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Physical Punishment/ Maltreatment During Childhood and Adjustment in Young Adulthood

Running Head: Physical Abuse

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ABSTRACT

OBJECTIVE: To study the relationships between retrospective reports of physical punishment/maltreatment and rates of adjustment difficulties at age 18 in a birth cohort of New Zealand subjects.

METHOD: Data were gathered over the course of an 18 year longitudinal study of a birth cohort of 1265 New Zealand born children. At age 18 retrospective reports of exposure to physical punishment/maltreatment were obtained. At this time the cohort was also assessed on measures of psychosocial adjustment including juvenile offending, substance abuse behaviours and psychiatric disorder.

RESULTS: Young people reporting exposure to harsh or abusive treatment during childhood had elevated rates of juvenile offending, substance abuse and mental health problems. However, subsequent analysis using logistic regression methods showed that much of the elevated risk shown by this group was explained by social and contextual factors that were associated with patterns of childhood punishment/maltreatment. Nonetheless, even after control for confounding factors those reporting harsh or abusive childhood experiences were at increased risks of violent offending, suicide attempts, being a victim of violence and alcohol abuse.

CONCLUSION: This study leads to three major conclusions: i) Those exposed to harsh or abusive treatment during childhood are an at risk population for juvenile offending, substance abuse and mental health problems. ii) Much of this elevated risk arises from the social context within which harsh or abusive treatment occurs. iii) Nonetheless, exposure to abuse appears to increase risks of involvement in violent behavior and alcohol abuse.

KEYWORDS: Physical punishment/maltreatment; psychiatric illness; substance abuse/dependence; criminal offending; longitudinal study

In recent years there have been increasing concerns expressed about the physical maltreatment of children and the long term consequences of such maltreatment for individual adjustment (Kempe, Silverman, Steele, Droegemueller & Silver, 1962; Malinosky-Rummell & Hansen, 1993; Wissow, 1995). In general, prevalence studies have suggested that while maltreatment leading to serious physical injury or death is uncommon (Kotch, Chalmers, Fanslow, Marshall & Langley, 1993; McClain, Sacks, Froehlke & Ewigman, 1993), a substantial number of children are exposed to parental maltreatment and discipline practices that are sufficient to lead to physical injury (Mullen, Martin, Anderson, Romans & Herbison, 1996; Wolfner & Gelles, 1993). Research in this area has suggested that children exposed to physical abuse during childhood are at increased risks of a wide range of later outcomes (for an overview of this literature see Malinosky-Rummell & Hansen, 1993). These include increased risks of later violent behaviours and offending (Briere & Runtz, 1990; Cavaiola & Schiff, 1988; Lewis, Shanok, Pincus & Glaser, 1979; Pollock et al, 1990), increased risks of psychiatric disorder (Briere & Runtz, 1988; Bryer, Nelson, Miller & Krol, 1987; Chu & Dill, 1990), increased risks of substance use behaviours (Brown & Anderson, 1991; Cavioli & Schiff, 1988; Schaefer, Sobieraj & Hollyfield, 1988) and increased risks of suicidal behaviours (Briere & Runtz, 1988; Cavioli & Schiff, 1988; Deykin, Alpert & McNamara, 1985). There are, however, a number of difficulties in interpreting the available literature.

Many studies of the consequences of exposure to physical abuse have been based on samples of individuals who have already been identified as having some form of psychosocial problem (Brown & Anderson, 1991; Bryer et al, 1987; Cavaiola & Schiff, 1988; Chu & Dill, 1990; Deykin et al, 1985; Lewis et al, 1979; Pollock et al, 1990; Schaefer et al, 1988). There are two ways in which such studies are limited. First, analysis of those exposed to severe childhood physical abuse may not reflect the spectrum of abusive behaviours to which children are exposed and may examine the outcomes of only those exposed to extremes of

violent behaviours. Second, clinical and agency samples may suffer from sample selection biases in which the processes by which subjects come to attention may lead to artifactual relationships between exposure to child abuse and outcome risks (Bertolli, Morgernstern & Sorenson, 1995; Ellenberg, 1994).

