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The effects of child sexual abuse in later family life; mental health, parenting and adjustment of offspring

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Abstract

Objective: To investigate links between child sexual abuse (occurring before 13 years), later mental health, family organization, parenting behaviors, and adjustment in offspring.
Method: The present study investigates a subsample of the Avon Longitudinal Study of Parents and Children an ongoing study of women and their families in the area of Avon, England. A sample of 8292 families met inclusion criteria for identifiable family type and completed self-report data on prior sexual assault. Further data were collected on life course variables, socioeconomic variables, psychological well-being, relationship quality, parent-child relationship quality, and children's adjustment.
Results: After adjustment for other childhood adversity, prior child sexual abuse was associated with a range of outcomes in adulthood, including current membership of a nontraditional family type (single mother and stepfather) poorer psychological well-being, teenage pregnancy, parenting behaviors, and adjustment problems in the victim's later offspring. The relationship of child sexual abuse with aspects of the parent-child relationship in later life and with the offspring's adjustment difficulties were mediated in part by mother's mental health—chiefly anxiety.
Conclusion: Findings indicate that child sexual abuse has long-term repercussions for adult mental health, parenting relationships, and child adjustment in the succeeding generation.

Keywords: Child sexual abuse; Parenting; Offspring; Adjustment

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Introduction

Correlates of child sexual abuse

Recent years have witnessed increasing understanding of the sequelae of childhood sexual abuse (CSA). Much of the research has been confined to the western industrialized world, though work in developing and non-western countries suggests similar levels of problems. A review by Finkelhor (1994) suggested prevalence rates for serious sexual abuse in childhood of between 7 and 36% for females. Work conducted since has yielded broadly similar estimates both in western (Creamer, Burgess, & MacFarlane, 2001; Hill et al., 2000; Molnar, Berkman, & Buka, 2001) and non-western countries (Haj-Yahia & Tamish, 2001; Olsson et al., 2000; Tang, 2002). Across different studies variations in rates are partly linked to the methodology employed—the definitions of sexual abuse (broader definitions yield higher prevalence estimates), data collection methods (e.g., interview vs. survey), sampling techniques (random samples, convenience samples, clinic populations) as well as cultural factors inhibiting or promoting the reporting of sexual abuse in different populations (Glasser, Campbell, Glasser, Leitch, & Farrelly, 2001).

Work has largely focused on the individual psychopathology associated with CSA, where it has been found that CSA carries an elevated risk for most disorders (the list includes PTSD, suicide, depression, anxiety, low self-esteem, summarization, dissociation, obsessive compulsive disorders, phobias, paranoid ideation, substance abuse, eating disorders, and personality disorder (Browne & Finkelhor, 1986; Deblinger, McLeer, Atkins, Ralphe, & Foa, 1989; Hill et al., 2000; Jasinski, Williams, & Siegel, 2000; Kendler et al., 2000; McClelland, Mynors-Wallis, Fahy, & Treasure, 1991; Mollon, 1996; Mulder, Beautrais, Joyce, & Fergusson, 1999; Nelson et al., 2002; Rhodes, Ebert, & Meyers 1993; Santa Mina & Gallop, 1998; Silverman, Reinherz, & Giaconia, 1996; Simpson & Miller, 2002; Wilsnack, Vogeltanz, Klassen, & Harris, 1997). Due to the wide range of problems it has been argued that there is no specific CSA syndrome (Bulik, Prescott, & Kendler, 2001). In addition CSA exhibits a dose response relationship with severity of abuse linked to severity of disorder satisfying a key epidemiological criterion for establishing cause and effect (Hill, 1965). Less attention has been devoted to relationship difficulties, impaired social functioning, and intergenerational effects thought to stem from CSA (though see Pears & Capaldi 2000). Available evidence points to increased hostility and aggression in adolescent and adult relationships of CSA survivors (Kendall-Tackett, Williams, & Finkelhor, 1993; Wekerle et al., 2001) as well as poor quality, instability, and difficulties in intimate relationships (Briere & Runtz, 1988; Hill et al., 2001). CSA has also been associated with an earlier sexual debut (Fergusson, Horwood, & Lynskey, 1997; Roosa, Tein, Reinholz, & Angelini, 1997; Stock, Bell, Boyer, & Connell, 1997), a greater number of later sexual partners (Olsson et al., 2000), increased sexual problems, and a propensity to perceive partners as uncaring and over controlling (Mullen, Martin, Anderson, Romans, & Herbison, 1994). While this literature has addressed the dynamics of the relationship between CSA survivors and their subsequent partners a notable omission is consideration of the structure of family ties and whether CSA survivors are more likely when adults to find themselves in particular types of family organization.

Interest in the intergenerational transmission of abuse—has been concerned with transmission of abuse from one generation to the next, though as Zuravin and Fontanella (1999) note, few studies have examined parenting attitudes and behavior of adult women who are survivors of CSA. This is surprising given the common assumption that internal working models of parenting are influenced by childhood experiences and are played out in interactions with one's own children. Several studies point to impaired parenting skills in those who were sexually abused as children. Goodwin, McCarthy, and DiVasto (1981) and

Zuravin and DiBlasio (1992) found mothers who were sexually abused as children were more likely to neglect their own children. Reduced confidence in parenting, more negative views of oneself as a parent, greater use of physical punishment strategies, and less emotional control in parenting situations have also been found among CSA survivors (Banyard, 1997; Cole, Woolger, Power, & Smith, 1992) and it has been reported that survivors of CSA may express a desire to avoid motherhood because of their own adverse experiences (Herman, 1981). These results carry a strong implication that the effects on parenting could lead to adjustment problems in the offspring of CSA survivors. However, this has yet to receive serious study and forms the principal focus of the current investigation.

Causal effects of child sexual abuse

A major problem for researchers in the area of CSA is untangling the networks of causes and effects (Hill et al., 2000; Merril, Thomsen, Sinclair, Gold, & Milner, 2001). Why do some survivors of CSA fail to develop the adverse effects which have been noted? Answers have been sought in terms of the characteristics of the abuse experience and the context during and following the abuse. Damage appears to be more severe where the abuse continued for longer periods, where penetration was involved, and where the perpetrator was a father or father figure within the family (Trickett, Noll, Reiffman, & Putnam, 2001; Trickett, Reiffman, Horowitz, & Putnam, 1997). The child's age, the coping strategies used by victims and support given by parents and peers are also important, although the typical patterns regarding abuse characteristics and context have not been found in all studies (Tremblay, Hérbert, & Piché, 1999).

