

Predicting depression in women: the role of past and present vulnerability

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ABSTRACT

Background. A prospective study, covering just over a 1-year period, sought to confirm an earlier finding that around 40% of women who experience a severe life event in the presence of two ongoing psychosocial vulnerability factors, (negative close relationships and low self-esteem) will develop a major depressive episode. Distal risk factors were examined to see if they improved prediction.

Methods. A population sample of 105 mainly working-class mothers with vulnerability and without depression were interviewed three times over a 14-month period to date the occurrence of severe life events and onset of major depression. Degree of vulnerability was assessed at first contact together with distal risk in terms of childhood neglect/abuse and any earlier episodes of depression.

Results. Thirty-seven per cent of these vulnerable women became depressed in the study period. The majority experienced a severe life event, and of these, 48% had onsets. Contrary to expectation, risk was only a little less among those with just one of the two vulnerability factors. Two-thirds of women with an onset had been depressed in previous years. Although this was associated with increased risk, the effect was greatest for those who had experienced an episode before age 20. A relationship between childhood neglect/abuse and onset was entirely accounted for by such early depression.

Conclusion. An aetiological model of depression outlined in earlier research was confined with a new factor of teenage depression shown to increase risk of onset.

INTRODUCTION

This paper reports on a prospective study of community-based women selected for being at particularly high risk of developing a major depressive episode. As many as one in ten onsets of clinical depression in a 12-month period can be expected among unselected working-class mothers in inner London (Brown & Harris, 1978; Bebbington *et al.* 1981). However, a study carried out in the early 1980s found treble this rate among similar women having certain psychosocial risk factors (Brown *et al.* 1990*a*). The aim of the current study is to replicate this result and examine whether distal factors in-

volving childhood experience and prior depression play a role over and above current factors in increasing prediction.

A number of studies have shown that ongoing depression is associated with social support, negative cognitions and social adversity. Depressed individuals have greater difficulties in interpersonal interaction (Weissman & Paykel, 1974; Coyne, 1976; Brugha, 1995), less gratifying social contacts (Roy, 1978; Costello, 1982) and a weak social support system (Andrews *et al.* 1978). They also manifest a variety of negative cognitive patterns (Beck, 1967; Seligman *et al.* 1979; Lewinsohn *et al.* 1981; Teasdale, 1988). However, only prospective studies can establish whether these characteristics precede a depressive episode and whether they can be used to predict a new onset (Lewinsohn *et al.* 1988).

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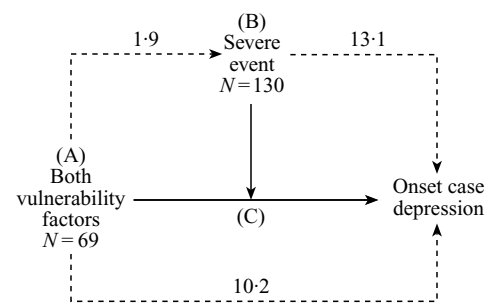
Although the role of stressors in provoking depressive episodes is well documented (Paykel, 1978; Tennant *et al.* 1981; Billings *et al.* 1983), such events cannot usually be used for predictive purposes since they are usually too closely linked in time with the onset itself, usually occurring in the prior few weeks.

The choice of risk factors used in the current study was guided by a psychosocial model developed over the last 20 years identifying both vulnerability and provoking agent in the genesis of depression (Brown & Harris, 1978). Vulnerability factors were defined in terms of their capacity to increase risk in the presence of stressful life events (see above). The original model originated from a cross-sectional study of women living in Camberwell, South London in the 1970s and was elaborated 10 years later in a prospective study of mothers in Islington, North London. The prospective nature of the latter enquiry allowed for the investigation of 'soft' variables in vulnerability, such as self-esteem, without the risk that the presence of a depressive disorder would increase bias.

The Islington study selected individuals known to be at an increased risk of disorder on the basis of a demographic-type variables: women were chosen because their rates of depression are typically found to be double those of men (Bebbington *et al.* 1981; Nolen-Hoeksema, 1987; Kessler *et al.* 1994); working-class mothers were selected because they have been shown to have nearly treble the rate of depression of their middle-class and childless counterparts (Brown & Harris, 1978; Surtees, 1984) and single mothers because of their documented higher risk (Moss & Plewis, 1977). Finally, an inner-city location was selected because of the higher rates of both stressors and depressive disorders in such areas (Brown & Prudo, 1981; Gaminde *et al.* 1993; Kessler *et al.* 1994). Among the 303 working-class Islington mothers free from depression at first contact 10.5% became depressed during the next 12-months (Brown *et al.* 1990a).

