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Five Risk Factors for Depression

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Significantly more of 300 patients with non-endogenous depression compared with 300 matched controls were unemployed and had a poor marriage before the onset of depression, had a first-degree relative who had been treated for depression, had experienced separation for one year or more from a parent before 17 years of age and had three or more children under 14 years of age at home. However, significantly more of 44 patients with endogenous depression, than their 46 controls, also had a poor marriage before the onset of depression and 43% of them had a first-degree relative who had been treated for depression. Thus a family history of depression and a poor marriage before the onset of depression are associated with both non-endogenous and endogenous depression but unemployment, separation for one year or more from a parent before 17 years of age, and having three or more young children at home may be risk factors for non-endogenous depression.

In a community study, Brown & Harris (1978) described four vulnerability factors which increased the chances of a woman developing depression in the presence of a life event or difficulty. They were: lack of full-time or part-time employment, lack of a good marital relationship, the presence of three or more children under 14 years at home, and parental loss before 17 years of age. In psychiatric patients, when compared to medical patient controls, these four factors along with a fifth – depression in a first-degree relative – have been previously reported to be significantly associated with non-endogenous depression (Roy, 1978, 1981*a*,*b*). However, the specificity of these factors for the non-endogenous subtype of depressive disorder has not been examined. Thus the purpose of this final report is to examine these risk factors in subtypes of depressive disorder by presenting the data as found in (a) this large gradually accumulated series of 300 patients with non-endogenous depression compared to their 300 matched normal controls and in (b) a consecutive series of 44 patients with endogenous depression compared to 46 normal controls.

Method

From July 1976 to June 1982 300 white patients meeting DSM-III criteria for a major depressive episode (MDE) without melancholia were seen (Diagnostic and Statistical Manual of Mental Disorders, 1980). Before DSM-III draft criteria became available the International Classification of Diseases (1965) category 3000.4, depressive neurosis was used. All of these patients would have met DSM-III criteria for MDE without melancholia and, in fact, had to have had a duration of depression of at least one month to be studied – twice the duration criterion in DSM-III. Few patients were seen with bipolar or psychotic depression or melancholia ('endogenous' depression) and thus were excluded as were patients with secondary depression. These 300 patients are the 'non-endogenous' sample.

The first 84 patients were all female patients seen at the Maudsley and Dulwich Hospitals in London. The remaining 216 depressed patients were seen at the Clarke Institute of Psychiatry, Toronto. All 300 patients were matched for age (within 5 years), sex, marital status, social class and country with non-depressed and never-depressed gynaecological and orthopaedic patients seen at Dulwich Hospital or clinics of the Wellesley or Orthopaedic and Arthritic Hospitals, Toronto. The General Health Questionnaire (GHQ) (Goldberg, 1972), followed by a short psychiatric interview, was used to screen out potential controls with depression or other psychiatric disorder.

From July 1982 to June 1985 a consecutive series of 44 white in-patients with endogenous depression (296.2, ICD) who met DSM-III criteria for a major depressive episode with melancholia was collected at the National Institute of Mental Health (NIMH), in Bethesda, Maryland, and are the 'endogenous' sample. They were compared with (a) 46 normal controls recruited through the NIMH normal volunteer office; and (b) with the 27 of these 46 controls with whom they could be matched for age, sex and marital status. Controls were interviewed with the Schedule for Affective Disorders and Schizophrenia (SADS-L) (Endicott & Spitzer, 1979) and had no past, current or family history of psychiatric disorder.

All 690 subjects were asked by the same interviewer about age, marital status, the occupation of the head of the

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household, whether they were in full- or part-time employment (at the onset of depression), about early parental loss because of death or separation for one year or more between 0 and 17 years of age, whether there was a first-degree relative treated for depression by a psychiatrist, and whether there were three children under 14 years of age at home (earlier papers reported three children 14 years or younger). The duration of depression and the Hamilton depression score (1960) were recorded. For married (or cohabiting) subjects a semi-structured marital interview was performed, using the method of Quinton *et al* (1976), covering the year before the onset of depression (or the year before for controls). Ratings 1–3 were called 'good marriage' and ratings 4–6 'poor marriage'. Two reliability studies of the marital interview were performed (Roy, 1978, 1981*a*). (The marriages of the first 16 depressed patients were not assessed.) Social class was determined using the occupation of the head of the household and the classification of occupations of Goldthorpe and Hope (1974); 1–22 was called middle class and 23–36 working class.

