Economic difficulties and common mental disorders among Finnish and British white-collar employees: the contribution of social and behavioural factors

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Abstract

Background—In addition to conventional indicators of socioeconomic position, material conditions such as economic difficulties are associated with mental health. However, there has been little effort to investigate explanations for these associations. This study aims to examine the association of current economic difficulties with common mental disorders (CMD) and the contribution of social and behavioural factors to this association in two cohorts of Finnish and British white-collar employees.

Methods—We used comparable survey data from the Finnish Helsinki Health Study (n=3949) and the British Whitehall II Study (n=3116). CMD were measured with the GHQ-12. Inequality indices from logistic regression analysis were used to examine the association between current economic difficulties and CMD, and the contribution of other past and present socioeconomic circumstances, health behaviours, living arrangements and work-family conflicts to this association. Inequality indices show the average change in ill-health for each step up in the level of economic difficulties. Analyses were conducted separately for men and women in each cohort.

Results—Clear associations between current economic difficulties and CMD were found. Adjusting for work-family conflicts attenuated the associations. Adjusting for indicators of past and present socioeconomic circumstances, health behaviours and living arrangements had generally negligible effects on the associations. The results were very similar among both sexes in the two cohorts.

Conclusions—Conflicts between work and family contribute to the association between economic difficulties and CMD in both Finland and Britain. Supporting people to cope not only with everyday

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economic difficulties but also with work-family conflicts may be important for reducing inequalities in mental health.

Keywords

mental health; GHQ; socioeconomic position; employees; comparisons

Introduction

Background

Studies on socioeconomic inequalities in health have typically examined the conventional dimensions of socioeconomic circumstances i.e. education, occupational class and income. Home and car ownership and other measures of wealth have been used to reflect the material resources dimension of socioeconomic circumstances.[1] Less attention has been paid to the importance of economic difficulties and to their associations with health. Economic difficulties are a domain of the multidimensional construct of socioeconomic circumstances, but they are not fully captured by income or other standard socioeconomic measures. They indicate immediate material hardship, but are not related to low income only. Daily life economic difficulties can exist at all income levels,[2] being caused for example by excessive consumption habits and debt[3,4] or emerging because of adverse life events and circumstances.

In our previous study comparing cohorts of middle-aged Finnish and British employees, economic difficulties, i.e. difficulties in paying bills and affording food and clothes that the family needs, were associated with common mental disorders (CMD) independent of other past and present socioeconomic circumstances.[2] Such association was not found for other socioeconomic circumstances, e.g. income or occupational class. Other studies have also documented associations between economic difficulties and CMD.[3-7] Furthermore, associations have been demonstrated between economic difficulties and other health outcomes including severe physical conditions. An analysis of the Whitehall II Study data confirmed an association between economic difficulties and incident of coronary heart disease, and this was not explained by other socioeconomic circumstances, early life factors, working conditions or health behaviours.[10] Economic difficulties have also been associated with physical functioning[11] and self-rated health[12] in the Helsinki Health Study.

Potential explanations for the association of economic difficulties with mental health include material and perceived deprivation, physical hardship, economic uncertainty, and impaired social relationships, which can act as acute or chronic exposures and stressors.[8,13-15] Thus, in addition to acting as a stressor in itself and having a direct effect on health, economic difficulties can affect health through mediating factors such as diminished possibilities for healthy behavioural and lifestyle choices, as well as difficulties in other areas of life [6] such as family. The effects of economic difficulties on health can also be either strengthened or weakened by other factors. For example, other simultaneous problems can further increase the overall stressfulness of the problematic situation.[16,17]

Aims and context of the study

We aim to examine factors contributing to the associations between current economic difficulties and CMD in white-collar employee cohorts from Finland and Britain. We have previously found strong associations between current economic difficulties and CMD which were very similar in these two cohorts.[2] We now aim to compare possible explanations for these associations in the two cohorts. Although Finland and Britain are both affluent western European countries, there are also dissimilarities between them and it is thus possible that the

explanations for these associations vary between these countries. The countries differ for example in their patterns of welfare provision and allocation, labour markets, social and family structures, and income distributions.[18,19] There is a higher employment rate among women, a more universal welfare coverage and smaller income differences in Finland than in Britain.

