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Socio-economic status, employment and neurosis

B. Rodgers

MRC National Survey of Health and Development, University College and Middlesex School of Medicine, Department of Community Medicine, London, UK

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Summary. In a national sample of over 3,000 36-year-olds, neurosis was more prevalent in men of lower status as assessed by housing tenure but not occupational class, education or personal income. Symptoms were more frequent in the unemployed, especially those not seeking work. In women, rates did not differ by husband's occupational class but were higher for those in rented accomodation, with unskilled manual jobs, without paid employment, with poor qualifications and with unemployed husbands, the strength of associations being dependent upon family structure. Many of these associations were reduced or eliminated by adjustment for reported financial hardship. Accounts of mental health problems in unemployed men and in married women (especially with children) may have underestimated the importance of financial circumstances.

Interest in the associations between socio-economic status, employment and psychiatric disorder has extended over many years, and it has often been asserted that neurosis is more common in lower socio-economic groups. Brown and Harris (1978) discussed epidemiological evidence for higher rates of depression in the lower classes and gave figures for their own surveys in Camberwell, London: "Psychiatric disorder and depression in particular, is much more common among working-class women: 23 per cent were considered cases in the three months before interview compared with only 6 per cent of middle-class women ($P < 0.001$)".

Kessler and Cleary (1980) stated that the "comparatively higher rate of distress in the lowest social strata is one of the most consistently documented findings in the literature on psychiatric epidemiology".

And Macintyre (1986) noted: "Screening measures such as the General Health Questionnaire (GHQ) tend to show a higher proportion of caseness and/or a greater number of psychiatric symptoms the lower the social class".

However, such statements are typically made with little empirical support. Early studies based on treatment tended to show either higher rates of neurosis in higher socio-economic groups (Hollingshead and Redlich 1958; Logan 1960; Clout 1962; Srole et al. 1962) or no significant class gradient (Helgason 1964; Taylor and Chave 1964; Shepherd et al. 1981; Adelstein et al. 1968). Bagley's (1973) review, concerned primarily with serious disorders and hospital cases, is particularly interesting because it assumes a predominant view of a link between depression and *higher* status. A criticism of such studies is that they reflect selective factors in treatment seeking, referral and diagnosis, although investigations of propensity to seek treatment have failed to demonstrate a significant association with occupational status (Weissman and Myers 1978; Hurry et al. 1980; Weissman et al. 1981; Roberts and Vernon 1982). (Two of these studies reported an association with educational level – Weissman and Myers 1978; Hurry et al. 1980; a rather curious pattern of results.)

General population studies are, in fact, far from unanimous in their elucidation of social class trends and Dohrenwend and Dohrenwend (1974) reached a more cautious conclusion than many commentators. Whilst pointing out the common finding of an inverse correlation between socio-economic status and overall psychopathology, they went on the remark that "personality disorder shows a consistent inverse relationship with class; neurosis and psychosis[1] do not". Higher rates of neurosis have been found in lower status groups in approximately half of the investigations conducted. Looking across studies there is no systematic variation with method of symptom rating or case identification and no obvious secular trend. One notable factor is geographical location but the precise nature of its influence is not easy to discern. Investigations in North America typically demonstrate an inverse correlation with socio-economic status (e.g. Leighton et al. 1963; Warheit et al. 1973; Tousignant and Dennis 1975; U.S. National Center for Health Statistics 1980; Holzer et al. 1986; Eaton and Ritter 1988; Hay 1988), although the findings of Rennie et al. (1957) and Blazer et al. (1988) were not unequivocal, varying with the measures utilized, and Costello (1982) found no association. In contrast, studies in Austra-

1 This conclusion was qualified for schizophrenia.

lasia usually find no gradient (Tauss 1967; Andrews et al. 1978; Henderson et al. 1979; McGee et al. 1983). Finlay-Jones and Burvill (1979) reported a significant effect for men but not for women and Romans-Clarkson et al. (1988) had mixed results depending on the measure of morbidity. With PSE caseness, socio-economic differences were more pronounced in rural than urban women (Romans-Clarkson et al. 1990).

In Britain findings seem to vary more predictably with the type of area studied. Occupational class differences have been found in an area of inner London (Brown et al. 1975; Brown and Harris 1978; Bebbington et al. 1981), in a mixed sample from English cities (Cochrane and Stopes-Roe 1980), in the "large Northern city" of Leeds (Stafford et al. 1980), in Edinburgh (Surtees et al. 1983), in Dundee (Ballinger et al. 1985; Hobbs et al. 1985) in two national samples (Power et al. 1986; Huppert et al. 1987) and in Central Clydeside (Ford et al. 1990). Rutter and Quinton (1977) reported a significant class "effect" for mothers in South London but not for a parallel study on the Isle of Wight, although sample size was such that the latter investigation still showed an appreciable difference between the middle and working classes. Other areas where no gradient was found include the post-war new towns (Taylor and Chave 1964; Hare and Shaw 1965), the Outer Hebrides (Brown and Prudo 1981) and semi-rural Sussex (Birtchnell et al. 1988). The suggested pattern of a greater class gradient in urban areas is not without inconsistencies, however, as seen in the negative findings of Moss and Plewis (1977), for an Inner London sample of "young" mothers, and of Williams et al. (1986) for a large community sample in West London.