Such work has furthered understanding of the determinants of adjustment following abuse but knowledge of the mechanisms by which specific outcomes are engendered remains poor. The relationship of CSA to later parenting and mental health are areas where specific causal pathways have been proposed. For example, a number of pathways are possible to link CSA with later poor parenting and depression. These associations could theoretically have arisen as a consequence of the poor quality of earlier parental care with which CSA is often associated. The association between CSA and subsequent poor parenting could be a result of an internalized model of poor parenting (common to victims of CSA) being enacted in adult years, and an association between CSA and depression could arise because of the association between poor early care and later depression. An association between CSA and depression in the absence of information on other aspects of childhood adversity cannot be considered convincing evidence of there being a true association. It could also be hypothesized that the impact of CSA on the later mental well-being of the mother is indirectly responsible for subsequent poor parenting.

Few researchers have directly tested such models. Banyard (1997) sought to disentangle the effects of neglect, physical abuse, and a negative parent-offspring relationship in the family of origin as well as current depression from the relationship of CSA to parenting. Using hierarchical regression, an independent contribution of CSA to violence in the parent-child relationship, and to satisfaction in the parental role was found. Hill et al. (2000) using similar methodology found that the quality of current adult relationships altered the risk for depression given poor parental care—but not the risk for depression given CSA, thus also arguing for distinct pathways linking CSA and poor previous parental care to current functioning—in this case depression. Similarly, Molnar et al. (2001) found that after controlling for childhood adversities and adult psychopathology there remained a significant relationship between CSA and suicidal behavior.

While these studies strongly suggest a direct link between CSA and later outcomes, some have failed to support the risk arising from CSA after controlling for other childhood adversity. The most well-known of

these (Rind, Tromovitch, & Bauserman, 1998) has been subject to extensive criticism (see Spiegel, 2001a, 2001b). The Rind et al. (1998) study, however, is not alone—Zuravin and Fontanella (1999), for example, found the effect of CSA upon parenting competence and violence toward children could be explained on the basis of adverse early experiences other than CSA—neglect, verbal and physical abuse, and emotional support. Hill et al. (2000) suggested variations in risk across samples with different characteristics may be one reason for these discrepancies in addition to variations in the adult outcomes which are assessed. To these may be added limited statistical power in studies involving just a few hundred parents.

The current study uniquely offers the opportunity to simultaneously investigate the relationship between CSA and current mental health, the parent-child relationship, and behavioral outcomes in the mother's children, in a large community sample, while controlling for childhood adversities. We will also examine current family type (single mother, stepfamilies, and families with both biological parents) both as a possible outcome of CSA and as a possible moderator of other effects arising from CSA. No literature to date has examined these possible relationships with family type.

We advance several specific hypotheses. Given the association of CSA with later relationship difficulties and instability, we first of all posit that CSA is associated with current membership of a nontraditional family type (single mother or stepfamilies). Family type as such is also likely to index a range of differing socioeconomic circumstances as well as possible differences in family process which may arise from the personal histories of the partners in the parental relationship. Second, as there is evidence that children's levels of adjustment may vary with family type (Dunn, Deater-Deckard, Pickering, & O'Connor, 1998), it is possible that factors intrinsic to, or associated with family type act to multiply or mitigate the harmful effects of CSA. We will therefore investigate whether family type interacts with a prior history of CSA to produce differential outcomes. Third, we hypothesize that children of mothers who report CSA show poorer adjustment. The fourth hypothesis is that psychological well-being in mothers reporting CSA is poorer, and fifth, that parent-child relationships between these mothers and their children is poorer. It is additionally proposed that these relationships exist independent of prior adverse childhood circumstances (defined here as reported physical and emotional cruelty). In investigating these hypotheses we wish to determine the extent to which current adult mental health and parenting behaviors mediate any relationships between the early sexual abuse of the mother and subsequent behavioral adjustment in her children. Explicit causal hypotheses will be examined via multivariate analyses including structural equation modeling.

Method

Sample

The present study investigates a subsample of the Avon Longitudinal Study of Parents and Children (ALSPAC) (Golding, 1996), an ongoing study of women and their families in the area of Avon, England. Ethical approval for the study was granted by three Medical Ethics' committees in the Avon study area in addition to an Ethics and Law subcommittee set up within the study itself.

Enrollment occurred primarily through midwives, together with local publicity, and direct contact of nonenrolled mothers. Confidentiality was stressed to mothers at enrollment as was the voluntary nature of the study. Agreement to participation was taken to signify consent.

The ALSPAC design included all women in the Avon Health District who gave birth between April 1st 1991 and December 31st 1992. An estimated 85–90% of the eligible population participated. Families in

the study resemble those in the UK as a whole, though ethnic minority representation at 3%, though similar to the 4% rate for the geographical area from which the sample is drawn, is lower than the 7.6% rate for the UK as a whole (Baker, Morris, & Taylor, 1997). Two inclusion criteria were used to form the subsample for the current investigation. The first comprised respondents who on the basis of the questionnaire data obtained 33 months postpartum, could be placed into one of four identifiable family types. These were classified as single mother, biological, stepmother/complex stepfamily and stepfather. Single mother families are those in which the family is headed by a nonmarried, noncohabiting woman. Biological families are those in which all children in the household are the biological children of both parents and there are no children visiting the household from either of the couple's previous relationships. Stepfather families are those in which there is at least one child (whether living in the household or visiting regularly) who is the biological child of the mother but unrelated biologically to the father and stepmother/complex stepfamilies include stepmother families in which at least one child (whether living in the household or visiting regularly) is the biological child of the father but unrelated biologically to the mother, as well as those in which both partners have brought children from previous relationships. This resulted in a sample size of 9138. The breakdown by family type was as follows; Single mother families comprised 9.0% of the sample ($n = 822$), Biological families 79.5% ($n = 7262$), Stepmother/complex stepfamilies 4.6% ($n = 421$), and Stepfather families 6.9% ($n = 633$). The second criterion related to the reporting of early sexual assault. Self-report data on prior sexual assault were provided by 92.8% of the above sample ($n = 8480$), of whom 3.7% ($n = 315$) indicated a prior assault. Of these 241 (76.5%) provided information about their age when the assault occurred. Over half ($n = 127$, 52.7%) indicated the assault occurred prior to their teenage years. This forms the operational definition of CSA used in this study. Those respondents who reported sexual assault later than this and those who reported a sexual assault but did not give their age when it occurred were excluded, giving a final overall sample size of 8292.