A range of factors which may contribute to the associations between current economic difficulties and CMD are included in the analyses. These include social factors, i.e. past and present socioeconomic circumstances, living arrangements and work-family conflicts, and behavioural factors, i.e. health behaviours. Although the causal order can not be examined in this cross-sectional study, we assume a tentative temporal order as a basis of our analysis. In our simplified framework, we assume socioeconomic circumstances such as education and subsequent occupational class to precede economic difficulties and act as explanatory factors, i.e. influencing economic difficulties which in turn influence CMD. Also living arrangements, i.e. living alone or with partner and/or children, might influence the experience of economic difficulties. We consider work-family conflicts as potential mediators, i.e. economic difficulties influencing work-family conflicts which would further influence CMD. Health behaviours occupy an intermediate role in this framework. On one hand, they can precede economic difficulties as they are often adopted set at a relatively early age. On the other hand, maintaining and adopting unhealthy behaviours may also be a way of coping with economic difficulties. We further assess whether the associations of economic difficulties with CMD are modified, i.e. whether there is an interaction, by household income or conflicts experienced between work and family.

Data and methods

Data

The data used in this study derived from surveys conducted among public sector employees in Finland and Britain. The Finnish data derived from the Helsinki Health Study which is a longitudinal prospective cohort study of male and female employees of the City of Helsinki. The baseline surveys were conducted in 2000, 2001 and 2002, and 67% responded (N=8960). [20] Each year a questionnaire was posted to male and female employees reaching the age of 40, 45, 50, 55 and 60 years. We used data from years 2001 and 2002 (N=5819) as data from year 2000 did not include information on work-family conflicts.

The British data derived from the Whitehall II Study which is a longitudinal prospective cohort study of male and female civil servants aged 35-55 years at the time of recruitment, working in the London offices of twenty National Government Civil Service departments. The study includes data from seven postal surveys and four screening examinations conducted in years 1985-2004. At baseline 73% responded (N=10308).[21,22] We used data mainly from the postal survey at phase 5 (1997) (N=7830, response rate 76%), as the earlier phases do not include all the measures needed, and to be more comparable with the Helsinki Health Study time frame.

The Helsinki Health Study data collection largely followed the Whitehall II Study protocol and the data were further harmonised as much as possible. To make the two cohorts as comparable as possible, we included respondents according to three criteria: 1) Being aged 45-60 years so that similar age-groups were formed for both cohorts; 40-year-olds (N=1135) from Helsinki and 61-65 year-olds (N=2036) from London were excluded. 2) Being a white-collar employee; thus manual workers (N=705 in age-groups 45-60) were excluded from the Helsinki cohort. 3) Being in current employment in the civil service; those who had left civil service in the London cohort were excluded (N=2397 in age-groups 45-60). The final number of participants who met these criteria and had information on the outcome measure was 3949 (713 men and 3236 women) in Helsinki and 3116 (2241 men and 875 women) in London.

The Helsinki Health Study has been approved by ethical committees at the Department of Public Health, University of Helsinki, and at the City of Helsinki health authorities. The Whitehall II Study has been approved by the University College London ethics committee.

Measurements

Common mental disorders (CMD) were measured by the 12-item version of the General Health Questionnaire (GHQ-12). The GHQ indicates primarily disorders that are recent, general and non-psychotic,[23,24] as well as context free, i.e. not related to a specific context such as work or family[25]. The GHQ has been well validated and also predicts more severe mental disorders.[23,24,26] The Helsinki Health Study data included the 12-item version of the GHQ. The Whitehall II Study data included the 30-item version from which the 12-item version was extracted. Different versions of the GHQ have been shown to be equally valid and the validity is unlikely to be affected by the language of the questionnaire.[24] Total score of the GHQ-12 ranges from 0 to 12. In this study, a recommended cut-off point of three or more symptoms was used to indicate CMD.[23,24,26]