A further modifying factor of socio-economic differences is that of life stage. This was evident in Brown and Harris' (1978) studies where "there was no class difference in risk of developing depression among women without children". In a similar vein, Surtees et al. (1983) noted that middle class women had the *higher* rate of depression in the 55–65 age group and Leaf et al. (1986) found no obvious gradient for major depression in 45–64 year old women. The Health and Lifestyle Survey (Huppert et al. 1987) showed a steeper gradient in the 18–39 age group compared with 40–64 year olds but such broad age bands are not particularly illuminating. This survey also showed an even greater inverse class difference in women over 64 years; a group often omitted from general population studies. There may be a life stage modifying influence in men, but acting in a different manner. Himmelweit and Turner (1982) reported increasing scores on an index of depressive symptomatology with progressively higher occupational level, for a sample of young men in London, and Huppert et al. (1987) found a high mean symptom score in their professional/employers/managers group aged 18–39 years. However, Power et al. (1986) did not show any reversal of the usual class gradient in their sample of 23-year-olds, although the trend was less marked in men than in women.

The only population studies indicating a positive association between socio-economic status and neurosis for combined adult age groups, appear to be those of Nandi et al. (1979) conducted in rural areas of India, and of Vazquez-Barquero et al. (1987) in rural Cantabria who found the highest rates in high status women but the lowest rates were in those of middle status. The more usual inverse correlation was found for men in the same investigation.

Work has been acknowledged as an important source of stress but the lack of it is generally considered to be even more noxious (Warr 1985, 1987). Studies of treated disorder tend not to have utilized employment status as a potential risk factor, exceptions being Tonge et al. (1961) and Roy (1978, 1981), but its use in population studies is common. Many have compared rates of neurosis in the employed and unemployed but only two have shown better mental health in the latter group (Tonge et al. 1961; Vazquez-Barquero et al. 1987). Several have also demonstrated changes in morbidity associated with changes in work status assessed retrospectively (Warr and Jackson 1984; Eales 1988) and prospectively (Pearlin et al. 1981; Banks and Jackson 1982; Linn et al. 1985; Bolton and Oatley 1987; Frese and Mohr 1987; Iversen and Sabroe 1988). In general, a detrimental effect of unemployment is observed for men but the results for women are more variable and often conditional upon other factors.

High rates of neurosis for unemployed men have been found in many different countries (U.S. National Center for Health Statistics 1980; Cochrane and Stopes-Roe 1980; Hobbs et al. 1985; Madianos et al. 1985; Weyerer and Dilling 1987; Vazquez-Barquero et al. 1987; Hodiamont et al. 1987; Cheng 1988) but not, apparently, in Finland (Lehtinen et al. 1990) and two studies have reported particularly high rates in those who are chronically ill and unable to work (Williams et al. 1986; Vazquez-Barquero et al. 1987). Social class of previous occupation possibly modifies the impact of unemployment (Hepworth 1980; Payne et al. 1984) and financial strain is one likely mediator of the effect of job loss (Pearlin et al. 1981; Kessler et al. 1987; Liem and Liem 1988). For all but the youngest and oldest men, lengthening of unemployment (up to 3–6 months) increases symptomatology (Jackson and Warr 1984; Warr and Jackson 1985; Liem and Liem 1988) and the cumulative experience of financial difficulty may be implicated in this (Warr and Jackson 1984; Rowley and Feather, 1987).

The two reports of higher morbidity for the employed were both specific to women. Tonge et al. (1961) studied General Practitioner treatment for anxiety and depressive reactions in married women under 60 years, and their figures give rates of 12.1% in the employed compared with 6.9% for those not in employment. This study was striking in that only about 10% of women were said to be in "gainful employment" in the rural practice investigated. No mention was made of whether employed women were required to consult their doctor because of sickness absence from work. Vazquez-Barquero et al. (1987) found that women who combined an "outside-house working activity" with being a housewife had a higher rate of disorder (30.9%) than those who were housewives only (19.3%).[2]

[2] From their figures it seems likely that "housewives" included divorced and widowed women.

