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Childhood sexual abuse and pathogenic parenting in the childhood recollections of adult twin pairs

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ABSTRACT

Background. We examined the relationship between childhood sexual abuse (CSA), and interviewees' recollections of pathogenic parenting, testing for possible retrospective biases in the recollections of those who have experienced CSA.

Methods. Information about CSA, parental divorce and interviewees' recollections of parental rejection, parental overprotection and perceived autonomy (as assessed through a shortened version of the Parental Bonding Instrument) was obtained through telephone interviews with 3626 Australian twins who had also returned self-report questionnaires several years earlier. Recollections of parental behaviours were compared for individuals from pairs in which neither twin, at least one twin, or both twins reported CSA.

Results. Significant associations were noted between CSA and paternal alcoholism and between CSA and recollections of parental rejection. For women, individuals from CSA-discordant pairs reported levels of parental rejection that were significantly higher than those obtained from CSA-negative pairs. The levels of parental rejection observed for twins from CSA-discordant pairs did not differ significantly from those obtained from CSA-concordant pairs, regardless of respondent's abuse status. For men from CSA-discordant pairs, respondents reporting CSA displayed a tendency to report higher levels of parental rejection than did respondents not reporting CSA. Other measures of parenting behaviour (perceived autonomy and parental overprotection) failed to show a clear relationship with CSA.

Conclusions. The relationship between CSA and respondents' recollections of parental rejection is not due solely to retrospective bias on the part of abused individuals and, consistent with other studies, may reflect a pathological family environment with serious consequences for all siblings.

INTRODUCTION

In *The Making and Breaking of Affectional Bonds*, Bowlby (1979) proposed that certain patterns of parental behaviour, referred to as 'pathogenic parenting', can adversely affect an individual's ability to form emotional bonds with both parents and others and can predispose to the development of neurotic attachment styles

and further psychopathology later in life. The nature of the parent-child bond was assessed psychometrically by Parker and colleagues (1979) through the Parental Bonding Instrument (PBI), a 25-item measure that retrospectively probes a respondent's perceptions of parenting behaviour. This scale measures two dimensions of parental behaviour, care and overprotection. The poles of the care dimension are emotional warmth *versus* neglect while the dimension of overprotection is polarized into parental control *versus* independence. Although Bowlby's de-

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scription of pathogenic parenting involves some parenting behaviours not measured on the PBI, parallels have been drawn between these dimensions and the concept of pathogenic parenting (Plantés *et al.* 1988).

Individuals reporting childhood sexual abuse (CSA) have been found to report forms of early family dysfunction that correspond to some PBI measures of pathogenic parenting. Mullen *et al.* (1993) reported that victims of CSA were twice as likely as non-abused individuals to rate both their mothers and fathers as uncaring and overcontrolling on the PBI. Furthermore, they noted an elevated risk for CSA in women from families characterized by various forms of disruption including parental separation, parental absence, parental conflict and frequent moves. In a community sample of Australian women, Fleming *et al.* (1997) reported that survivors of CSA were more likely to report that both their mothers and fathers were uncaring and overcontrolling on the PBI. Furthermore, they were also more likely than non-abused individuals to report that their mother or father was an alcoholic and that their mother suffered from physical or mental health problems. Most recently, Gladstone *et al.* (1999) noted that women reporting CSA were four times as likely as those not reporting these experiences to rate their parents as rejecting on the PBI.

These results, based upon subjects' recollections obtained by the PBI, correspond to an extensive literature suggesting that CSA is associated with a dysfunctional family background. Family structures characterized by low cohesion and low adaptability (Alexander & Lupfer, 1987) and by parental violence and extended periods of childhood institutionalization (not including hospital-stays or boarding schools; Bifulco *et al.* 1991) have also been associated with CSA. In the first national US survey of adults concerning CSA, Finkelhor *et al.* (1990) noted that reporting an unhappy early family life and living without at least one natural parent during childhood were risk indicators for CSA for both men and women. A number of recent studies (i.e. Hall, 1996; Gladstone *et al.* 1999; Vogeltanz *et al.* 1999; Widom, 1999) have reported that CSA is associated with several dimensions of family dysfunction, including a lack of parental protection, a lack of emotional support, parental alcohol or drug problems,

marital discord and emotional abuse and neglect. Thus, in general, CSA appears to be one of a number of correlates of pervasive familial discord.