Current vulnerability and onset

Two indices were used in the Islington enquiry to reflect vulnerability. Psychological vulnerability consisted largely of 'negative evaluation of self' (NES) but also included chronic symptomatology of anxiety or low grade depression.



(C) Details of the core interactive link

	% onset	Relative risk
A + B	45.8 (22/48)	76.3
A alone	9.5 (2/21)	15.8
B alone	8.5 (7/82)	14.2
Neither	0.6 (1/152)	1.0

FIG. 1. Islington 1980 model of depression showing relative risks among 303 London mothers (Brown *et al.* 1990a). (--->, Zero order links (relative risks); —>, core interactive causal link.)

A negative interpersonal environment was reflected in 'negative elements in core relationships' (NECR) involving conflict with partner or children, or lack of support outside the home in the case of single mothers. Each index was associated with an increased risk of onset (Brown *et al.* 1990a). However, those with both psychological and interpersonal vulnerability had a greatly increased risk: one in three became depressed in the following 12 months compared with 3% of remaining women. Only 23% of the 303 women free from case depression at first contact had both vulnerability factors, yet as many as three-quarters of the onsets (24) occurred in this group of 69 women. Such vulnerability also doubled the likelihood of experiencing a severely threatening event in the follow-up period and nearly half of these women with both vulnerability factors who experienced such an event became depressed (22/48, see Fig. 1).

Distal risk factors

In the 1980 Islington series, childhood adversity was assessed in terms of severe neglect, physical or sexual abuse before age 17. An index based on the presence of any one of these was associated with a doubling of risk of depression in the study period (Bifulco *et al.* 1994). Such childhood experience was related to the two vulnerability factors already discussed and in

practice was only linked to depression in their presence. Evidence of a similar indirect link has now been reported in a number of studies (Harris *et al.* 1986; Kessler & Magee, 1993, 1994; Rodgers, 1996). Childhood experience has been shown to link with adult disorder through two pathways finally resulting in vulnerability; an environmental one involving experiences such as early and unplanned pregnancy, single parenthood and working-class status and a psychological one relating to poorer coping with life events, low self-esteem and helplessness (Bifulco *et al.* 1987, 1991; Harris *et al.* 1990).

The experience of an earlier depressive episode has long been recognized as increasing risk of a new episode and studied mainly in patient series (e.g. Surtees & Barkely, 1994) and to a lesser extent in community samples (e.g. Lewinsohn *et al.* 1988). This risk has been shown to hold for women more often than men (Amenson & Lewinsohn, 1981) and to be correlated with more proximal factors such as negative life events (Paykel & Tanner, 1976) and criticism by spouse (Hooley & Teasdale, 1989). The predictive importance of age has also been considered. Recurrent depression is related to older age in patient series (Surtees & Barkley, 1994) and younger age in non-clinical series (Coryell *et al.* 1991). There is some evidence that an age of 20 or less at first episode is more highly related to recurrence (Giles *et al.* 1989) and studies of adolescent depression show a high likelihood of recurrence (Kandel & Davies 1986; Clarizio, 1989; Harrington *et al.* 1996). The role of childhood adversity in both early and recurrent depressions has received little attention and since most studies have been based on patient series, it remains unclear how far the findings hold in community settings.

One large-scale community telephone survey in the US has examined both distal risk factors of prior depression and childhood adversity in onset of depression. Of particular interest was the experience of reported depression in late teenage years (Kessler & Magee, 1993, 1994). Although several kinds of childhood experience were found to relate to incidence and prevalence of disorder in a 12-month study period, family violence proved the most predictive (Kessler & Magee, 1994). A key finding was that teenage depression played a crucial mediating role between adversity in childhood and depression.

However, the scale of the survey entailing the use of telephone interviews necessarily involved only cursory measurement of childhood experience and prior depression (McLeod *et al.* 1990). The current study aims to examine with intensive investigator-based interview instruments distal factors of prior depression and adverse childhoods in addition to current vulnerability and onset of major depression.