The measure of current economic difficulties was constructed from two questions from Pearlin's list of chronic strains.[27] (1) "How much difficulty do you have in meeting the payment of bills?"; the response categories were scored as 0 'very little', 1 'slight', 2 'some', 3 'great' and 4 'very great'. (2) "How often does it happen that you do not have enough money to afford the kind of food or clothing you/your family should have?" (London) and "How often do you have enough money to buy the food or clothing you or your family need?" (Helsinki); the response categories were scored as 0 'never', 1 'seldom', 2 'sometimes', 3 'often' and 4 'always' in London, and vice versa in Helsinki. The scores of the two variables were summed up to yield a total score of economic difficulties ranging from 0 to 8. This score was used as a continuous variable in which a higher score indicated a higher level of difficulties. In descriptive analyses the variable was divided into three categories (0, 1-3, 4+) which approximately correspond to those used in our previous study.[2]

Six measures of socioeconomic circumstances and a measure of living arrangements were included. Parental education was based on information about both mother's and father's education, of which the higher one was chosen. Childhood economic difficulties were measured by asking whether the respondent's childhood family had faced serious (Helsinki) or continuing (London) financial problems before the respondent was aged 16. Own education and occupational class were included to indicate adult socioeconomic position. Household income was divided by the household size and weighted using the modified OECD equivalence scale.[28] Housing tenure was dichotomised into owner-occupiers and renters. Living arrangements were categorised into five groups: living alone, living with spouse/partner, living alone with children, living with spouse/partner and children, and others. More details on the socioeconomic measures can be found in our previous publication.[2]

Four measures of health behaviours were used. Smoking was divided into two categories: current smokers and non-smokers. Alcohol consumption was based on reported units of alcoholic beverages consumed during an average week (Helsinki) or the previous week (London). Units were converted into grams. Consumption exceeding 280 grams/week among men and 140 grams/week among women was considered as heavy drinking. Measure of physical activity was combined from questions asking about weekly and monthly frequency of physical activity on different levels of strenuousness. The least active quintile was classified as inactive. BMI was calculated from self-reported (Helsinki) or measured (London) height and weight, and obesity was classified as BMI of 30 or higher.

Work-to-family and family-to-work conflicts were measured with four items each.[29] The work-to-family question was: To what extent do your job responsibilities interfere with your

family life? The response statements were: (1) Your job reduces the amount of time you can spend with the family, (2) Problems at work make you irritable at home, (3) Your work involves a lot of travel away from home, and (4) Your job takes so much energy you do not feel up to doing things that need attention at home. The family-to-work question was: To what extent does your family life and family responsibilities interfere with your performance on your job in any of the following ways? The response statements were: (1) Family matters reduce the time you can devote to your job (2) Family worries or problems distract you from your work (3) Family activities stop you getting the amount of sleep (4) family obligations reduce the time you need to relax or be yourself. For each item, there were four response categories: 'not at all', 'to some extent', 'a great deal', 'not applicable'/'I don't have a family'. The responses were summed to form separate scales from 4 to 12 for work-to-family and family-to-work conflict. The sum scores were grouped into three categories, i.e. 'low' (4), 'average' (5-7) and 'high' (8+) conflicts.

Correlations between current economic difficulties and other variables ranged between r=-0.01 and r=0.32 in both cohorts. In Helsinki the highest correlation was between economic difficulties and household income (r=0.28) and the lowest between economic difficulties and parental education (r=0.03). In London the highest correlation was between economic difficulties and household income (r=0.31) and the lowest between economic difficulties and heavy drinking (r=0.003). The proportion of missing values in the variables was generally small in Helsinki. In London the proportion of missing values was larger, particularly in household income (16% in women, 14% in men). However, approximately half of the missing values in household income could be replaced with information on individual income; the criterion was that the respondent was living alone or reported that no others contributed to the household income. Further treatment of missing values is described below.