Secondly, a majority of studies have failed to consider the extent to which apparent associations between exposure to child abuse and later outcomes may have arisen from social and contextual factors that were related to both risks of exposure to child abuse and outcome risks. In particular, the evidence on risk factors associated with physical abuse suggests that those exposed to abuse tend to come disproportionately from family and social environments characterised by multiple disadvantageous features including: poverty, limited parental education, generally impaired parenting skills, stress and a variety of similar factors (Bousha & Twentyman, 1984; Connelly & Straus, 1992; Dubowitz, Hampton, Bithoney & Newberger, 1987; Martin & Walters, 1982; Trickett & Susman, 1986; Whipple & Webster-Stratton, 1991). It may be argued that many of the apparent associations between childhood physical abuse and later adjustment reflect the social and family context within which abuse occurs rather than the direct traumatic effects of abuse on individual adjustment (Mullen et al, 1996).

In addition to these problems of sampling and confounding, research in this area has been subject to threats to validity from a series of measurement issues centring around the accuracy and validity of measures of abuse (Carlin et al, 1994; Plunket & Oates, 1990).

The best way of addressing many of these issues would be through a longitudinal study in which childhood abuse experiences were assessed throughout childhood concurrently with measures of social and contextual factors with exposure to child abuse being related to measures of adjustment in later life (Bertolli et al, 1995). This design, however, faces some insurmountable practical difficulties centring around the adequate assessment of physical

abuse during childhood. Since physical child abuse is generally intra-familial, there are clear difficulties in assessing abuse on the basis of reports of family members or children.

Furthermore, even if such reports could be collected in a valid way, disclosure of physical abuse during childhood would pose severe ethical problems since investigators would be obliged to report or intervene to reduce physical abuse.

A weaker but more practical design would be to follow a birth cohort of children to the point of young adulthood measuring relevant social, family and related circumstances throughout this period. At the point of young adulthood cohort members could be questioned about their exposure to physical child abuse in a way that would avoid many of the problems associated with the prospective assessment of child abuse. In this paper we report on a study of exposure to physical abuse during childhood and its consequences that is based on this design. Specifically, the study involved a birth cohort of children who have been studied to the age of 18 with regular assessments of family, social and related circumstances being made at annual intervals throughout childhood. At the age of 18 cohort members were then asked to provide retrospective accounts of childhood exposure to physical maltreatment and, concurrently with this, a series of measures of personal adjustment were obtained. This design makes it possible to examine the relationships between retrospectively reported physical abuse and adjustment at the age of 18 taking into account prospectively measured childhood, family and related circumstances. The specific aims of the present analysis were:

- i) To examine the relationships between reports of physical ill treatment and abuse during childhood and measures of adjustment at age 18 including psychiatric disorders, suicidal ideation, substance abuse/dependence, juvenile offending and being a victim of violent crime.

ii) To examine the extent to which exposure to child abuse was associated with other adverse family factors including economic factors, social background, parenting behaviours, parental characteristics and exposure to childhood sexual abuse.

iii) To estimate the associations between reports of physical abuse during childhood and outcomes at age 18 taking into account social, familial and contextual factors that were associated with reports of physical abuse during childhood.

METHOD

The data reported here were collected during the course of the Christchurch Health and Development Study. The Christchurch Health and Development Study is a longitudinal study of a birth cohort of 1265 children born in the Christchurch (New Zealand) urban region during mid 1977. These children have been studied at birth, four months, and at annual intervals to the age of 16 years and again at age 18 years. An overview of the study design has been given previously (Fergusson, Horwood, Shannon & Lawton, 1989). The data analysed in this report were measured in the following ways.

The Assessment of Exposure to Physical Punishment/ Maltreatment

At the age of 18 sample members were asked to report the extent to which their parent figures used physical methods of punishment. Reports were made on a five point scale ranging from “parent never used physical punishment” to “parent treated me in a harsh and abusive way”. Separate ratings were obtained for the child’s mother figure and father figure (if available). The ratings for both parents were combined into a single rating by classifying the young person’s reported exposure to physical child abuse into a composite four point based on the greatest exposure to physical punishment reported by the respondent. This classification revealed that: 10.8% of the sample reported that both parents never used physical punishment;

77.7% of respondents reported that both parents seldom used physical punishment; 7.6% of respondents reported that at least one parent used physical punishment methods regularly; 2.0% of respondents reported that at least one parent used physical punishment methods too often and too severely and 1.9% of respondents described at least one parent as treating them in a harsh and abusive way. Due to the small numbers in the last two categories these were combined in the analysis into a single category representing those sample members who reported either overly frequent and severe physical punishment or harsh and abusive treatment.