Replication and elaboration

There has been a need to replicate the original Islington results since the identification of the two vulnerability factors was based on the analysis of a number of possible risk factors that might have capitalized on chance associations. Furthermore, a design allowing for more frequent follow-up interviews would entail greater confidence in the dating of depression and life events. Finally, an extension of the original study to assess both prior history of disorder and its relationship to adverse childhood experiences would enable further exploration of the role of such distal factors. A full replication of the Islington study would have been a highly expensive undertaking, involving interviewing around 400 women to ensure the minimum number of new onsets required. The current study has undertaken a partial replication on the basis of the earlier finding that women without vulnerability very rarely develop depression. By selecting a series of around 100 women all of whom had vulnerability it was possible to test the prediction of increased risk while avoiding the expense of assessing women without vulnerability who had an extremely low probability of developing depression.

Aims

(i) Replication

We aimed to confirm whether it is possible to predict on the basis of the presence of both psychological and interpersonal vulnerability a rate of onset of clinical depression of one in three, a risk treble that found in the earlier largely representative Islington series of inner-city mothers. Also to confirm that the presence of a vulnerability factor only relates to onset once a severe life event occurs and that almost half of the women with both vulnerability factors and subsequent severe event will become depressed.

(ii) *Prediction of onset from distal risk factors*

We aimed to examine whether earlier episodes of depression enhance the prediction of onset over and above current vulnerability, particularly when examined in relation to childhood experience.

(iii) *The effects of distal risk and severe life events on onset*

We aimed to examine whether distal risk factors and severe life events occurring after first contact have an independent effect in predicting onset of depression.

METHOD

Sample

The present sample differs from the earlier Islington vulnerable subgroup in two other ways. First, although women with major depression at first contact were, of course, excluded in both, in the present series depression at lower levels was also excluded in order to provide a more stringent test of onset from lower base rate symptomatology. Anxiety disorders at DSM case thresholds and lasting at least 12 months, although not intentionally excluded, were not part of the vulnerability selection procedure and in practice few in the final sample qualified. Therefore, the vulnerability factors tested in this series were only those of negative evaluation of self (NES) and negative elements in close relationships (NECR); the role of chronic symptomatology was not addressed. Secondly, the women in the current series were interviewed at two points in the follow-up period in order to ensure the maximum possible accuracy of dating onsets of disorder and life events.

Subjects were first selected by questionnaire screening of women registered with general practitioners in Islington, North London. This was the same procedure as that adopted in the 1980 study, whereby all registered women aged 18–50 were sent a screening questionnaire. The response rate in the earlier study of 45% (Brown *et al.* 1985) was similar to that in the 1990 study, and explained by the majority of non-responders in the earlier series no longer living at the registered address. This resulted effectively in a 70% response rate of suitable women. The high

rates of those registered having moved away is typical of other London samples (e.g. Harris *et al.* 1986), but the representatives of the series was, nevertheless, argued for on the basis that there was a wide coverage of general practices in the area and most women with children who had moved would have been expected to re-register with a GP and, therefore, were less likely to be excluded for this reason.

The postal screening questionnaire in the current study was longer than its predecessor and included three sections to assess: demographic suitability; absence of depression; and presence of at least one of the two vulnerability factors.

The demographic items concerning marital/cohabiting and motherhood status and occupation of the subject and/or partner were identical in the two series.

The Personal Health Questionnaire (PHQ; Simpson, 1984) a variant of the General Health Questionnaire (GHQ; Goldberg, 1972) was used for a preliminary assessment of the presence of major depression and anxiety. This was added to the screening procedure in the 1990 series in order to exclude those likely to have depressive disorder. The PHQ was chosen in preference to the GHQ because it was based on DSM criteria and was thus consistent with one of the psychiatric interview criteria.

Finally, the 1990 postal questionnaire included the Vulnerability to Depression Questionnaire (VDQ), which assessed the likely presence of negative interaction with children, negative interaction with partner and negative evaluation of self (Moran, 1997). This instrument proved to have satisfactory sensitivity and specificity when related to interview material on a larger series, with an overall accuracy of 76.5% for NES and 89% for NECR (Moran & Bifulco, 1997).

