

WORK AND ABSENCE FROM WORK

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ABSTRACT

This study assesses risk factors for sickness absence in the British civil service. As one component of a large study of psychosocial factors and health, 10,314 civil servants between the age of 35 and 55 completed questionnaires about their work environment, social circumstances outside work, health and health-related behaviours. To obtain a more objective measure of the work environment, personnel managers provided external assessments of participants' jobs. The baseline variables were related to rates of short spells (7 days or less) and long spells (more than 7 days) of sickness absence for 85% of participants, over a mean period of 20 months (6-26 months).

There were striking grade differences in sickness absence, with a stepwise increase in rates of both short and long spells from top administrators to clerical and office support staff. Other identified risk factors explained only a third of these grade differences in sickness absence.

Further analyses were adjusted for age and grade. Self-reported health was strongly related to rates of long spells and, to a lesser extent, short spells. Adequacy of support and difficulty paying bills were the two factors outside work which related to rates of both short and long spells.

Job satisfaction was the only measure of the work environment which related to rates of both short and long spells. Other aspects of the work environment which were associated with increased rates of short spells were low variety and skill use and low support at work for both sexes, and low control, slow work pace and few conflicting demands for men. Self-reports and external assessments of the work environment related to sickness absence in a similar way, suggesting that the work environment itself was important.

Factors which did not relate to either short or long spells of sickness absence were marital status, dependent children, the frequency of social contacts and physical activity. Women had higher rates of sickness absence than men and Asians had higher rates than Caucasians.

This study identified a number of risk factors for sickness absence and differences in these risk factors for short and long spells of sickness absence. The grade, sex and ethnic differences in sickness absence remained largely unexplained. Group attitudes towards sickness absence may be important. Methodological issues related to the assessment of psychosocial factors are discussed.

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Finally, I thank my husband, Ralph, and family for the tremendous amount of support they gave me throughout the three years.

STATEMENT OF PERSONAL CONTRIBUTION

I worked on the Whitehall II Study for three and a half years between July 1986 and December 1989. During this time I collected the baseline and follow-up data presented in this thesis. The baseline data consisted of questionnaires obtained at the screening clinics and external assessments of participants' jobs.

I contributed to the organisation of the screening clinics at different work sites. This involved liaising with personnel staff and arranging the necessary clinic facilities, recruiting and training field staff, visiting the clinics regularly, retraining field staff, monitoring the screening results and setting up quality control procedures. I also developed a computer programme to notify participants and their general practitioners of the screening results. With others in the research team, I supervised the coding, entry and verification of the data collected at the screening clinics.

I developed external assessments to provide a more objective measure of the work environment. After a pilot phase, I held briefing sessions in each department to recruit the personnel managers who undertook the external assessments. I then liaised with them as they rated participants' jobs. Finally I checked and edited the external assessments before linking them to other baseline data.

I established the on-going sickness absence follow-up by negotiating with the civil service for the annual supply of computerised sickness absence records. I then linked the sickness absence records to the baseline data.

As part of the long-term follow-up study, I set up morbidity follow-up by obtaining diagnostic information from general practitioners for all prolonged spells of sickness absence and mortality follow-up by flagging participants at the National Registry for notification of deaths. These data will be analysed in the future.

I was responsible for managing the data base for data presented in this thesis, in addition to checking, editing and performing the analyses.

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CHAPTER 1

Sickness absence

1.1 Introduction

This study examines risk factors for sickness absence in the British civil service. Sickness absence is all absence from work attributed to sickness. The risk factors considered include grade of employment, psychosocial aspects of work and social life, health and health-related behaviours. It also examines the extent to which these factors could account for the higher rates of sickness absence in lower grades of employment.

A major objective of this study is to assess the importance of psychosocial aspects of the work environment. These include the amount of control employees have over their work, variety, the extent to which skills are used and developed, work pace, conflicting demands and support at work from colleagues and supervisors. Attitudes towards work, such as perceived job importance and job satisfaction, are also examined. Physical aspects of the work environment are not examined.