In the statistical analysis the χ^2 and Fisher's exact test were used and possible interactions were examined for using linear model analysis (Grizzle *et al*, 1969).

Results

The demographic data and clinical variables are shown in Table I.

Non-endogenous depression

Unemployment before onset of depression

Significantly more depressed patients than controls were unemployed before the onset of depression (104 vs 57, $P<0.0001$) (Table II). Significantly more of both the total group of Canadian ($n=216$) and British ($n=84$) depressed patients than controls were unemployed (71 vs 39, $P<0.01$; 33 vs 18, $P<0.0006$, respectively). Significantly more of both the total group of working-class ($n=129$) and female working-class ($n=88$) depressed patients were unemployed (63 vs 31, $P<0.0001$; 50 vs 24, $P<0.0001$, respectively).

Poor marriage before onset of depression

Significantly more depressed patients than controls had a poor marriage before the onset of depression (94 vs 13, $P<0.0001$) (Table II). Significantly more of both the total group of working ($n=53$) and middle-class ($n=51$) female depressed patients than controls had a poor marriage (36 vs 6, $P<0.0001$; 33 vs 2, $P<0.0001$, respectively).

Among the married English depressed 14 of 32 (44%) working-class and four of 16 (25%) middle-class patients were unable to confide in their spouse compared with 0 and 0 of controls ($P<0.0001$ and NS). Among the married Canadian depressed 16 of 36 (44%) working-class and 14 of 55 (26%) middle-class patients were unable to confide in their spouse compared with 1 (3%) and three of controls ($P<0.0001$ and $P<0.008$, respectively).

Three or more children under 14 years at home

Significantly more depressed patients than controls had three or more children under 14 years of age living at home (17 vs 8, $P<0.05$) (Table II).

Depression in a first-degree relative

Significantly more depressed patients than controls had a first-degree relative treated for depression (77 vs 30, $P<0.0001$) (Table II).

Early parental loss

The detailed data about early parental loss because of permanent separation or death has been previously

TABLE I
Demographic data and clinical variables

	Non-endogenous depressed patients (n=300)	*Endogenous depressed patients (n=44)*	*Controls for endogenous patients (n=46)*
Female	207 (69%)	37 (84%)	28 (61%)
Male	93 (31%)	7 (16%)	18 (39%)
Married	155 (51.7%)	31 (71%)	29 (63%)
Single	91 (30.3%)	4 (9%)	13 (28%)
Separated/divorced/widowed	54 (18%)	9 (20%)	4 (9%)
Middle-class	171 (57%)	34 (77%)	42 (91%)
Working-class	129 (43%)	10 (23%)	4 (9%)
Out-patients	202 (67.3%)	3 (7%)	46 (100%)
In-patients	98 (32.7%)	41 (93%)	
Mean age in years	33.7 (range 18 to 65)	45.4 (range 26 to 73)	38.2 (range 21 to 78)
Mean duration of depression in months	5.2 (range 1 to 24)	9.2 (range 1/2 to 33)	
Mean Hamilton depression score	16.5 (range 9 to 30)	26.1 (range 15 to 37)	

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TABLE II
Risk factors in patients with non-endogenous depression compared to normal controls

	Women			*Men*			*Total*		
	Depressed (n = 207)	*Controls (n = 207)*	*Sig. P*	*Depressed (n = 93)*	*Controls (n = 93)*	*Sig. P*	*Depressed (n = 300)*	*Controls (n = 300)*	*Sig. P*
Unemployed before onset of depression	85	50	<0.0004	19	7	<0.009	104	57	<0.0001
Poor marriage before onset of depression	69/104	8/104	<0.0001	25/35	5/35	<0.0001	94/139	13/139	<0.0001
Three children under 14 years of age	12	7	NS	5	1	NS	17	8	<0.05
Depression in a first-degree relative	57	21	<0.0001	20	9	<0.02	77	30	<0.0001
Parental death before 17 years of age	30	23	NS	9	9	NS	39	32	NS
Permanent separation from parent(s) before 17 years of age	42	14	<0.0001	24	5	<0.0003	66	19	<0.0001
Non-permanent separation from parent(s) for at least one year or more before 17 years of age	33	8	<0.0001	9	2	NS	42	10	<0.0001