Four Islington surgeries were utilized and 2997 questionnaires sent out yielding 1320 responses. Selection then progressed in three stages. First, demographic suitability was determined according to marital and motherhood status, and occupation. Only those either married/cohabiting with partners in manual occupations/unemployed or those without live-in partners, regardless of occupation were considered for selection. The rate of lone parenthood in Islington is relatively high, con-

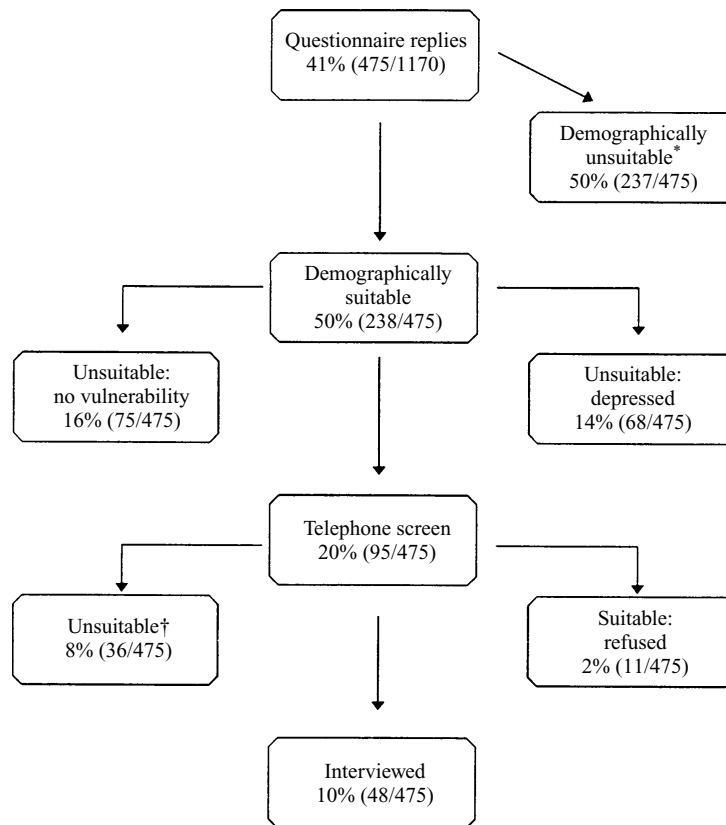


Fig. 2. Analysis of the screening procedure. Detailed breakdown of a third of questionnaire responses. (* Middle class/no child at home/not a single mother; † no vulnerability or depressed.)

stituting a third of households with children (*HMSO Census Statistics*, 1991) and the proportion selected was consistent with this rate. Just under half the questionnaires returned were excluded due to demographic unsuitability.

The second selection stage involved the exclusion of those with probable depressive disorder or absence of vulnerability. Of questionnaire responses showing demographic suitability, 60% with extreme scores were eliminated on the basis of the questionnaire alone. For the remainder a further screening by telephone (or home visit) was undertaken to verify the presence of vulnerability and absence of depression. Of those telephone screened 61% were verified as suitable and 88% of these agreed to be interviewed face-to-face. The detailed breakdown of a representative third of the screened sample is shown in Fig. 2. Of the 110 women finally contacted as suitable for interview, 105 agreed to be seen for the full three interviews arranged

at approximately 5-month intervals. Two women allowed only brief visits and as a result their historical information on childhood and prior depression is missing. At the time of the first face-to-face interview 58 women had both NES and NECR and 47 women had one or the other.

Study design

The study had prospective and retrospective components. Vulnerability was assessed at first contact before knowledge of any depression occurring in the follow-up period. The occurrence of any depressive onset, together with a record of all life events was made by retrospective questioning of the prior 5 months at each of the follow-up interviews. The presence of vulnerability was assessed at first interview using the Self Evaluation and Social Support Schedule (SESS). The Life Events and Difficulties Schedule (LEDS) was used at each interview to identify severe events known to be capable of

provoking a depressive episode, and the Present State Examination (PSE) to assess psychiatric status. Both the latter were used to cover experiences in the period prior to each contact. An adaptation of the PSE was used to assess history of clinical depression. The Childhood Experience of Care and Abuse (CECA) measure was used to reflect adversity before age 17.

Measures

Present State Examination (PSE) (Wing *et al.* 1974)

(i) Case (major) depression

The PSE was used to assess symptoms of depression with caseness assessed by means of the Bedford College criterion (Finlay-Jones *et al.* 1980). The presence of depressed mood plus four other key symptoms out of a possible 11, all lasting at least 2 weeks, were required for caseness. This threshold is comparable in severity to psychiatric out-patient attenders, and somewhat higher than the ID 5+ criteria of the CATEGO system of other PSE users or the 'major depressions' of the RDC (Dean *et al.* 1983). Additional symptoms were taken from the more recent SCAN version of the PSE necessary for DSM diagnoses (Wing *et al.* 1990). All but three cases in the present series additionally qualified for major depression in terms of the DSM-III-R checklist (American Psychiatric Association, 1987). All symptom levels and caseness judgements were checked by a psychiatrist trained in the PSE and SCAN (Professor T. K. J. Craig).

