

Socioeconomic circumstances and common mental disorders among Finnish and British public sector employees: evidence from the Helsinki Health Study and the Whitehall II Study

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Background	Common mental disorders do not always show as consistent socioeconomic gradients as severe mental disorders and physical health. This inconsistency may be due to the multitude of socioeconomic measures used and the populations and national contexts studied. We examine the associations between various socioeconomic circumstances and common mental disorders among middle-aged Finnish and British public sector employees.
Methods	We used survey data from the Finnish Helsinki Health Study ($n=6028$) and the British Whitehall II Study ($n=3116$). Common mental disorders were measured by GHQ-12. The socioeconomic indicators were parental education, childhood economic difficulties, own education, occupational class, household income, housing tenure and current economic difficulties. Logistic regression analysis was the main statistical method used.
Results	Childhood and current economic difficulties were strongly associated with common mental disorders among men and women in both the Helsinki and the London cohort. The more conventional indicators of socioeconomic circumstances showed weak or inconsistent associations. Differences between the two cohorts and two genders were small.
Conclusions	Our findings emphasize the importance of past and present economic circumstances to common mental disorders across different countries and genders. Overall, our results suggest that among employee populations, the socioeconomic patterning of common mental disorders may differ from that of other domains of health.
Keywords	Mental health, GHQ, socioeconomic position, comparisons, employees

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Introduction

Socioeconomic inequalities in health and illness have been widely documented. A lower social position, measured by indicators such as education, occupational class and income, is associated with poorer physical and general health and a higher level of mortality.^{1–4} Similar gradients have been found for severe mental disorders.^{5–7} However, the findings have been less consistent for

minor mental health problems, which are often called 'common mental disorders'.⁸⁻¹⁵

The varying results obtained for socioeconomic gradients in common mental disorders may be related to factors such as the measure of socioeconomic position used,^{15,16} the indicator, sub-domain and severity of the mental disorders,^{11,17,18} population of the study, e.g. employees, unemployed or general population,^{10,19-21} age and gender as well as the national and cultural context.^{10,22-26} In this study, the measures of socioeconomic position are in a particular focus. Many earlier studies have found stronger and clearer gradients for certain socioeconomic indicators than for others. There have been tendencies for income and material standard of living to show more consistent gradients than occupational class or education.^{10,16} To understand these inconsistencies and the distribution of common mental disorders in general, it is necessary to take into account the multidimensional nature of socioeconomic position. Although studies on common mental disorders have examined a wide variety of indicators ranging from the conventional measures, i.e. education, occupational class and income, to past and present material circumstances, these have rarely been analysed simultaneously. Overall, studies on health inequalities have often been restricted to analysing only one or a few socioeconomic indicators at a time, or aspired to find the most important indicator among many.^{15,27}

Furthermore, the understanding of the characteristics of socioeconomic differences in common mental disorders can be increased by comparing their occurrence and patterning in different populations and cultural contexts. According to European comparisons, there are some variations between countries in the size and prevalence of socioeconomic gradients in physical and general health and mortality.²⁸⁻³¹ International comparisons are thus essential in identifying the common and unique determinants of socioeconomic differences in health in different countries. They also help us identify circumstances associated with health inequalities, as well as assess the role of social policies and national contexts. Furthermore, comparative studies enable us to evaluate the generalizability of findings from one national setting only.^{29,32} In spite of these benefits, we are unaware of earlier studies comparing socioeconomic inequalities in common mental disorders across affluent western societies.

In this study, we compare cohorts from Finland and Britain. The two countries differ in their patterns of welfare provision and allocation, labour markets, social structure and family structure, which may all contribute to the socioeconomic inequalities in health.³³ There are also differences in the income distributions with much larger income inequalities in Britain.³⁴ Previous studies comparing socioeconomic inequalities in physical and general health between Finland and Britain have found only slight differences between the countries.^{3,35} However, it is still possible that inequalities in mental health may vary.

The general aim of this study is to investigate socioeconomic gradients in common mental disorders among middle-aged Finnish and British public sector employees. More specifically, the aim is to examine the associations between various socioeconomic circumstances and common mental disorders measured by Goldberg's General Health Questionnaire (GHQ-12)^{36,37} in a comparative setting. The comparisons are carried out for seven

socioeconomic indicators measuring both past and present circumstances: parental education, childhood economic difficulties, own education, occupational class, household income, housing tenure and current economic difficulties.