TABLE III
Risk factors in patients with endogenous depression compared to normal controls

	Total groups			*Groups matched for age, sex, and marital status*		
	Depressed (n = 44)	*Controls (n = 46)*	*Sig. P*	*Depressed (n = 27)*	*Controls (n = 27)*	*Sig. P*
Unemployed before onset of depression	19	7	<0.007[1]	9	3	NS[1]
Poor marriage before onset of depression	15/31	4/29	<0.009	10/20	3/20	<0.04
Three children under 14 years	2	5	NS	2	4	NS
Depression in first-degree relative	19	NA[2]		14	NA[2]	
Parental death before 17 years of age	5	5	NS	3	3	NS
Permanent separation from parent(s) before 17 years of age	2	1	NS	2	1	NS
Non-permanent separation from parent(s) for at least one year or more before 17 years of age	1	2	NS	1	1	NS

Mean age of matched depressed patients, 20 female and 7 male, was 41.3 years and of controls 40.6 years; six patients and four controls were working class.

1. Fourteen of the total 46 and 9 of the 27 matched controls were hospital employees.
2. NA is not applicable. Controls were selected for biological studies thus those with a family history of psychiatric disorder were excluded. However, 30 of the 300 non-endogenous controls (10%) had a depressed first-degree relative (Table II) and if 10% of these controls had such a relative there would be significant differences.

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published (Roy, 1983, 1985). Significantly more depressed patients than controls had permanent separation from a parent before 17 years of age (66 vs 19, $P<0.0001$) (Table II). In 14 patients (4.7%) this was separation from both parents compared with three controls (1%) ($P<0.01$). There were no significant differences for early parental death.

Significantly more depressed patients than controls had non-permanent separation of or from parents for at least one year or more before 17 years of age (42 vs 10, $P<0.0001$). Sixteen of these 42 depressed patients and three of these control patients also had experienced a permanent loss (either parental death or permanent parental separation). Thus only 26 of the depressives with non-permanent loss had experienced no permanent loss as had seven of these ten controls ($P<0.001$).

The linear model analysis revealed no significant interactions between any of the five factors in any group.

Endogenous depression

Unemployment before onset of depression

There was no significant difference in the matched comparison.

Poor marriage before onset of depression

Significantly more depressed patients than controls in both total and matched groups had a poor marriage before the onset of depression ($P<0.009$ and $P<0.04$, respectively) (Table III).

Three or more children under 14 years at home

There were no significant differences (Table III).

Depression in a first-degree relative

Nineteen of the total 44 (43.2%) and 14 of the 27 (51.9%) matched depressed patients had a first-degree relative treated for depression. However, their controls were selected for biological studies and those with a family history of psychiatric disorder were excluded (Table III).

Early parental loss

There were no significant differences for either parental death or permanent or non-permanent separation before 17 years of age (Table III).

Discussion

This final study reports on 344 depressed patients and 346 controls seen over 9 years by one investigator. Significantly more non-endogenous depressed patients than controls were unemployed and had a poor marriage before the onset of depression, had a family history of depression, had three children under 14 years of age at home, and had experienced permanent separation from a parent before 17 years of age. Only two of these five factors, poor marriage before the onset of depression and a family history of depression, were found significantly more among patients with endogenous depression than controls.

Being unemployed before the onset of depression was significantly associated only with patients with non-endogenous depression. Unemployment was high in both British and Canadian depressed patients (39.3% and 32.9%). Significantly more of both British and Canadian female depressed patients were unemployed as were significantly more male depressed patients. In the total group of patients unemployment was significantly associated only with the working class, and was found in 47.3% of them. Tennant *et al* (1982) found that being employed was highly protective for the mental health of both men and women.

A poor marriage before the onset of depression was found in significantly more of both non-endogenous and endogenous depressed patients. It was found in 67.6% of married non-endogenous and 48.4% of married endogenous depressed patients—percentages similar to the 69.2% of neurotic and 36.0% of endogenous depressed patients reported by Birtchnell & Kennard (1983a,b) to have marital maladjustment preceding the onset of depression. Other studies have also found that a poor marriage was associated with non-endogenous depression (Weissman & Paykel, 1974; Paykel *et al*, 1980; Kumar & Robson, 1984; Watson *et al*, 1984; Hallstrom & Persson, 1984; D'Arcy & Siddique, 1984). Assortative mating and the stresses induced by recurrent episodes of affective disorder may also play a part in causing a poor marriage (Brodie & Leff, 1971; Hoover & Fitzgerald, 1981; Merikangos, 1984).