Despite the exclusion criteria five women proved at first interview to have low grade/minor depression but were retained in the sample. A further seven women had chronic anxiety at DSM-III-R levels (excluding simple phobia and mild agoraphobia consistent with earlier procedures (Brown & Harris, 1993)). Since so few qualified for this vulnerability factor, it has not been specified as a separate risk. Nine women had anxiety at DSM-III-R thresholds for agoraphobia, panic, generalized anxiety disorder or social phobia, but lasting less than a year. A further 45 women had lower grade anxiety unclassifiable in DSM terms.

(ii) Previous history of depression

A previous history of depression was collected by use of the same PSE questions and probes to

cover lifetime episodes, a procedure similar to that used in the SCAN, but identifying each potential episode. Recall was aided by a parallel chronological assessment of experiences in childhood, teenage years and earlier adult life. Once symptoms in the current period were fully covered, women were asked to identify times earlier in their lives when they felt depressed, hopeless or suicidal, had lost weight or sleep due to distress, or saw a doctor for depression. The full list of key PSE symptoms required for depressive caseness was then covered for each period identified by the subject as a possible episode. Dates of onset and offset were established, guided by information about other key life experiences such as whether the episode was prior to leaving the parental home, around the time of births of children or separations from partners. The Bedford College criterion for depressive caseness was applied involving depressed mood and four key symptoms. The method has previously shown high agreement with GP records for treated episodes of depression (Harris *et al.* 1986).

The Self Evaluation and Social Support: (SESS) (O'Connor & Brown, 1984)

Vulnerability at first contact was assessed by means of a lengthy semi-structured interview instrument assessing negative evaluation of self and negative elements in close relationships.

Negative Evaluation of Self (NES)

This is an index based on negative comments about the self given in response to a series of questions. High negative evaluation of personal attributes (such as personality or attractiveness) or role performance (for example as mother or worker) or lack of self acceptance (more global judgements of self dislike) were taken as indicating the presence of NES (Brown *et al.* 1990a).

Negative Elements in Close Relationships (NECR)

This is an index involving both conflict and lack of support. High negative interaction with either partner or children in the home was rated where there was frequent tension, arguments and rows in the relationship. For three women conflict with adult relatives living in the household was considered equivalent. In the case of single

mothers the lack of a close confidant seen monthly was included in the index (Brown *et al.* 1990a).

Life Events and Difficulties (LEDS) (Brown & Harris, 1978)

All life events and difficulties were measured for the follow-up period, but only severe events will be dealt with in this report. Events were rated as severe if on contextual grounds they were judged to involve high threat or unpleasantness which remained for at least 2 weeks after the beginning of the event. Only events focused on the individual and unlikely to be the result of disorder were included, and the presence of a minimum of one such event per subject is referred to in the analysis. Severe events after onset were excluded from the analysis.

Childhood Experience of Care and Abuse (CECA) (Bifulco *et al.* 1994)

The CECA semi-structured interview instrument was used to assess a wide range of negative childhood experiences prior to age 17. Levels of care and abuse during different household arrangements in childhood were questioned about. The scales used in the present analysis involve parental neglect, physical abuse by mother, father or other household member and instances of sexual abuse from any adult. Each of these was read for severity on four-point scales and the top two points used to denote severe instances. Reliability and validity are satisfactory and are reported elsewhere (Bifulco *et al.* 1994, 1997). The index of 'childhood adversity' used in this analysis is based on the presence of at least one type of such experience in childhood.

Implications of studying high risk samples

It is important to emphasize that investigating only selected vulnerable women necessarily restricts the kind of conclusions that can be drawn about the correlates of such vulnerability which may be discernible from a fuller representative survey. Since each woman in this study had either NES or NECR at first contact and since the earlier Islington study had indicated that distal factors such as child neglect or abuse acted almost entirely via those factors, a correlation between a distal risk factor and disorder could only be expected to emerge if

there was an effect over and above that mediated by the two proximal vulnerability factors. Given the predictive strength of these latter factors only exceptional distal factors would emerge as predictively important in these circumstances. However, it also needs to be kept in mind that there was a negligible rate of depression (1%) among non-vulnerable women in the earlier Islington enquiry, thus justifying their exclusion in terms of adding any extra onsets in the current study.

