

Postnatal Depression and Child Development A three-year follow-up study

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Summary: This study investigates whether three-year-old children whose mothers had been depressed after their birth showed more behaviour disturbance than children of mothers who were not depressed at that time. Ninety-one of 103 mothers who took part in an earlier prospective study of postnatal depression were reinterviewed three years later to determine their present mental state, and to assess their child's behaviour, using Richman's Behavioural Screening Questionnaire.

No relationship was found between a prolonged postnatal depression and behaviour disturbance in the child, but children whose mothers had brief postnatal depressive episodes showed more behaviour disturbance than those whose mothers had not been depressed since childbirth.

The possible relationship between childhood disturbance and maternal depression has been the subject of several studies. Weissman *et al* (1972) found that three-quarters of children whose mothers had had in-patient treatment for depression showed emotional disturbance, while Richman *et al* (1975) and Richman (1977), in a study of less severe depressive illness, found an association between this and behavioural disturbance in the three-year-old child, as well as noting the duration to be related to maternal depression (Richman *et al*, 1982). These findings have recently been confirmed by another London study (Ghodsian *et al*, 1984). Furthermore, young mothers from some urban areas are known to be at particular risk of depression (Brown *et al*, 1975; Richman *et al*, 1975; Richman, 1977) and depression following childbirth is also particularly common (Pugh *et al*, 1963; Kendell *et al*, 1981; Cox *et al*, 1982; Kumar & Robson, 1984).

However, there have been only two published prospective studies of postnatal depression and later child behaviour, and their findings conflict. Uddenberg & Englesson (1978) in Sweden, examined the mental state of 69 women in the puerperium and again four and a half years later, when the child's behaviour was also assessed; an association was found between postnatal 'mental disturbance' and a mother's tendency to describe her child in a negative way. It was also noted that children of mothers who had a puerperal psychiatric disorder described their mothers more negatively than children of non-depressed mothers. This study, however, used unfamiliar measures of psychiatric illness and behaviour disturbance, and 28% of mothers could not be followed-up. In the second

study (Ghodsian *et al*, 1984), a sample of 131 London women booking into an ante-natal clinic were followed-up until their children reached 42 months of age. The follow-up rate was rather greater (82%), and interviewer bias was minimised by ensuring where possible that women were seen by different interviewers at different stages of the study. Using well standardised measures similar to those of the present study, no relationship was found between maternal depression at four months post-partum and later child disturbance.

Using data from the earlier study of postnatal depression in Edinburgh (Cox *et al*, 1982) we set out to re-examine the hypothesis that three-year-old children whose mothers had been depressed following their birth would show more behavioural difficulty than children of mothers not depressed at that time. In the previous Edinburgh study of 103 mothers, 13 had a severe postnatal depression that lasted from shortly after delivery until the postnatal interview (PNII), carried out 3-5 months post partum (PD group). All these mothers fulfilled Pitt's criteria for an atypical post-partum neurotic depression (Pitt, 1968). A further 17 had more brief and milder depressive symptoms (PS group) which, though remitted by PNII, had nevertheless lasted in 15 for at least four weeks.

Method

Of the 103 subjects in the earlier study, 91 were successfully followed-up and re-interviewed three years later (PNIII); only two subjects refused further contact, eight had moved abroad, and no information was available about a further two. Except in three cases, the interviews were carried out in the subject's own home by AR, who had not interviewed any of the women before;

one subject could not be interviewed at home, but agreed to have an extensive telephone interview with AR. The interviewer was initially blind to whether or not the mother had had postnatal depression previously. One of the research psychiatrists (RW or JC) was a co-rater in a sixth of these home interviews. During this interview, four standardised instruments were administered.

- As in the study of Ghodsian *et al* (1984), Richman's Behavioural Screening Questionnaire (BSQ) was used to assess the child's behavioural disturbance (Richman & Graham, 1971).
- The Standardised Psychiatric Interview (SPI) (Goldberg *et al*, 1970) was slightly abbreviated, and used to record the mother's current mental state at interview.
- The Child Behavioural Checklist (BCL) (Richman & Graham, 1971) was completed by the mothers themselves.
- The Eysenck Personality Questionnaire (EPQ) (Eysenck & Eysenck, 1975) was also completed by the mothers.