Statistical methods

Analyses were conducted separately for men and women in each cohort. For descriptive purposes, age-adjusted prevalence for CMD with 95% confidence intervals (CI) were calculated by each independent variable. Inequality indices with 95% CI for CMD were calculated with logistic regression analysis using economic difficulties as a continuous variable. The inequality index is interpreted as the average change in ill-health (in terms of the odds ratio) for each step up in the level of economic difficulties. Age-adjusted indices were first calculated. In the subsequent multivariate models the socioeconomic variables were first adjusted for. After this, living arrangements, health behaviours and work-family conflicts were added, one variable group at a time. In the final model all variables were simultaneously adjusted for. Interactions of household income and work-to-family as well as family-to-work conflicts with economic difficulties were also examined.

Treatment of item missing was carried out with multiple imputation using ICE (Imputation by Chained Equations) method in STATA.[30] Five copies of the data were formed in the imputation process, each with missing values imputed on the basis of the variables used in the analyses of this study. These copies were independently analysed in the logistic regression analyses, and estimates of parameters were averaged across the copies to obtain mean estimates and their 95% CI. Using ICE, the results were practically identical with those obtained with a complete case analysis (N=2626, Helsinki; N=1921, London), but the precision of the estimations was improved.

Results

The overall prevalence of CMD was 27% among women and 23% among men in Helsinki (Table2). The corresponding figures were 29% and 23% in London (Table3). The prevalence

of CMD was higher among respondents with current economic difficulties among women and men in both cohorts (Table 1), with Helsinki women having the largest difference.

There were large variations in CMD by work-to-family and family-to-work conflicts and childhood economic difficulties in both cohorts and sexes (Tables 2 and 3). Variations in CMD were less consistent by other variables, and only among Helsinki men and to a lesser degree among women current smoking and physical inactivity were associated with CMD. In both cohorts, economic difficulties were more common in lower position groups by all socioeconomic variables except parental education. They were also more common among those living with children, having conflicts between work and family, and reporting unhealthy behaviours, except heavy drinking among women (no results shown).

The age-adjusted logistic regression analysis confirmed a clear association between economic difficulties and CMD among women and men in Helsinki (Table 4, Model 0). Adjusting for socioeconomic circumstances (Model 1) had no effect on the association between economic difficulties and CMD. Further adjustment for living arrangements (Model 2) and health behaviours (Model 3) had mostly small or negligible effects on the association between economic difficulties and CMD. Only adjusting for health behaviours caused some attenuation among men. Adjusting for work-family conflicts (Model 4) clearly attenuated the association among both sexes. This attenuation was slightly more due to family-to-work conflict (OR=1.20, women; OR=1.09, men) than work-to-family conflict (OR=1.24, women; OR=1.15, men) among both women and men (no results shown). Overall, adjusting for conflicts between work and family (Model 4) attenuated the inequality index value of the basel model (Model 1) by 27% (100*(1.26-1.19)/(1.26-1)) among women and 50% (100*(1.18-1.09)/ (1.18-1)) among men in Helsinki.

As in Helsinki, also in London the age-adjusted models showed a clear association between economic difficulties and CMD in both sexes (Table 4, Model 0). Similarly in London, the adjustments for other socioeconomic circumstances (Model 1) and for living arrangements (Model 2) and health behaviours (Model 3) had practically no effects on the association between economic difficulties and CMD. Adjusting for work-family conflicts (Model 4) clearly attenuated the association among both sexes. Similarly to Helsinki women and men, among London women adjusting for work-to-family conflict (OR=1.04) had a somewhat stronger effect on the association than family-to-work conflict (OR=1.07), whereas among London men work-to-family conflict (OR=1.15) was slightly less important than family-to-work conflict (OR=1.13) (no results shown). After adjusting for work-to-family and family-to-work conflicts (Model 4) the inequality index value of the base model (Model 1) was reduced by 73% among women and 42% among men in London.

Interactions of household income, family-to-work conflict and work-to-family conflict with current economic difficulties were examined (no results shown). No interactions were found for family-to-work and work-to-family conflict. For household income, a stronger association between economic difficulties and CMD in lower income groups (age-adjusted inequality index OR=0.77 in the highest and OR=1.39 in the lowest income group) was found in Helsinki men (no results shown). In London and in Helsinki women, there was a similar tendency but it did not reach statistical significance.