Measures

Life course variables

As part of a detailed medical history, a self-report measure of whether the respondent had ever been sexually assaulted and if so the age when this occurred was obtained at the time of enrolment. This question comprised part of a battery of items enquiring into childhood events, injuries, and accidents. Mother's age at first pregnancy was collected during pregnancy. Teenage pregnancy as a nominal variable was derived from this. When the target child was 21 months old, respondents were asked to report whether their parents had been emotionally or physically cruel during the respondent's childhood, defined as being up to 17 years of age. These were initially coded using 5 categories: 1 = yes, big effect; 2 = yes, moderate effect; 3 = yes, mild effect; 4 = yes, but no effect; and 5 = no. To provide a measure uncontaminated by subject's perception of the severity of effects stemming from these, they were subsequently recoded as indicator variables to denote that cruelty either had (yes = 1) or had not occurred (no = 0).

Socioeconomic variables

Level of educational attainment (data gathered at 21 months postnatal) was measured on a 5-point scale, ranging from 1 point for qualifications at CSE (Certificate of Secondary Education) level, 2 points for those at GCSE (General Certificate of Secondary Education)/O (Ordinary) level, 3 points for A (Advanced)

level or equivalent, 4 points for a first degree, and 5 for postgraduate qualifications. Household income (at 33 months postnatal) was classified into 5 bands: 1 = less than £100/week; 2 = £100–£199/week; 3 = £200–£299; 4 = £300–£399/week; and 5 = £400 or more/week. An index of crowding was used, computed as the mean number of persons per room in the house (including kitchen and dining room). This was grouped into four bands: less than .5, between .5 and .74, between .75 and 1, greater than 1.

Psychological well-being

Several measures of psychological well-being were utilized (collected at 33 months postnatal). Depression was measured using the Edinburgh Post-Natal Depression Scale (Cox, Holden, & Sagovsky, 1987). Although the scale was developed for use with women who had just given birth, none of the items is specific to the postnatal experience. Anxiety was measured using the 8-item anxiety subscale of the Crown-Crisp Experiential Index (Crown & Crisp, 1979) and Self Esteem using the 11-item Backman Self Esteem Scale (Medora, Goldstein, & von der Hellen, 1993). All had high internal consistency ($\alpha_{\text{depression}} = .86$, $\alpha_{\text{anxiety}} = .86$, $\alpha_{\text{self-esteem}} = .91$).

Relationship nature and quality

Couples currently living in a biological or stepfamily who had also indicated they were either never married, widowed, divorced, or separated were classed as cohabiting. The quality of the parents' relationship was measured using scales developed by Stanley (personal communication) for the Western Australia Pregnancy home visiting program. These include a 7-item scale measuring relationship satisfaction ($\alpha = .83$), a 7-item scale assessing quality of communication ($\alpha = .84$), and a 12-item scale measuring relationship warmth ($\alpha = .94$). Length of time in the current relationship was also recorded. All information was collected at 33 months postnatal. Missing values were substituted based on overall mean scores.

Parent-child relationship

Mothers were asked to indicate how eight statements concerning parent-child relationships applied to their relationship with the study child, with the same statements applied to the partner's relationship with the child. From these a positivity and a negativity scale were derived on a priori conceptual grounds (Dunn et al., 1998; Dunn, Deater-Deckard, & Pickering, 1999). Internal consistency for the negativity scale was .62 for mothers and .66 for partners. For the mother's positivity, α was .60 and for the partner's .61. A series of 11 questions comprising Parker's (1988) measure of maternal bonding asked about the mother's enjoyment of ($\alpha = .76$) and confidence in ($\alpha = .59$) her relationship with her child. Information was collected 33 months postnatal.

Child adjustment

The strengths and difficulties questionnaire (SDQ; Goodman, 1997), a 25-item screening questionnaire comprising 5 scales of 5 items each; conduct problems, emotional symptoms, hyperactivity, peer problems, and prosocial behavior was used to assess adjustment of the mother's child at 47 months. A total difficulties score is composed from the first 4 of these scales. Internal consistency is high ($\alpha = .80$; Dunn et al., 1998).

Analyses

All analyses were conducted using SAS (6.12) unless otherwise stated. Initial analyses assessed the relationship between CSA and a range of outcomes, unadjusted for early adversity. Where appropriate standardized effect sizes (β values) which describe the strength of any significant relationships (range 0 to 1) will be given. These permit the direct comparison of the magnitude of effect across different outcomes. Larger samples enable the detection of smaller effects at statistically significant levels.

1. Frequency of CSA in different family types was examined. Likelihood ratio chi-square tests compared differences in proportions for each family type compared to biological families.
2. The relationship between CSA and the following variables were examined: teenage pregnancy, level of mother's education, and weekly household income. The significance of the relationships with CSA will be assessed using Wald chi-square tests. With dichotomous outcome variables, the relative increase in risk for a particular outcome for victims of CSA relative to others will be expressed by odds ratios.
3. The relationships between CSA and a number of indicators pertaining to the mother will also be examined: psychological well-being (depression, anxiety, self-esteem), relationship history, quality of relationship with partner, quality of parent-child relationship, and psychosocial adjustment of the target child.

Multivariate analysis

4. Relationships between CSA and the above outcomes will be adjusted for reported physical and emotional abuse in childhood. Further regressions will explore whether the relationship of CSA with child outcome and with measures of the parent-child relationship are mediated by psychological well-being. This is described in detail later.
5. Analyses will examine whether the effects of CSA on the mother's psychological well-being, quality of the parent-child relationship, and the child's adjustment vary with family type. Main effects are included in the models with family type and CSA entered as class variables.
6. The use of structural equation models (SEM) in the social sciences represents a development from path analysis. It comprises testing a hypothesized set of ordered linear causal relationships among a set of variables against possible alternative model specifications. Such models possess descriptive value in summarizing the relationships found between key variables and in addition permit the exploration of particular causal pathways proposed on the basis of prior theory. In the present study structural equation models will be constructed to assess the independent contribution of CSA to problems in the parent-child relationship and child adjustment. Prior to constructing these models the effects of childhood emotional and physical cruelty will be partialled out from all variables.

The assumption of multivariate normality (MVN) among the model variables will be tested in EQS 5.7b (Bentler, 1998) using a normalized estimate of Mardia's coefficient (Tabachnick & Fidell, 1996). If MNV is established, models will be analyzed by maximum likelihood estimation, if not they will be evaluated using Asymptotically Distribution Free (ADF) methods. To produce good fit, chi-square values should be nonsignificant. Hu and Bentler (1999) have also suggested good fitting models should yield a comparative fit index of at least .95, with a standardized root mean square residual below .08.

