

## Maternity Blues

### III. Associations with Obstetric, Psychological, and Psychiatric Factors

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One hundred and six women were assessed psychiatrically in the 14–16th and 36–38th weeks of pregnancy and the 12th week after childbirth. They also completed a maternity blues questionnaire daily in the ten days after delivery. Blues scores were significantly associated with: neuroticism; anxiety and depressed mood during pregnancy; fear of labour; poor social adjustment; and retrospective severity of pre-menstrual tension. Blues scores were not associated with obstetric factors, with previous history of psychiatric disorder, or with case status on the PSE in pregnancy or 12 weeks after delivery.

In the two preceding papers, an account was given of the development and evaluation of a questionnaire for detecting and measuring maternity blues. This paper reports a study in which this questionnaire was used to examine the frequency and severity of the blues in relation to social, obstetric, psychological, and psychiatric factors.

There have been few reports of positive associations between the blues and social factors. The blues has been found to be associated with marital disharmony and with psychosexual problems (Nillson, 1972; Ballinger *et al*, 1979; Cutrona, 1983), but not with social class (Jarrahi-Zadah *et al*, 1969; Stein, 1980) and not with life events or chronic background difficulties (Davidson, 1972; Pitt, 1973; Ballinger *et al*, 1979; Paykel *et al*, 1980; Stein, 1980).

The evidence for associations between the blues and obstetric factors is conflicting. The blues has been reported to be more common in primiparous women (Yalom *et al*, 1968; Nott *et al*, 1976), more common in multiparous women (Davidson, 1972), and not related to parity at all (Robin, 1962; Pitt, 1973; Handley *et al*, 1980; Stein, 1980). Obstetric problems in pregnancy have been found to be associated with the blues by some workers (Yalom *et al*, 1968; Davidson, 1972), but not by others (Pitt, 1973; Ballinger *et al*, 1979; Stein, 1980). It has been suggested that intensive physiological monitoring in labour may be associated with the blues (Oakley & Chamberlain, 1982), but a study by Long Blumberg (1980) did not support such a link. In another study, neither Caesarean section nor length of confinement was found to be associated with the blues (Kendell *et al*, 1984). There seems to be agreement that the frequency of the blues is no different between breast-feeding and bottle-feeding mothers (Ballinger *et al*, 1979; Harris, 1980; Kendell *et al*, 1981; Cox *et al*, 1982). Feeding difficulties and the blues were found

to be associated by Pitt (1973), but not by other workers (Harris, 1980; Kendell *et al*, 1981; Cox *et al*, 1982).

Psychological evidence is also conflicting. In studies by Pitt (1973) and by Nott *et al* (1976), no significant associations were found between the blues and scores on the Eysenck Personality Inventory (EPI; Eysenck & Eysenck, 1964). In another study, however, the peaking of blues symptoms on the third and fourth days after delivery was greater in women with higher EPI neuroticism scores (Kendell *et al*, 1984). There has been similar disparity in reports about patients' attitudes. Thus the blues was found to be associated with rejecting or ambivalent attitudes to pregnancy (Nillson & Almgren, 1970), and with fear of labour (Yalom *et al*, 1968), but other workers found no such relationships (Pitt, 1973; Ballinger *et al*, 1979).

The main psychiatric interest has been in possible associations between the blues and affective disorders. The evidence about previous affective disorders is difficult to evaluate, because most studies have examined previous psychiatric disorders in general, rather than affective disorders in particular. The blues has been reported to be associated with previous non-puerperal disorders, including depression (Ballinger *et al*, 1979; Stein, 1980) and mental illness in general (Nillson & Almgren, 1970), but most investigators have found no such relationships (Yalom *et al*, 1968; Pitt, 1973; Handley *et al*, 1980; Harris, 1980; Stein, 1980). The blues has also been found related to previous puerperal depression (Yalom *et al*, 1968; Harris, 1980; Stein 1980).

There is more agreement about the blues in relation to psychiatric symptoms in the index pregnancy. In five studies, associations were found between the blues and symptoms such as anxiety, depression, and weeping in pregnancy (Davidson,

1972; Nott *et al*, 1976; Handley *et al*, 1980; Harris, 1980; Stein, 1980).