Discussion

Main results

We have previously found current economic difficulties to be strongly associated with CMD.[2] In this study we sought to improve our understanding of this association by examining the contribution of a range of social and behavioural factors, i.e. past and present socioeconomic

circumstances, living arrangements, health behaviours and work-family conflicts, to this association. We also sought to compare employee cohorts including women and men from two countries, Finland and Britain.

Our first main finding was that adjusting for conflicts between work and family attenuated the associations of economic difficulties with CMD (adjusted for age and socioeconomic circumstances) by approximately 30-70%. First of all, these conflicts might act as mediators between economic difficulties and CMD, i.e. economic difficulties would contribute to conflicts between work and family which in turn would contribute to mental health. As the attenuation of the association between economic difficulties and CMD was slightly more due to the adjustment for the variable 'family-to-work conflict' than for the variable 'work-to-family conflict', it is possible that the same family problems that impede work are the ones leading to economic difficulties. Thus, for example a large number of dependants or family members' health problems might cause both the economic difficulties and the conflicts between family and work. Furthermore, it is possible that there is some conceptual overlap between work-family conflicts and economic difficulties, and they might reflect partly similar phenomena. This kind of overlap might also be possible between work-family conflicts and the GHQ, although the correlations between these were not very high, ranging between $r=0.13$ and $r=0.26$ (results not shown). Finally, the strong contribution of work-family conflicts to the association between economic difficulties and CMD might also derive from a situation in which several simultaneous problems, such as economic difficulties and work-family conflicts, increase the overall mental strain and contribute to CMD.[16,17]

Our second main finding was that other past and present socioeconomic circumstances, living arrangements and health behaviours did not generally affect the association between economic difficulties and CMD. This has been previously observed in the Whitehall cohort for severe physical health problems, i.e. coronary events, which is a medically confirmed health outcome free of self-report bias.[10] It is particularly notable that in our study, there were generally no clear mediating or explanatory effects of health-related behaviours, although unhealthy behaviours have tended to be associated with poorer mental health[31,32] and been shown to vary by other socioeconomic circumstances[33,34]. Overall, these results suggest that economic difficulties may differ from other socioeconomic circumstances, at least among white-collar employees.

According to our third main finding, patterning of CMD by the studied variables was very similar in the two cohorts. Thus, the associations of economic difficulties with CMD and the effects of contributing factors appear not to be affected by the differences Finnish and British societies have between them for example in working life, social policies and welfare regimes in general[18] and in the income distributions[19]. It is possible that the similarity of the two employee cohorts was more important than the cultural and social differences between the countries. This may suggest a better generalisability of these results to similar employee groups also in other western European societies.

Methodological considerations

An advantage of our study was the availability of comparable employee cohorts using largely identical measurements. However, some limitations need to be considered when interpreting the results. Firstly, as our samples were relatively homogeneous consisting of middle-aged white-collar employees only, the results cannot be generalised to all employees or the general population. Secondly, due to the cross-sectional design, causal interpretations of the found associations should be made with caution. There is a possibility of health-related selection, i.e. that low socioeconomic position and economic difficulties in particular, as well as work-family conflicts, are influenced by prior poor mental health. However, previous studies suggest that the causal direction is mainly from socioeconomic position to health.[35,36] It has also been

shown that among the respondents of the Whitehall II Study health affects the social position much less than vice versa.[37] Thirdly, as the data were self-reported, the possibility of reporting bias has to be considered: the respondents' common mental disorders might influence their responses to questions about socioeconomic circumstances and economic difficulties. Negative affectivity, i.e. a disposition to respond negatively in surveys, might equally affect the results.[38] However, we were able to test this in the London cohort and further adjusting for negative affectivity in the logistic regression models did not affect the main findings. Fourthly, non-response bias may affect the results of surveys. In the Helsinki cohort, women and higher social classes had a higher response rate. However, the effects of non-response on the results concerning relative socioeconomic differences in health appear to be negligible. [39,40] Also attrition between the Whitehall II Study baseline (1985-88) and phase 5 (1997) may have affected the results. Despite attrition, we used data from the phase 5 as the earlier phases did not include all the measures needed for this study. Furthermore, we have checked that in phases 1 and 3 the associations of economic difficulties and other available socioeconomic indicators with CMD are practically similar to those in phase 5. Fifthly, the Helsinki Health Study year 2000 data was excluded from the analysis. However, the results for economic difficulties and CMD were similar to those in data from all three years 2000-2002. [2]