We have previously explored the relationship between CSA, family background variables and measures of lifetime psychopathology using the twin study method. Based on data from a large sample of Australian twins (Dinwiddie *et al.* 2000) we have noted that subjects reporting CSA were more likely than non-abused subjects to report parental alcoholism and parental depression. Furthermore, genetic model-fitting indicated that, while there was no familial correlation for liability to CSA in men, over half of the variance in liability to CSA in women could be attributed to shared environmental factors. Finally, non-abused co-twins of abused individuals were found to be at an increased risk of lifetime psychopathology. These results raised the possibility that CSA is associated with familial characteristics that may include pathogenic parenting and which may be significant risk factors for CSA and other negative sequelae.

The present study extends this investigation into characteristics of pathogenic parenting, specifically subjective ratings of emotional neglect and overcontrol, as measured by the PBI, which might contribute to risk for CSA. Although it cannot be equated with pathogenic parenting, parental alcoholism was also explored in relation to respondent CSA. This variable is one potential correlate of parental disability or absence that we had previously observed to be associated with CSA. Thus, this measure allows for a more complete assessment of family risk factors in regard to CSA.

We used twin data to assess perceived parental behaviour in individuals from pairs in which neither twin was abused, in which one twin was abused, and in which both twins were abused. By comparing abused and non-abused co-twins, we were able to separate the recollection of parental behaviours from the actual experience of CSA. Thus, we attempted to avoid the potential confound of retrospective bias on the part of the abused individual, a complication inherent in many previous studies on this topic.

We hypothesized that a history of parental alcoholism and measures of family dysfunction such as perceptions of parental rejection and

overcontrol would be associated with CSA. We further hypothesized that, if the association between CSA and these recollections was not due solely to retrospective bias, then individuals from twin pairs in which at least one twin was abused should report higher levels of these parenting behaviours than subjects from pairs in which neither was abused, regardless of their own abuse status.

METHOD

Subjects

Data from 1813 complete twin pairs from the Australian National Health and Medical Research Council Twin Register were assessed in this study. This register is a volunteer panel that was established in 1979–81 and has been previously described in detail elsewhere (Eaves *et al.* 1989; Heath *et al.* 1997). The subsample used in this study, who had complete data on all variables, included 646 pairs of monozygotic (MZ) females, 279 pairs of MZ males, 344 pairs of dizygotic (DZ) females, 147 pairs of DZ males and 397 opposite sex pairs. All of these twins provided both maternal and paternal ratings. These participants had been interviewed by telephone in 1992–3 after participating in two mailed questionnaire surveys, the first in 1980–2 ('1981 survey') and the second 8 years later in 1988–90 ('1989 survey'). The participants represented individuals aged 28–89 years of age, born between 1902 and 1964.

Measures

Negative parenting behaviour

Participants' recollections of parental behaviours were obtained through the use of a shortened 14-item version of the Parental Bonding Instrument (s-PBI; Bucholz *et al.* 1993; Todd *et al.* 1994). Respondents reported on a 1–4 scale ('not at all', 'a little', 'somewhat', or 'a lot') how much their mother and father displayed certain parenting behaviours during the subject's childhood. Todd *et al.* (1994) have reported 1-year test–retest reliability coefficients of 0.55–0.66 for this shortened version of the PBI. Variables reflecting respondents' recollections of parenting behaviours were constructed through the factor analysis of PBI items.

Though it is a retrospective instrument, previous studies have supported the reliability