This study is one component of a large prospective study of psychosocial and other risk factors for cardiovascular disease, the Whitehall II Study. Sickness absence is used as the outcome measure in this study and will be used to identify cardiovascular morbidity in the long term prospective study.

Sickness absence is an important problem for both individuals and organisations. Individuals who are frequently absent are unable to maintain their usual roles at work. This may affect their self-esteem and career prospects. Prolonged sickness absence probably indicates physical, psychological or social disability. Sickness absence may also cause strain by increasing the workload for other employees. In addition, sickness absence is a major cause of reduced efficiency in the workplace.

There are large differences in sickness absence between different occupational groups. For example, less skilled occupations generally have higher rates of sickness absence than more skilled occupations (1-7). The reasons for these differences are poorly understood and are likely to be complex. Factors other than health may contribute to the decision to be absent from work.

In this chapter the interpretation of sickness absence, its measurement, and earlier studies which have examined the patterns of and risk factors for sickness absence are discussed. In Chapter 2, studies which have examined psychosocial aspects of the work environment in relation to sickness absence and other health outcomes are described.

1.2 Costs of sickness absence

It is difficult to determine the total costs of sickness absence but most estimates are substantial. In Britain, it has been estimated that the total costs of sickness absence are equivalent to the costs of running the National Health Service (8). This includes the direct costs of sickness payments and the indirect costs of payment of additional employees to cover the work normally done by the absent employee, payment of overtime and lost productivity.

1.3 Trends in sickness absence

Sickness absence has increased in most industrialised countries since the 1950s (9-11). In Britain there was a steep increase in the number of new claims made to the National Insurance Scheme between 1949 and 1964 (9). Alderson extended this analysis showing that there was a steady increase in new claims until 1978 when there was a slight reduction (12). Changes in the system of claiming benefits since 1980 make it difficult to interpret recent trends. In large organisations such as the Post Office similar trends in the frequency of sickness absence have been observed since the 1950s, but the total duration of sickness absence has remained relatively constant (13). This suggests that there has been an increase in short rather than long periods of sickness absence.

1.4 Sickness absence as a general measure of health

Health is complex, multidimensional and difficult to measure. It can be defined in terms of disease, symptoms, psychological well-being, function and physical fitness (14). Most measures of health are specific to one of these dimensions.

Sickness absence is a more general measure of health which is influenced by disease, symptoms and psychological well-being. Sickness absence may also be a measure of physical, psychological or social functioning. It represents the extent to which employees are able or choose to maintain their usual daily activities.

1.5 Measurement of sickness absence

Sickness absence consists of one or more periods of absence which can vary in duration from one day to several months. The term 'spell' is used in this thesis to describe an episode of absence from work lasting one or more days. Certified sickness absence refers to spells which are supported by a certificate from a general practitioner. No single measurement can describe all aspects of sickness absence. Three measurements are frequently used.

- i) Frequency of sickness absence measured as the total number of spells per person year.
- ii) Total duration of sickness absence measured either as the total number of days per person year or the percentage of working time lost.
- iii) Prevalence of sickness absence measured as the proportion of people absent on a particular day. Some studies describe the proportion of people who have at least one spell of sickness absence during a defined period.

Each measurement provides different information. Prevalence gives no information on either the frequency or duration of sickness absence. However it is simple to obtain and can be used to compare groups of employees. Employers often use the percentage of working time lost to plan staffing levels. Frequency gives more weight to short spells, whereas total duration gives more weight to long spells. A few people who have occasional long spells contribute a disproportionate amount to the total duration. For example, analyses of total duration based on National Insurance figures include a year of absence for people who are permanently sick and, in effect, are not employed. It is important to consider the measurement used when comparing different studies.

1.6 Patterns of sickness absence

A number of studies have described differences in sickness absence by sex, socioeconomic status and ethnic group.