The evidence for an association between the blues and subsequent affective disorder is also difficult to evaluate because most studies have been retrospective, and such retrospective recall is likely to be inaccurate. In a prospective study, Cox *et al* (1982) found that women with severe maternity blues (measured on a visual analogue scale) had a higher risk of later persistent depressive symptoms.

There have been two other limitations in previous research: first, the blues was mainly measured with scales that were not designed for the purpose; second, the risk of affective disorder was examined in relation to the occurrence, but not the severity, of the blues.

For these reasons, it was decided to undertake a prospective study in which the blues would be measured daily during the ten days after delivery, and psychiatric state would be measured twice in the index pregnancy, and again in the 12th week after delivery. The aim was to examine both the frequency and severity of the blues in relation to social, obstetric, psychological and psychiatric factors.

## Method

### Selection of patients

The study was based on a consecutive series of pregnant women who were booked to have their baby in the local maternity unit. A total of 122 women were approached in the 12–14th week of pregnancy and asked to join the study, of whom 112 (92%) agreed to do so.

### Assessment procedures

Assessments were made at four stages: (a) weeks 14–16 of pregnancy; (b) weeks 36–38 of pregnancy; (c) the first ten days after the day of delivery; (d) week 12 of the puerperium. In assessment (a) (weeks 14–16 of pregnancy), psychiatric state was rated at interview by means of the Present State Examination (PSE; Wing *et al*, 1974), and symptoms of depression were rated with the scale of Montgomery & Åsberg (1979). Life events were recorded with the interview for recent life events (Paykel *et al*, 1980).

The following self-rated scales were used: Leeds scales for measuring anxiety and depressed mood (Snaithe *et al*, 1976); the Modified Social Adjustment Scale (SAS-M; Cooper *et al*, 1982); and the Eysenck Personality Inventory (EPI; Eysenck & Eysenck, 1964).

A semistructured interview schedule was used to obtain demographic and social data, and obstetric and psychiatric histories. Also rated were 22 questions concerning attitudes towards pregnancy and childbirth. These were scored as discrete variables on pre-coded scales. Questions included the following: “How happy do you feel about having this baby?”; “Do you have worries about labour and delivery?”;

“How confident do you feel about your ability to look after the baby?”

Questions were also asked about social support. Thus, details of the accessibility of family members were collected and three further questions asked: “Do you have someone you can rely on in a crisis?”; “Is there at least one person in whom you can confide?” “Do you feel that you can confide in your partner?”

In assessment (b) (weeks 36–38 of pregnancy), ratings were again made with the PSE, the Montgomery & Åsberg rating scale, and the life events interview. In addition, the women were asked to complete the blues questionnaire on three consecutive evenings. The purpose here was to obtain antenatal ‘baseline’ blues scores for comparison with later scores in the ten days after delivery. Antenatal ratings were limited to three days in order to maximise the patients’ later co-operation in completing the questionnaire on ten post-natal days. For the same reason, women were not asked to complete the Leeds scales or the SAS-M at this assessment.

In assessment (c) (the ten days after delivery), the women completed the blues questionnaire each day, but no other scales.

In assessment (d) (week 12 of the puerperium), the same standardised measures were used as in assessment (a), except that the EPI was not repeated, and questions were added to assess attitude towards the infant.

Detailed information for all patients was obtained from the obstetric case notes on routine procedures and any complications in the index pregnancy, labour, delivery, and puerperium.

### Method of analysing scores on the blues questionnaire

As reported in paper I, it was found that there was much individual variation and thus a wide range in the percentage of items on the blues questionnaire which post-partum women endorsed (mean 21.3, s.d. 17.7). For the analysis of discrete variables, such as social class, we defined two blues categories based on the severity of blues scores. A woman was allocated to the first category (‘blue 1’) if on any day her total score on the blues questionnaire was higher than the *mean peak* score for the whole group of women (that is, the average of all individuals’ highest scores). A woman was allocated to the second category (‘blue 2’) if on any day her total score on the blues questionnaire was higher than the *mean* score for the whole group (that is, the average of all individuals’ mean scores). Thus, blue 2 denoted a less severe condition.

For the analysis of continuous variables, such as age, two blues measures were used: the individual’s peak score (‘bluehigh’) and the individual’s mean score (‘bluemean’) over the ten post-partum days.

## Results

### Numbers of patients

The numbers of patients at the four assessments were (a) 112, (b) 110, (c) 106, (d) 106. The reasons for patients withdrawing were: miscarriage before the second interview (1);

premature delivery (2); admission to special care after delivery (2); and moving away from the area (1).