Results

Family type

There was a significant association between CSA and the type of family the mother currently lived in ($p = .0002$, see Table 1). Those in nontraditional family types, particularly single mother and stepfather families were significantly more likely to have a prior history of CSA than those in biological families. In stepmother/complex families the frequency did not differ significantly from that found in biological families.

Life course variables

Over a quarter (26.0%) of respondents who reported CSA first became pregnant during their teens. This association was highly significant ($p = .0002$, odds ratio $= 2.20$, $\beta = .05$). Those reporting CSA when compared with those who did not report CSA, were also more likely to report physical cruelty (22.0% vs. 2.3%; $p < .00005$, odds ratio $= 12.34$, $\beta = .17$) and emotional cruelty during childhood (29.1% vs. 6.2%; $p < .00005$, odds ratio $= 6.25$, $\beta = .12$).

Socioeconomic status

Whether women had experienced CSA or not was unrelated to their educational attainment ($p = .39$), though there was a relationship with household income ($p < .00005$); with rising income, decreasing proportions of women reported CSA. This association remained highly significant after adjustment for current family type ($p = .0009$). There was also a significant relationship with household crowding—higher levels of crowding were associated with increasing proportions of women who had reported CSA ($p = .0098$). This association was reduced with the addition of household income ($p = .07$) and after the further addition of family type was not significant ($p = .15$).

Psychological and psychosocial well-being

Those who reported CSA reported higher levels of depression (7.89 vs. 6.11; $p = .0001$, $\beta = .04$) and anxiety (6.69 vs. 4.61; $p < .0005$, $\beta = .07$) and lower levels of self-esteem (29.38 vs. 31.94; $p = .0001$, $\beta = -.04$).

Table 1
Percentage reporting CSA by current family type

	N	Percent reporting CSA	Chi-square[a]
Single parent	691	3.04	12.32***
Biological parents	6680	1.30	
Stepmother/complex stepfamily	366	.82	.63
Stepfather	555	2.88	8.65**

[a] Tests significance of the log of the proportion of those reporting CSA in each family type compared to the proportion in biological families.

** $p < .005$.

*** $p < .0005$.

Relationships

Those reporting CSA were more likely to be in a cohabiting relationship (14.4% vs. 9.2%; $p = .05$, odds ratio = 1.65, $\beta = .03$). They also reported less satisfaction (14.67 vs. 15.38; $p = .043$, $\beta = -.02$) and poorer communication (14.47 vs. 15.03; $p = .06$, $\beta = -.02$) in their relationship with their partner. There were no differences in the length of their current relationship (8.12 *cf* 8.34 years; $p = .55$) nor in the warmth of the relationship ($p = .93$).

Relationships with children. Mothers reporting CSA reported less positive relations between their partner and the study child (2.87 vs. 3.29; $p = .001$, $\beta = -.04$), and greater negativity (1.19 vs. .98; $p = .058$, $\beta = .02$). They also reported greater negativity (1.36 vs. 1.17; $p = .07$, $\beta = .02$) and less positivity (3.30 vs. 3.56; $p = .015$, $\beta = -.03$) in their own relationship with the child as well as less maternal confidence (13.70 vs. 14.56; $p = .003$, $\beta = -.03$). No differences were found in levels of maternal enjoyment of their relationship with their children ($p = .24$).

Children's adjustment

A summary of the analyses for the study child is contained in Table 2.

As can be seen, more total problems, hyperactivity, conduct problems, peer problems, and emotional problems were reported in the children of mothers reporting CSA compared to the children of other mothers. No differences were found in prosocial behavior.

Adjustment for role of emotional and physical cruelty

Further analyses were undertaken to ascertain whether CSA was related to outcome independent of emotional and physical cruelty during childhood. Variables for reported physical and emotional cruelty in childhood were therefore added to existing models in which the outcome variables were predicted by CSA.

Table 2
Children's adjustment for mothers by history of CSA

	CSA		No. of CSA		β	t	df
	N	Mean	N	Mean			
Total problems	102	33.33	7109	31.96	.05	4.27****	7210
Hyperactivity	106	9.16	7324	8.89	.02	1.86*	7338
Conduct problems	105	7.78	7289	7.46	.04	3.22***	7392
Peer problems	102	9.63	7247	9.2	.04	3.65****	7349
Emotional problems	106	6.78	7299	6.43	.03	2.40**	7403
Prosocial behaviour	102	12.12	7266	12.03	.0	0.9	7368

* $p < .1$.
** $p < .05$.
*** $p < .005$.
**** $p < .0005$.

In these analyses there remained a significant relationship with family type ($p = .027$). CSA also remained significantly associated with depression ($p = .0055$, $\beta = -.03$), anxiety ($p = .0001$, $\beta = -.05$), lower self-esteem ($p = .0064$, $\beta = -.03$), and increased likelihood of teenage pregnancy ($p = .004$, odds ratio = 1.83, $\beta = .04$). In addition there remained a significant association with household income ($p = .0004$), but after inclusion of childhood cruelty the relationship of CSA with cohabiting status was not significant ($p = .12$, odds ratio = 1.50, $\beta = .03$). With regard to relationship quality, less satisfaction with partner ($p = .002$, $\beta = -.03$), and a poorer quality of communication ($p = .03$, $\beta = -.02$) remained significantly associated with CSA.

Adjustment for childhood cruelty did affect the relationship between CSA and several indicators of parent-child relationship quality. The relationships with both mother-child negativity ($p = .22$, $\beta = .01$) and perceived partner-child negativity ($p = .11$, $\beta = .02$) were no longer significant. The relationships with parent-child positivity remained though they were reduced in magnitude, for mother-child positivity ($p = .06$, $\beta = -.02$) and for perceived partner-child positivity ($p = .026$, $\beta = -.02$). Maternal confidence retained its association with CSA ($p = .025$, $\beta = -.02$). With the exception of hyperactivity, all indicators of adjustment in the mother's children were still significantly associated with CSA after adjustment. For total problems, $p = .0008$, $\beta = .04$; hyperactivity, $p = .26$, $\beta = .01$; conduct problems, $p = .008$, $\beta = .03$; peer problems, $p = .0008$, $\beta = .04$; emotional problems, $p = .06$, $\beta = .02$.