Data and methods

Data

The data used in this study was derived from surveys conducted among public sector employees in Finland and Britain. The Finnish data were from the Helsinki Health Study which consists of cross-sectional baseline surveys conducted in 2000, 2001 and 2002 among the employees of the City of Helsinki. Each year a questionnaire was posted to male and female employees reaching the age of 40, 45, 50, 55 and 60 years ($n = 8960$, response rate 67%).⁴

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 20 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 ($n = 10\,308$).^{38,39} The data used in this study were mainly from the postal survey at phase 5 (1997) ($n = 7830$, response rate 76%).

For this study we included respondents aged 45-60 years from the Finnish and the British cohort. To make the two cohorts maximally comparable, we excluded manual workers from the Finnish cohort, whereas from the British cohort we excluded those not working in the Civil Service any more. The two cohorts included altogether 6070 participants from Helsinki and 3397 participants from London. The final number of participants included in the analyses, i.e. those with information on the outcome, was 6028 (1079 men and 4949 women) in Helsinki and 3116 (2241 men and 875 women) in London.

Measurement of common mental disorders

Common mental disorders were measured by the 12-item version of the GHQ-12. The disorders the GHQ measures are recent, general, non-psychotic and context-free^{36,37} i.e. not related to a specific context such as work or family.⁴⁰ The Finnish data included the 12-item version of the GHQ while the British data included the 30-item version from which the 12-item version was extracted. Comparisons of the different versions of the GHQ have proved them to be equally valid.³⁷ We also performed a control analysis with the GHQ-30 in the British data, and the results were identical with those obtained with the GHQ-12. Further, the validity of the GHQ is unlikely to be affected by the language of the questionnaire, and the results are likely to be comparable between countries.³⁷ The GHQ-12 gives a total score ranging from 0 to 12. A recommended and commonly used cut-off point of three or more symptoms was used in this study to indicate the common mental disorders.^{36,37,41} A confirmatory analysis in the Finnish data showed that a more severe cut-off of seven or more symptoms had no effect on the results.¹⁵ Furthermore, a control analysis was also performed with SF-36 Mental Component Summary, which produced results that were substantively identical with those obtained with the GHQ.

Measurement of socioeconomic circumstances

Parental education was based on information about parents' educational level in the Helsinki cohort and parents' age at leaving full-time education in the London cohort. In both cohorts, parental education was based on the information about both mother's and father's education, of which the higher one was chosen. Three groups were formed: (i) higher education, i.e. matriculation or college examination or more (Helsinki) and leaving full-time education at the age of 18 or over (London); (ii) intermediate education, i.e. secondary school or vocational training (Helsinki) and leaving full-time education at the ages of 16–17 (London) and (iii) basic education, i.e. primary school or less (Helsinki) and leaving full-time education at the age of 15 or below (London).

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. The response categories were 'yes' and 'no'.

Own education was divided into three levels: (i) higher education, i.e. university degree; (ii) intermediate education, i.e. matriculation or college examination (Helsinki) and A/S level or ONC/HND qualifications (London) and (iii) basic education, i.e. secondary or vocational school (Helsinki) and no academic qualification or O-level (London).

Occupational class was divided into three hierarchical categories according to a classification used in an earlier comparative study:³² (i) administrative and managerial, (ii) professional and semi-professional and (iii) clerical employees. In the Helsinki cohort, employment grade was mainly derived from the personnel register data of the City of Helsinki (80%) and was completed from the questionnaire data. The highest grade consisted of managers in supervisory positions, the second highest grade consisted of professionals (e.g. teachers, social workers and medical doctors) and semi-professionals (e.g. nurses, foremen and technicians) and the third grade included clerical employees and other non-professional occupations. In the London cohort, the categorization was based on the questionnaire data by collapsing the 12 non-industrial salary-based grade levels. The highest grade consisted of unified grades 1–6 (Permanent Secretary to Senior Principal), the second highest grade included unified grade 7 (Principal), senior and higher executive officers and executive officers and the third grade consisted of clerical officers and clerical assistants.

In the London cohort, *household income* was based on the total income the respondent's household had received during the last 12 months and in Helsinki on the total household income during a typical month. Household income was equalized by dividing the income by the household size which was weighted according to the modified OECD equivalence scale: the respondent received the value of 1.0, other adults 0.5 and children 0.3. For both cohorts four income groups were formed each consisting of approximately a quarter of the combined population of men and women in each cohort.

Housing tenure was dichotomized into owner-occupiers and renters.

Current economic difficulties were measured with two questions:⁴² (i) 'How much difficulty do you have in meeting the payment of bills?' and (ii) '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?' in London and 'How often do you have enough money to buy the food or clothing you or your family need?' in Helsinki. For these questions there were five response alternatives indicating the level of difficulties. The sum scores for the two variables were then divided into three degrees of economic difficulties: (i) no difficulties, (ii) occasional difficulties and (iii) frequent difficulties.