Other investigations in a number of countries have reported no relationship between paid employment and disorder in women (Hare and Shaw 1965; Radloff 1975; Henderson et al. 1979; Costello 1982; McGee et al. 1983; Ballinger et al. 1985; Hodiamont et al. 1987; Weyerer and Dilling 1987; Cheng 1988; Lehtinen et al. 1990). There have also been examples of negative correlations between employment and morbidity but they tend to be dependent on other circumstances (i.e. modifying or moderating factors). Brown et al. (1975) have highlighted employment as a possible stress buffering factor for women, which should only be apparent when occurring in conjunction with recent provoking agents. This protective influence was not found in women who had a confiding relationship with their husband or partner (Brown and Harris 1978) which may account for failures to replicate the effect (Solomon and Bromet 1982; Costello 1982; Campbell et al. 1983; Bebbington et al. 1984), although Parry (1986) had directly contradictory results when taking account of this factor. More recently Brown and Bifulco (1990) reported part-time (but not full-time) employment to be associated with a lower risk of onset of depression in married mothers, but other studies have been inconsistent regarding part-time v full-time differences (Welch and Booth 1977; Aneshensel et al. 1981; Gore and Mangione 1983; Lennon 1987). Social class is another possible modifier of employment effects. Warr and Parry (1982a) found lower rates of depressed mood for those in paid employment in a sample of working class women and a re-analysis of data from Brown and Harris (1978) and Bebbington et al. (1981) showed significant differences for working class but not middle class women (Warr and Parry 1982b). Roy (1978) reported a similar conditional effect in a matched control study of depressed women outpatients. This finding may not be universal, however, as no such interaction was reported by Finlay-Jones and Burvill (1979), Surtees et al. (1983) or Weyerer and Dilling (1987) and the opposite effect has been proposed (Waldron 1980). A further approach is to consider the degree of "occupational involvement" of different groups of women (Warr and Parry 1982b). This predicts a greater effect of unemployment in unpartnered women (including single, divorced, widowed) an intermediate effect in married women without children, and a lesser effect (perhaps non-existent) in married women with children, especially young children, living at home. Support is gained from the findings of Finlay-Jones and Burvill (1979), Stafford et al. (1980) and Romans-Clarkson et al. (1988), for example.

Some studies have shown an effect of employment in women without focussing on particular sub-groups, including those of Gove and Geerken (1977), Cochrane and Stopes-Roe (1981), Kessler and McRae (1982), Surtees et al. (1983), Williams et al. (1986)[3], Ensminger and Celentano (1988), Hall and Johnson (1988) and Romans-Clarkson et al. (1988). Two of these investigations, however, had produced non-significant findings when using alternative measures of morbidity (Cochrane and Stopes-Roe 1980; Romans-Clarkson et al. 1988). An interesting analysis of trends in sex differences in psychological distress in the United States (Kessler and McRae 1981) attributed part of the apparent historic narrowing of such differences to higher female participation in the labour workforce.

Considerably less attention has been paid to spouse's employment status as a variable influencing psychiatric morbidity. Job loss for men has detrimental effects on their wives' mental health (Dew et al. 1987; Liem and Liem 1988). Cochrane and Stopes-Roe (1980, 1981) found that women with unemployed husbands had high rates of depression but there was no equivalent elevation for men. Elsewhere positive and negative associations have been observed between wives' employment and spouses' mental health (Booth 1977; Kessler and McRae 1982).

The present study examined the distribution of neurosis in relation to socio-economic status and employment, using a national sample of 36-year-olds in Britain. It was anticipated that higher rates of disorder would be found in the lower social groups in this study, although this relationship was expected to be somewhat less than for an exclusively urban sample. It should also be weaker for women at this age than at younger ages and could be dependent on the presence of children, especially those of pre-school age. Previous investigations suggest that an appreciable effect of unemployment would be found for men, particularly those of lower status, increasing with length of time unemployed. Differences for women were likely to be restricted to those of lower social class or of higher occupational involvement. It was predicted that husband's employment status would be important for women, but the effect of wife's employment on men was less certain.

Method

Sample

The study forming the basis of the current investigation was the Medical Research Council's National Survey of Health and Development (NSHD), a prospective follow-up of 5,362 individuals all born in one week (3rd–9th March 1946) throughout Scotland, England and Wales. This sample was selected from a larger, representative study of births (Joint Committee 1948) such that all children of non-manual and agricultural workers were included with a randomly chosen one-quarter of the remainder. Illegitimate children and multiple births were excluded from the follow-up, however. The survey members have been studied on frequent occasions during childhood and at longer intervals in adult life. A description of the study up to age 26 years was given by Atkins et al. (1981) and a more recent summary of findings can be found in Wadsworth (1987).