To provide cross-validation of the overall classification the rate at which subjects reported specific abusive experiences in childhood was related to the overall classification. Reports of specific abusive experiences spanned a range of measures describing physical punishment and maltreatment during childhood. These measures were based on the self-report measures of punitive experiences described by Berger, Knutson, Mehm & Perkins (1988) augmented by a number of other measures. Table 1 shows the associations between the global rating physical punishment/maltreatment described above and specific reports of abusive experiences in childhood. For each of the four groups to be analysed the Table shows: a) the frequency with which each item was reported; b) the association between the specific measure and the overall classification based on the phi coefficient and; c) the statistical significance of the association based on the Mantel-Haenszel test of linearity.

The Table shows clear gradients in the extent to which reports of abusive experiences were made. The trends in this Table can be seen from the mean number of punishment or abusive experiences reported for each group: while those reporting that their parents seldom used punishment only reported a mean of .24 punishment or abuse experiences, those reporting frequent/severe punishment or being treated in a harsh or abusive way reported a mean of

4.56 such experiences. These results support the view that the overall rating of exposure to abuse during childhood was generally consistent with the individual reports of specific punishment and abuse experiences in childhood.

INSERT TABLE 1. HERE

Mental Health, Substance Use and Criminal Offending at Age 18 Years

Psychiatric Disorder and Attempted Suicide. Concurrently with the assessment of physical abuse, subjects were questioned about their psychiatric symptoms over the period from 16-18 years using a questionnaire based on the Composite International Diagnostic Interview (CIDI; World Health Organization, 1993) supplemented by an instrument based on the Self-Report Delinquency Inventory (SRDI; Elliot & Huizinga, 1989). The CIDI items were used to assess mood disorders, anxiety disorders and substance use disorders in the sample while the SRDI was used to assess conduct disorder.

Using this information DSM-IV criteria (American Psychiatric Association, 1994) were used to construct a series of diagnoses of psychiatric disorder for each subject over the period from 16 to 18 years. These diagnoses included the following: i) Conduct disorder; ii) Major depression and; iii) Anxiety disorders. An account of the assessment of these disorders has been provided previously (Fergusson, Horwood & Lynskey, In press).

Additionally, subjects were questioned about suicidal behaviors during the period from age 16 to age 18 years. On the basis of this information a measure was constructed reflecting whether the subject had ever made a suicide attempt during this period. These estimates were combined with reports of suicide attempts prior to age 16 (Fergusson & Lynskey, 1995) to produce an estimate of suicide attempts made prior to age 18.

Substance Use. At age 18 years the subjects were questioned about their substance use behaviors and psychiatric symptoms over the period from 16-18 years using a number of questionnaires including the alcohol use questionnaires developed by Casswell, Stewart, Connolly & Silva (1991) and the Composite Diagnostic Interview Schedule (CIDI; World Health Organisation, 1993) supplemented by custom written items to assess the extent of use of nicotine, cannabis and other illicit drugs. Using this information DSM-IV criteria (American Psychiatric Association, 1994) were used to construct a series of diagnoses of substance abuse/ dependence over the period from 16 to 18 years. These diagnoses included: i) Nicotine dependence; ii) Alcohol abuse/dependence; and iii) Cannabis abuse/dependence. An account of the assessment of these disorders has been provided previously (Fergusson et al, in press).

Offending (17-18 Years). Concurrently with the assessment of physical abuse, subjects were questioned about their offending behaviours and contact with the criminal justice system using a variety of instruments including the Self Report delinquency Inventory developed by Elliot and Huizinga (1989) and survey items concerning any police contact and the consequences of these contacts. Using these items the following measures of the young person's offending behaviours over the period from 17 to 18 years were constructed:

a) Recurrent property offending (17-18 years). The extent of property offending was measured by the sum of self-reported property offences including damaging property, breaking into a house, stealing a car, shoplifting or other theft. The resulting measure had a highly skewed distribution with offence reports ranging from zero to over 500. To address the distributional problems associated with the offence count measure a dichotomous measure which classified subjects as committing recurrent property offences if they reported committing three or more property offences in the preceding year.

b) Recurrent violent offending (17-18 years). Measures of violent offending were based on the sum of reported violent offence including assault, fighting, cruelty to animals, and using physical coercion. To address the distributional problems associated with this measure a dichotomous measure which classified subjects as committing recurrent violent offences in the previous year if they reported committing three or more violent offences in the preceding year was constructed.

c) Victim of violence (16-18 years). At age 18 years the young people were asked a series of questions concerning life events during the preceding two years. This questioning included an item relating to exposure to physical assault during the interval from 16-18 years.