Correlations between the socioeconomic indicators were positive in both cohorts. In Helsinki the highest correlation was found between own education and occupational class ($r=0.61$) and the lowest one between parental education and childhood economic difficulties ($r=0.06$). In London the highest correlation was between household income and occupational class ($r=0.53$) and the lowest between parental education and current economic difficulties ($r=0.01$). The proportion of missing values in the socioeconomic variables was small in Helsinki. In London this proportion was larger, particularly in household income, in which it was 13% among men and 15% among women. However, approximately half of these could be replaced with information on personal income; the criterion was that the respondent was living alone or reported that no others contributed to the household income.

Statistical methods

All analyses were conducted separately for men and women in each cohort. For descriptive purposes age-adjusted prevalence for common mental disorders, i.e. three or more GHQ-12 symptoms and their 95% confidence intervals were calculated by each socioeconomic indicator. Logistic regression analysis was used to examine associations between the socioeconomic indicators and common mental disorders. Firstly, we calculated age-adjusted bivariate models for each socioeconomic indicator and GHQ-12. In the next three models, the socioeconomic variables were added in an assumed temporal order. We first fitted a multivariate model adjusting for parental education and childhood economic difficulties. After that we added own education, occupational class and household income. In the final model, all seven socioeconomic indicators were simultaneously adjusted for. The results of the logistic regression models are presented as odds ratios (OR) and their 95% confidence intervals (CI).

In both cohorts, interactions of childhood and current economic difficulties with each other and with household income were tested by adding interaction terms into the fully adjusted logistic regression models, one term at a time. In the London cohort, we were also able to test the contribution of negative affectivity, i.e. a tendency to respond negatively to survey questions, which may affect the self-reported information on socioeconomic circumstances and health. A negative affect subscale of the affect balance scale was used, and further added into the fully adjusted logistic regression models.^{43,44} In the London cohort, we also tested whether further adjustment for financial assets affected the results. Financial assets were measured by asking about the amount of money the respondent would have if they cashed in all household assets and paid off all debt.

Further treatment of item missing was carried out with multiple imputation using ICE (Imputation by Chained Equations) method in STATA.⁴⁵ Five copies of the data were

formed in the imputation process, each with missing values imputed. These copies were independently analysed in the logistic regression analyses, and estimates of parameters were averaged across the copies to obtain a mean estimate and 95% CIs. The results were practically identical with those obtained with a complete case analysis, but the precision of the estimations was improved.

Results

Prevalence of common mental disorders in the Helsinki and London cohorts

Tables 1 and 2 show the distributions of participants and the age-adjusted prevalence of common mental disorders by each socioeconomic indicator. The overall age-adjusted prevalence of common mental disorders was 26% among women and 23% among men in the Helsinki cohort (Table 1). The corresponding figures were 29% and 23% in the London cohort (Table 2). In Helsinki, women and men with childhood as

well as current economic difficulties reported a notably higher prevalence. The variations by other socioeconomic indicators were small. In London, the gradients were similar to those in Helsinki. Women and men with childhood and current economic difficulties reported a higher prevalence of common mental disorders. Among both genders the variations by other socioeconomic indicators were small and inconsistent.

Associations between socioeconomic circumstances and common mental disorders in the Helsinki cohort

The results of the logistic regression analyses are shown for Helsinki in Table 3 for women and in Table 4 for men. Among women the age-adjusted bivariate analyses (Model 0) confirmed the prevalence percentages shown in Table 1. The next two models, adjusting firstly for childhood circumstances and secondly for own education, occupational class and household income, affected the gradients only slightly. Similarly, mutual adjustment for all socioeconomic indicators had only small effects on the gradients. The associations between childhood and

Table 1 Distribution of participants and age-adjusted prevalence of GHQ-12 score 3+ with 95% CI by socioeconomic indicators in Helsinki