#### Blues scores

The numbers of women whose completed questionnaires were satisfactory for analysis were: antenatally, 99; post-natally, 87; both antenatally and post-natally, 79. In this paper, descriptive data are based on the 112 women who were initially recruited, while statistical analyses will be based on the responses of those who completed the blues questionnaire.

#### *Relationships between antenatal and post-natal blues scores*

As reported in paper I the mean blues score for all mothers who completed both antenatal and post-natal blues questionnaires ( $n=79$ ) increased from 14.8 antenatally to 21.3 post-natally ( $t=2.85$ ,  $P<0.01$ ), while the mean peak score increased from 23.6 antenatally to 45.7 post-natally ( $t=6.08$ ,  $P<0.001$ ).

The mean total scores of individual women antenatally (mean 14.8, s.d. 15.3) and post-natally (mean 21.3, s.d. 17.7) were significantly correlated with one another (Pearson's  $r=0.440$ ,  $P<0.001$ ). In other words, women who scored highly before childbirth tended to have the higher scores post-natally. Of the 87 women who completed blues questionnaires in the first ten post-natal days, 37 fulfilled the criterion for blue 1, and 52 were allocated to category blue 2, those in blue 1 automatically being included in the blue 2 population.

#### Social findings

The mean age of the mothers was 28 years (range 16–41 years); most (60%) were aged between 20 and 29 years, while 4% were under 20, 33% between 30 and 39, and 3% over 40 years. Most of the women (92%) were married, 4% were cohabiting, and the rest were single (separated or never married). Nearly half (47%) had a full-time or part-time job. When social class was determined by the method of Goldthorpe & Hope (1974), 72% of the women were deemed to be middle class and 28% working class.

Blues scores were significantly associated with several ratings on the SAS-M completed at weeks 14–16 of pregnancy (Table I). No significant association was found between blues scores and the number or severity of life events reported at either weeks 14–16 or weeks 36–38 of pregnancy.

#### Obstetric findings

The earlier obstetric history was collected from patients at the first assessment (14–16th weeks of pregnancy). Among the 112 women interviewed, the distribution of earlier experiences was: no previous pregnancy, 40 (36%); one or more miscarriages, 32 (29%); one or more terminations, 10 (9%); still births 2 (2%); medical help for infertility 20 (18%).

When interviewed at the 14–16th weeks of pregnancy, 91 (81%) women said the pregnancy was planned. Among

the unplanned pregnancies, half were said to be welcome and half unwelcome.

With one exception, there was no significant association between blues scores in the first ten post-natal days and any item in the obstetric or gynaecological history before the index pregnancy. The one exception was a self-reported history of moderate or severe pre-menstrual tension (13% of the population) which was associated with categories blue 1 and blue 2 (Table I).

Blues scores were not significantly associated with any aspect of the index pregnancy or its sequelae. Thus there were no significant associations with: pregnancy (parity, any complications, number of antenatal visits or hospital admissions); delivery (type of delivery, length of labour, problems such as foetal distress or breech presentation); puerperium (complications such as excessive blood loss, severe tearing, pyrexia, length of stay in hospital); the baby (cord round the neck, jaundice, sticky eye); and feeding the baby (breast or artificial, any feeding problems).

#### Psychological findings

EPI neuroticism scores at the 14–16th weeks of pregnancy were significantly associated with blues scores in the first ten post-partum days (Table I). There was no significant difference between high EPI scorers and low EPI scorers in their day-to-day variation in blues scores.

Of the attitudes towards pregnancy and childbirth, only fear of labour was significantly associated with any blues measure (Table I).

#### Psychiatric findings

Of the 112 women interviewed at assessment (a), 28 reported having consulted their general practitioner (GP) at any time in the past because of mood problems.

Among the 72 women who had previously given birth, 18 reported having experienced depression during the post-partum year (three of these having sought medical help, and two having been referred to a psychiatrist). Thirty-seven women reported having definitely experienced maternity blues, while three women reported having probably done so.

In the 12 months before the first assessment, seven women had seen their GP with complaints of emotional symptoms; two of these women had received medication from the GP and two had been referred to a psychiatrist. During the index pregnancy, one woman had seen her GP because of mild anxiety and depressed mood. At the time of the first assessment, none of the mothers was receiving psychiatric care.