Confounding Factors

To assess the extent to which the associations between exposure to physical abuse during childhood and outcomes in young adulthood could be explained by the effects of confounding factors the following measures were chosen from the data base of the study for inclusion in the analysis. These measures were selected on the following basis: a) A review of the literature identified factors which have been previously found to be associated with increased risks of physical abuse during childhood (Bousha & Twentyman, 1984; Connelly & Straus, 1992; Dubowitz et al, 1987; Martin & Walters, 1982; Trickett & Susman, 1986; Whipple & Webster-Stratton, 1991); b) Previous analyses based on the Christchurch Health and Development Study cohort which have identified factors associated with the mental health, substance use and criminal offending outcomes studied in this report (Fergusson et al, in press). However, the covariate factors chosen for inclusion in these analyses excluded any factors which may have been influenced by exposure to physical abuse. The following factors were chosen for inclusion in the analysis:

Social and Demographic Background. A series of demographic measures was assessed at the initial (birth interview). These included: i) Family type (one parent/two parent family); ii) Maternal age; iii) Maternal education and; iv) Socio-economic status based on the Elley and Irving (1976) scale of socio-economic status for New Zealand.

Family Functioning.

a) Changes of parents. As part of the study comprehensive data on changes of parents were collected at annual intervals (Fergusson, Horwood & Lynskey, 1992). This data was used to construct a measure of whether or not the child had experienced a change of parent figure during the interval from birth to the age of 15 years. A change of parent was counted if a parent left the family as a result of family breakdown or death or entered the family as a result of remarriage or reconciliation.

b) Parental conflict. Parents were questioned annually on three items which described the quality of marital relationships. These items were: a) whether the parents had engaged in prolonged arguments during the last 12 months; b) whether the child's mother reported being assaulted by her spouse in the last 12 months and; c) whether the child's mother had reported experiencing sexual difficulties in the last 12 months. These items were combined to produce a scale measure of the extent to which the child was exposed to parental conflict (Fergusson et al, 1992).

c) Family history of offending. When sample members were aged 15 years, their parents were questioned about criminal offending by themselves and the child's siblings. A young person was classified as having a family history of offending if one of his/her parents or a sibling was reported to have a history of criminal offending.

d) Parental illicit drug use. When sample members were aged 11 years, their parents were questioned on the extent to which they had used cannabis or other illicit drugs.

e) Family history of alcohol or drug abuse. When sample members were aged 15 years their parents were questioned about problems of alcohol/substance use in themselves and the child's siblings. A young person was classified as having a family history of alcohol/drug problems if either one of his/her parents or a sibling were reported as having a history of alcohol/drug problems.

f) Average family income (0-10 years). Each year families were asked to provide estimates gross family income. These estimates were transformed to real income levels using 1987 income as a base and the resulting estimates were summed and divided by ten to obtain an estimate of typical family income levels throughout the ten year period.

g) Family living standards (0-10 years). At each year the living standards of the family were rated by survey interviewers on a five point scale ranging from "very poor" to "very good". These ratings were summed over the ten year period and divided by ten to give a measure of typical family living standards during this period.

h) Childhood disadvantage (3 years). The construction of this index has been described previously (Fergusson, Horwood & Shannon, 1981) and is based on a weighted sum of preventive health care, risks of morbidity, levels of childhood experience and exposure to preschool education, mother-child interaction patterns, living standards and family stability, as assessed up to the age of three years.

i) Family life events (11-14 years). Each year from ages 11 to 14 years mothers were questioned about the events occurring in the previous year using a 49 item life event

inventory based on the inventory developed by Henderson, Byrne & Duncan-Jones (1981). To measure the extent of the child's exposure to family life events during the period from 11 to 14 years the number of life events reported over the four year period was computed and the resulting sum divided by four to obtain an estimate of the per annum rate of life event exposure.

j) Childhood sexual abuse. At age 18 years sample members were questioned about their experience of childhood sexual abuse (CSA) prior to age 16 years. Respondents who reported CSA were asked a further series of questions relating to the extent and nature of the abuse experience (Fergusson et al, in press). On the basis of this questioning sample members were classified into four groups reflecting the extent of their experience of CSA: a) subject reporting no CSA (89.8% of the sample); b) subjects reporting episodes of non-contact CSA (2.4% of the sample); c) subjects reporting episodes of contact CSA not involving intercourse or attempted intercourse (4.4% of the sample); d) subjects experiencing CSA involving completed or attempted oral, anal or vaginal intercourse (3.4% of the sample).

Sample Size

The analyses reported in this paper were based on a sample of 1025 respondents for whom complete data on childhood physical abuse and the outcomes studied at age 18 were available. This sample represented 81.0% of the initial cohort of 1265 children and 92.8% of all cohort members still alive and resident in New Zealand at the age of 18 years. Losses to follow up arose from outmigration from New Zealand (56%), refusal to participate in the research (36%) and mortality (8%).