	Women		Men	
	n	GHQ-12 3+ % (CI)	n	GHQ-12 3+ % (CI)
Parental education				
Higher	875	29 (26–32)	260	26 (20–31)
Intermediate	1384	26 (24–28)	334	21 (17–26)
Basic	2690	26 (24–28)	485	22 (18–26)
Childhood economic difficulties				
No difficulties	3987	24 (23–26)	906	21 (18–24)
Difficulties	962	35 (32–38)	173	32 (25–39)
Own education				
Higher	1352	27 (25–30)	473	23 (19–27)
Intermediate	1627	27 (25–29)	331	24 (19–28)
Basic	1970	25 (23–27)	275	22 (17–27)
Occupational class				
Administrative/managerial	379	27 (23–32)	280	25 (20–30)
Professional/semi-professional	2120	28 (26–29)	661	23 (20–26)
Clerical	2450	25 (24–27)	138	19 (13–26)
Household income				
Highest group	1078	24 (21–26)	224	24 (18–30)
2nd	1334	25 (23–28)	321	24 (19–28)
3rd	1264	28 (25–30)	290	20 (16–25)
Lowest group	1273	29 (26–31)	244	26 (21–32)
Housing tenure				
Owner-occupier	3479	27 (25–28)	840	22 (20–25)
Renter	1470	26 (24–28)	239	24 (19–30)
Current economic difficulties				
No difficulties	2666	22 (20–24)	639	20 (17–23)
Occasional difficulties	1869	29 (27–31)	378	25 (20–29)
Frequent difficulties	414	47 (42–52)	62	44 (32–56)
Total	4949	26 (25–28)	1079	23 (20–25)

Table 2 Distribution of participants and age-adjusted prevalence of GHQ-12 score 3+ with 95% CI by socioeconomic indicators in London

	Women		Men	
	n	GHQ-12 3+ % (CI)	n	GHQ-12 3+ % (CI)
Parental education				
Higher	179	31 (24–38)	454	24 (20–28)
Intermediate	220	30 (24–36)	653	23 (20–26)
Basic	476	28 (24–32)	1134	23 (21–26)
Childhood economic difficulties				
No difficulties	618	27 (23–30)	1675	21 (19–22)
Difficulties	257	36 (30–41)	566	31 (28–35)
Own education				
Higher	290	33 (27–38)	913	23 (20–25)
Intermediate	178	30 (23–36)	706	24 (20–27)
Basic	407	28 (24–33)	622	24 (21–27)
Occupational class				
Administrative/managerial	208	28 (22–34)	1121	22 (20–25)
Professional/semi-professional	404	33 (29–38)	988	25 (22–28)
Clerical	263	23 (18–29)	132	16 (10–23)
Household income				
Highest group	263	28 (23–34)	774	23 (20–26)
2nd	165	28 (22–35)	319	25 (20–30)
3rd	202	29 (23–35)	562	23 (19–26)
Lowest group	245	31 (25–37)	586	24 (20–27)
Housing tenure				
Owner-occupier	799	30 (27–33)	2127	23 (21–25)
Renter	76	20 (11–30)	114	24 (16–31)
Current economic difficulties				
No difficulties	475	26 (22–30)	1276	20 (18–22)
Occasional difficulties	334	32 (27–37)	839	26 (23–29)
Frequent difficulties	66	37 (25–48)	126	40 (31–48)
Total	875	29 (26–32)	2241	23 (21–25)

Table 3 Associations between socioeconomic indicators and GHQ-12 score 3+ in Helsinki. OR with 95% CI from logistic regression analysis, women ($n = 4949$)

	MODEL 0 Age-adjusted	MODEL 1 0 + PE + ChED	MODEL 2 1 + OE + OC + HI	MODEL 3 2 + HT + CuED
Parental education (PE)				
Higher	1.00	1.00	1.00	1.00
Intermediate	0.85 (0.70–1.03)	0.81 (0.67–0.98)	0.83 (0.68–1.01)	0.84 (0.69–1.03)
Basic	0.85 (0.71–1.01)	0.78 (0.65–0.93)	0.80 (0.66–0.98)	0.82 (0.67–0.99)
Childhood economic difficulties (ChED)				
No difficulties	1.00	1.00	1.00	1.00
Difficulties	1.66 (1.40–1.97)	1.71 (1.44–2.04)	1.70 (1.42–2.02)	1.56 (1.30–1.87)
Own education (OE)				
Higher	1.00		1.00	1.00
Intermediate	0.98 (0.84–1.16)		1.00 (0.84–1.20)	1.02 (0.85–1.23)
Basic	0.91 (0.77–1.06)		0.96 (0.76–1.22)	0.97 (0.76–1.24)
Occupational class (OC)				
Administrative/managerial	1.00		1.00	1.00
Professional/semi-professional	1.00 (0.78–1.29)		0.96 (0.75–1.23)	0.94 (0.73–1.20)
Clerical	0.90 (0.71–1.16)		0.83 (0.62–1.11)	0.77 (0.58–1.03)
Household income (HI)				
Highest group	1.00		1.00	1.00
2nd	1.09 (0.90–1.31)		1.12 (0.93–1.36)	1.10 (0.91–1.33)
3rd	1.22 (1.01–1.48)		1.27 (1.04–1.55)	1.19 (0.97–1.45)
Lowest group	1.28 (1.06–1.55)		1.38 (1.12–1.69)	1.15 (0.93–1.42)
Housing tenure (HT)				
Owner-occupier	1.00			1.00
Renter	0.99 (0.86–1.14)			0.81 (0.70–0.95)
Current economic difficulties (CuED)				
No difficulties	1.00			1.00
Occasional difficulties	1.43 (1.25–1.64)			1.46 (1.27–1.69)
Frequent difficulties	3.10 (2.49–3.85)			3.29 (2.60–4.17)