The sample was contacted in 1982–83 (i.e. at age 36) when home visits were carried out by trained nurse-interviewers. This was successful for 3,322 survey members, 75.6% of those thought to be alive and resident in Great Britain. In general, losses have not introduced significant

[3] Again those identified as "not employed/ill health" were particularly at risk.

bias (Wadsworth et al. in press) although there are specific examples of higher attrition rates for those who had received special educational provision (Rodgers 1979), others with poor literacy skills (Rodgers 1986) and a subgroup of previous psychiatric inpatients who had been diagnosed as schizophrenic (Rodgers 1990a).

Data

The 36-year interview inquired into several aspects of survey members' lives including family structure and housing, health and health behaviour, employment, leisure activities and attitudes, and a brief physical examination was carried out. Following the interview and before the physical examination, nurses administered a short version of the Present State Examination (PSE), taken from Wing et al.'s (1974) ninth edition of this structured psychiatric schedule. Recruitment and training of interviewers, monitoring of fieldwork, and reliability and validity of PSE assessment have been described by Rodgers and Mann (1986). Two measures from the PSE are used in this report; the total PSE score, which is a summation of symptom scores, and the Index of Definition (ID) which is derived by computer scoring (Wing and Sturt 1978). The former has a possible range of 0 to 68 and an actual range of 0 to 38 in the present investigation. The ID is a scale from 1 to 8 representing the probability that an individual merits a diagnosis of psychiatric disorder, although no examples of level 8 were found in the NSHD. By convention, levels 1 to 4 and 5 or more are aggregated, the latter grouping being referred to as "cases" (Wing et al. 1978). Of the 3,322 interviews, 29 were considered not to provide suitable PSE assessments (mainly those with mentally handicapped interviewees and some where schedules had missing pages), and acceptable ratings were obtained for 1640 men and 1653 women.

The following analyses called on several indicators of socio-economic circumstances. Paid employment between previous contact and the 36-year interview was coded using both the 1971 and 1981 census classification of occupations (G.B. Office of Population Censuses and Surveys 1970, 1980). As well as providing the conventional six OPCS classes, the 1971 codes were converted into Hope-Goldthorpe categories and aggregated into the seven classes described by Goldthorpe and Llewellyn (1980). Education of survey members was also used. Histories of courses and qualifications, obtained from contemporary reports over several contacts, were coded using the Burnham schema (Burnham Further Education Committee 1972, 1975), which rates courses from 'O'-level standard or below, through 'A'-level equivalents, further advanced courses (e.g. Higher National Certificates and Diplomas), to degree level and above (including certain specified professional qualifications). A further index of status was housing tenure and a number of other features of accommodation were inquired of in the 36-year interview. No information was available regarding total household income but a classification of personal income was obtained. Some indication of financial hardship was given by a question which asked whether the family (or individual where appropriate) had to go without things they really needed in the past year because of shortage of money. Finally, employment status was classified into categories of: full-time paid work, part-time paid work, unemployed and actively looking for work, unemployed and not looking for work, housewife (i.e. looking after the home full-time) and others.

Analysis

Relationships between each independent variable and the two PSE measures were assessed in turn, using analysis of variance for total PSE score and Chi-square tests for the dichotomized ID scale. Subsequent multivariate models utilized the GLM procedure of SAS and the logistic regression program of BMDP. Total PSE score was used both in its raw form, which has a positively skewed distribution, and following a logarithmic transformation. Findings with the transformed scores are only reported where they differed from those using raw scores.

Results

Sex differences

Case rates were 3.8% for men and 8.6% for women. These figures were unchanged when adjustment was made for the survey's original sample stratification. (All further figures are given without this adjustment.) Mean total PSE scores were 1.80 for men and 3.04 for women. As well as this highly significant main effect of sex, interactions were found with other independent variables (e.g. employment status) and therefore subsequent analyses were conducted for men and women separately.

Socio-economic and employment status

Occupational level of own (present or last) job according to OPCS classification was unrelated to symptomatology in men but was significantly associated with women's PSE assessments (Table 1). For women it was only the high scores of those in unskilled manual work which contributed to this. The Goldthorpe classification gave the same pattern although the lowest category of women was of larger number and less extreme in its symptomatology than the OPCS unskilled manual group. Of the two, OPCS classification showed the stronger association with total PSE score and ID level. When spouse's occupational level was considered this had no bearing on men or women's symptoms. [Figures for women are shown in Table 1.] As Brown and Harris (1978) drew attention to the importance of social class for women with young children these analyses were conducted separately for those with any children in the family and for those with children under 5 years. In neither instance was there a trend in disorder.