RESULTS

The Associations Between Exposure to Physical Abuse During Childhood and Outcomes at age 18.

Table 2 shows the sample divided into four groups on the basis of reports made at age 18 of exposure to physical punishment/ill treatment during childhood. These groups are: a) those young people who reported that their parents never used physical punishment (10.8%); b) those young people who reported that their parents used physical punishment only infrequently (77.7%); c) those young people who reported that their parents regularly used physical punishment (7.6%); d) those young people who reported that their parents used physical punishment too often or too severely or treated them in a harsh or abusive way (3.9%). For each group the Table shows rates of psychiatric disorder, substance abuse/dependence, juvenile offending and reports of being a victim of assault. The strength of the association between exposure to physical punishment during childhood and each of these outcomes is assessed using the phi coefficient and the significance of this association is tested using the Mantel-Haenszel chi-squared test of linearity.

The results in Table 2 show that increasing exposure to physical punishment during childhood was associated with significant ($p < .05$) increases in rates of psychiatric disorder, suicide attempt, substance abuse/dependence, criminal offending and rates of victimization: young people who reported that they had been exposed to frequent, severe punishment or harsh and abusive treatment during their childhood had rates of these outcomes that were 1.5 to 3.9 times higher than those rates for young people who reported that their parents had never used physical punishment.

INSERT TABLE 2. HERE

Family, Social and Related Factors Associated with Exposure to Physical Abuse During Childhood.

Table 3 examines the extent to which physical abuse during childhood was related to prospectively measured social, family and related factors. These factors included measures of family social background, parental characteristics and exposure to childhood sexual abuse. For ease of display all measures have been expressed in dichotomous form and the associations between the extent of exposure to physical abuse during childhood and the dichotomously scored risk factors have been tested for significance using the Mantel-Haenszel chi-squared test of linear association. The results in Table 3 lead to the following conclusions.

i) The Table shows the presence of pervasive relationships between the extent of reported physical abuse and a series of social and demographic factors. Those reporting harsh/severe treatment during childhood were more likely to come from single parent families ($p < .05$), to have young mothers ($p < .001$), mothers lacking formal educational qualifications ($p < .10$) and to come from families of unskilled or semi-skilled socio-economic status ($p < .001$). However, there was no clear or significant association between reports of physical abuse and gender ($p > .40$).

ii) The Table shows the presence of pervasive relationships between the extent of reported physical abuse and a range of family factors. Those reporting harsh or severe punishment during childhood were more likely to experience family change ($p < .001$), have parents prone to criminal offending ($p < .005$) or substance use problems ($p < .001$); more often came from economically disadvantaged families ($p < .001$) and experienced greater childhood or family adversity ($p < .001$). In addition, those reporting harsh or severe treatment during childhood more often reported being exposed to childhood sexual abuse ($p < .001$).

INSERT TABLE 3 HERE

Adjustment for Childhood and Family Factors

The results in Table 3 suggest that some component of the associations between exposure to physical abuse during childhood and the outcomes shown in Table 2 may have been spurious and arisen from the effects of social, family and related factors which were associated with increased risks of exposure to physical abuse and which, independently of this association, may have acted to increase risks of adverse outcomes in young adulthood. To examine the extent to which associations between reported physical abuse and the outcomes shown in Table 2 could be explained by the childhood and related factors shown in Table 3, multiple logistic regression models were fitted to the data. In these models the log odds of each outcome were regressed on the measure of physical abuse together with the potentially confounding social, family and related factors described in Table 3. In fitting all models the covariate factors were not treated in the dichotomous form shown in Table 3 but were scored as described in the Method section. Model fitting was conducted using both forward and backward methods of variable inclusion to identify the best fitting and most parsimonious models.