At assessment (a), four of the women interviewed were 'cases' on the PSE; at assessment (b), three women were 'cases'. However, at three months post-partum (assessment d), 13 of the 106 women interviewed were PSE 'cases'. Community surveys have indicated that the prevalence of PSE cases in women is around 10% (Surtees *et al.*, 1983; Gath *et al.*, 1987).

#### *Associations between blues and psychiatric factors*

No significant association was found between blues measures in the first ten post-natal days and any history of

TABLE I  
Associations between maternity blues and social, obstetric, psychological, and psychiatric factors

	n	'Blue 1'		'Blue 2'		'Bluehigh'		'Bluemean'			
		$\chi^2$	P	$\chi^2$	P	Pearson $\gamma$	P	Pearson $\gamma$	P		
<b>Social factors</b>											
SAS-M											
poor overall social adjustment	85	—	—	—	—	—	—	0.205	*	0.318	***
dissatisfaction with role as houseworker	86	—	—	—	—	—	—	0.175	NS	0.194	*
Poor relationship in:											
family unit	63	—	—	—	—	—	—	0.204	NS	0.276	*
extended family	84	—	—	—	—	—	—	0.256	*	0.329	***
marriage	84	—	—	—	—	—	—	0.218	*	0.332	***
Partner a confidante (d.f. = 1):	76	5.05	*	3.80	*	—	—	—	—	—	—
is a confidante											
case		2.16		11.8		3.9		10.5			
non-case		51.3		34.2		55.3		30.3			
is not a confidante											
<b>Obstetric factors</b>											
PMT (d.f. = 1):	56	9.28	**	11.84	***	—	—	—	—	—	—
yes						64.3		14.3			
no						5.4		16.1			
<b>Psychological and psychiatric factors</b>											
EPI neuroticism	87	—	—	—	—	—	—	0.337	***	0.419	***
Attitude											
Fear of labour (d.f. = 3):	76	2.93	NS	8.20	*	—	—	—	—	—	—
marked fear						31.6		23.7			
moderate fear						10.5		2.6			
moderate calm						14.5		5.3			
very calm						2.6		9.2			
PSE case status:											
Time 1	87	0.68	NS	0.86	NS	—	—	—	—	—	—
Time 2	87	0.88	NS	1.03	NS	—	—	—	—	—	—
Montgomery & Åsberg depression ratings:											
Time 1	86	—	—	—	—	—	—	0.307	**	0.274	**
Time 2	86	—	—	—	—	—	—	0.300	**	0.280	**
Leeds scale (time 1):											
depression	86	2.40	NS	1.38	NS	—	—	0.284	**	0.275	***
anxiety (d.f. = 1)	86	4.6	*	8.53	**	—	—	0.287	**	0.399	***
yes						53.5		23.3			
no						8.1		15.1			

\* $P < 0.05$ , \*\* $P < 0.01$ , \*\*\* $P < 0.001$ , — no associations can be determined. Cell values for  $\chi^2$  analysis are shown for significant associations. The findings summarised here give both significant and non-significant results for psychiatric variables, but only significant associations for social, obstetric and psychological variables.

earlier psychiatric disorder, whether puerperal or non-puerperal.

As shown in Table I, blues measures in the first ten post-natal days were not significantly associated with PSE case status in pregnancy as measured at the first and second assessments. However, both 'bluehigh' and 'bluemean' scores were significantly associated with depression in pregnancy as rated on the Montgomery and Åsberg scales at the first and second assessments. On the Leeds scale (given at assessment (a)) all blues measures were significantly associated with anxiety, while 'bluehigh' and 'bluemean' were significantly associated with depression.

No significant associations were found between blues measures in the first ten post-natal days and any psychiatric measures 12 weeks after delivery.

#### Subjective recall of the blues

At assessment (d) (week 12 after delivery), the mothers were asked whether, in their view, they had experienced the blues during the first ten days after childbirth, that is, the days during which they were completing the blues questionnaire. Of the 106 women interviewed, 36 recalled experiencing the blues definitely, 33 probably, and 37 not at all.

Of the 69 women who had had definite or probable blues, 62 reported the onset within the first four post-natal days, and 23 of these identified day 3 as the day of onset. Thirty-eight recalled a blues episode lasting only a single day, while 15 recalled a duration of a week or more. All of the 69 women recalled a 'trigger' for the blues, most commonly tiredness, or conflict with hospital staff.