Quinton *et al* (1976) developed the marital interview assessment technique used here. They, and others, found that marital ratings can be performed reliably. Goering *et al* (1986) examined whether expressed marital dissatisfactions and criticisms were merely reflections of the depressed state but found no correlation between severity of depression and the patient's report of the premorbid marital relationship, but there was a strong correlation between premorbid marital ratings obtained from separate interviews with depressed patients and their spouses. Crowther (1985) also found highly significant correlations between depressed patients and spouses for their scores on the Locke-Wallace Marital Adjustment Test and between depressed patient's scores and their therapists rating of marital adjustment. Similarly Waring & Patton (1984) reported general agreement

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between spouses and depressed patients about the degree of marital intimacy. Thus these studies suggest that depressed patients are able to give a reasonably undistorted account of their premorbid marital relationship.

Having three or more children under 14 years of age at home was significantly associated only with non-endogenous depressed patients — but was found in only 5.7% of them. Brown *et al* (1975) identified this risk factor in depressed working-class women in London, and Campbell *et al* (1983) reported similarly from Oxford. Tennant *et al* (1982) found that having young children at home was not directly associated with psychiatric disorder but through the effect on unemployment, as having young children prevented married women being employed.

A first-degree relative treated for depression was found in more of both non-endogenous and endogenous depressed patients. Weissman *et al* (1982, 1984) also found a familial aggregation of non-bipolar depression in first-degree relatives of non-bipolar depressed patients when compared with controls. In the present study the percentage of patients with a depressed first-degree relative was higher among endogenous than non-endogenous depressed patients (43.2% vs 25.7%) which conforms with the view that the evidence for genetic transmission is less clear for non-endogenous depression than for endogenous depression (Kidd & Weissman, 1978). However, another interpretation of these data is that families transmit a depression-proneness culturally rather than genetically, and that when, as with non-endogenous depressions, current circumstances as well as past family culture contribute to onset, the effect of the latter will be diluted by the former.

Early parental loss because of permanent separation from a parent before 17 years of age (but not because of death) was significantly associated only with patients with non-endogenous depression (discussed in Roy, 1985). Non-permanent separation for at least one or more years was also significantly associated with the non-endogenous depressed patients, as found by Brown *et al* (1977). However, among endogenous depressed patients there were no significant differences, compared to controls, for either early permanent or non-permanent separation or death.

Social risk factors for depression may best be identified from studies of general population samples rather than from studies of the minority of depressives who are referred to hospital psychiatrists. Thus, it is possible that the differences in the present study between endogenous and non-endogenous depressed patients and their respective controls are not genuine differences but the product of differences in the 'filters' determining who consults a doctor, whether that doctor refers the patient to a psychiatrist and whether the psychiatrist admits the patient to hospital. Also, the distinctions found in the present study between the non-endogenous patients (from London and Toronto) and the endogenous patients (from NIMH in Maryland) may be confounded by national, cultural and temporal differences. However, all the depressed patients were matched with controls from the same country, and DSM-III criteria were used by one investigator which prevented study variables (e.g. job loss, marital disharmony) influencing diagnoses of non-endogenous or endogenous depression. Furthermore, the endogenous sample contains significantly more middle-class patients than the non-endogenous sample and this social class difference may possibly confound interpretations of the endogenous/non-endogenous distinctions reported here.

In summary, all five factors studied were significantly associated with non-endogenous depression: unemployment before onset, a poor marriage before onset, separation for one year or more from a parent before 17 years of age, having a first-degree relative treated for depression, and having three or more children under 14 years of age at home. No significant interactions were found. Patients with endogenous depression were found to have two of these five factors: a poor marriage before onset and depression in a first-degree relative. Thus the present study suggests that three social factors – unemployment before onset, separation for one year or more from a parent before 17 years of age and having three or more children under 14 years at home – are risk factors for non-endogenous depression but that depression in a first-degree relative and a poor marriage before the onset of depression are found in both non-endogenous and endogenous depression.

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