current economic difficulties and common mental disorders remained strong whereas the gradients for other circumstances remained weak.

Among men in Helsinki the results were very similar to women. The bivariate analyses confirmed the prevalence analyses, and further adjustments had minimal effects on the gradients. After mutually adjusting for all socioeconomic circumstances, a strong gradient for both childhood and current economic difficulties remained, but no other associations were found.

Associations between socioeconomic circumstances and common mental disorders in the London cohort

The results of the logistic regression analyses are shown for London in Table 5 for women and in Table 6 for men. Among both women and men the bivariate models confirmed the prevalence percentages. Among women, the gradual adjustments, and the mutual adjustments for all socioeconomic indicators, had only small further effects on the associations. The gradients for childhood and current economic difficulties remained. In addition, in the full model the lowest occupational

class showed a lower level of disorders than the two other classes.

Among men in London, the changes in the associations between the socioeconomic indicators and common mental disorders were mostly minimal when adjusting gradually for the socioeconomic circumstances. After mutual adjustments, both childhood and current economic difficulties remained strongly associated with common mental disorders. Also, as among women, the clerical men had a lower level of disorders than the other classes after the adjustments.

Control for interactions, negative affectivity and financial assets

No consistent interactions were found between the tested variables in either of the cohorts. In the London cohort, adjusting for negative affectivity attenuated the gradients of childhood and current economic difficulties by ~20–40% among both men and women, but did not affect the general patterning of the results. Adjusting for financial assets in the London cohort had no effect on the gradients.

Table 4 Associations between socioeconomic indicators and GHQ-12 score 3+ in Helsinki. OR with 95% CI from logistic regression analysis, men (*n* = 1079)

	MODEL 0 Age-adjusted	MODEL 1 0 + PE + ChED	MODEL 2 1 + OE + OC + HI	MODEL 3 2 + HT + CuED
Parental education (PE)				
Higher	1.00	1.00	1.00	1.00
Intermediate	0.76 (0.52–1.12)	0.76 (0.52–1.12)	0.74 (0.49–1.10)	0.75 (0.50–1.12)
Basic	0.81 (0.57–1.15)	0.75 (0.53–1.08)	0.73 (0.50–1.08)	0.76 (0.51–1.12)
Childhood economic difficulties (ChED)				
No difficulties	1.00	1.00	1.00	1.00
Difficulties	1.79 (1.21–2.63)	1.84 (1.24–2.72)	1.86 (1.25–2.76)	1.65 (1.10–2.47)
Own education (OE)				
Higher	1.00		1.00	1.00
Intermediate	1.06 (0.76–1.49)		1.18 (0.83–1.69)	1.14 (0.79–1.63)
Basic	0.93 (0.65–1.33)		1.06 (0.69–1.64)	1.00 (0.65–1.55)
Occupational class (OC)				
Administrative/managerial	1.00		1.00	1.00
Professional/semi-professional	0.91 (0.65–1.27)		0.88 (0.62–1.24)	0.86 (0.61–1.22)
Clerical	0.77 (0.46–1.27)		0.71 (0.40–1.26)	0.67 (0.37–1.20)
Household income (HI)				
Highest group	1.00		1.00	1.00
2nd	1.03 (0.68–1.56)		1.03 (0.68–1.58)	0.98 (0.64–1.50)
3rd	0.84 (0.54–1.30)		0.84 (0.53–1.32)	0.80 (0.51–1.26)
Lowest group	1.13 (0.73–1.77)		1.16 (0.72–1.88)	0.98 (0.60–1.60)
Housing tenure (HT)				
Owner-occupier	1.00			1.00
Renter	1.12 (0.80–1.58)			1.06 (0.74–1.53)
Current economic difficulties (CuED)				
No difficulties	1.00			1.00
Occasional difficulties	1.38 (1.01–1.88)			1.34 (0.97–1.87)
Frequent difficulties	2.91 (1.69–5.03)			2.65 (1.47–4.78)

Discussion

Main results

In this study, we examined the associations between seven socioeconomic circumstances and common mental disorders measured by the GHQ-12 in Finnish and British cohorts of middle-aged white-collar public sector employees. We found strong associations between economic difficulties and common mental disorders. In both cohorts and genders, participants reporting childhood as well as current economic difficulties had common mental disorders clearly more often than those without such difficulties. The associations remained even after adjusting for the other socioeconomic circumstances. Gradients by parental education, own education, income and housing tenure were small and inconsistent in both the cohorts and genders. For occupational class we observed some evidence for lower morbidity in the clerical class, particularly for London men. However, differences between the two higher classes were non-existent.