The results of this analysis are given in Table 4 which shows: i) The adjusted rate of each outcome when the effects of the covariate factors were taken into account. The adjusted rates may be interpreted as the rate of the outcome for each group that would have been observed if all groups were identical in their levels of exposure to the factors described in Table 3; ii) the significance of the adjusted relationship based on the ratio of the logistic regression coefficient to its standard error and; iii) the covariate factors that were statistically significant ($p < .05$) in each equation. The results in this Table lead to the following conclusions:

a) The effects of adjusting the associations between exposure to physical abuse and risks of outcomes at age 18 for the social, family and related factors described in Table 3 were to reduce these associations substantially. Before adjustment for confounders young people who reported being exposed to harsh or abusive treatment were 1.5 to 3.9 times more likely to experience the outcomes shown in Table 4 than young people who reported that their parents had never used physical punishment. After adjustment for confounding covariates young people who had been exposed to harsh or abusive treatment had rates of these outcomes that were 1.1 to 3.3 times those of young people whose parents had not used physical punishment.

b) Nonetheless, even after adjustment for potentially confounding covariates, there was evidence of significant ($p < .05$) associations between reports of physical abuse and later outcomes. Specifically:

i) While physical abuse was unrelated to rates of conduct disorder and major depression ($p > .10$), there was a marginally significant tendency ($p < .10$) for rates of anxiety disorder to increase with increasing reports of physical abuse. In addition, increasing reports of physical abuse were associated with increased risks of attempted suicide ($p < .05$).

ii) Physical abuse was not significantly ($p > .40$) related to rates of nicotine dependence or cannabis abuse/dependence. However, there was a clear and significant association between the extent of reported physical abuse and rates of alcohol abuse/dependence ($p < .05$).

iii) Physical abuse was unrelated to rates of recurrent property offending ($p > .80$). However, there were clear and significant associations between reports of physical abuse and risks of violent offending ($p < .01$).

iv) In addition, those reporting exposure to physical abuse during childhood were at increased risks of being the victim of violent assault during adolescence ($p < .05$).

INSERT TABLE 4 HERE

DISCUSSION

This study has examined the relationships between retrospective reports of physical punishment/maltreatment during childhood and adjustment at age 18 using data gathered over the course of a longitudinal study. The major findings and implications of these analyses are reviewed below.

The results of this study suggest the presence of a continuum of exposure to physical abuse/maltreatment that ranges from no exposure to physical punishment to severe, harsh and abusive treatment. The results of this study showed that the majority of children reported that their parents never or seldom used physical punishment. Nonetheless, in the region of 4% of the sample reported overly frequent, harsh or abusive treatment with these young people recounting experiences of the heavy use of physical punishment, being severely beaten or injured as a result of parental punishment methods.

There were consistent dose/response relationships between the extent of reported physical punishment/maltreatment during childhood and a wide range of outcomes including mental health status at age 18, substance abuse and dependence, juvenile offending and being a victim of violence. In general, those reporting overly frequent punishment, harsh or abusive treatment had substantially higher rates of psychiatric disorder, suicide attempts, juvenile offending and victimization than those who reported that their parents never or seldom used physical punishment.

However, examination of the family backgrounds of those reporting different exposures to physical punishment/maltreatment showed clear differences in childhood environments. In general, those reporting overly frequent punishment, harsh or abusive treatment more frequently came from demographically disadvantaged homes, experienced a higher rate of other childhood and family adversities and were more often exposed to childhood sexual abuse. These results clearly suggested that the elevated rates of adjustment problems in this group may have been largely or wholly due to the social environment and context in which physical punishment/maltreatment occurred rather than to the traumatic effects of such treatment on longer term adjustment. Subsequent analysis supported this conclusion to the extent that adjustment for prospectively measured childhood, family and social circumstances substantially reduced the associations between reported physical punishment/maltreatment and adjustment at age 18. Nonetheless, even after such adjustment, those reporting overly frequent, harsh or abusive treatment during childhood were at increased risks involvement in self inflicted or interpersonal violence (suicide attempt, violent crime, victim of assault) and were more prone to alcohol abuse/dependence. Additionally, there was a marginally significant tendency for these young people to more often experience anxiety disorders.

In general, these findings suggest that linkages between exposure to physical punishment/maltreatment and later adjustment may arise by two routes. Firstly, those exposed to harsh or abusive treatment tend to come disproportionately from socially disadvantaged, dysfunctional or compromised childhood environments which are associated with increased risks of later adjustment difficulties. However, physical abuse may have specific effects on personal adjustment leading to an increased vulnerability to being involved in violent behaviours including suicide attempts, violent crime and being a victim of violence. Additionally, those exposed to abuse in childhood appear to be more prone to alcohol abuse/dependence and show greater tendencies to anxiety disorders.

The findings of this study reinforce concerns about the longer term impact of exposure to physical maltreatment in childhood. In general, those exposed to such maltreatment appear to show greater vulnerability to certain types of adjustment problems. At the same time, the findings suggest that much of the elevated risk seen amongst those exposed to maltreatment may be more due to the family and social context within which abuse occurs rather than to the traumatic effects of abuse. These findings suggest the need for child abuse prevention policies and interventions to avoid a narrow focus on physical abuse and to take into account the family, social and contextual factors that are frequently associated with abuse.