When these subjective reports were compared with scores on the blues questionnaire, there was no significant association between the women who reported experiencing the blues and those who fulfilled the criteria for blue 1 or blue 2.

#### Discussion

In this study, the main factors positively associated with maternity blues were: poor social adjustment, both overall and within family relationships; poor marital relationships; retrospective history of moderate or severe pre-menstrual tension; high scores on the EPI 'neuroticism' scale; fear of labour; and anxious and depressed mood during the index pregnancy. These findings were generally in agreement with those of earlier published studies.

The finding of an association between the blues and poor family and/or marital relationships is consistent with the findings of Nilsson (1972), Ballinger *et al* (1979), and Cutrona (1983). This is of particular interest because social adjustment was rated six months before the post-natal blues were experienced.

The association found between the blues and the severity of retrospective pre-menstrual tension agrees

with the earlier finding of Nott *et al* (1976). This association could point to a biological (hormonal) basis for the blues. On the other hand, both PMT and the blues could be related to a common third factor, EPI neuroticism. In two other studies, complaints of PMT have been found to be highly correlated with EPI neuroticism (Gath *et al*, 1987; Osborn & Gath, 1989). It is important to note that the menstrual data were collected retrospectively and could therefore be unreliable.

In the present study blues scores in the first ten post-partum days were associated with EPI neuroticism measured in the 14–16th weeks of pregnancy. Kendell *et al* (1984) also found an association between the two, although in their study the association was particularly with peaking of mood in the post-partum period. On the other hand, it should be noted that neither Pitt (1973) nor Nott *et al* (1976) found any association between the blues and EPI neuroticism.

The finding of an association between the blues and fear of labour during the index pregnancy is consistent with the earlier findings of Davidson (1972) and Stein (1980). Our study also agreed with the studies of Pitt (1973) and Ballinger *et al* (1979) in finding no association between the blues and any other attitude to pregnancy or labour.

Lastly, the present study agreed with several earlier studies (Davidson, 1972; Nott *et al*, 1976; Handley *et al* 1980; Harris, 1980; Stein, 1980) in finding the blues to be associated with mood during the index pregnancy, notably with anxiety and depressed mood.

Turning to the negative findings, no associations were found between the blues and: demographic and social factors (other than social adjustment); life events; obstetric factors; and psychiatric disorder either before or after the index pregnancy. These findings are generally consistent with those of the earlier published studies.

With regard to demographic and social factors, maternity blues was not associated with age, marital status, employment, social class, or social support. In these respects, the blues seems to differ from depressive disorder, which has been found to be related to all these factors (Warheit, 1979; Brown & Harris, 1978). The lack of any association between the blues and life events is consistent with earlier findings (Davidson, 1972; Pitt, 1973; Ballinger *et al*, 1979; Paykel *et al*, 1980; Stein, 1980). Here again, the lack of a positive association seems to differentiate the blues from depressive disorder, which has been found to be related to life events (Brown & Harris, 1978; Paykel *et al*, 1969).

There was a notable absence of association between maternity blues and obstetric factors. While



some workers have reported positive associations between the blues and obstetric factors (Yalom *et al*, 1968; Davidson, 1972), most workers have found no such links.

Perhaps the most important negative finding was the lack of any association between the blues and psychiatric disorder. In the present study, the blues was not related to previous psychiatric disorder, whether puerperal or non-puerperal. The same finding has been reported by most earlier investigators (Yalom *et al*, 1968; Pitt, 1973; Handley *et al*, 1980; Harris, 1980; Stein, 1980). Similarly, we found the blues unrelated to psychiatric disorder 12 weeks after delivery. Two previous prospective studies did find an association between mood in the first few post-partum days and later psychiatric disorder. The explanation may be in the use of different measures in the immediate post-natal period – a measure of depressed mood in one study (Handley *et al*, 1980), and in the other study a visual analogue scale comprising six items (happiness, depression, tears, anxiety, irritability, lability) (Kendell *et al*, 1981).

In the present study, a negative finding with important implications for research method was that the patients' subjective recall of the blues 12 weeks post-partum showed little correspondence with their experience recorded on the blues questionnaire in the first few post-natal days. This finding confirms that collecting blues data retrospectively is unreliable.