and validity of the PBI as a measure of actual parenting behaviour (Parker, 1981; Parker & Lipscombe, 1981; also, see Parker, 1989, 1990 for reviews). Similarly, its validity has also been supported by studies utilizing twin data. Parker (1986) noted that mean correlations on the PBI scales were high and similar for monozygotic and dizygotic twin pairs (0.70 and 0.71, respectively). In a larger twin study (Mackinnon *et al.* 1991), female co-twins shared relatively high agreement on PBI scores (mean $r = 0.69$ for monozygotic (MZ) twins ($N = 164$ twins) and 0.56 for dizygotic (DZ) twins ($N = 128$ twins)) but agreement for male co-twins was lower (mean r for MZ twins = 0.56 ($N = 116$ twins), mean r for DZ twins = 0.10 ($N = 116$ twins; as cited by Parker, 1989)). According to the authors, these results may have reflected an increased rate of sibling competition for limited parental resources particularly on the part of male twins. While the results from the males were not easily interpreted, the results from the females generally supported the validity of this instrument as a measure of parental behaviours rather than a measure of genetically filtered perceptions. Additionally, Wilhelm & Parker (1990) reported 5-year stability coefficients of 0.67–0.82 for this instrument, indicating acceptable reliability of the PBI scales.

The PBI has been used in over 200 published studies (see Perusse *et al.* 1994). Parenting behaviour characterized by low care and high overprotection (known as 'affectionless control') has displayed significant correlations with various forms of respondent psychopathology, including depression and schizophrenia (Parker *et al.* 1982, 1988; Parker, 1983*a, b*; Gotlib *et al.* 1988; Plantes *et al.* 1988). Plantes *et al.* (1988) have suggested that the measure of 'affectionless control' on the PBI corresponds to Bowlby's description of pathogenic parenting in that, not only do children within these families suffer a lack of parental care, but they also experience a reversal of the parent–child roles, which can lead to anxious attachment patterns and various psychopathology later in life.

Parental alcoholism and divorce

Parental alcoholism and parental divorce were assessed through a telephone adaptation of the Semi-Structured Assessment for the Genetics of Alcoholism (SSAGA), specifically utilizing an

Australian version (or Mini-SSAGA-OZ; Bucholz *et al.* 1994), which included the question 'Has drinking ever caused your (natural) father/mother to have problems with health, family, job or police or other problems?'. Respondents were also asked about the occurrence of a number of life events, including parental divorce.

CSA

The 1992 interview included one question which asked 'Before age 18, were you ever forced into sexual activity including intercourse?'. Participants endorsing affirmative responses to this question were classified as having experienced childhood sexual abuse. Thus, through this item, respondents decided for themselves whether any of their childhood experiences constituted sexual abuse. While this single item cannot provide a comprehensive evaluation of respondents' experiences of CSA, the fact that it was asked of a large twin sample allows us to explore the utility of twin or sibling data in testing for possible retrospective biases in those who have experienced CSA.

Analysis

All statistical analyses were performed using SAS Version 6.09 (SAS Institute, 1990). To correct for skewed distributions, scores on all variables related to parenting behaviours were log-transformed prior to analysis. Factor analysis was used to derive three parenting variables: parental rejection, overprotection and perceived autonomy. Although the identification of three factors on the s-PBI conflicts with the usual two factor solution obtained from the full PBI, the data reported by Parker and colleagues (1979) do not preclude a broader interpretation of the PBI factors through the identification of an 'autonomy' factor in addition to the care and overprotection factors. We have previously utilized a similar factor structure in an earlier report (Bucholz *et al.* 1993).

Logistic regression (Hosmer & Lemeshow, 1989) was used to examine the relationships between parenting behaviour, parental alcoholism, parental divorce and CSA. To correct for the non-independence of observations on twin pairs, odds ratios and 95% confidence intervals were estimated by bootstrapping (Efron & Tibshirani, 1986) using the twin pair as the unit of resampling with 1000 bootstraps run for each

analysis. Inter-quartile odds ratios were computed for continuous variables and were also corrected for non-independence of observations on twin pairs using bootstrapped estimates of standard errors.

In order to assess the relationship between the ratings of parenting behaviour and the CSA status of each of the individuals in a twin pair, a data set was created in which these variables were double entered for each individual in each twin pair. In a double entered data set such as this, both individuals in the twin pair are in turn treated as 'respondents'. A variable was created to reflect whether a 'respondent' belonged to a twin pair in which neither twin was abused, in which one twin was abused or in which both twins were abused. For pairs in which one twin was abused, we created two groups – one group in which twin 1 was the respondent and twin 2 the co-twin and one group in which twin 2 was the respondent and twin 1 the co-twin. In this manner we were able to assess the PBI ratings of both individuals from CSA discordant twin pairs. Bootstrapped standard errors and 95% confidence intervals were then obtained for scores on all parenting behaviours over each of the four levels of CSA status, to adjust for the non-independence of observations on twin pairs.