To reduce the possible aspect of bias, the BSQ was the first measure to be administered. This is based on a semi-structured interview and includes ratings of appetite and sleep disturbance, encopresis, enuresis, mood, temper control, over-activity, dependency, non-specific anxiety, and specific phobias. Probing questions were also used to clarify these symptoms and to enable the detailed ratings to be made. The general health of the child, opportunity to mix with local children, and the frequency of attendance at a nursery school or playgroup were also noted. In addition, the number of secure caregivers was recorded and the degree of secure attachment provided by each rated on a five-point scale. A total score was then derived to indicate the amount of secure care-giving provided by the husband and grandmother. To test the success of maintaining blindness, once the BSQ was completed, the interviewer recorded whether she thought the mother had had a postnatal depression three years previously. The SPI was then administered, after which a retrospective account was sought of any depressive episodes experienced by the mother during the lifetime of the child. The severity of such episodes was measured, using symptom ratings from the SPI.

The obstetric and paediatric case records were also obtained for 89 of the 91 children, which enabled the postnatal complication score of Littman & Parmelee (1978) to be determined. This scale recorded the severity of health complications in the child during the first post-partum week.

Results

Only eight of the 91 women recalled a depressive episode during the 12 months preceding PNIII and only one mother was diagnosed as having clinical depressive illness at interview. Unlike Ghodsian's study, in which one-third of mothers were depressed at the 42 month follow-up interview, it was only necessary to exclude one case to partial out the effects of concurrent maternal depression.

Analysis of the mother's account of depression that had occurred since childbirth showed that 10 of the 16 women with postnatal depressive symptoms (PS) had subsequent

depressive episodes. However, only one of these episodes had occurred after the second postnatal year and nine had been of brief duration, i.e. six months or less. It was interesting that four of these ten depressive episodes followed a further pregnancy, and in a further two the mother was preoccupied with a fear about her child's health. By contrast, of the 11 with prolonged postnatal depression (PD), only two had subsequent depressive episodes between PNII and PNIII, although five had become pregnant again; however, the overall duration of their depressive illness was significantly longer. In seven of these 11 women, the depressive illness present at PNII had gone on for at least the first post-partum year, and in two mothers had lasted for more than two years.

Two further groups of mothers were also identified for our subsequent analysis. The first was of 15 mothers who reported having suffered one or more depressive episodes between PNII and PNIII but who had not previously had prolonged or more brief depressions post-partum (EP group). The remaining group was of mothers who had not been depressed at any time since childbirth (NOT DEP group). Only one mother was clinically depressed at our postnatal interview, when the BSQ ratings were made.

The relationship between BSQ, BCL scores, and maternal depression was then investigated, using analysis of variance, and the significance of any differences in BSQ or BCL scores between the four groups (PD, PS, EP and NOT DEP) was determined. No significant increase in the BSQ scores was found for those children whose mothers had experienced a prolonged postnatal depressive illness (PD), when compared with children whose mothers had not been depressed at any time since childbirth (NOT DEP). However, (Figure 1), children whose mothers had had postnatal depressive symptoms (PS) did have a significantly higher mean BSQ score than that found in any of the other three groups. The mean BCL scores for each group also showed a similar pattern to the BSQ, although these differences between groups did not reach statistical significance. Detailed analysis of the BSQ interviews was undertaken, which showed that the increased mean behaviour score of children whose mothers had previously had postnatal depressive symp-

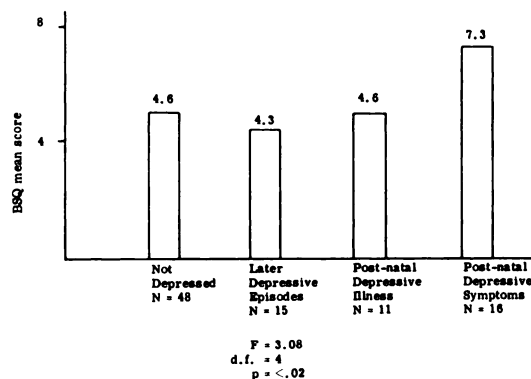


FIG. 1 Mean BSQ scores and post-natal depression

toms (PS) was not caused by the presence of a few severely disturbed children. Thus, in only five of the total sample (6%) was the BSQ score above the cut-off point for 'disturbance' recommended by Richman.

The following case histories illustrate the range of behaviour disturbance that was found:

Andrew: BSQ total score 6. A three year-old boy with poor appetite, minor food fads, separation anxiety, frequent night waking, and sleeping regularly in his parents' bed. His mother had had depressive symptoms (PS) and said he "never settled" as a baby.

Patricia: BSQ total score 8. An anxious first-born child with eczema, who made frequent visits to the toilet, and soiled herself at least once daily. Her mother presented as a tense and controlled woman, who said that her daughter had a particularly close relationship to her father.

Willie: BSQ total score 10. This first-born boy had a nightly pattern of waking and then sleeping in his parent's bed. He always had been a worrier and was jealous and quarrelsome with his younger brother, as well as with other children. His mother had had depressive symptoms (PS), with thoughts of infanticide.