Our first main finding reconfirms the results from previous studies which have observed associations between current

economic difficulties and common mental disorders.^{13,46–49} Potential explanations that have been proposed for the association between economic difficulties and mental disorders include material and perceived deprivation, physical hardship, financial uncertainty and impaired social relationships, which can act as acute or chronic exposures and stressors.^{48,50–52} It is noteworthy that in this study, the importance of current economic difficulties remained even after taking into account the respondents' income level. Furthermore, the study populations only consisted of employed people, and absolute poverty is unlikely among them. Overall, these findings thus imply that the association between economic difficulties and common mental disorders is unlikely to be due to absolute poverty and material circumstances. However, regardless of the income level, people may face financial problems due to divorce and other strenuous life situations. As suggested in previous studies, problems might also be caused by financial habits such as excess consumption and accumulation of debt that are too high in relation to income.^{53–54} These kinds of factors may be further related to lifestyles, one's control over life or personality traits. However, adjusting for net financial assets in the London cohort had little effects on the economic

Table 5 Associations between socioeconomic indicators and GHQ-12 score 3+ in London. OR with 95% CI from logistic regression analysis, women ($n = 875$)

	MODEL 0 Age-adjusted	MODEL 1 0 + PE + ChED	MODEL 2 1 + OE + OC + HI	MODEL 3 2 + HT + CuED
Parental education (PE)				
Higher	1.00	1.00	1.00	1.00
Intermediate	1.00 (0.56–1.78)	0.98 (0.54–1.76)	1.02 (0.56–1.85)	1.01 (0.54–1.87)
Basic	0.88 (0.59–1.31)	0.82 (0.55–1.23)	0.88 (0.56–1.37)	0.92 (0.59–1.43)
Childhood economic difficulties (ChED)				
No difficulties	1.00	1.00	1.00	1.00
Difficulties	1.54 (1.11–2.14)	1.59 (1.13–2.23)	1.56 (1.11–2.19)	1.52 (1.08–2.14)
Own education (OE)				
Higher	1.00		1.00	1.00
Intermediate	0.89 (0.59–1.36)		0.89 (0.56–1.40)	0.91 (0.58–1.44)
Basic	0.79 (0.56–1.12)		0.84 (0.53–1.32)	0.84 (0.54–1.33)
Occupational class (OC)				
Administrative/managerial	1.00		1.00	1.00
Professional/semi-professional	1.18 (0.82–1.70)		1.14 (0.72–1.78)	1.09 (0.70–1.72)
Clerical	0.70 (0.45–1.08)		0.58 (0.31–1.08)	0.58 (0.31–1.08)
Household income (HI)				
Highest group	1.00		1.00	1.00
2nd	0.98 (0.63–1.54)		1.00 (0.62–1.60)	0.98 (0.61–1.58)
3rd	1.02 (0.65–1.60)		1.21 (0.72–2.05)	1.12 (0.66–1.91)
Lowest group	1.09 (0.73–1.63)		1.62 (0.96–2.74)	1.45 (0.84–2.50)
Housing tenure (HT)				
Owner-occupier	1.00			1.00
Renter	0.57 (0.31–1.05)			0.62 (0.32–1.15)
Current economic difficulties (CuED)				
No difficulties	1.00			1.00
Occasional difficulties	1.30 (0.95–1.78)			1.32 (0.93–1.86)
Frequent difficulties	1.66 (0.96–2.88)			1.73 (0.95–3.16)

difficulties gradient. Thus, it appears unlikely that debt is a major explanation for the result.

Our second main finding, the importance of childhood economic difficulties to common mental disorders, has not been as widely examined. There is, however, previous evidence on the associations of childhood economic and other adversities with adult mental and psychosocial health.^{48,55–57} Childhood adversities have been suggested to influence adult health either directly or indirectly through other factors and later circumstances, or by leading to accumulation of disadvantages across the lifecourse.^{48,58} In this study, the association between childhood economic difficulties and common mental disorders remained unaffected after adjusting for current circumstances. Correlations between childhood economic difficulties and present socioeconomic circumstances were also very low in both cohorts ($r = 0.00–0.15$). Thus, no pathways between the past and present circumstances were identified.