Relationships with level of educational qualifications were little more pronounced, although when those with qualifications of "O" level standard or above were com-

Table 1. Mean total PSE score and case rate by social class

	Mean PSE score	P	Case rate	P	No. of subjects
Men (own job)					
I	1.60		1.7%		179
II	1.89		3.4%		558
IIIN	2.00	0.609	3.4%	0.716	177
IIIM	1.59		3.2%		497
IV	1.75		4.9%		162
V	1.52		4.0%		25
Women (own job)					
I	3.77		0.0%		19
II	2.79		7.3%		356
IIIN	2.77	< 0.001	8.4%	0.085	491
IIIM	2.64		8.7%		92
IV	3.37		10.7%		243
V	5.41		16.5%		79
Women (husband's job)					
I	2.91		9.2%		131
II	3.05		8.4%		405
IIIN	3.00	0.986	7.6%	0.964	145
IIIM	3.19		9.4%		403
IV	3.09		7.2%		152
V	3.39		8.3%		36

Table 2. Mean total PSE score and case rate by housing tenure

	Mean PSE score	P	Case rate	P	No. of subjects
Men					
Owner occupiers	1.70	0.037	2.8%	< 0.001	1224
Renting and 'others'	2.10		6.8%		412
Women					
Owner occupiers	2.78	< 0.001	7.1%	< 0.001	1243
Renting and 'others'	3.84		13.2%		410

pared with the remainder a significant association was seen for women; in the former group 6.5% reached an ID level of five or more compared with 10.9% of others ($\chi^2 = 9.58$, $P = 0.002$) and mean PSE scores were 2.78 and 3.30 ($F = 5.15$, $P = 0.023$). A test was made of the interaction between educational qualifications of women and the presence of children in the family. Although a difference between the better and poorer qualified was only found in those with children and was greatest when a child was aged 0–4 years, this pattern was non-significant after allowance for the main effects.

For both men and women, home owners had fewer symptoms and were less likely to be cases than tenants and others[4] (Table 2). Women in local authority housing had the highest scores but not significantly greater than women renting privately or in tied accommodation. Although expressions of dissatisfaction with accommodation were related to symptoms, no significant associations were found for level of overcrowding (persons per room), lack of running hot water, lack of a kitchen or bathroom, or sharing a kitchen or bathroom with another household. The hypothesised interaction of socio-economic status with presence of children was assessed in women, using housing tenure as a measure of status. It was indeed found that differences were only present in women with children and were particularly evident in those with children under 5 years of age (Figure 1). The interaction term was significant when predicting total PSE score ($F = 4.72$, $d.f. = 2$, $P = 0.009$) and borderline for case status ($\chi^2 = 5.87$, $P = 0.053$).

Personal income levels showed no link with disorder in either men or women. Unfortunately no information was available for spouse's or total household income. However, survey members who reported financial hardship during the past year showed particularly high symptom levels (Table 3). Although these individuals could have contributed to their difficulties by poor management of resources, there was evidence that this group contained a substantial number who would be likely to face hardship regardless of such considerations. They included single parents (widowed, divorced, separated and unmarried), unemployed men and wives of unemployed men.

Simple comparisons between working and not working survey members revealed a highly significant difference in men and a difference of borderline significance in women, the employed having fewer symptoms. These basic analyses concealed other important factors, however. In men the unemployed who were not seeking employment (predominantly the chronically sick and disabled) had an even higher mean score and case rate. "Others", mainly those in full-time education or training (and one man who described himself as a "housewife") did not appear to have poor mental health, although their number was very small. Men in part-time employment had elevated symptom scores but were too few to compare with those working full-time. Detailed results are shown in Table 4. The possible interaction between unemployment and socio-economic status was tested using indicators of both occupational social class and housing tenure. In each case the association of PSE scores with employment was stronger in the lower groups and this was most prominent in those

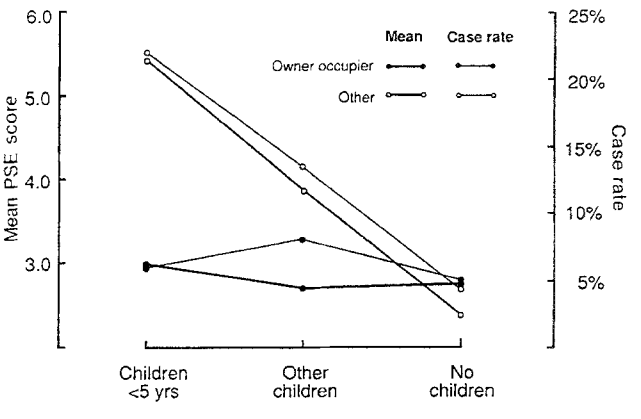

Fig. 1. Mean total PSE score and case rate by housing tenure and children in the family: women

[4] Predominantly those with accommodation tied to employment or owned by relatives who did not charge a rent.