Changes in effect sizes before and after adjustment for reported childhood cruelty are summarized in Table 3. for all variables which initially exhibited significant relationships with CSA. Overall there is a mean standardized effect size of .035 prior to adjustment and .027 afterwards—a reduction of 23% (effect sizes with childhood cruelty are excluded from these). Thus, statistically removing the influence of other childhood adversity has had only a minor effect on the magnitude of the effects associated with CSA.

The role of mental health in mediating relationships between CSA and children's adjustment and with parent-child relationship quality

One possible reason for the association between CSA and adjustment of the mother's child is that it is mediated by mother's mental health—that is, CSA is correlated with the adjustment of the mother's children because it is linked with poor psychological well-being in the mother which in turn is associated with poor adjustment in the child. If mother's mental health is completely responsible for the association, then if adjustment (indicated by total SDQ score) is regressed onto CSA (in addition to reported cruelty) together with the indicators of psychological well-being, the relationship between CSA and adjustment should no longer be significant. Regression analyses undertaken to examine this found that the relationship was in fact still significant ($p = .004$, $\beta = .04$) and with an effect size which was barely diminished—from .04 to .036. Both anxiety ($p = .0001$, $\beta = .13$) and depression ($p = .0003$, $\beta = .06$) exerted independent effects on child adjustment, but self-esteem did not ($p = .14$). The relationship between CSA and children's adjustment is not, on the basis of this result, completely explained by its relationship with the mother's mental health.

A further issue concerns the relationships between CSA and parent-child relationship quality. Can these associations be explained by a mediational role of mother's well-being? Further regressions therefore examined the relationship between CSA, parent-child relationship quality, and mental health. First, maternal confidence was regressed onto CSA (controlling for reported cruelty and mother's psychological well-being). This now led to a nonsignificant relationship for CSA ($p = .44$), the effect size reduced from .025 to .008. When mother-child positivity was regressed onto CSA (controlling for reported cruelty and

Table 3
Standardized effect sizes for relationships with CSA before and after adjustment for reported childhood cruelty

Variable	Before adjustment	After adjustment
Life course variables		
Childhood physical cruelty	.17	
Childhood emotional cruelty	.12	
Teenage pregnancy	.05	.04
Psychological well-being		
Depression	.04	.03
Anxiety	.07	.05
Self-esteem	−.04	−.03
Relationships		
Cohabiting	.03	.03
Satisfaction	−.02	−.03
Communication	−.02	−.02
Relationships with children		
Positivity with mother	−.03	−.02
Positivity with partner	−.04	−.02
Negativity with mother	.02	.01
Negativity with partner	.02	.02
Maternal confidence	−.03	−.02
Children's adjustment		
Total problems	.05	.04
Hyperactivity	.02	.01
Conduct problems	.04	.03
Peer problems	.04	.04
Emotional problems	.03	.02

mother's psychological well-being), this also led to a nonsignificant relationship with CSA ($p = .19$), with a reduction in effect size from .025 to .016. When perceived partner-child positivity was similarly regressed; the effect of CSA was also no longer significant ($p = .08$), though there was only a small reduction in the effect size (from .025 to .021). These results suggest that the relationships between CSA and later parent-child relationship quality are largely due to the effects of CSA on the mother's mental health.

Interactions: sexual assault versus family type

Significant interactions were found for effects of CSA in different family types. This was the case for self-esteem ($F_{3,8284} = 3.62$, $p = .013$), anxiety ($F_{3,7908} = 3.22$, $p = .022$), and depression ($F_{3,7503} = 2.97$, $p = .031$). There was also one marginally significant interaction—for maternal enjoyment ($F_{3,8284} = 2.44$, $p = .062$). No significant interactions were observed for relationship quality ($p > .30$ in all cases) or for any dimension of children's adjustment ($p > .15$ in all cases). Adjusting for reported emotional and physical cruelty had little effect on these interactions. For self-esteem ($F_{3,8282} = 2.85$, $p = .036$), anxiety ($F_{3,7906} = 2.48$, $p = .059$), depression ($F_{3,7501} = 2.58$, $p = .051$), and maternal enjoyment ($F_{3,8282} = 2.26$, $p = .079$) the interactions were of similar magnitude to those

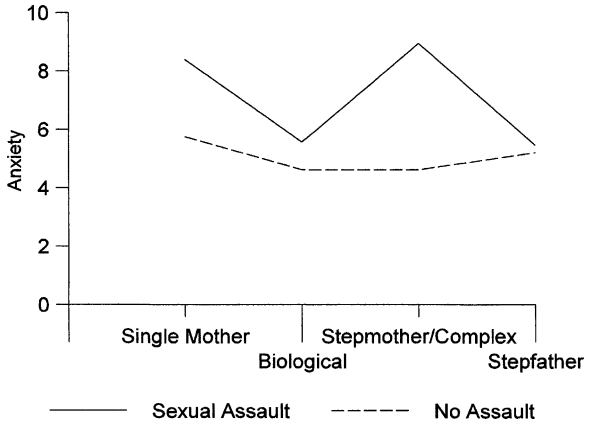


Figure 1. Relationship between CSA and anxiety by family type.

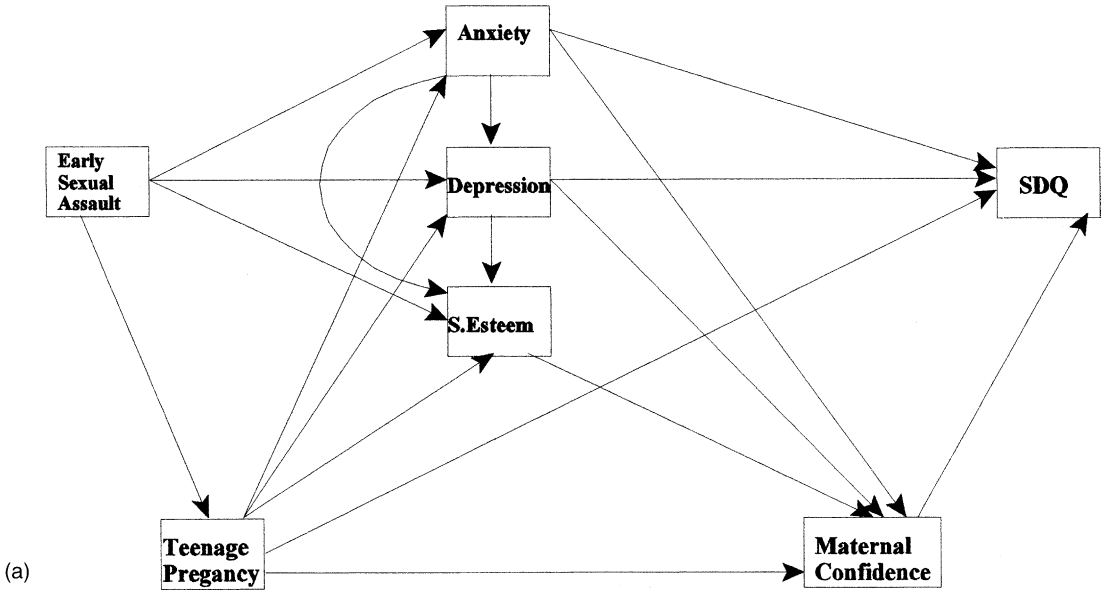
obtained previously. For all interactions the pattern of results was similar, with the largest differences between those reporting CSA and those who did not, occurring in the stepmother/complex families (results for anxiety are shown in Figure 1). Further analyses were therefore carried out in an attempt to ascertain the reasons for this.