Statistical tests used are chi-square with Yates' correction and logistic regression using the SPSS program.

RESULTS

The 1990 series proved to be similar to that of 1980 in demographic terms: around a third were single mothers, for half their youngest child was aged under five, a third their oldest child in teenage years and a third were in the lowest social class quartile according to partner's occupation, or their own if single (Goldthorpe & Hope, 1974). The average age of the women was 41 with nearly half aged 26–35. Only 5% were below age 25. The average length of the study period was 14 months.

1 Onset of depression

Thirty-nine women (37%) became depressed in the follow-up period. The average length of episode during the study period was 18 weeks with 13% lasting under 6 weeks. Among women with both vulnerability factors as many as 67% experienced at least one severe life event and the risk of onset was 40% rising to 51% among those with a severe life event (see Table 1A, row 1). Each of the latter had a severe life event within the 6 months before onset, usually in the preceding few weeks. Women with one vulnerability factor proved to be similar to those with both: 72% experienced a severe life event, 34% became depressed with 44% who experienced a severe event becoming depressed (see Table 1A, row 2). Logistic regression showed that only the presence of a severe life event was required to model onset in this vulnerable series: combining the vulnerability factors did not add to the prediction.

The rate of onset among those with both vulnerability factors and a severe life event

Table 1. Nature of current vulnerability, severe event and onset of depression among vulnerable women in two Islington series

(A) 1990 series

NES or NECR	Severe event during follow-up			% Severe event
	Present	Absent	Total	
	% Onset	% Onset	% Onset	
Joint	51 (20/39)	16 (3/19)	40 (23/58)	67 (39/58)
Single	44 (15/34)	8 (1/13)	34 (16/47)	72 (34/47)
Total	48 (35/73)	13 (4/32)	37 (39/105) NS	70 (73/105) NS

Logistic regression: severe event, OR = 6.73, Wald = 10.50, $P = 0.001$; joint vulnerability, OR = 1.16, Wald = 0.51, NS. Thus, severe event alone is the best predictor of onset.

(B) 1980 series (excluding all with chronic depressive symptoms, and all with no vulnerability factor)

NES or NECR	Severe event during follow-up			% Severe event
	Yes	No	Total	
	% Onset	% Onset	% Onset	
Joint	46 (19/41)	13 (2/16)	37 (21/57)	72 (41/57)
Single	16 (7/44)	0 (0/52)	7 (7/96)	46 (44/96)
Total	31 (26/85)	3 (2/68)	18 (28/153) $P < 0.001$	55 (85/153) $P < 0.025$

proved to be very similar to the 1980 series, thus confirming the basic hypothesis (see Table 1B, row 1). (Women with chronic depressive symptoms have been excluded from the earlier series to make the samples comparable.) The proportion experiencing at least one severe event in the study period was also similar. However, those with one vulnerability factor had a much lower risk in the earlier series, not only of onset but also of experiencing a severe life event (see Table 1B). In that series both severe life event and joint vulnerability were required to predict onset of depression. Since risk did not differ in the current series for those with single or joint vulnerability factors they will be combined in the following analysis. Results are essentially unchanged when those with one factor are analysed separately.

2 Childhood adversity and onset

Over half (60/103, two missing values) of the women reported either severe neglect, physical or sexual abuse before age 17. As expected given the established link between childhood adversity and current vulnerability (Brown *et al.* 1990b), this is considerably higher than the 29% found in the earlier representative Islington series

(Bifulco *et al.* 1994). The presence of at least one of these childhood adversity factors was associated with an increased risk of an onset in the follow-up period (47% (28/60) *versus* 23% (10/43), $P < 0.05$). This latter difference was unexpected given that in the earlier enquiry the link of childhood adversity with onset had been totally mediated by vulnerability. The relationship of childhood adversity to onset was, therefore, further explored in relation to prior episodes of depression.