Table 3. Mean total PSE score and case rate by financial hardship

	Mean PSE score	P	Case rate	P	No. of subjects
Men					
No hardship	1.63	< 0.001	2.9%	< 0.001	1390
Had to go without	2.73		8.4%		250
Women					
No hardship	2.65	< 0.001	7.0%	< 0.001	1393
Had to go without	5.12		17.3%		260

Table 4. Mean total PSE score and case rate by employment status

	Mean PSE score	P	Case rate	P	No. of subjects
Men					
Paid employment					
Full-time work	1.64		2.9%		1525
Part-time work	2.91		9.1%		11
Unemployed		< 0.001		< 0.001	
Looking for work	3.53		12.0%		75
Not looking for work	7.11		36.8%		19
Others/'housewife'	1.60		10.0%		10
Women					
Paid employment					
Full-time work	2.96		7.7%		454
Part-time work	2.77		7.9%		581
Unemployed		0.255		0.589	
Looking for work	3.60		12.7%		55
Not looking for work	3.25		8.7%		92
Housewife/others	3.34		9.8%		471
Women of high occupational involvement					
Paid employment	2.78	0.001	6.1%	0.001	264
Unemployed	5.00		20.0%		55
Women of low occupational involvement					
Paid employment	2.88	0.218	8.4%	0.772	771
Unemployed	3.19		8.9%		563

identified as not owning their home. (The finding applied only to the unemployed who were seeking work.) The interaction term was significant after adjustment for main effects ($F = 6.68$, $d.f. = 2$, $P = 0.001$). Using ID level, case rates increased from 2.5% to 3.8% in owner occupiers and from 4.5% to 16.3% in other men.

Symptom scores increased monotonically with duration of unemployment for men looking for paid work: means of 1.95, 2.77, 3.70 and 4.88 for ranges 0–12 weeks, 13–38 weeks, 39–103 weeks and 104 weeks plus. However this trend did not reach statistical significance ($r = 0.19$, $P = 0.107$), nor was the difference significant comparing those unemployed for greater or less than 6 months. (Numbers were too small to assess the association with case rates.) In view of the magnitude of the observed trend, financial hardship was also examined in relation to duration of unemployment and "going without" increased for the above four categories: 14.3%, 15.4%, 56.5% and 81.3% respectively ($\chi^2 = 22.4$, $d.f. = 3$, $P < 0.001$). No similar trends were seen in the unemployed men not seeking work, either for symptom levels or financial hardship.

For women no difference in symptoms was found between those working part-time and full-time (Table 4). The total sample was sub-divided into groups of differing occupational involvement as indicated by Warr and Parry (1982b). Of 1,653 women, 1,334 were married or living with a partner and had children living in the household. Within this group there was no difference in PSE outcomes between those in and not in paid work, but contrary to expectation those with young children had lower scores when working, although not significantly so. For those living with a husband or partner without children ($n = 139$) the case rate was much higher in those not working (15.8%, $n = 19$) than those in paid work (3.3%, $n = 120$) and mean PSE scores were also higher, 3.47 compared with 2.43. The former comparison is of borderline significance ($P = 0.054$, Fisher's exact test) and the latter is non-significant, however. Effects of borderline significance were also observed both for unpartnered women without children, although only 12 of these were unemployed (means = 2.36 and 4.92, $F = 4.06$, $P = 0.047$), and for unpartnered women with children. In this last group seven out of 24 women not in paid work were rated at case levels (29.2%) compared with 13.4% of those who had a job ($P = 0.08$, Fisher's exact test); mean PSE scores were 6.25 and 3.89 respectively ($F = 3.27$, $P = 0.07$), thus even those working had high scores. Combining these three small groups of women of higher occupational involvement, those not in paid work had significantly more symptoms than those working (Table 4). A further analysis tested the hypothesis that employment was more important for working-class than middle-class women. Use of husband's (or partner's) occupational class yielded a non-significant result, but with home ownership paid employment was associated with better mental health only for the lower group i.e. those in rented or tied accommodation.

The NSHD data also allowed investigation of the relevance of spouse's employment status, and showed a strong sex difference. For men there was no difference between those with wives in paid work and those whose wives were "looking after the home". Higher PSE scores were seen where wives were "unemployed and seeking work" (mean = 2.28) but this was a small group ($n = 32$) and did not differ significantly from the former groups. For women an unemployed spouse was a bad thing. Eleven out of 78 such wives (14.1%) reached case levels on the PSE compared with 8.0% of others ($\chi^2 = 3.63$, $P = 0.057$) and their mean score was 4.69 compared with 2.88 ($F = 12.22$, $P < 0.001$). Although the size of these differences was greatest in those of lower socio-economic status (e.g. tenants), the interaction of status and spouse's employment was not statistically significant.

Factors in combination

As anticipated, many predictive factors were inter-related. For example, 18.1% of male tenants were unemployed compared with 3.1% of home owners and, for married women, 17.1% in rented accommodation had unemployed husbands compared with 2.9% of owner occupiers. Significant variables were therefore examined in

combination to assess their independent association with symptomatology.