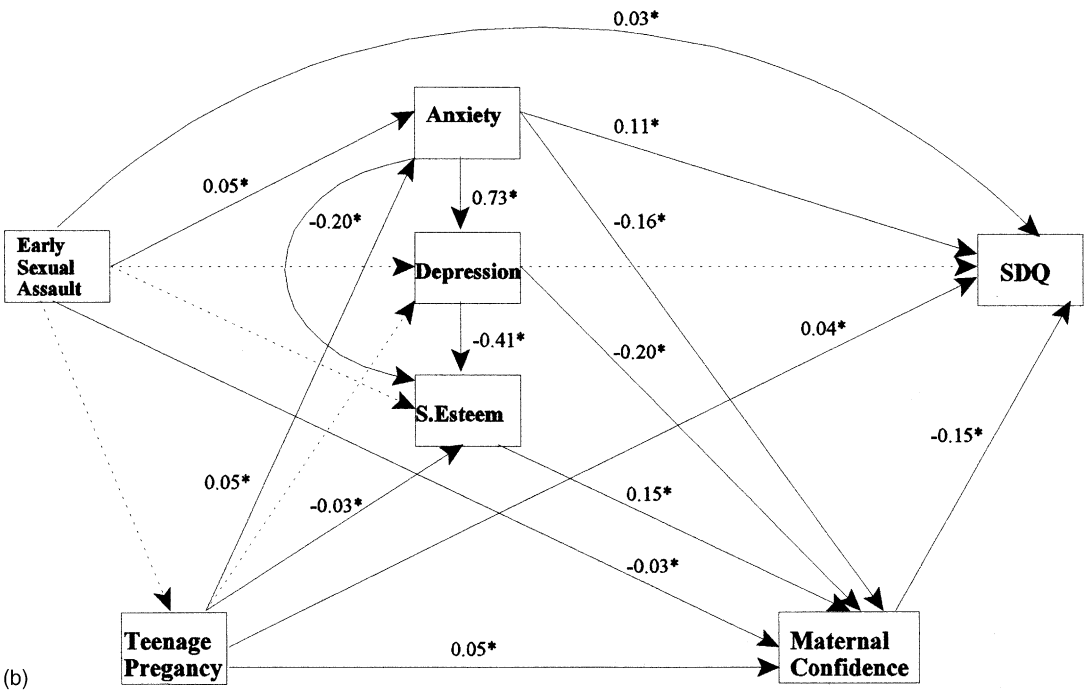
The interactions between family type and CSA on the above outcomes were firstly adjusted for family income. The relationships were substantially unaffected by this, nor by the addition of variables indexing quality of the parental relationship. Only when the level of household crowding was controlled for were the interaction effects between CSA and family type eliminated (for self-esteem, $F_{3,4174} = .66$, $p = .58$; for anxiety, $F_{3,3986} = .37$, $p = .77$; for depression, $F_{3,3748} = .62$, $p = .60$; and for maternal enjoyment, $F_{3,4174} = .76$, $p = .51$). Thus the larger adverse effects of CSA observed in stepmother/complex families appear to arise as a consequence of the more crowded environment these families live in.

Structural equation modeling

We constructed two SEM measurement models of the pathways linking CSA to behavior problems in mothers' offspring. These examine the extent to which the relationships are mediated through the psychological well-being of the mother, the parenting relationship and teenage pregnancy. In the first (fully mediated) model no direct relationship is posited between CSA and subsequent problems in the child, whereas in the second (partially mediated) there is. As these models are nested, a chi-square difference test between them provides a test of whether a significant improvement in fit is given by hypothesizing a direct pathway unmediated by teenage pregnancy, mental health, and the parenting relationship.

Figure 2a illustrates the proposed fully mediated model. This posits direct links between behavioral problems in the mother's child and teenage pregnancy, mother's psychological well-being (anxiety and depression) and parenting quality (maternal confidence), and that links between CSA and later problems in the offspring are mediated by the links which CSA has with teenage pregnancy, psychological well-being, and parenting behavior. On the basis of earlier regression analysis, no direct relationship between mother's self-esteem and children's behavioral problems is proposed, nor between CSA and maternal confidence, although it is proposed that self-esteem plays an intermediate role between teenage pregnancy and maternal confidence.





Yuan-Bentler corrected AGLS X2(1)=0.00, p=1.00 CFI=1.00, standardised rmsr=0.00

Figure 2. (a) Schematic model: pathways from CSA to behaviour problems in mother's children. (b) Structural equation model: pathways from CSA to behaviour problems in mother's children.

As the normalized estimate for Mardia's coefficient was large (72.1), multivariate normality could not be assumed. As a result of this distribution free estimation methods were employed. Satisfactory fit indices were obtained for the mediated model which was therefore judged to fit the data well [Yuan-Bentler corrected AGLS $\chi^2(3) = 14.28$, $p < .01$, CFI = .99, standardized rmsr = .03; $N = 6114$]. The partially mediated model also provided a good fit [Yuan-Bentler corrected AGLS $\chi^2(2) = 8.85$, $p < .05$, CFI = 1.00, standardized rmsr = .01; $N = 6114$]. The chi-square difference test [$\chi^2(1) = 5.43$, $p = .02$] suggested a better fit is provided by the partially mediated model. Lagrange Multiplier tests indicated improved model fit would be obtained by adding a direct path from CSA to maternal confidence [$\chi^2(1) = 8.81$, $p = .003$]. The final model with this path is shown in Figure 2b and gives a very good fit [Yuan-Bentler corrected AGLS $\chi^2(1) = .00$, $p = 1.00$, CFI = 1.00, standardized rmsr = .00; $N = 6114$]. In this there are direct relationships between CSA and children's behavior problems ($\beta = .03$) and indirect effects thru anxiety (standardized coefficient = $.0055 = .05 \times .11$) and maternal confidence (standardized coefficient = $.0045 = .03 \times .15$).