1.6.1 Socioeconomic and regional differences in sickness absence

Socioeconomic status is a poorly defined concept. It refers to a person's social position and relates to a number of social and cultural factors. Most measures of socioeconomic status are based on occupation and the terms socioeconomic status, social class and

occupational status are often used interchangeably. In Britain, the Registrar General's social class classification is widely used and allocates occupations to six social classes on the basis of skill and social position (15). However the precise criteria for allocating occupations to different classes are not clear. The Registrar General's socioeconomic groupings is an alternative occupational classification which allocates occupations into 17 groupings on the basis of social and economic status (15).

A number of studies have reported higher rates of sickness absence among employees in less skilled or manual occupations (1-7). In a national sample of insured persons, men in skilled, partly skilled and unskilled occupations (social classes III to V) were twice as likely to have some certified sickness absence as men in professional and intermediate occupations (social classes I and II) (1). Similar differences have been reported within non-manual occupations. In the General Household Survey, employees in intermediate and junior non-manual occupations (socioeconomic groupings 5 and 6) were twice as likely to report sickness absence in the week before the interview as employees in professional and managerial occupations (socioeconomic groupings 1 to 4 and 13) (2). In a Swedish study of insured persons, similar socioeconomic differences in the frequency and duration of sickness absence were observed for several occupational classifications (3).

Similar socioeconomic differences in sickness absence have been reported within organisations. In both public and private sectors, clerical staff had two to five times more sickness absence than administrative staff (4-7). These differences were observed for both the frequency and duration of sickness absence.

In the United Kingdom marked regional differences in both frequency and duration of sickness absence have been reported (12,16). Wales, Northern Ireland and the North East had higher rates of sickness absence than the Midlands or the South. Similar regional differences have been reported for mortality (17). Employees on long term sickness benefits would be included in the National Insurance figures. Regional differences in sickness absence therefore partly reflect regional differences in health. There are also marked regional differences in occupations. For example, there is more heavy industry in Wales and the North, and more light industry or office work in the Midlands and the South. In the Post Office, regional differences in the duration of sickness absence were reduced after adjusting for occupation (4). This suggests that differences in occupational status also partly explain the regional differences in sickness absence.

1.6.2 Sex differences in sickness absence

A number of studies have reported higher rates of sickness absence among female employees (4-7). However women are more frequently in jobs with lower occupational status than men. This suggests that it is not possible to interpret sex differences in sickness absence if differences in occupational status are ignored.

Sex differences persist, but are less marked, when men and women in the same occupations are compared. Taylor collated the findings from several studies showing sex differences in sickness absence for teachers, clerical and technical staff, nurses and bus conductors (18). In these studies, the female to male ratios for the duration of sickness absence were between 1.2 and 2.0. The female to male ratios were closer to one for single women than for married women. Similar differences between single and married women have been reported for certified and uncertified sickness absence in a study of office employees (6). It is possible that married women, who have often interrupted their careers to have children, have less skilled jobs within an occupation than single women or men.

Sex differences are not necessarily observed in groups with higher occupational status. In the Swedish study discussed above, there were minimal sex differences in the frequency of sickness absence in professional or skilled non-manual occupations, whereas women in less skilled non-manual or manual occupations had more frequent sickness absence than men (3).

1.6.3 Ethnic differences in sickness absence

Two studies have reported higher rates of sickness absence for Indian employees compared to employees in other ethnic groups. In Singapore, Indian employees at HM Dockyard had twice the frequency of sickness absence as either Chinese or Malaysian employees (19). In a manufacturing plant in Britain, Indian employees had twice the frequency and duration of certified sickness absence as West Indian or Caucasian employees (20). In the latter study, more Indian and West Indian employees were in unskilled jobs compared to Caucasians. However the differences persisted after adjusting for occupational status. The reasons for these differences are poorly understood.

1.7 Risk factors for sickness absence

Earlier studies of risk factors for sickness absence are discussed in relation to the work environment, social circumstances outside work, health and health-related behaviours.