Men. Housing tenure was no longer a significant main effect in the analysis of men's PSE score when financial hardship was taken into account; families in rented accommodation were more likely to be "going without" than owner occupiers. Although some of the association between employment status and symptomatology was attributable to hardship, it was not the whole explanation and both factors plus the interaction between unemployment and housing tenure were independently predictive when considered together (Table 5). The main effects held with logarithmic transformation of PSE score and with case status (using logistic regression analysis), but the interaction term no longer reached statistical significance.

Women. The impact of adjustment for financial hardship was more pronounced in women, accounting for associations of PSE score with their level of educational qualifications and with their own employment status (for those of higher occupational involvement and those living in rented or tied accommodation). There was an additional interesting feature of employment status and lone parenthood; the difference between working and unemployed lone mothers was not explained by financial hardship, even though the poor mental health of both these groups was linked to this factor. Financial hardship was implicated in the interaction between housing tenure and presence of children, being more common outside of owner occupation and particularly so where children (especially pre-school children) lived in the family. The interaction was considerably reduced but not eliminated after adjustment for hardship and other factors ($P = 0.045$).

The remaining significant factors for women were: social class of own occupation (unskilled manual v the rest), housing tenure, and husband's employment status. Finan-

Table 5. Socio-economic factors associated with PSE score and case status

	PSE score			Case status		
	n	Adjusted deviation	*P*	*B*	Odds ratio (95% CI)	*P*
Men ($n = 1636$)						
Housing tenure						
Owner occupier (A)	1224	+0.22	0.131	0.00[a]	–	0.270
Renting/other (B)	412	−0.65		+0.54	0.64–4.62	
Financial hardship						
No hardship	1388	−0.12	<0.001	0.00	–	0.017
Had to go without	248	+0.69		+0.76	1.17–3.90	
Employment						
In paid work (I)	1542	−0.13	<0.001	0.00	–	<0.001
Seeking work (II)	75	+1.25		+0.76	0.69–6.55	
Not seeking work (III)	19	+5.47		+2.68	5.31–40.4	
Tenure x employment						
A + I	1190	−0.14	0.002	0.00	*	0.579
A + II	26	+0.43		−0.35	*	
A + III	8	+7.62		+0.39	*	
B + I	352	−0.12		+0.03	*	
B + II	49	+2.08		+0.40	*	
B + III	11	+3.31		−0.36	*	
Women ($n = 1652$)						
Occupational class						
I–IV	1573	−0.09	<0.001	0.00	–	0.233
V	79	+1.74		+0.41	0.79–2.92	
Housing tenure						
Owner occupier	1242	−0.18	0.051	0.00	–	0.195
Renting/other	410	+0.56		+0.39	0.84–2.59	
Financial hardship						
No hardship	1392	−0.46	<0.001	0.00	–	<0.001
Had to go without	260	+2.47		+0.79	1.45–3.32	
Husband's employment						
In paid work	1394	−0.12	0.077	0.00	–	0.713
Not in paid work	78	+0.80		+0.13	0.57–2.32	
No husband	180	+0.54		+0.33	0.79–2.48	
Children at home						
No children	228	−0.27	0.051	0.00	–	0.030
Children 5 yrs +	1061	+0.18		0.88	1.14–5.05	
Child < 5 yrs	363	+0.68		0.99	1.16–6.23	

[a] zero denotes reference group
* not estimated

cial hardship retained its substantial contribution when adjustment was made for all other factors. As well as the main effects there were two further interaction terms of hardship with housing tenure ($P = 0.025$), such that women who had "done without" and were in rented accommodation had particularly high symptom scores, and of hardship with presence of children ($P = 0.022$). This latter term was complex in that both those with no children (many being unmarried) and those with young children had elevated scores when they "did without". Similar results were obtained using raw and logarithmic scores, although husband's unemployment was of greater significance with the latter. However, the equivalent logistic regression analysis failed to show an independent effect of husband's employment status, the association with unskilled work was reduced and the only interaction to reach significance was between housing tenure and presence of children, indicating an adverse combination of young children and not owning the home. Table 5 shows the results for main effects in the prediction of raw PSE score and case status.

Discussion

Overall these findings came fairly close to expectations, with perhaps the greatest surprise being the general absence of association between occupational measures of social class and neurosis. The only instance where occupational class was important, but which seemed not to be an economic influence, was the high mean symptom score of women in (or previously in) unskilled manual work. This was little changed by adjustment for financial hardship suggesting job content may have been responsible. However, the finding appplied equally to those no longer in paid work and was not related to self-reported job (dis)satisfaction (Rodgers 1989), rendering it rather enigmatic. The weak association of education with psychiatric symptoms is not an unusual finding even when other measures of socio-economic status appear significant (Hussaini and Neff 1981; Gilboa et al. 1990; Lehtinen et al. 1990), although this may be less evident in women than men (Kessler 1982) and contrary results are possible (Meile and Haese 1969; Husaini et al. 1979). Also, over 40% of individuals in the present study had no qualifications, giving poor discrimination at lower socio-economic levels. Housing tenure was more strongly correlated with symptom levels than other measures of socio-economic status and this was particularly so for women.