In conclusion, the findings could point to a coherent pattern: in predisposed women, the impact of pregnancy and the anticipation of childbirth might induce symptoms of anxiety and depression, together with fear of labour. These symptoms may be worse in women scoring highly on EPI neuroticism or with poor social adjustment. The combination of these factors may increase the incidence or severity of the blues. These psychological and social findings do not preclude biological causes, which could be primary.

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#### References

- BALLINGER, C. B., BUCKLEY, D. E., NAYLOR, G. J., *et al* (1979) Emotional disturbance following childbirth: clinical findings and urinary excretion of cyclic AMP. *Psychological Medicine*, **36**, 293–300.
- , DAY, D. S. G., NAYLOR, G. J., *et al* (1982) Some biochemical findings during pregnancy and after delivery in relation to mood change. *Psychological Medicine*, **12**, 549–556.
- BROWN, G. W. & HARRIS, T. (1978) *Social Origins of Depression*. London: Tavistock Publications.
- COOPER, P., OSBORN, M., GATH, D., *et al* (1982) Evaluation of a modified self-report measure of social adjustment. *British Journal of Psychiatry*, **141**, 68–75.
- COX, J. L., CONNOR, Y. & KENDELL, R. E. (1982) Prospective study of the psychiatric disorders of childbirth. *British Journal of Psychiatry*, **140**, 111–117.
- CUTRONA, C. E. (1983) Causal attributions and perinatal depression. *Journal of Abnormal Psychology*, **92**, 161–172.
- DAVIDSON, J. R. T. (1972) Post partum mood changes in Jamaican women; a description and discussion on its significance. *British Journal of Psychiatry*, **121**, 659–663.
- EVERITT, B. S. (1974) *Cluster Analysis*. London: Heineman.
- EYSENCK, H. J. & EYSENCK, S. B. G. (1964) *The Manual of The Eysenck Personality Inventory*. London: University of London Press.
- GATH, D., OSBORN, M., BUNGAY, G., *et al* (1987) Psychiatric disorder and gynaecological symptoms in middle aged women: a community survey. *British Medical Journal*, **194**, 213–218.
- GEORGE, A. J., COPELAND, J. R. M. & WILSON, K. C. M. (1980) Prolactin in the maternity blues. *British Journal of Pharmacology*, **70**, 102–103.
- GOLDBERG, D. P. (1972) *The Detection of Psychiatric Illness by Questionnaire*. London: Oxford University Press.
- GOLDBERG, D. P., COOPER, B., EASTWOOD, M. R., *et al* (1970) A standardised psychiatric interview for use in community surveys. *British Journal of Preventive and Social Medicine*, **24**, 18–23.
- GOLDTHORPE, J. H. & HOPE, K. (1974) *The Social Grading of Occupations*. Oxford: Clarendon Press.
- HAMILTON, J. A. (1962) *Post Partum Psychiatric Problems*. St Louis: C.V. Mosby Co.
- HANDLEY, S. L., DUNN, T. L., WALDRON, G., *et al* (1980) Tryptophan cortisol and puerperal mood. *British Journal of Psychiatry*, **136**, 498–508.
- HARRIS, B. (1980) Prospective trial of L-tryptophan in maternity blues. *British Journal of Psychiatry*, **137**, 223–235.
- JARRAHI-ZADEH, A., KANE, F. J., VAN DER CASTIE, R. L., *et al* (1969) Emotional and cognitive changes in pregnancy and the early puerperium. *British Journal of Psychiatry*, **115**, 797–805.
- JOHNSTON, M. (1980) Anxiety in surgical patients. *Psychological Medicine*, **10**, 145–152.
- KENDELL, R. E., MCGUIRE, R. J., CONNOR, Y., *et al* (1981) Mood changes in the first three weeks after childbirth. *Journal of Affective Disorders*, **3**, 317–326.
- , MACKENZIE, W. E., WEST, C., *et al* (1984) Day to day mood changes after childbirth: further data. *British Journal of Psychiatry*, **145**, 620–625.
- KENNERLEY, H. & GATH, D. (1986) Maternity blues reassessed. *Psychiatric Developments*, **1**, 1–17.
- LEVY, V. (1987) The maternity blues in post-partum and post-operative women. *British Journal of Psychiatry*, **151**, 368–372.
- LIKERT, R. (1932) A technique for measurement of attitudes. *Archives of Psychology*, No. 140.
- LONG BLUMBERG, N. (1980) Effects of neonatal risk, maternal attitude and cognitive style on early post-partum adjustment. *Journal of Abnormal Psychology*, **89**, 139–150.
- MACKAY, C. J. (1980) The measurement of mood and psychological activity using self-report techniques. In *Techniques in Psychophysiology* (eds I. Martin & P. H. Venables), pp. 501–558. Chichester: John Wiley & Sons Ltd.
- MANLEY, P. C., McMAHON, R. J., BRADLEY, C. F., *et al* (1982) Depressive attributional style and depression following childbirth. *Journal of Abnormal Psychology*, **91**, 245–254.