3 Previous history of depression and onset

Just over half the women (55/103, two missing values) described an earlier episode of depression that reached clinical case level, and around two-thirds of those with an onset in the study period reported an earlier episode (26/38, one missing value) leaving a third of those developing depression reporting it to be their first ever episode. Those with, or without, a previous episode differed little in age (average age 34 compared with 32 respectively). The presence of a prior episode of depression related to onset: 47% (26/55) with a prior episode *versus* 25% (12/48) with no prior episode becoming depressed ($P < 0.05$). There were 15 women whose

Table 2. *Distal risk and onset of depression: age at prior depression and childhood adversity*

Childhood adversity	Prior depression age ≥ 20				Total % Onset
	Present		Absent		
	Present % Onset	Absent % Onset	Present % Onset	Absent % Onset	
Teenage depression					
Present	83 (5/6)	0 (0/2)	86 (6/7)	—	73 (11/15)
Absent	43 (12/28)	25 (3/12)	26 (5/19)	24 (7/29)	31 (27/88) <i>P</i> < 0.01
Total	50 (17/34)	21 (3/14)	42 (11/26)	24 (7/29)	37 (38/103)*

* 2 missing values.

Logistic regression: teenage depression, OR = 4.95, Wald = 6.22, *P* = 0.01; childhood adversity, OR = 2.19, Wald = 2.76, NS; depression age ≥ 20, OR = 1.19, Wald = 0.16, NS. Thus, only teenage depression significantly predicted onset.

first depression occurred in teenage years with just under half of these occurring before age 16. Depressions starting at or after age 20 were much more common with 40 women reporting at least one such episode. Eight women reporting episodes in both teenage and post-teenage years. Teenage depression was associated with a nearly two and a half times greater risk of an onset in the study period (73% (11/15) versus 31% (27/88), *P* < 0.01, see Table 2, col. 5). Once those with a teenage depression were excluded, episodes occurring after age 20 showed little association with onset (38% (15/40) versus 25% (12/48), Table 2, row 2)).

It was common for those with childhood adversity to have at least one depressive episode prior to the study period: 68% (41/60) compared with 33% (14/43) of remaining women (*P* < 0.001). The comparable figures for teenage depression were 22% (13/60) and 5% (2/43)

Table 3. *Teenage depression, severe event and onset of depression*

Teenage depression	Severe event		Total % Onset
	Yes	No	
	% Onset	% Onset	
Yes	91 (10/11)	25 (1/4)	73 (11/15)
No	40 (24/60)	11 (3/28)	31 (27/88)
Total	48 (34/71)	13 (4/32)	37 (38/103)*

* 2 missing values.

Logistic regression: severe event, OR = 7.78, Wald = 10.30, *P* = 0.001; teenage depression, OR = 7.90, Wald = 8.39, *P* = 0.003. Both severe event and teenage depression are independent predictors of onset.

Table 4. *Current and distal vulnerability for onset of depression*

Logistic regression	OR	Wald	<i>P</i>
Severe event	7.89	9.97	0.001
Teenage depression	6.51	6.65	0.01
Childhood adversity	1.87	1.54	NS
Prior depression age ≥ 20	1.51	0.72	NS

Severe life events and teenage depression independently predict onset of depression.

respectively (*P* < 0.025). It is notable that all but two of those with a teenage depression also had an adverse childhood. Table 2 examines the relationship of childhood adversity, teenage depression and prior depression age 20 or over. Logistic regression showed that only teenage depression was required to model onset. Next, teenage depression was examined in conjunction with severe life event and both factors were shown to be independent predictors of onset (see Table 3). Multiplicative combinations of predictor variables did not add to the predictive power of the model.

Finally, a logistic regression with all four factors confirmed that severe life event and teenage depression provided the best prediction of onset among this vulnerable sample. In terms of goodness of fit, 73% of subjects were correctly classified.

DISCUSSION

A combined prospective and retrospective study of just over a hundred inner-city, largely working-class mothers selected for having at

least one of two vulnerability factors (negative evaluation of self or negative close relationships) found 40% with both factors became clinically depressed in a 14-month follow-up period. This is approaching four times the rate expected from a prior unselected series of working-class mothers and confirms the findings of an earlier series also from Islington, North London, concerning the high risk associated with the presence of both factors. Also confirmed is the fact that as many as half with both factors became depressed at a clinical level following a severe life event (Table 1A). Furthermore, nearly three-quarters of the women experienced severe life events in the follow-up period, supporting earlier findings that vulnerability factors are associated with an increased rate of such events as well as being associated with increased sensitivity to such events once they have occurred. However, unlike the earlier series, women with only one proximal vulnerability factor in the current series showed almost as high a risk of depression as those with two (34%, Table 1A). The reason remains unclear, but it could be due to sampling variability, for example, due to a different distribution of distal risk in this series. Another possibility is that an alternative psychological vulnerability factor related to NES would increase the prediction of onset. This will be explored in a later report in terms of interpersonal styles of relating.