The lack of concordance between occupational class and financial circumstances may be part of the explanation for these findings, and it is probable that housing tenure is a more sensitive index of socio-economic status in the age group concerned (36 years) than at earlier times in the cohort's housing career. In men at least it appeared that hardship was at the root of the elevated symptomatology of tenants. For women there remains the additional possibility of more intrinsic disadvantage in not owning one's home. This could arise either from the status and resource of tenure itself or from the nature of rented accommodation, most of which was local authority housing. Although analysis did not identify specific features of accommodation which were related to neurosis, other unmeasured characteristics could well be more influential (Gillis 1977; Duvall and Booth 1978; Elton and Packer 1986). A new phase of data collection has included more detailed assessments of housing conditions and locality as well as additional objective indicators of family financial difficulties.

Employment status was important in men and women and this was most striking in men of lower socio-economic status and in women of higher occupational involvement. Again, financial hardship was linked with these relationships. Only in lone mothers did employment appear to confer any beneficial effects for women beyond that expected from its economic contribution. This is reminiscent of the stress buffering role of paid work, which operated only in the absence of a confiding relationship (Brown and Harris 1978). It is possible that financial factors in conjunction with occupational involvement contribute to the greater effect of women's unemployment (and re-employment) apparent in longitudinal investigations (Ensminger and Celentano 1988; Hall and Johnson 1988) as compared with cross-sectional surveys. In men, the very strong influence of unemployment retained an independent "effect" when considered together with hardship, in keeping with the findings of Kessler et al. (1987) and implying additional deleterious aspects of not being in paid work. Elements such as utilization of time and one's perceived value in society (Hepworth 1980; Feather and Bond 1983) could be important. In parallel with this finding, husbands' employment status showed some association with symptom levels in women after adjustment for other socio-economic factors and this may reflect the influence of husbands' symptomatology on their wives (Dew et al. 1987).

Overall, the importance of associations with financial hardship was the most salient feature of these results. This was seen for men in relation to the high frequency of symptoms in those of lower status (i.e. not home owners) and those seeking employment. This and other evidence of its mediating effect (Pearlin et al. 1981; Kessler et al. 1987; Ensminger and Celentano 1988; Liem and Liem 1988) underlines the suspicions of several authors that the role of financial stress in the unemployed has been understated (Carr-Hill 1985; Fryer 1986; Payne and Hartley 1987; Ullah 1990). Furthermore the progressive increase in hardship with duration of unemployment suggests that indicators other than measures of income can be extremely valuable in such studies (Pearlin et al. 1981; Jackson and Warr 1984; Warr and Jackson 1985). In women, high scores of those with lower educational qualifications and those with unemployed husbands were also strongly linked to financial hardship. The relevance of hardship for women extended beyond the economic domain to include aspects of family structure. The construct of women's occupational involvement (Warr and Parry 1982 b), as indicated by marriage and presence of children, was a rather good index of the financial importance of women's employment and its consequence for mental health[5]. And the

[5] With the noted exception within lone mothers.

interaction between class (indicated by housing tenure) and presence of children, particularly under 5 years, was largely attributable to hardship. Children, especially young children, can diminish the earning capacity of families, whilst all children living at home place a demand on resources. The implications of employment and children for women's mental health have been interpreted most often in terms of role strains and conflicts (Gove and Tudor 1973; Radloff 1975; Pearling 1975; Aneshensel et al. 1981; Krause 1984) and it is possible that this emphasis has overlooked important additional economic aspects.

These conclusions need to be viewed in the light that observed associations need not reflect a one-way causal path from social position to mental health. In some instances the reverse influence is operative, e. g. the small group of unemployed men with chronic illnesses and disabilities included a number with long-standing psychiatric disorder which may have preceded and precipitated their departure from the employment market. A similar case may be made for associations with housing tenure (Smith 1990). It will be possible within the present study to examine such health selection models in relation to known risk factors for adult disorder (Rodgers 1990a, b) and, in future, to study transitions between different status categories and associated changes in symptomatology. In the meantime the observed relationships serve to pinpoint more precisely those groups of individuals with high risk of neurosis and indicate that further refinements of indices of socio-economic status may lead to a better understanding of aetiology (Dohrenwend 1990)

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B. Rodgers
MRC National Survey of Health and Development
University College and Middlesex School of Medicine
Department of Community Medicine
66-72 Gower Street
London WC1E 6EA
UK