In the final model CSA directly predicted low maternal confidence ($\beta = .03$). Several other effects were as predicted; anxiety ($\beta = .11$), teenage pregnancy ($\beta = .04$), and maternal confidence ($\beta = -.15$) had direct relationships with children's behavior, while anxiety ($\beta = -.16$), depression ($\beta = -.20$), and low self-esteem ($\beta = .15$) contributed to low maternal confidence. Teenage pregnancy contributed to anxiety ($\beta = .05$), low self-esteem ($\beta = -.03$), and maternal confidence ($\beta = .05$). In summary, the model confirms a relationship between CSA and later adjustment in the mother's offspring, partially mediated by the mother's mental health (principally anxiety) and maternal confidence. The link between CSA and later maternal confidence is also partially mediated by mental health.

Discussion

The current study adds to the growing literature on the consequences of the sexual abuse of young people. Our results confirm findings reported elsewhere of associations with psychological impairment, teenage pregnancy, relationship difficulties, and parenting problems. We also reported on the extent of behavioral problems in the children of survivors of CSA, rather than focusing on whether the same form of abuse is recycled in the next generation. Regression analyses confirmed that the majority of these associations remained significant after physical and emotional cruelty during childhood had been adjusted for, thereby supporting workers (e.g., Banyard, 1997; Hill et al., 2000; Merril et al., 2001; Molnar et al., 2001) who argue that effects from CSA operate independently of other childhood adversity.

Results of the SEM analysis largely followed the pattern of findings from the regression analyses with minor differences. In the SEM analysis the pathway from CSA to teenage pregnancy did not quite reach significance, whereas in the regression analyses the association between these replicated effect sizes previously reported (Fergusson et al., 1997), with a history of CSA elevating almost twofold the risk of later teenage pregnancy. The differences between these analyses are a likely consequence of the reduced power available in the SEM analyses, where the inclusion of many more variables has reduced the effective sample size compared to the regression. Regression analysis also suggested the relationship between CSA and maternal confidence was fully mediated by psychological well-being, whereas SEM analyses suggested only partial mediation. Again we suggest that results from the regression analysis take precedence due to the greater power available.

As mentioned earlier one possible reason why some studies have failed to find evidence of the independent effects of CSA has been the limited statistical power available—the study by Zuravin and Fontanella (1999), for example, involved a sample size of approximately 500 only. The large sample size in the current study—and the fact that this is a community sample provides grounds for confidence in the results. In common with previous studies we found the magnitude of the standardized effect sizes were small and broadly comparable across the range of different outcomes—though this does not mean that the effects themselves are not clinically significant among those who have experienced CSA. In the present context it should be remembered that the measures of psychological functioning which were employed are general, rather than specific and trauma related and that this was a community and not a clinical sample where participants would probably be skewed toward those who had experienced more severe forms of abuse. In light of these factors some of the specific effects associated with trauma may be underestimated.

Though not the primary focus of our investigation, we obtained evidence for the importance of early adversity other than CSA. Adjustment for childhood cruelty reduced the overall magnitude of significant zero order relationships by around 23% and appeared to mediate aspects of the quality of parent-child interaction—notably parent-child negativity. The relationship of CSA with cohabiting status also disappeared once earlier adversity was controlled for. It is evident then that the relationship between CSA and parenting is complex—for some aspects of parenting (e.g., parent-child negativity) the link is a consequence of the relationship both the variables have with other forms of adversity. For other aspects (e.g., maternal confidence) there appears to be a direct relationship. The more researchers can agree on what the most crucial dimensions of parenting are, the more appropriate comparisons of findings across studies can be made.

In addition, we highlighted the importance of family type—both as an outcome and as a potential moderator of the effects of CSA. Regarding the former—our hypothesis was largely confirmed that CSA survivors appear more likely to be currently living in a nontraditional family, that is, single mother or stepfamily. However, while this was true for stepfather families, it was not for stepmother/complex stepfamilies. It is possible that women with a history of CSA are more likely to choose a subsequent partner without children of their own because this will not entail increased demands for child-rearing about which victims of CSA have reduced confidence. Consistent with the notion that partners who bring children from previous relationships into the new relationship bring with it added demands to survivors of CSA, we found that the association of CSA with poor psychological well-being in the mother and with lower maternal enjoyment was exacerbated in complex stepfamilies. A key factor in explaining the pattern of results in complex stepfamilies appeared to be the level of household crowding. It is not difficult to understand why this might be an important variable to consider in studies of the effects of CSA. Sexual assault of any kind is an extreme violation of personal boundaries. In conditions where personal space is more limited there is a greater likelihood that such conditions will reactivate traumatic memories associated with the invasion of personal space (Van der Kolk, 1989). The observation that complex stepfamilies live in more crowded households is a reminder that studies of different family types need to be cognizant of the varying socioeconomic and environmental circumstances that may distinguish them, before drawing conclusions about the possible benefits to be accrued from living in one type of family organization over another (Entwisle & Alexander, 1999).

Of particular interest is the suggestion from both regression and SEM analysis that the link between CSA and behavioral difficulties in the mothers' children is in part mediated through anxiety, rather than depression. If so, this suggests that CSA should be considered a potential contributory factor in the

relationship between antenatal anxiety and child adjustment (O'Connor, Heron, Golding, Beveridge, & Glover, 2002) and concurs with findings pertaining to the enduring neurobiological effects of trauma. The current position that PTSD be viewed as an anxiety disorder (O'Brien, 1998) draws support from the symptomatology which PTSD shares with a range of anxiety disorders, as well as the physiology and phenomenology of extreme stress. Physiologically, chronic activation of the fight/flight system following stress is known to give rise to a variety of disorders including anxiety, depression, and drug addiction, and evidence of persistent changes in stress reactivity following childhood abuse has recently been confirmed (Heim et al., 2000), while the victims of extreme stress and trauma describe feelings of apprehension, anxiety, and alarm as initially predominating, producing a state of hypervigilance (Ehlers & Clark, 2000; Meaney, 2001). In the proposed model, other correlates of CSA—depression, low self-esteem, and low maternal confidence, some of which directly or indirectly affect children's adjustment, are envisaged as consequences of a primary disturbance in anxiety levels.