Parenting behaviour and CSA status: possible response patterns

Table 1 presents four possible response patterns for parental rejection, overprotection and perceived autonomy among twin pairs and their possible interpretations in terms of retrospective bias on the part of the abused co-twin. The responses displayed in Pattern I would provide strong evidence against any association between CSA and the parental factors measured by the PBI. In contrast, Pattern II would provide the strongest evidence for some kind of retrospective bias on the part of the abused individual. Pattern III would provide some evidence for retrospective bias since the scores from abused individuals would be more extreme than those from non-abused individuals. However, in this scenario, individuals from pairs where both report abuse also report the most extreme PBI scores suggesting that while there may be some retrospective bias, abuse concordance still appears to be associated with the most extreme degree of negative parenting behaviour. Finally,

Table 1. Four possible response patterns for parental rejection, overprotection and perceived autonomy among twin pairs and their possible interpretations in terms of retrospective bias on the part of the abused individual

Abuse status	Predicted ratings of parental rejection, overprotection and perceived autonomy under competing hypotheses			
	I No association between scales and CSA	II Strong evidence of retrospective bias	III Some evidence for retrospective bias	IV Strong evidence against retrospective bias
Neither twin abused	Low	Low	Low	Low
Respondent not abused/ co-twin abused	Low	Low	Higher	High
Respondent abused/ co-twin not abused	Low	High	Even higher	High
Both twin abused	Low	High	Highest	High

Response patterns for perceived autonomy would be in the opposite direction.

Pattern IV would provide strong evidence against retrospective bias and would suggest that both twins have similar recollections of negative parenting behaviour regardless of abuse status. If CSA is associated with a high degree of general family dysfunction, as we hypothesize and as other retrospective studies (that do not have within-family controls) suggest, then the results that we observe in the present set of analyses should be similar to those suggested by Pattern IV.

RESULTS

Factor structure, CSA, parental alcoholism, parental divorce and parenting behaviour

Consistent with previous studies, we were able to derive three factors from the s-PBI: parental rejection, parental overprotection and perceived autonomy. Respondents' parental rejection scores were obtained using the following items: mother/father 'seemed emotionally cold to me' and 'made me feel I wasn't wanted'. Scores on perceived autonomy were derived using the items: mother/father 'let me do those things I liked doing', 'appeared to understand my problems and worries' and 'liked me to make my own decisions'. Scores on overprotection were obtained using the items: mother/father 'tried to make me dependent upon her/him' and 'was overprotective of me'. In addition to assessing global ratings of parenting behaviours, we constructed variables reflecting separate ratings for the respondents' mother and father for each factor.

Table 2. Perceptions of parental alcoholism and parenting behaviour predicting childhood sexual abuse (controlling for birth cohort)

Variable	OR	95% CI
Paternal alcoholism	1.54	1.04–2.28
Maternal alcoholism	2.07 ^{NS}	0.98–4.35
Parental rejection	1.36	1.15–1.63
Parental overprotection	1.28 ^{NS}	0.98–1.68
Autonomy	0.92 ^{NS}	0.78–1.68

Analyses have been corrected for non-independence of observations on twin pairs. Inter-quartile odds ratios are presented for parental rejection, parental overprotection and autonomy.

^{NS} Odds ratio is not significant.

The total prevalence rate of CSA was 4.63% for women and 3.76% for men while the total prevalence rate of parental divorce was 0.63% for women and 0.56% for men. Parental divorce was significantly associated with parental alcoholism (OR = 5.73, 95% CI = 2.46–13.37) in the total sample. Due to the rarity of parental divorce in this sample, however, we could not correct this analysis for non-independence of observations on twin pairs. Since the relationship between parental divorce and CSA was found to be nonsignificant (OR = 1.09, uncorrected 95% CI = 0.23–5.06), the divorce variable was removed from further analysis.