1.7.1 The work environment

A number of studies have evaluated the importance of the work environment in relation to sickness absence. Only a few studies have assessed psychosocial aspects of the work environment and these studies are discussed in Chapter 2. Most studies have examined job satisfaction or organisational factors such as working group size and hours of work. These studies are discussed in this section.

i) Job satisfaction

Two approaches have been used to assess the relationship between job satisfaction and sickness absence. The first approach compares levels of job satisfaction between employees with different patterns of sickness absence (21-23). With the exception of female salaried employees in one study (21), all of these studies reported a higher proportion of dissatisfied employees in the groups with frequent sickness absence. The second approach correlates employees' reports of job satisfaction with their rates of sickness absence (24-26). These studies reported few significant associations between job satisfaction and either the frequency or duration of sickness absence.

The studies which used simple measures of job satisfaction provide no information on how job satisfaction relates to specific aspects of work. Other studies have assessed different aspects of job satisfaction including satisfaction with the work, pay, promotions, supervisors and coworkers. These studies have usually shown no association between different aspects of job satisfaction and sickness absence.

ii) Organisational components of work

Several studies have examined the relationship between sickness absence and organisational size, size of working group and hours of work such as shift work and overtime.

Sickness absence varies widely between organisations (27). However these differences did not relate to organisational size. In a study of 375 salaried men and women and 251 male wage workers, male workers in larger working groups had more frequent sickness

absence than those in smaller working groups (21). There were no differences in sickness absence by working group size for salaried employees. This study suggests that working group size may be more important than organisational size. Porter and Steers speculated that large working groups tend to be characterised by less group cohesiveness, higher task specialisation and poorer communications (28).

Most studies suggest that shift workers have less sickness absence than day workers (29,30). In a study which compared 666 shift workers with 717 day workers in an oil refinery, day workers had about twice the rates of sickness absence as shift workers (29). The author suggested that differences in working group size, job satisfaction and social structure may explain the observed differences in sickness absence between shift and day workers. In another study, 965 pairs of shift and day workers from 29 organisations were compared (30). Shift workers generally had lower rates of sickness absence than day workers, although there were unexplained differences between organisations. One explanation for these differences is the selection of shift workers. Workers who are healthier may be more likely to remain on permanent shift work. This is supported by a study of 8,603 male manual workers which reported higher mortality rates among ex-shift workers than either current shift workers or day workers (31).

Few studies have assessed the effects of overtime and sickness absence. In a study of 194 oil refinery workers, overtime hours varied widely among employees with different patterns of sickness absence, although the average overtime worked steadily decreased from the group who were frequently absent to those who were never absent (23).

I am not aware of any studies which have examined the relationship between the length of the working day or week and sickness absence.

1.7.2 Social circumstances outside work

There is some evidence that employees with greater family responsibilities, for example married employees or employees with children, have higher rates of sickness absence.

In a study of hospital employees, married employees had almost twice the frequency and duration of sickness absence as single employees (7). These differences were similar for men and women. The authors speculated that family responsibilities were likely to explain the differences by marital status. However the analysis took no account of the possible confounding effect of socioeconomic status. Within occupations the differences are less clear. Several studies have described greater female to male ratios of sickness absence for married women than single women within occupations (6,18). On the other

hand, in a small study of 220 female clerical workers, married women were no more likely to have four or more days of sickness absence than single women (32).

In the same study, women with one or more dependents were more likely than those without dependents to have four or more days of sickness absence (32). This comparison is difficult to interpret because it failed to distinguish between dependent adults and children. In a large study of 8,049 employees in different organisations, women with one or more children aged under 15 had an average of 2.9 spells of sickness absence per year compared to 2.1 spells of sickness absence per year for women without children (33). The findings were not presented for men. One of the few studies to examine the relationship between dependent children and sickness absence for male employees was the study of 194 refinery workers (23). Men with one dependent (excluding partners and employed children) had an average of 1.5 spells of sickness absence per year compared to 2.7 spells of sickness absence per year for men with no dependents or two or more dependents.

These studies took no account of the age of dependent children. Findings from the General Household Survey suggest that the age of the youngest child may be important (34). In this survey, women with at least one child under the age of five were more likely to have been absent for personal or other reasons than those with older children (7% compared to 1% for women with older children). For men, no such difference was observed.