The weak or non-existent gradients by other socioeconomic circumstances in our study are in keeping with many previous studies. Although gradients by education, occupational class and income have sometimes been documented for common mental

disorders,^{16,25,55} negligible gradients have also been found, particularly among middle-aged employees.^{9,10,13,19} This study thus reconfirms the picture that the socioeconomic patterning of common mental disorders may differ from that observed for physical health and severe mental disorders, at least in employed populations in affluent western countries. Furthermore, we did not find any interrelations or pathways between the socioeconomic circumstances across the lifecourse, contrary to previous findings on physical and general health.^{27,59}

As this study was conducted in two countries, Finland and Britain, we also aimed to find out whether there are differences between the two studied cohorts. However, the overall results were practically identical in the two cohorts. Earlier studies comparing socioeconomic inequalities in common mental disorders across western industrial countries are not available, but studies on the socioeconomic patterning of general and physical health have documented only slight differences between Finland and Britain.^{3,35} Thus, in the light of the previous studies, the found similar socioeconomic patterning was not unexpected. Nevertheless, the results might also have been less identical with regard to dissimilarities between the two societies, their working

Table 6 Associations between socioeconomic indicators and GHQ-12 score 3+ in London. OR with 95% CI from logistic regression analysis, men (n = 2241).

	MODEL 0 Age-adjusted	MODEL 1 0 + PE + ChED	MODEL 2 1 + OE + OC + HI	MODEL 3 2 + HT + CuED
Parental education (PE)				
Higher	1.00	1.00	1.00	1.00
Intermediate	0.92 (0.67–1.27)	0.89 (0.64–1.24)	0.87 (0.63–1.21)	0.88 (0.63–1.22)
Basic	0.95 (0.72–1.25)	0.90 (0.67–1.20)	0.87 (0.64–1.17)	0.89 (0.66–1.20)
Childhood economic difficulties (ChED)				
No difficulties	1.00	1.00	1.00	1.00
Difficulties	1.77 (1.42–2.21)	1.79 (1.43–2.23)	1.79 (1.43–2.24)	1.72 (1.38–2.15)
Own education (OE)				
Higher	1.00		1.00	1.00
Intermediate	1.06 (0.84–1.34)		1.04 (0.81–1.35)	1.04 (0.81–1.35)
Basic	1.08 (0.85–1.38)		1.11 (0.84–1.48)	1.12 (0.84–1.49)
Occupational class (OC)				
Administrative/managerial	1.00		1.00	1.00
Professional/semi-professional	1.15 (0.94–1.41)		1.12 (0.87–1.43)	1.05 (0.82–1.34)
Clerical	0.67 (0.41–1.09)		0.62 (0.36–1.07)	0.52 (0.29–0.94)
Household income (HI)				
Highest group	1.00		1.00	1.00
2nd	1.09 (0.79–1.51)		1.06 (0.75–1.48)	1.03 (0.73–1.45)
3rd	0.96 (0.74–1.25)		0.94 (0.71–1.24)	0.90 (0.68–1.19)
Lowest group	1.03 (0.80–1.33)		1.04 (0.77–1.41)	0.90 (0.65–1.22)
Housing tenure (HT)				
Owner-occupier	1.00			1.00
Renter	1.02 (0.65–1.60)			1.06 (0.65–1.73)
Current economic difficulties (CuED)				
No difficulties	1.00			1.00
Occasional difficulties	1.38 (1.12–1.70)			1.41 (1.13–1.75)
Frequent difficulties	2.41 (1.64–3.56)			2.48 (1.63–3.76)

life, social policies and welfare regimes in general.³³ Particularly important from the view of this study might be the different income distributions in Britain and Finland, with larger income inequalities in Britain.³⁴ Finally, it is possible that the homogeneity of the public sector employee cohorts in this study was a more important factor than the cultural and social differences between the countries.