Table 2 summarizes the association between CSA and parental alcoholism, parental rejection, parental overprotection and perceived autonomy. Alcoholism in the respondent's father was significantly associated with CSA, while the association with maternal alcoholism fell just

Table 3. Parental rejection, parental overprotection and perceived autonomy by sex and abuse status

CSA status	Women			Men		
	Mean	S.D.	95% CI	Mean	S.D.	95% CI
Parental rejection						
Neither twin abused	1.82	0.007	1.81–1.84	1.83	0.009	1.81–1.85
Respondent not abused/ co-twin abused	1.97	0.038	1.89–2.05	1.90	0.046	1.81–1.99
Respondent abused/ co-twin not abused	1.98	0.038	1.91–2.06	1.99	0.067	1.86–2.13
Both twins abused	2.04	0.099	1.84–2.24	2.19	0.062	2.07–2.31
Parental overprotection						
Neither twin abused	2.00	0.009	1.98–2.01	1.93	0.010	1.91–1.96
Respondent not abused/ co-twin abused	2.15	0.039	2.07–2.23	1.99	0.046	1.90–2.08
Respondent abused/ co-twin not abused	2.08	0.036	2.01–2.15	1.92	0.057	1.81–2.03
Both twins abused	1.93	0.074	1.79–2.08	1.73	0.032	1.67–1.80
Perceived autonomy						
Neither twin abused	2.88	0.006	2.87–2.89	2.92	0.010	2.91–2.94
Respondent not abused/ co-twin abused	2.79	0.031	2.73–2.85	2.86	0.046	2.81–2.92
Respondent abused/ co-twin not abused	2.75	0.034	2.69–2.82	2.80	0.057	2.70–2.90
Both twins abused	2.81	0.073	2.67–2.95	2.81	0.033	2.77–2.86

Means were computed using $\log(\text{score} + 1)$. The sample sizes within each group were as follows: for individuals from pairs in which neither twin reported CSA, $N = 1172$ for men and $N = 2168$ for women. For individuals from pairs in which the respondent did not report CSA but the co-twin did, $N = 44$ for men and $N = 85$ for women. For individuals from pairs in which the respondent reported CSA but the co-twin did not, $N = 30$ for men and $N = 99$ for women. For individuals from pairs in which both twins reported CSA, $N = 3$ for men and $N = 25$ for women.

short of significance. Parental rejection was the only parental behaviour noted as having a significant association with CSA. When we analysed parental rejection separately for mothers and fathers, we noted elevated odds ratios in association with CSA for rejection from both parents (maternal rejection, OR = 1.75 (0.89–3.45); paternal rejection, OR = 1.88 (1.01–3.49), uncorrected odds ratios). Rates of parental rejection did not vary across the five zygosity groups.

Parental rejection, parental overprotection and perceived autonomy by sex and abuse status

Table 3 presents the mean scores on parental rejection by sex and abuse status. An examination of the 95% confidence intervals surrounding these values reveals that, for both men and women, twins from pairs concordant for CSA reported levels of parental rejection that were significantly higher, on average, than those from pairs in which neither reported CSA. Regardless of respondent's abuse status, twins from pairs discordant for CSA also reported

levels of parental rejection that were higher than twins from pairs in which neither twin was abused. For women, twins from CSA discordant pairs reported levels of parental rejection that were as high as those reported by women from CSA concordant pairs, regardless of respondent's abuse status. Thus, the observed response patterns for women corresponded well to Pattern IV. In contrast, the average parental rejection score for men from pairs in which both twins were abused was higher than that observed for men from CSA discordant pairs. Men from CSA discordant pairs displayed a trend towards higher parental rejection when the respondent was abused than when the co-twin was abused. Thus, the response patterns for men corresponded most closely to Pattern III.

Respondents' rating of parental overprotection and perceived autonomy generally shared a less clear relationship with respondent CSA status than did their ratings of PR. For ratings of parental overprotection, the average score for men from pairs in which both reported CSA was lower than that observed for men from

pairs in which only one twin was abused or in which neither of the twins was abused. For ratings of perceived autonomy, men from pairs in which at least one twin reported CSA also reported a lower degree of perceived autonomy than men from pairs in which neither reported CSA. In women, CSA-discordant pairs reported higher levels of parental overprotection than women from pairs in which both twins reported CSA. They also reported lower levels of perceived autonomy relative to women from pairs in which neither reported CSA.