In addition, it has been our experience for the research on physical child abuse to be over generalised in public debates to imply that any physical punishment of children is child abuse that may lead to harmful psychological consequences. The present study does not suggest this interpretation. As can be seen clearly from Table 2, those reporting that their parents never used physical punishment were not at any lesser (or greater) risks of adjustment problems as 18 year olds. These results suggest that it is unlikely that the occasional or mild use of physical punishment has either beneficial or detrimental effects on longer term adjustment. Clearly, since the evidence suggests that most physical child abuse arises from excessive punishment rather than deliberate maltreatment (EPOCH, 1992; Ritchie & Ritchie, 1993), it is prudent to advocate that parents avoid these methods because of the risks they entail (Ritchie & Ritchie). It is, however, misleading to imply that occasional or mild physical punishment has longer term adverse consequences.

Finally, there are a number of important caveats that should be noted. First, the present analysis has been based on retrospective evaluations of parental punishment practices. While these evaluations were generally internally consistent with reported childhood experiences, it is likely that the measure of physical punishment/maltreatment may be subject to errors of

measurement that may arise from either over-reporting or under-reporting. It is not possible to ascertain the extent of such errors using the present design. However, it seems likely that errors of reporting are likely to have led to the under-reporting of physical maltreatment in childhood and the effect of this may have been to lead to an underestimation of the relationships between exposure to maltreatment in childhood and later adjustment.

Secondly, very few young people in this cohort reported extremes of physical ill treatment during childhood. Because severe physical child abuse was uncommon in this cohort, the present study can provide little guidance about the extent to which extreme maltreatment and brutality in childhood may lead to adjustment difficulties. Nonetheless, the general dose/response relationships that exist between the extent of punishment/maltreatment clearly suggest that effects of extreme abusive conditions on adjustment may be far larger than those evident in this study.

Finally, while we have controlled associations between physical abuse and later adjustment for a wide range of prospectively measured confounding factors, the possibility remains that the apparent associations between exposure to physical maltreatment during childhood and later adjustment may be due to the effects of uncontrolled confounding factors. One set of factors that clearly requires examination is the role of genetic factors in these associations since it could be argued that both exposure to physical maltreatment and later violent behaviours may be symptomatic of family environments in which members show generalised tendencies to violence.

Notwithstanding the above caveats, the findings of this study are generally consistent with three major conclusions about the linkages between physical maltreatment during childhood and later adjustment. First, those exposed to maltreatment are an at risk population for a wide range of adjustment problems in later life. Second, much of the elevated risk of this group

appears to reflect the social and family context within which physical maltreatment occurs rather than the traumatic effects of abuse. Finally, there is evidence to suggest that exposure to physical maltreatment in childhood may make relatively small but statistically detectable contributions to risks of violent behaviours, suicide attempts, alcohol abuse/dependence and anxiety disorders.

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Table 1: Associations between evaluation of the extent of physical punishment and reports of various forms of physical punishment and injury during childhood (0-16 years).

	Extent of Physical Punishment				ϕ	p
	1 None	2 Seldom	3 Regular	4 Severe/ Harsh		
% Reporting frequent smacking	0.0	3.8	56.4	60.0	.59	<.001
% Reporting being hit around head or body with fists	0.0	5.5	30.8	65.0	.46	<.001
% Reporting being frequently hit on the bottom with a cane, strap or similar object	0.0	0.6	12.8	47.5	.53	<.001
% Reporting being hit around head or body with a cane, strap or similar object	0.0	4.2	29.5	57.5	.46	<.001
% Reporting receiving a severe beating	0.0	1.4	23.1	65.0	.59	<.001
% Reporting being kicked	0.0	2.8	16.7	52.5	.45	<.001
% Reporting being choked or throttled	0.0	0.8	7.7	15.0	.25	<.001
% Reporting being locked in a cupboard or shed	0.0	0.8	3.9	5.0	.11	<.005
% Reporting being burnt	0.0	0.4	0.0	7.5	.18	<.001
% Reporting being injured as a result of physical punishment	0.0	3.5	35.9	80.0	.60	<.001
Mean Number of Acts	0.00	0.24	2.17	4.55		
N	111	796	78	40		

Table 2: Rates (%) of psychiatric disorder, substance abuse/dependence, criminal offending and victimisation (16-18 years) by extent of exposure to physical punishment during childhood (0-16 years).