In addition, the present study has elaborated on the earlier Islington enquiry by taking into account previous episodes of depressive disorder. Prior depressions were common among such vulnerable women: half had experienced at least one, and two-thirds of those with onsets in the follow-up period reported a previous episode. When considering early risk factors in relation to onset it is important to repeat the point made earlier that a design concentrating on high risk women is likely to limit conclusions. This is because previous research has shown that risk for depression stemming from childhood adversity is largely mediated via current vulnerability and the documentation of such an effect, therefore, requires the study of both vulnerable and non-vulnerable, unselected women. However, despite this constraint, the current analysis has been able to show that teenage depression significantly raised risk over and above that arising from current vulnerability (Table 2).

Although childhood adversity did not add to the prediction, it is noteworthy that nearly all the teenage episodes were reported in the context of such childhood neglect or abuse. Although it is surprising that there were so few exceptions to this, it should be borne in mind that those with teenage depression without prior childhood adversity may be less likely to remain on the life trajectory to adult vulnerability and therefore not included in this series. Alternatively, such women may have had high biological loading for disorder and be similarly excluded from this study because of ongoing depression. Although the distribution of distal risk in this series cannot be generalized to a representative group, there is no reason to think that the associations found would not hold for other series. Although the low rate of teenage depression without childhood adversity could indicate some invalidity of the method – for example an ‘effort after meaning’ for those who became depressed – it is difficult to see why this would not also hold for the reporting of depressions after age 20. Also, assessments of prior depression were not made at a point when the subjects were currently depressed. It would, however, be useful for the result to be replicated in a large unselected series to that the precise role of both childhood adversity and teenage depression could be examined in relation to onset.

Any interpretation of the findings concerning more distal factors needs to keep in mind the point already made about the limitations of studying only high risk women, in this instance those with at least one vulnerability factor. To the degree which these are correlated with a putative risk factor the impact of the latter will be attenuated or even rendered non-existent. On this basis it was predicted that childhood adversity would show no link with onset in the current series as in the earlier full scale enquiry its impact was completely mediated by the two current vulnerability factors. The fact that an association emerged in the present series, therefore, required some explanation. The most likely one involved the particularly high risk associated with a prior episode in adolescence, bearing in mind that in almost every instance such episodes occurred among those with childhood adversity. When such early depression is taken into account, childhood adversity no longer related to risk of an onset in the follow-up period

consistent with its predictive power being via its link with current vulnerability. The fact that later adult episodes of depression did not predict onset is consistent with them also having an impact entirely mediated by the two current vulnerability factors. However, caution is required in interpreting this negative finding since the failure of later episodes to add to onset may be the result of poor statistical power in this analysis, and the finding needs repeating on a fuller series. Yet the results concerning early depression are consistent with those reported by Kessler and colleagues. The association found between childhood adversity and teenage depression requires further consideration in terms of whether the severity, timing and chronicity of neglect and abuse in childhood increases the likelihood of teenage depression occurring. This will be the subject of a later report.

Another cautionary note should be made with respect to chronic subclinical symptomatology. This was excluded in the current series in order to provide a more stringent test of new onset. However, in terms of studying depressive vulnerability in the community, particularly in relation to intervention, this would be included, since low self-esteem in particular has been shown to be highly related to the presence of chronic low grade disorder and this should be seen as a significant component of the full vulnerability profile.

The research has been based on mothers living in an inner-city area of London and further studies are required to test how far the vulnerability factors highlighted have wider relevance. For example, among men and in different age groups, for those in suburban or rural settings or in different cultures. The reliance of the present study on factors such as household conflict and lack of a close support figure outside the home may well need to be broadened to take into account affiliation and attachment styles that vary according to cultural setting. However, the current report has confirmed the possibility of identifying, at least in an urban context in the UK, a relatively circumscribed group of depression-free women for whom a very high rate of imminent clinical depression can be predicted. This could have implications for the cost-effectiveness of any preventative programme based on targeting women at high risk. The same point concerning cost-effective-

ness holds for research utilizing high risk samples, for example studies concerned with biological risk factors or conditions often comorbid with depression. Further exploration of this data set in terms of risk associated with attachment style and coping with severe events will be examined in future reports in the hope of obtaining even greater precision in defining the interplay of person and environment in onset of depressive disorder.

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