DISCUSSION

The twin sample utilized in this study allowed us to explore the relationship between CSA and pathogenic parenting in a manner that avoided some of the potential methodological difficulties inherent in previous investigations. Through the use of a large general community sample we were able to avoid Berkson's bias (Berkson, 1946), the possibility of obtaining spurious associations in samples selected through treatment. Furthermore, by including non-abused co-twins in these analyses, we were able to assess, in CSA-discordant pairs, pathogenic parenting as perceived by a non-abused informant who had shared the same rearing environment as the sexually abused co-twin.

These results parallel those of previous studies (Mullen *et al.* 1993; Fleming *et al.* 1997; Gladstone *et al.* 1999) by strongly suggesting that children who report childhood sexual victimization also report, through ratings on the PBI, that they experienced an emotionally cold and rejecting family environment. More importantly, they further suggest that CSA is associated with parental behaviours that are recognized by other family members, regardless of their abuse status. Although the respondents' ratings of parental overprotection and perceived autonomy did not display a consistent relationship with CSA, the data do suggest that twins from CSA-discordant pairs experienced a family environment that was more rejecting than the environment experienced by twins from pairs in which neither reported abuse.

As previously described, paternal alcoholism was also associated with CSA, further supporting the idea that parental disability or absence may mediate a child's risk for CSA,

although a number of other covariates (such as socio-economic status and general family disorganization) may be the primary determinants of this association. CSA was reported more often in this sample than was parental divorce, and the two variables were not found to be associated. This result contrasts with those of other studies (Finkelhor, 1984; Finkelhor *et al.* 1990; Vogeltanz *et al.* 1999 for example) in which the absence of a parent was associated with an increased risk of sexual abuse. Our failure to note an association between divorce and CSA, in this study, is most likely attributable to a lack of statistical power due to the rarity of divorce in the parental generation for the Australian population from which our sample was derived.

This study has also revealed gender differences that warrant further exploration. For women, CSA is associated with parental rejection and the data suggest that women from CSA discordant twin pairs, regardless of respondent's abuse status, rated their parents as being just as rejecting as did women from pairs in which both twins were abused. These results correspond to Pattern IV and suggest that the association between CSA and recollections of parental rejection, for women, is not due solely to retrospective bias on the part of the abused individuals.

In contrast, the results for men corresponded to Pattern III. Levels of parental rejection were lowest (on average) in men from pairs in which neither twin was abused. They were higher in men from pairs where only the co-twin was abused and higher still in men from pairs where only the respondent was abused. Finally, they were the highest, on average, among men from pairs in which both twins were abused. These results, however, must be interpreted with caution since only three respondents were from pairs in which both twins reported CSA and the high level of PR that we observed seemed to be due to one respondent whose scores on these scales may have been aberrant. Thus, we would need to include a larger sample of men from pairs in which both twins reported CSA to determine if the results observed for this group (on all scales) are indeed indicative of a more severe degree of family dysfunction, relative to that experienced by respondents from the other groups. In general, these results suggest that

some retrospective bias on the part of male CSA victims may be mediating the relationship between sexual abuse and recollections of parental rejection. One alternative to this explanation could be that men who were actually sexually abused were also indeed treated differently by their parents, as previous studies on CSA in women have suggested (Hall, 1996). Nonetheless, for both men and women, non-abused co-twins of abused individuals report higher levels of parental rejection relative to men and women from twin pairs in which neither twin reported abuse.

Thus far, our consideration of retrospective bias has been limited to its potential influence on the recollections of abused individuals. We must also consider the possibility that our female respondents may have been more aware of the experiences of their co-twins than were our male respondents. This explanation could account for the observation that women from twin pairs in which one twin was abused reported levels of parental rejection that were as high as those from pairs in which both were abused, regardless of their own CSA status. In support of this possibility, previous research (Mackinnon *et al.* 1991) has suggested that PBI scores could reflect family dynamics as well as actual parenting behaviour. Additionally, we must concede to the possibility that the non-sexually abused co-twin might have been subjected to some other form of childhood maltreatment that could lead to similar retrospective distortions. Thus, it is possible that some form of retrospective bias on the part of the non-sexually abused co-twin may be influencing their recollections of the early family environment.