Few studies have examined the relationship between other social circumstances outside work and sickness absence. In a study of 139 employees of whom 70% were women, control, variety, task identity, feedback and social interactions at and outside work were related to sickness absence (35). These factors both at and outside work were negatively correlated with the frequency of sickness absence ($r=-0.20$ and $r=-0.26$ respectively). However they did not relate to time lost.

1.7.3 Health

The distributions of diagnoses for both uncertified and certified sickness absence are remarkably similar in different studies (1,5,8,36,37). The most common diagnoses are respiratory, gastrointestinal, musculoskeletal and psychiatric disorders. This suggests that the most common causes of sickness absence are minor in terms of serious morbidity and mortality.

A number of cross-sectional studies have reported more frequent sickness absence for younger employees and more prolonged sickness absence for older employees (5,38-41). The latter would be consistent with age differences in morbidity. However several prospective studies have reported no increase in the frequency of sickness absence with age (39,40). The differences between cross-sectional and prospective studies may reflect differences in the populations studied. Long follow-up in a stable population is required to assess age-related changes in sickness absence in a prospective study.

In a cross-sectional study of 400,000 Post Office employees, rates of certified sickness absence, premature retirements for medical reasons and deaths were higher in the lower grades of employment (4). The similar grade differences in certified sickness absence, medical retirements and deaths may indicate a relationship between them. However in this study, prospective information was not available and employees' sickness absence was not related to their risk of medical retirement or death.

Two Swedish studies have examined the relationship between specific medical conditions and sickness absence. In a population study, men with lower back pain had almost twice the frequency and duration of sickness absence as men without lower back pain (42). These differences persisted after adjusting for education and occupational status. In another study, men with dyspepsia had more frequent and more prolonged sickness absence than men in the general population (43). These studies took no account of occupational status. Although they suggest that low back pain or dyspepsia relate to rates of sickness absence, they provide little information on the importance of these medical conditions relative to other factors.

The study of 194 refinery workers discussed earlier is interesting because it assessed the relationship between more general measures of morbidity and different patterns of sickness absence (23). Men were classified according to their pattern of sickness absence into four groups - frequently absent (five or more spells of sickness absence per year), absent for a long period (more than 60 days per year), never absent during the previous eight years and controls matched to the frequently absent group by age, occupation, department and length of service. Employees with a long period of absence were more likely to report a previous hospital admission than those in other groups. Employees with a long period of absence and those who were frequently absent were also more likely to report past psychiatric problems or incapacitating back pain than either the controls or those who were never absent. Somewhat unexpectedly, a similar proportion of the controls, those who were frequently absent and those who were never absent had chronic medical conditions, such as chronic bronchitis, on examination.

Few studies have assessed the relationship between psychiatric morbidity and sickness absence. In a study of 2,352 employees, men with high scores on the Middlesex Hospital Questionnaire which measures psychoneurotic and personality traits had more frequent certified sickness absence than men with low scores (44). In a more detailed study of 321 executive officers in the British civil service, minor psychiatric morbidity was assessed using the General Health Questionnaire and the Clinical Interview Schedule (45). Both men and women with minor psychiatric morbidity had higher rates of certified and uncertified sickness absence compared to those with no minor psychiatric morbidity.

1.7.4 Health-related behaviours

i) Smoking habits

Although a major report on smoking and health concluded that smokers have more sickness absence than non-smokers, this conclusion was based on limited evidence (46). Two small studies have reported slightly more hours of sickness absence per month for smokers compared to non-smokers (47,48). However, these studies did not take account of occupational status. An association between smoking and sickness absence was observed in two studies of 200 student nurses (49,50). Nurses who smoked had an average of 3.5 uncertified spells of sickness absence in a six month period, compared to 2.0 spells for non-smokers. A higher proportion of smokers had at least one certified spell in the six month period. On the other hand, a large study of 1,313 salaried employees and wage workers, reported minimal differences in the duration of sickness absence between smokers and non-smokers (51).