Conclusions

The associations between economic difficulties and CMD were in a large part dependent on conflicts between work and family, but not on other socioeconomic circumstances, living arrangements or health behaviours. This held true for women and men from the Finnish and the British cohorts. However, factors contributing to the associations between economic difficulties and CMD still remain partly open, and analyses focusing on other possible contributory factors are needed. In the light of our results, supporting people to cope with everyday economic difficulties as well as efforts to improve the balance between work and family life may help employees to maintain good mental health.

What is already known on this topic

- Current economic difficulties are associated with common mental disorders but the explanations for this association are unclear.

What this study adds

- Work-family conflicts explained a large part of the associations between current economic difficulties and common mental disorders in the Finnish and British employee cohorts.

- Other socioeconomic circumstances, living arrangements, and health behaviours had negligible effects on the associations between economic difficulties and common mental disorders.

- Work-family conflicts and economic difficulties should be considered in efforts to reduce inequalities in mental health.

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Table 1

Number of participants (N), age-adjusted prevalence (%) and odds ratio (OR) with 95% confidence intervals (CI) of GHQ-12 3+ by current economic difficulties, Helsinki and London

	Helsinki women N	**Prevalence % of GHQ-12 3+**	**OR (CI)**	**Helsinki men** N	**Prevalence % of GHQ-12 3+**	**OR (CI)**
Current economic difficulties						
0	1851	22	1.00	441	20	1.00
1-3	1080	30	1.57 (1.32-1.86)	217	26	1.41 (0.95-2.09)
4+	305	45	2.98 (2.31-3.85)	55	33	1.96 (1.06-3.62)

	London women N	**Prevalence % of GHQ-12 3+**	**OR (CI)**	**London men** N	**Prevalence % of GHQ-12 3+**	**OR (CI)**
Current economic difficulties						
0	478	26	1.00	1278	20	1.00
1-3	327	32	1.29 (0.94-1.78)	804	26	1.41 (1.15-1.75)
4+	71	36	1.64 (0.96-2.81)	160	36	2.05 (1.41-2.98)

Table 2

Number of participants (N), age-adjusted prevalence (%) and odds ratio (OR) with 95% confidence intervals (CI) of GHQ-12 3+ by explanatory and mediating variables, Helsinki.