Interestingly, our findings concerning maternal and paternal overprotection stand in contrast to those of other studies in which CSA was associated with parental overcontrol (e.g. Mullen *et al.* 1993; Fleming *et al.* 1997). The present data suggest that victims of CSA are less likely (on average) than other respondents to rate either their mothers or their fathers as having been overprotective of them during childhood. This pattern suggests that the items used in this study to rate each parent on the 'overprotection' dimension may not necessarily have been eliciting recollections of maladaptive parenting behaviours but may instead have been measuring some aspect of normal parental care-

giving. The finding that the highest levels of parental overprotection and (for women) the lowest levels of perceived autonomy were observed in individuals from CSA-discordant twin pairs further suggests that the family dynamics associated with CSA discordance may differ qualitatively from those associated with either pattern of CSA concordance.

We must concede several methodological drawbacks of our study. First, the assessment instrument that we utilized was designed to evaluate risk factors for alcoholism and was not designed to ascertain the severity of CSA, whether it was chronic or acute, the location of the abuse (e.g. its occurrence in the home, at school, etc.) or the identity of the perpetrator. The relationship between victim and perpetrator, as it may relate to pathogenic parenting styles in particular, may warrant further consideration.

Intra-familial and extra-familial sexual abuse may be associated with different patterns of family dynamics. As described by Alexander & Lupfer (1987), father-daughter incest has been associated with enmeshment and parent-child role reversal (Blick & Porter, 1982; James & Nasjleti, 1983) and families within which such abuse occurs are particularly patriarchal and rigid with regard to sex roles (Herman, 1981; cited by Alexander & Lupfer, 1987). However, Alexander & Lupfer (1987) have also noted that CSA is consistently associated with a lack of emotional bonding within the family and an inability to adapt to situational or developmental stressors, regardless of the relationship between victim and perpetrator. Thus, these results suggest that our findings regarding subjects' recollections of pathogenic parenting may be applicable to cases of either intra-familial or extra-familial sexual abuse.

Two additional drawbacks concern the measurement of CSA and the sample from which we draw our conclusions. The identification of CSA in this study was based on self-report without measures of external validation, a drawback that other researchers have cautioned against (e.g. Green, 1993). The single item that we used may have provided a somewhat cursory measure of childhood sexual abuse in that it limited CSA to instances in which the perpetrator used 'force' thus eliminating other less violent, though still abusive, instances of molestation. Thus, instances of sexual abuse

involving bribery or threats, for example, as well as instances of consensual intercourse with an underage child, would have been missed. Furthermore, the fact that the item mentioned 'sexual intercourse' could have introduced ambiguity on the part of male victims and may have led to the exclusion of some serious incidents of sexual abuse of boys by other males. Previous studies (Finkelhor *et al.* 1990; Vogeltanz *et al.* 1999; Wyatt *et al.* 1999), which have gathered data regarding more inclusive categories of abuse such as exhibitionism, frotteurism and forced voyeurism, have reported rates as high as 34% for women and 16% for men. Thus, the difference in the definition of abuse between these studies and the present report is most likely a main contributor to the relatively low rate of CSA observed herein.

Finally, as Dinwiddie *et al.* (2000) have suggested, a volunteer twin panel may not be entirely representative of the population from which it was obtained and we may not be able to generalize results based upon a subsample of Australian twins to other populations, particularly given the extremely low incidence of divorce in this sample. In general these drawbacks suggest that our conclusions regarding the relationship between CSA and parenting behaviour may apply to instances of abuse involving more severe sexual violations. Due to the rarity of divorce in this sample, we are not able to infer much about the way in which this psychosocial risk factor may moderate the relationship between parenting behaviour and CSA.

In conclusion, we have used twin data from a large community sample to test for possible retrospective biases in the recollections of individuals who have experienced CSA. Despite several methodological limitations, the results of our analyses strongly support the idea that the association between CSA and emotional neglect, noted in previous studies, is not due solely to retrospective bias on the part of the abused individual. Rather, the respondents' recollections of pathogenic parenting may represent a dysfunctional family milieu with serious implications for all siblings.

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