- MATHEWS, A. & RIDGEWAY, V. (1981) Personality and surgical recovery: a review. *British Journal of Clinical Psychology*, **20**, 243–260.
- MONTGOMERY, S. A. & ÅSBERG, M. (1979) A new depression scale designed to be sensitive to change. *British Journal of Psychiatry*, **134**, 382–389.
- NILSSON, A. (1972) Paranatal emotional adjustment. In *Psychosomatic Medicine in Obstetrics and Gynaecology* (ed. N. Morris), pp. 157–160. Basel: Karger.
- & ALMGREN, P. (1970) Para-natal emotional adjustment: a prospective investigation of 165 women. *Acta Psychiatrica Scandinavica* (suppl. 220).
- NOTT, P. N., FRANKLIN, M., ARMITAGE, C., *et al* (1976) Hormonal changes and mood in the puerperium. *British Journal of Psychiatry*, **128**, 379–383.
- OAKLEY, A. & CHAMBERLAIN, G. (1981) Medical and social factors in post-partum depression. *Journal of Obstetrics and Gynaecology*, **1**, 182–187.
- OPPENHEIM, G. (1962) Psychological aspects of pregnancy and childbirth. Lecture to the RMPA quoted by Pitt (1973).
- OSBORN, M. & GATH, D. (1989) Psychological and physical determinants of the pre-menstrual syndrome (In preparation).
- OWEN, C. Y. & CAMPBELL, E. A. (1987) Maternity Blues: a genuine peaking experience. Paper presented at BPS conference: London.
- PAYKEL, E. S., MYERS, J. K., DIENELI, M. N., *et al* (1969) Life events and depression: a controlled study. *Archives of General Psychiatry*, **21**, 753–760.
- , EMMS, E. M., FLETCHER, J., *et al* (1980) Life events and social support in puerperal depression. *British Journal of Psychiatry*, **136**, 339–346.
- PITT, B. (1973) Maternity blues. *British Journal of Psychiatry*, **122**, 431–433.
- ROBIN, A. M. (1962) Psychological changes associated with childbirth. *Psychiatric Quarterly*, **36**, 129–150.
- SNAITH, R. P., BRIDGE, G. W. K. & HAMILTON, M. (1976) The Leeds scale for self-assessment of anxiety and depression. *British Journal of Psychiatry*, **128**, 156–165.
- STEIN, G. S. (1980) The pattern of mental change and body weight change in the first post-partum week. *Journal of Psychosomatic Research*, **24**, 165–171.
- (1982) The maternity blues. In *Motherhood and Mental Illness* (eds P. Brockington & R. Kumar), pp. 119–154. London: Academic Press.
- SURTEES, P. G., DEAN, C., INGHAM, J. G., *et al* (1983) Psychiatric disorder in women from an Edinburgh community: association with demographic factors. *British Journal of Psychiatry*, **142**, 238–246.
- WARHEIT, G. J. (1979) Life events, coping, stress and depressive symptomatology. *American Journal of Psychiatry*, **136**, 502–507.
- WING, J. K., COOPER, J. E. & SARTORIUS, N. (1974a) *The Measurement and Classification of Psychiatric Symptoms*. London: Cambridge University Press.
- , —, — (1974b) *An Instruction Manual for the Present State Examination and CATEGO Programme*. London: Cambridge University Press.
- WISHART, D. (1975) *Clustan I.C. Manual*. University College, London: Computer Centre.
- YALOM, I., LUNDE, D. T., MOOS, R. H., *et al* (1968) Post-partum blues syndrome: a description and related variables. *Archives of General Psychiatry*, **18**, 16–27.

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