	Extent of Physical Punishment				ϕ	p
	1 None	2 Seldom	3 Regular	4 Severe/ Harsh		
Mental Health						
Conduct Disorder	5.4	3.5	14.1	10.0	.14	<.01
Anxiety Disorders	11.7	16.0	24.4	40.0	.14	<.001
Major Depression	26.1	19.1	32.1	50.0	.17	<.005
Suicide Attempt	4.5	4.2	12.8	17.5	.15	<.001
Substance Abuse/Dependence						
Nicotine Dependence	17.1	11.8	23.1	27.5	.12	<.05
Alcohol Abuse/ Dependence	14.4	17.7	37.2	32.5	.15	<.001
Cannabis Abuse/ Dependence	9.9	10.6	21.8	22.5	.12	<.005
Criminal Offending						
Recurrent (3+) Property Offending	11.7	9.3	21.8	17.5	.12	<.05
Recurrent (3+) Violent Offending	7.2	7.7	28.2	15.0	.19	<.001
Victim of Violence	16.2	15.5	32.1	37.5	.16	<.001

Table 3: Associations between exposure to physical punishment and rates (%) of social, family, parental and related characteristics

	Extent of Physical Punishment				p
	1 None	2 Seldom	3 Regular	4 Severe/ Harsh	
Social and Dmeographic Background					
% Entering single parent families at birth	10.8	8.4	12.8	22.5	<.05
% Mother aged <25 years at birth of child	32.4	37.6	47.4	72.5	<.001
% Mother has no formal educational qualifications	50.5	47.2	55.1	67.5	<.10
% Family of semi-skilled/ unskilled socioeconomic status	24.3	22.9	34.6	50.0	<.001
% Male	43.2	49.5	61.5	37.5	>.40
Family Factors					
% >2 Changes of parents (0-15 Years)	21.6	23.0	44.9	52.5	<.001
% In upper quintile of parental conflict score (0-10 years)	19.8	18.3	37.2	57.5	<.001
% Family history of offending	12.8	7.6	18.7	29.0	<.005
% Parental illicit drug use	27.2	23.2	32.0	25.0	>.60
% Family history of alcohol/ drug problems	19.6	15.1	33.3	39.5	<.001
% In lowest quartile of average family income (0-10 years)	22.5	21.0	44.2	46.2	<.001
% In lowest quartile of average family living standards (0-10 years)	26.1	19.5	40.3	46.2	<.001
% In highest quartile of childhood disadvantage score (0-3 years)	19.1	15.1	31.0	51.4	<.001
% In highest quartile of family life events measure (11-14 years)	20.0	24.1	40.5	47.2	<.001
% Exposed to Childhood Sexual Abuse	9.9	8.8	14.1	37.5	<.001

Table 4: Rates (%) of psychiatric disorder, substance abuse/dependence, criminal offending and victimisation (16-18 years) by extent of exposure to physical punishment during childhood after adjustment for covariates

	Extent of Physical Punishment				p	Significant Covariates
	1 None	2 Seldom	3 Regular	4 Severe/ Harsh		
Mental Health						
Conduct Disorder	3.3	4.5	6.1	8.2	>.10	1-3
Anxiety Disorders	13.5	16.4	19.9	23.8	<.10	1-3,5,6
Major Depression	18.1	20.7	23.6	26.8	>.10	1,2,4,5
Suicide Attempt	3.3	5.0	7.4	10.7	<.05	2,7,10
Substance Abuse/ Dependence						
Nicotine Dependence	12.3	13.6	15.1	16.7	>.40	2,4,7
Alcohol Abuse/ Dependence	15.2	19.3	24.2	29.7	<.05	1,2,5,8
Cannabis Abuse/ Dependence	10.1	11.3	12.6	14.0	>.40	1-4,6
Criminal Offending						
Recurrent (3+) Property Offending	9.9	10.3	10.6	10.9	>.80	1,2,9
Recurrent (3+) Violent Offending	5.8	8.9	13.3	19.3	<.01	1-3,10
Victim of Violence	12.9	17.3	22.6	29.0	<.05	1-3,5,11

Covariates: 1 = Gender; 2 = Exposure to childhood sexual abuse; 3 = Family history of offending; 4 = Changes of parents (by 15 years); 5 = Exposure to family life events (11-14 Years); 6 = Maternal age; 7 = Parental illicit drug use; 8 = Average family Income (0-10 Years); 9 = Childhood disadvantage (3 years); 10 = Socio-economic status; 11 = Birth placement (one parent/ two parent family).