Fiona: BSQ total score 12. She had a poor appetite with some food fads. Her father was a Petty officer in the Merchant Navy, and she was only content when her father was at home. She had much separation anxiety from her mother, awaking each night and then sleeping in her mother's bed. She was also attention-seeking and had poor peer relationships. Her mother had developed a hysterical aphonia and hemiparesis during pregnancy, of which there was some slight evidence still at the PNIII follow-up interview. She said she had felt trapped by her new baby, was afraid of her, and had not wanted to touch her in case she became ill. In infancy, she could not leave Fiona to sleep and had been worried about feeding her.

Because a low BSQ score might have missed a more circumscribed but nonetheless disabling behaviour disorder, all the BSQ protocols were also carefully reviewed by RW using customary clinical criteria. However, again, no differences were found between children whose mothers had a postnatal depressive illness, and those who had never been depressed at all since childbirth.

As many PS women also had further depressive episodes, the BSQ scores for those ten children whose mothers did have subsequent depressive episodes were compared with children of the six PS mothers who had no such further depression. Although there was a non-significant tendency for children whose mothers had recurrent depressive episodes to have an increased BSQ score, this was not because an increased BSQ score was associated with depressive episodes in the preceding 18 months. Other differences between the 'illness' and 'symptom' mothers are shown in Table I.

Mothers with postnatal depressive symptoms (PS) were more likely than those with depressive illness (PD) to be primagravidae, to have discontinued breastfeeding, to have had an early separation from their own mother, to recall having been more anxious about their baby, and to be uncertain about their maternal role. PD mothers, on the other hand, more often had been preoccupied with marital difficulties and social or housing problems. They

TABLE I
Differences between depressive illness (PD) and depressive symptoms (PS) mothers

(a) No significant differences:	
Previous premenstrual symptoms	
Unwanted/unplanned conception	
Housing satisfaction	
Financial satisfaction	
Confiding relationship	
(b) Commoner in PS group:	
Long childhood separation from mother	P < 0.01
Postnatal depressive preoccupation with new baby/maternal role	P < 0.01
(c) Commoner in PD group:	
Considered termination	P = 0.07
Marital relationship less often improved by pregnancy	P < 0.001
Marital relationship at 3-5 months post partum	
Deteriorated	P < 0.001
Sexual dissatisfaction	P < 0.001
Sexual deterioration	P < 0.01
Maternal neuroticism	P < 0.05

also had significantly higher neuroticism and SPI scores at PNIII.

Analysis of the caregiving scores showed that the mother was the principal caregiver for 59 children and that the father only carried out this task for five children. In 14 cases, the father had no caregiving role whatsoever, and in a further three there was no father available. We found no relationship between the Caregiving Scale scores and either postnatal depression or child disturbance.

Table II shows that there was an association between certain variables and depression after childbirth, with an

TABLE II
Postnatal depression and perinatal complications, primiparity and neuroticism (PS and PD groups combined)

	BSQ		
Ordinal position	Mean	s.d.	n
Not depressed/Not a first child	4.16	2.66	31
Not depressed/First child	4.88	2.79	33
Depressed/Not a first child	5.09	3.33	11
Depressed/First child	6.88	2.50	16
	F = 3.42, d.f = 3, P = 0.02		
	Richman Interview		
With perinatal complications	Mean	s.d.	n
Not depressed/No complications	4.36	2.91	45
Not depressed/Complications	4.95	2.27	19
Depressed/No complications	6.07	2.99	15
Depressed/Complications	6.25	3.02	12
	F = 2.29, d.f = 3, P = 0.08		
	Richman Interview		
With maternal neuroticism	Mean	s.d.	n
Not depressed/No neuroticism	4.42	2.73	48
Not depressed/Neuroticism	5.00	3.29	8
Depressed/No neuroticism	6.33	3.13	18
Depressed/Neuroticism	6.67	2.66	6
	F = 2.608, d.f = 3, P = 0.06		

increased BSQ score. Thus having a first born child, experiencing a postnatal complication, and having a higher neuroticism score were all associated with an increased BSQ for children whose mothers were also depressed; the increased BSQ score, however, only reached a significant level for having a first child.

No association between BSQ and EPQ scores was found, but not unexpectedly, there was a weak association between the BSQ and total SPI score at PNIII (Spearman rank correlation $r = 0.22$, $P < 0.02$). No relationship was found between the postnatal complication score, or low birth weight, and the BSQ.

The effect of bias

Table III shows that the interviewer guessed correctly almost half of those mothers who had had a postnatal depressive illness (PD), but only one of the 16 PS women.

An incorrect belief by the interviewer that the mother had postnatal depression was associated with a slight increase in total BSQ and the SPI score at PNIII.

