonstrating that, among individuals who experienced spanking, differences in parenting style and strategies do not influence the abuse risk, nor do they moderate the impact of spanking frequency (interaction effect not significant). Spanking by itself, and especially when it is used more frequently, in an impulsive manner, and within a context of a more physically violent family, increases the risk of abuse. Nevertheless, it should be noted that the association between CP and psychological aggression was the highest observed among the predictor variables. It is possible that the shared variance between the two constructs prevented psychological aggression from appearing as a significant predictor of physical abuse risk among individuals who experienced childhood spanking. However, this correlation is consistent with previous research from population-based studies suggesting that intra-familial forms of violence (i.e., CP, psychological aggression, physical IPV, physical abuse) tend to occur together (Clément et al. 2013; Dufour et al. 2011; Thompson et al. 1999; Trocmé et al. 2010).

Limitations

It is important to note various limitations in the study's methodology. First, the cross-sectional and retrospective nature of the study prevents causal or temporal associations between the variables. Indeed, results from this study confirm that spanking and child physical abuse tend to occur together. However, the conclusion that spanking leads to later physical abuse cannot be made. As mentioned previously, results reflect a continuum of violence between spanking and physical abuse, but future studies should favor prospective and longitudinal designs in order to better establish temporality between the

two variables as well as to better control for other explanatory variables. In fact, Gershoff's process-context model (2002a, b) proposes a series of variables, from the interactional context (e.g., characteristics of child's misbehavior), the stable individual and relational context (e.g., age, family structure), and the social-cultural context (e.g., stress, social support, socioeconomic status), that can moderate the association between CP and its outcomes. However, many of these variables could not be accounted for in the present study due to the limits of our collected data. In addition, prospective and longitudinal studies collecting information from different raters (e.g., parent and child) could prevent problems associated with shared variance due to the reliance on a unique source of information (Baumrind et al. 2002).

Even though retrospective data are often used in developmental and family research due to the cost of longitudinal studies, the reliability and validity of such data can be of concern (Fauchier 2007). Indeed, participants that had abusive experiences in childhood might be more inclined to recall greater and harsher discipline. On the other hand, the frequency of disciplinary experiences could also be underreported due to this limitation and, since we do not have a measure of what actually occurred at the referent age-period, the objective accuracy and validity of the data cannot be known. Even though retrospective recall could introduce biased results and problems of accuracy, it should be noted that the prevalence of CP revealed in the current study (i.e., 45 %) was nonetheless in line with prevalence rates observed in previous Canadian national surveys, which ranged between 30 and 50 % (Canadian Press and Leger Marketing 2002; Fréchette and Romano 2013; Oldershaw 2002).

The operationalization of physical abuse in our study could be another limitation in that we relied on participant reports rather than substantiated child welfare records. Nevertheless, items used in this study were behaviorally driven (i.e., items asked about specific behaviors such as having been hit with a fist or kicked hard, having been grabbed around the neck, etc.) rather than asking participants to self-label their experiences as physically abusive or not. This study also focused on participant experiences with spanking and physical abuse at around the age of 10 and it used a convenience sample (i.e., undergraduate psychology students). As such, the generalizability of our findings is sample limited. Future studies may attempt to characterize the link between CP and physical abuse at an earlier age and with a sample more diversified in terms of its demographic characteristics. Finally, post-hoc power analyses revealed low statistical power. Therefore, non-significant results appear more difficult to interpret; they may reflect a true absence of an effect or a Type II error. In order to increase our confidence in the non-significant effects (such as the absence of factors counteracting the effect of spanking on physical abuse), future studies should try to replicate results from the present study with a larger sample.

Implications

Our results suggest that spanking is associated with an increased risk of physical abuse. Furthermore, as spanking frequency increases, so does the risk that children may experience physical abuse. Nevertheless, it is essential to note that results from our study suggest that any amount of spanking carries a risk, as the frequency of spanking experiences was quite low in our sample. Finally, it appears that parental impulsiveness during disciplinary moments (as perceived by children) and the presence of family violence (i.e., physical IPV) place children with spanking experiences at an even greater risk of also experiencing physical abuse. These findings add to the growing body of evidence attesting to the numerous and varied negative effects of child CP, even reportedly mild and common forms such as spanking.

These findings appear particularly important given the detrimental impact of physical abuse on child development (Kaplan et al. 1999; Manly et al. 1994; Petrenko et al. 2012). As such, given the link between spanking and physical abuse, we should gain a better understanding of the potential impact of spanking and the factors contributing to its use. This link further leads us to question CP and the fact that the use of reasonable force remains legally sanctioned by Canadian and U.S. laws. Results from this study contribute to our understanding of the concept of “risk,” central to decision-making in child protection (Gonzalez et al. 2008). Finally, results from the current study should inform clinicians (e.g., pediatricians, health care providers, psychologists) to whom parents turn for parenting advice. The results can lend further support to public education efforts aimed at dissuading parents from the use of any form of child physical punishment and at increasing their use of positive, alternative strategies.

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