	Helsinki women N	Prevalence % of GHQ-12 3+	OR (CI)	Helsinki men N	Prevalence % of GHQ-12 3+	OR (CI)
Total	3236	27		713	23	
Parental education						
Higher	678	30	1.00	206	23	1.00
Intermediate	823	26	0.82 (0.65-1.03)	182	21	0.86 (0.52-1.42)
Basic	1735	26	0.81 (0.66-0.98)	326	24	1.05 (0.69-1.59)
Childhood economic difficulties						
No difficulties	2635	25	1.00	601	21	1.00
Difficulties	601	34	1.56 (1.28-1.90)	112	31	1.72 (1.09-2.72)
Own education						
Higher	878	27	1.00	305	23	1.00
Intermediate	1106	29	1.11 (0.91-1.35)	225	22	0.93 (0.61-1.41)
Basic	1251	25	0.93 (0.76-1.13)	183	23	0.95 (0.61-1.48)
Occupational class						
Administrative/managerial	247	28	1.00	187	23	1.00
Professional/semi-professional	1407	27	0.93 (0.68-1.26)	439	23	1.06 (0.70-1.61)
Clerical	1582	26	0.87 (0.65-1.18)	87	18	0.81 (0.42-1.55)
Household income						
Highest group	677	23	1.00	168	24	1.00
2nd	928	26	1.16 (0.91-1.47)	190	23	1.00 (0.60-1.65)
3rd	796	27	1.22 (0.95-1.56)	198	21	0.84 (0.50-1.40)
Lowest group	835	29	1.34 (1.05-1.70)	157	25	1.12 (0.66-1.90)
Housing tenure						
Owner-occupier	2275	26	1.00	550	22	1.00
Renter	961	27	1.06 (0.89-1.26)	163	25	1.15 (0.76-1.75)
Living arrangements						
Alone	805	29	1.00	166	26	1.00
With spouse/partner	820	24	0.77 (0.62-0.96)	197	23	0.76 (0.45-1.28)
Alone with children	214	33	1.02 (0.71-1.46)	19	32	1.49 (0.53-4.21)
With spouse/partner and children	706	24	0.82 (0.63-1.06)	212	19	0.71 (0.42-1.17)
Other	691	28	0.94 (0.74-1.19)	118	25	0.99 (0.56-1.74)
Current smoking						
No	2553	26	1.00	543	20	1.00
Yes	683	31	1.29 (1.07-1.56)	170	30	1.70 (1.15-2.52)
Heavy drinking						
No	3026	26	1.00	666	23	1.00
Yes	210	32	1.33 (0.98-1.81)	47	22	1.03 (0.50-2.11)
Physical inactivity						
No	2592	26	1.00	573	20	1.00
Yes	644	30	1.21 (1.00-1.46)	140	31	1.81 (1.19-2.75)
Obesity						
No	2768	26	1.00	613	22	1.00
Yes	468	32	1.24 (1.00-1.54)	100	26	1.27 (0.78-2.07)
Family-to-work conflict						
Low	1581	18	1.00	376	14	1.00
Average	1188	32	2.18 (1.82-2.63)	245	25	2.07 (1.37-3.13)
High	257	56	6.40 (0.48-8.55)	55	55	7.48 (4.05-13.80)
Not applicable/ no family	211	32	1.99 (1.45-2.74)	37	34	2.46 (1.14-5.33)
Work-to-family conflict						

	Helsinki women N	Prevalence % of GHQ-12 3+	OR (CI)	Helsinki men N	Prevalence % of GHQ-12 3+	OR (CI)
Low	595	12	1.00	142	8	1.00
Average	1899	24	2.46 (1.84-3.28)	403	18	2.36 (1.24-4.51)
High	530	52	8.21 (5.97-11.30)	131	48	9.91 (4.97-19.74)
Not applicable/ no family	211	32	3.35 (2.26-4.96)	37	34	4.38 (1.73-11.08)

Table 3

Number of participants (N), age-adjusted prevalence (%) and odds ratio (OR) of GHQ-12 3+ by explanatory and mediating variables, London.