We concur with other workers (e.g., Mezey, 1994) that "abuse is not destiny" and a number of factors not specified in this model such as coping strategies, appropriate social support, and disclosure play a strong role in determining longer term outcomes—and in the current context are likely to explain why CSA remained associated with children's adjustment after psychological well-being and parenting were controlled for. The model also suggested that the effects of CSA on mental health provide only a partial explanation for the relationship of CSA to subsequent low maternal confidence, and that other factors should be sought to provide a more complete account. More generally, the model provides an example of the transmission of the effects of an environmental event occurring early in life to the next generation, mediated (at least in part) by alterations in maternal anxiety and maternal confidence. Recent opinion (e.g., Meaney, 2001; O'Connor et al., 2002) suggests that these alterations in maternal care produce their effects in the children, through changes in fetal brain development which affect stress reactivity rather than through learning or modeling of specific behaviors.

Invariably there are caveats to these findings—the data used in the study have generally been drawn from a single source and are therefore subject to the possibility that shared method variance could inflate some of the associations detected. However, because of the longitudinal nature of the study, many of these measures were collected with considerable intervals of time between them (e.g., from 14 to 26 months) and as such are unlikely to be subject to shared variance as might arise, for example, from current mood state. Several additional factors mitigate against the likelihood that the findings are an artifact of common method variance. Most of the associations reported between CSA and later outcomes have been adjusted for the reporting of childhood cruelty and the association between CSA and adjustment in the mother's children (at 47 months) remained significant after adjustment for self-reported psychological well-being (at 33 months).

Like the majority of studies of CSA this one relies on a self-reported measure of CSA, as recalled from adulthood. Several problems thereby arise. One is the under reporting of previous abuse—memory studies show that 38% of CSA survivors do not recall the abuse when adults (Widom & Morris, 1997)—some proportion of this is likely to be a consequence of the early age at which the abuse occurred. Terr (1991) has provided compelling evidence that memories from early traumas including sexual abuse (where evidence was documented by others) may be acted out behaviorally though remaining inaccessible to verbal recall. A perhaps insurmountable obstacle in addressing the issue of corroboration by others, is that by its very nature the victims of abuse are often isolated, coerced into silence, and frequently tell no-one else about their experience. Hence potential corroboration is absent (Kendler et al., 2000). Another issue has been possible retrospective bias for recall of other adverse childhood circumstances

among CSA survivors. A study in which this possibility was investigated, involving nonabused twin pairs, twin pairs discordant for CSA and twin pairs, both of whom were abused, concluded that retrospective bias could not account for the relationship between CSA and pathogenic parenting and consequently the association is likely to be a real one (McLaughlin et al., 2000). However, it cannot be doubted that validity and reliability of findings are enhanced where a longitudinal design is employed and the data on potential correlates and consequences are obtained on occasions distinct from those in which the data regarding CSA are gathered (Fergusson & Mullen, 1999)—a feature of the present study. Problems with self-report methodologies cannot be entirely eliminated, but a considerable degree of their validity comes from the associations which have repeatedly been found with a range of psychological and psychosocial problems. An additional point of relevance here is that our measure of CSA by its wording in terms of sexual assault may have precluded some respondents from reporting chronic but less violent forms of abuse. If so this factor would contribute to underestimates of both the prevalence of CSA in this population and the magnitude of any effects associated with it.

A limitation of the present study is that data were not obtained on whether the abuse was perpetrated from within or outside the family. It has been documented that within family abuse is associated with greater trauma and poorer subsequent adjustment (e.g., Browne & Finkelhor, 1986; Bulik et al., 2001). It is therefore likely that disruption to subsequent parenting skills may be more severe in cases where the abuse was familial (Cohen, 1995). If within family CSA survivors have been under-represented in the present study then we might expect our estimates of parenting effects to be biased downwards. The environment in which the abuse originally took place may also be related to the current family type in which the respondent lives. If previous abuse occurred in a stepfamily setting, for example, how does this effect the likelihood of current residence in a stepfamily? Further research is needed here.

A further issue is attrition. Are CSA survivors more likely to have dropped out of later stages of the study and hence be less likely to provide data on children's behavior? There is some indication of this. A lower proportion of respondents reporting CSA provided information on their children's adjustment compared to other respondents (81.11% vs. 87.01%). The difference between these proportions just reached significance [$\chi^2(1) = 3.93$, $p = .05$]. The small size of this effect though, means that any bias in estimating the magnitude of CSA effects will be small.

Finally as noted, both the range of findings and the magnitude of effect sizes detected are in agreement with those previously reported. They appear to confirm that CSA may have long-term consequences for mental health, parent-child relationships and child adjustment in the succeeding generation.

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Résumé

Objectif: Investiguer les liens entre les abus sexuels (ayant lieu avant l'âge de 13 ans), la santé mentale dans les années qui suivent, l'organisation familiale, les comportements parentaux et l'adaptation des enfants des victimes.
Méthode: L'étude en question s'est penchée sur un sous-échantillon de l'étude *Avon Longitudinal Study of Parents and Children*, une étude en cours portant sur des femmes et leurs familles vivant dans la région d'Avon en Angleterre. On a retenu 8292 familles qui rencontraient les critères de l'étude sur le type de famille et sur des données fournies pas les femmes elle-mêmes concernant des agressions sexuelles vécues. On a collecté des données supplémentaires sur diverses variables portant sur les étapes de leur vie, leur statut socioéconomique, leur bien-être psychologique, la qualité de leur relations, la relation parent-enfant et l'adaptation de leurs enfants.
Résultats: Ayant pris en considération d'autres difficultés de l'enfance, on a noté que les agressions sexuelles étaient associées à toute une gamme de phénomènes en âge adultes, y compris l'appartenance à un type de famille non traditionnelle (mère vivant avec un père adoptif), un faible niveau de bien-être psychologique, la grossesse adolescente, les comportements en tant que parents et des difficultés d'adaptation des enfants des victimes. La santé mentale de la mère–principalement l'angoisse—affecterait la relation

entre l'agression sexuelle en enfance et certains aspects de la relation parent-enfant plus tard, ainsi que les troubles d'adapation des enfants de la victime.
Conclusion: Les constats indiquent que les agressions sexuelles ont des répercussions à long terme sur la santé mentale en âge adulte, sur les relations interpersonnelles des victimes dans leur rôle de parent et sur l'adaptation de leurs enfants.

Resumen

Spanish language abstract not available at the time of publication.