Discussion

These data have shown that the three year-old children whose mothers had postnatal depression but in seven out of the 13 had lasted one year or more did not show any increased behaviour disturbance, when compared with children whose mothers had not been depressed at any time since childbirth.

This result therefore confirms the recent finding of Ghodsian *et al*, and is somewhat reassuring, although neither study included measures of temperament or cognition.

We were nevertheless surprised to discover that children whose mothers had shorter postnatal depressive episodes did have more behaviour disturbance than children of non-depressed mothers. Although we found that the disturbance was not severe, this association has not been previously identified by others and therefore requires further explanation. The absence of an association with paediatric complications in the first week would suggest that the cause of this behaviour disturbance was not as a sequel to a physical illness or congenital handicap. We have found that PS mothers differed from PD mothers on a number of important variables; although the overall duration

of their depressive symptoms was briefer these mothers were more anxiously preoccupied with their baby, and were also more reluctant to continue breastfeeding than PD mothers. Although we could not exclude the possibility that the more favourable outcome for babies of PD women was because other caregivers had been available in their early life, even at three years-old alternative caregivers were only rarely available for any of the children of these mothers.

Our results suggest that a depressed mood in the puerperium may not invite an enduring effect on the interaction between mother and child, except when a depressed mother is excessively concerned about her child, or uncertain about her own maternal role.

It is possible that these less prolonged depressive episodes may disrupt the relationship between the mother and her infant, perhaps in a similar way that a period of mother-infant separation during infancy in monkeys has been reported to disrupt the mother-infant relationship of some (Hinde, 1977; Hinde & McGinnes, 1977). An alternative explanation for our finding is that depressive symptoms recurred in those mothers who had a specific difficulty in relating with their child, whereas in those with a more prolonged depressive illness, biological factors are more important in the aetiology of depression, rather than mothering difficulties. In support of this latter explanation was firstly our finding that the PS group were predominantly primigravidae, although Richman *et al* (1982) did not find first-born children in general at risk for behavioural problems. Secondly, that of ten mothers with postnatal depressive symptoms who had subsequent depressive episodes, only one had occurred in the third year of the child's life, whilst in six the further episode was associated with anxieties in fulfilling their maternal role (in two of the episodes the depressive preoccupation was concerned with the same child, and four followed a subsequent childbirth). However, small cell numbers prevented a more formal statistical analysis of the significance of these latter observations.

As only current mood disturbance was recorded in the study of Ghodsian *et al*, similar depressive episodes earlier than the four months post-partum assessments and at times other than the fourteenth month during the second year of the child's life may not have been identified in their study. The PS group in our study may thus correspond to the subgroup of women in Ghodsian *et al*'s study who were found to have disturbed children at 42 months, but who were noted only to be depressed at the 14-month post-partum follow-up.

TABLE III
Interviewer's blind rating of postnatal depression

<i>Interviewer's rating of whether mother had postnatal depression</i>	<i>NOT DEP</i>	<i>EP</i>	<i>PD</i>	<i>PS</i>
	<i>n = 48</i>	<i>n = 15</i>	<i>n = 11</i>	<i>n = 16</i>
Yes	2	0	5	1
No	46	15	6	15
	$\chi^2 = 28.4$, d.f. = 4, $P < .001$			

Since a limitation of the BSQ is that it includes no direct assessment of the child, it has been suggested (Ghodsian *et al*, 1984) that the child behaviour ratings are largely "the function of both the child and the mother", and "illustrative of stresses within the family setting". However, our finding that the BCL scores also showed a similar pattern among the four groups would suggest that the BSQ results were not distorted by the mother's account to the interviewer.

It is clear that our findings of increased child disturbance if mothers had brief postnatal depression needs to be replicated by others using a larger sample, and the inclusion of measures of cognition, temperament, and mother-child interaction would also be important. However, our confirmation of the recent finding of Ghodsian *et al* clearly suggests that the impact of severe depression on maternal responsiveness to the baby may be less daunting than had previously been proposed (e.g. Winnicott, 1965; Kohut, 1971).

We have also shown that in studies of this kind, there is a need to detect interview bias, and that it was not always possible to preserve this blindness completely. However, since in both studies any

such bias effect was likely to be in the direction of an association between prolonged postnatal depression and behaviour disturbance, the null hypothesis (that no difference would be found between the behaviour of children whose mothers had prolonged postnatal depression and those whose mothers were not depressed in the puerperium at all) has been upheld.

The low rate of current depression among this group of young mothers deserves brief comment. Although only one woman was currently depressed, a further two were noted to be recovering from depression. However, we consider this finding to be robust because a well validated measure of depression was used, and because Surtees *et al* (1983) had found the overall prevalence of depression in a community sample of Edinburgh women to be much lower than that found in similar studies conducted elsewhere.

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