	London women N	Prevalence % of GHQ-12 3+	OR (CI)	London men N	Prevalence % of GHQ-12 3+	OR (CI)
Total	875	29		2241	23	
Parental education						
Higher	221	30	1.00	505	25	1.00
Intermediate	155	30	1.11 (0.69-1.80)	545	22	0.83 (0.62-1.16)
Basic	500	28	0.91 (0.62-1.34)	1191	23	0.88 (0.68-1.15)
Childhood economic difficulties						
No difficulties	617	27	1.00	1672	21	1.00
Difficulties	258	36	1.54 (1.11-2.13)	569	31	1.78 (1.43-2.22)
Own education						
Higher	289	32	1.00	918	23	1.00
Intermediate	177	30	0.90 (0.58-1.41)	698	24	1.06 (0.83-1.35)
Basic	409	29	0.83 (0.59-1.18)	625	24	1.08 (0.85-1.39)
Occupational class						
Administrative/managerial	208	28	1.00	1120	22	1.00
Professional/semi-professional	405	33	1.18 (0.82-1.70)	989	25	1.15 (0.94-1.41)
Clerical	262	23	0.70 (0.45-1.07)	132	16	0.68 (0.41-1.10)
Household income						
Highest group	261	28	1.00	772	23	1.00
2nd	167	27	0.93 (0.60-1.45)	314	25	1.09 (0.80-1.49)
3rd	199	29	1.03 (0.67-1.59)	569	23	0.96 (0.74-1.26)
Lowest group	248	31	1.13 (0.76-1.68)	586	24	1.04 (0.80-1.34)
Housing tenure						
Owner-occupier	800	30	1.00	2128	23	1.00
Renter	75	20	0.56 (0.31-1.03)	113	24	1.04 (0.66-1.64)
Living arrangements						
Alone	231	49	1.00	360	23	1.00
With spouse/partner	311	39	0.87 (0.60-1.27)	548	22	0.92 (0.67-1.28)
Alone with children	22	14	0.61 (0.22-1.64)	60	24	1.03 (0.54-1.94)
With spouse/partner and children	61	25	0.98 (0.53-1.80)	474	23	0.97 (0.70-1.34)
Other	250	45	0.83 (0.56-1.24)	799	25	1.07 (0.80-1.44)
Current smoking						
No	763	29	1.00	1852	23	1.00
Yes	112	29	1.00 (0.64-1.55)	389	24	1.05 (0.81-1.36)
Heavy drinking						
No	761	28	1.00	1969	23	1.00
Yes	114	35	1.33 (0.87-2.03)	272	24	1.08 (0.80-1.45)
Physical inactivity						
No	704	29	1.00	1806	23	1.00
Yes	171	29	0.95 (0.65-1.38)	435	24	1.06 (0.82-1.359)
Obesity						
No	707	29	1.00	1952	23	1.00
Yes	168	30	1.08 (0.73-1.59)	289	26	1.17 (0.87-1.58)
Family-to-work conflict						
Low	310	22	1.00	738	13	1.00
Average	337	30	1.58 (1.09-2.27)	1060	24	2.17 (1.67-2.81)
High	107	50	3.67 (2.28-5.93)	286	46	5.62 (4.07-7.75)
Not applicable/ no family	121	31	1.70 (1.05-2.75)	157	23	2.09 (1.36-3.21)
Work-to-family conflict						
Low	146	19	1.00	261	10	1.00
Average	421	41	2.41 (1.12-5.19)	1062	18	1.97 (1.22-3.16)

	London women N	Prevalence % of GHQ-12 3+	OR (CI)	London men N	Prevalence % of GHQ-12 3+	OR (CI)
High	187	65	7.08 (3.36-14.92)	761	35	4.83 (2.99-7.78)
Not applicable/ no family	121	31	3.23 (1.42-7.36)	157	23	2.78 (1.56-4.98)

Table 4

Associations of current economic difficulties with common mental disorders (GHQ-12 3+) and the contribution of socioeconomic circumstances, living arrangements, health behaviours and work-family conflicts. Inequality index values[a] from logistic regression analysis, Helsinki and London.

	Inequality indices (95 % confidence intervals)					
	MODEL 0 Age-adjusted	MODEL 1 0+ Socio-economic circumstances[b]	MODEL 2 1+ Living arrangements	MODEL 3 1+ Health behaviours[c]	MODEL 4 1+ Work-family conflicts[d]	MODEL 5 Fully adjusted
Helsinki						
Men	1.18 (1.05-1.33)	1.18 (1.04-1.33)	1.18 (1.04-1.34)	1.15 (1.01-1.30)	1.09 (0.95-1.25)	1.07 (0.92-1.23)
Women	1.26 (1.20-1.32)	1.27 (1.20-1.34)	1.27 (1.20-1.34)	1.26 (1.20-1.33)	1.19 (1.13-1.26)	1.17 (1.11-1.24)
London						
Men	1.18 (1.11-1.27)	1.19 (1.11-1.28)	1.19 (1.11-1.29)	1.19 (1.10-1.28)	1.11 (1.03-1.20)	1.11 (1.03-1.21)
Women	1.10 (1.00-1.22)	1.11 (0.99-1.24)	1.12 (1.00-1.25)	1.11 (0.99-1.24)	1.03 (0.91-1.16)	1.04 (0.92-1.17)

[a] Current economic difficulties score 0-8 is used as a continuous variable. Inequality index is the OR for each one point increase in economic difficulties.

[b] Parental education, childhood economic difficulties, own education, occupational class, household income, housing tenure

[c] Current smoking, heavy drinking, physical inactivity, obesity

[d] Family-to-work and work-to-family conflict