Methodological considerations

In this study, we were able to examine several socioeconomic circumstances and common mental disorders using highly comparable data and measures from two countries. However, there were also limitations in the data which have to be considered. Firstly, because of the largely homogeneous public sector employee samples, the generalizability of our results may be limited. Thus, further comparative studies including manual workers and private sector employees are needed. Secondly, the cross-sectional design prevents strict causal interpretations of the associations between current economic difficulties and common mental disorders. There is a possibility of health-related selection, i.e. poor health leading to a lower socioeconomic position,

although its contribution has been suggested to be minor in common mental disorders as compared with severe mental disorders.^{6,7,17,18} Furthermore, similar results on the importance of economic difficulties on common mental disorders have also been obtained with a longitudinal design in a recent study on the British general population.⁴⁹

Thirdly, as the data on exposure and outcome were self-reported, the possibility of reporting bias has to be considered. The responses to questions about socioeconomic circumstances might be influenced by the respondent’s poor mental health. Also ‘negative affectivity’, the disposition to respond negatively to survey questions, might have effects on the responses.^{43,44} Particularly the self-reported current economic difficulties and the retrospective questions about childhood conditions might be affected by these factors. However, although our measure of current economic difficulties was self-reported, it did not measure the participants’ own perception of their financial situation but was based on questions on the existence of concrete difficulties. Also, retrospective information on childhood adversities has been widely used in studies and suggested to be reliable.^{60,61} Furthermore, controlling for negative affectivity in the London

cohort did not affect the general patterning of the results, and thus cannot provide a comprehensive explanation for the found associations. Overall, although our aim was to study self-reported common mental disorders, further studies assessing the association of economic difficulties with clinically confirmed outcomes would be useful.

Fourthly, attrition in the Whitehall phase 5 follow-up data may have affected the results. Despite attrition, we used data from the phase 5 as the earlier phases do not include all the socioeconomic measures. The time of the data collection of the phase 5 is also comparable with the data collection in the Helsinki Health Study. Furthermore, the associations between the socioeconomic indicators available in phases 1 and 3 and the GHQ in the Whitehall study were practically similar to those in phase 5.

Conclusions

Our results suggest that past and present economic circumstances are potentially more important to common mental disorders than the conventional socioeconomic indicators. These findings remained consistent throughout the multivariate analyses in both cohorts as well as among women and men. It is thus likely that the socioeconomic patterning of common mental disorders may differ from that of other domains of health, at least among middle-aged employee populations. The policy implications of our results highlight the importance of supporting people with

financial difficulties in order to prevent and reduce socioeconomic inequalities within the domain of common mental disorders.

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Conflict of Interest: None declared.

KEY MESSAGES

- Childhood and current economic difficulties were strongly associated with common mental disorders measured by GHQ-12 among Finnish and British public sector employees.
- The more conventional indicators of socioeconomic circumstances showed weak or inconsistent associations with common mental disorders.
- The findings remained consistent throughout the multivariate analyses in both cohorts as well as among women and men.
- These results suggest that it is likely that the socioeconomic patterning of common mental disorders differs from that of other domains of health, at least among middle-aged employees.

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Commentary: Socioeconomic position and common mental disorders: what do we need to know?

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Studies of the association between socioeconomic status and mental disorders have a long history and one early example is the 1939 Chicago study conducted by Faris and Dunham.¹ These researchers used aggregate data and reported an association between admission for schizophrenia and living in a deprived neighbourhood. Later studies on the association between severe mental disorders and socioeconomic status generally confirmed these early observations.² The controversy remained on the explanation of this finding with two competing explanations (social causation vs social selection/social drift). There are arguments in favour of both², although recent epidemiological research has challenged the more traditional social drift hypothesis.³

Common mental disorders is a term mainly used in Britain to denote mild forms of neurotic disorder composed from symptoms of depression and anxiety.⁴ These are distinguished from the more severe mental disorders. The concept of common mental disorders has proved useful in epidemiological research and is often measured with simple self-reported questionnaires

like the 12 item general health questionnaire (GHQ-12) or the mental health index of the short form health survey (SF-36). More specific psychiatric syndromes included in the concept of common mental disorders are major depression and specific anxiety disorders such as panic disorder, social phobia or obsessive compulsive disorder. Operational diagnostic criteria for these more specific diagnoses have been published from WHO (ICD-10) or the American Psychiatric Association (DSM-IV) and tested in various epidemiological surveys around the world.^{5,6} Although there is a high correlation between general measures of psychological distress and more specific psychiatric syndromes, one should not assume that associations elicited with simple scales should apply to more specific syndromes or vice versa.

A paper in this issue of the *International Journal of Epidemiology*⁷ investigates the association between common mental disorders, assessed with the GHQ-12, and various socioeconomic indicators in two similar samples of middle-aged public sector employees from the UK and Finland. The UK sample is from the British Whitehall II study while the Finnish sample is from the Helsinki Health study. This paper failed to find a consistent association between income, social class and education and GHQ-12 in both cohorts. A more subjective question on current or past financial difficulties was significant.

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