The reasons for an association between smoking and sickness absence are likely to be complex. Respiratory infections are a common cause of sickness absence. In a study of men entering the army, smokers had a higher incidence of upper respiratory tract infections than non-smokers (52). Smoking may also be associated with other differences in personality, psychological well-being and lifestyle. For example in the two studies of nurses, smokers with psychiatric symptoms had more frequent sickness absence than either non-smokers or smokers without psychiatric symptoms (49,50).

ii) Alcohol consumption

In Britain between 8 and 15 million working days are lost each year because of alcohol-related illnesses (53). Several studies have reported higher rates of sickness absence among heavy drinkers. In a random sample of 2,000 adults, heavy drinkers were about twice as likely as other respondents to report at least three days of sickness absence in the

previous three months (54). In a large population screening survey in Sweden, men with liver enzyme levels (gamma glutamyl transferase) above the 90th percentile had an average of 60 days of sickness absence in the previous year, compared to 12 days for those with liver enzyme levels below the median (55). Within a large organisation, 764 problem drinkers detected in a screening programme were compared with 863 controls matched for age, sex, occupational class and location (56). Problem drinkers had an average of 1.3 spells per year and 13.0 days per year of sickness absence compared to 0.7 spells per year and 5.8 days per year for controls. These differences were observed for men and women in different age and occupational groups.

iii) Physical activity

Little information is available on how physical activity relates to sickness absence. In a study of salaried employees and wage workers, the relationship between physical activity during leisure time and sickness absence was assessed (51). Salaried employees who took little physical activity had higher rates of sickness absence. Wage workers, who as a group had more physically active jobs, took less physical activity during their leisure time. For these workers, there was no relationship between physical activity and sickness absence. This suggests that the importance of physical activity during leisure time may relate to other differences in lifestyle, rather than physical fitness.

1.8 Conclusion

There have been numerous studies of sickness absence in different groups of employees. Considered together, these studies suggest that a large number of factors relate to sickness absence. However, most studies have focussed on a limited number of risk factors. Consequently, it is not clear to what extent the associations have been confounded by factors which were not measured and remarkably little is known about the relative importance of different factors.

A consistent finding in most studies of sickness absence has been the higher rates of sickness absence among employees with lower occupational status. The reasons for these differences are poorly understood. Possible explanations include differences in health, lifestyle and psychosocial factors at work and outside work.

Differences in occupational status need to be considered when the association between other factors and sickness absence is examined. Many studies which have examined risk factors for sickness absence have not taken account of occupational status.

A limitation of many studies is the use of a single measurement of sickness absence. Different measurements describe different aspects of sickness absence. Frequency tends to represent short spells of sickness absence, whereas total duration and time lost tends to represent long spells of sickness absence. The risk factors for short and long spells of sickness absence may be different.

Most studies have examined sickness absence in less skilled, non-manual or manual occupations. These findings cannot necessarily be extended to other occupational groups. Relatively little is known about sickness absence in more skilled, non-manual occupations.

CHAPTER 2

The work environment

A number of studies have examined the relationship between psychosocial factors at work and health. These studies have defined the work environment in different ways, from global measures of employees' responses to their work to specific measures of psychosocial aspects of the work environment. In addition, these studies have assessed a number of outcomes, including job satisfaction, sickness absence, anxiety and depression, hospitalisations and coronary heart disease.

There is a large literature on occupational stress and health. In this chapter studies which are directly relevant to the concepts and measurements of the work environment used in the present study are discussed.

2.1 Methods of measuring the work environment

Two general methods have been used to measure the work environment, namely employees' reports and assessments by other individuals.

The most widely used method is to ask employees to describe their work, so called self-reports. This method is simple and relatively easy to obtain. Employees are likely to have a good knowledge of their work and may also be in the best position to report on certain aspects of the work environment, for example adequacy of support from colleagues and supervisors.

However, self-reports reflect employees' perceptions of the work environment, as well as the work itself. Employees' perceptions are influenced by personality, past experience and expectations. Consequently, different employees may report on the same work environment in different ways. When self-reports of the work environment are related to self-reported outcomes, such as psychological well-being, it is difficult to separate the effect of the work environment from individual differences in perception and reporting.

There may also be systematic reporting differences between the groups being compared. For example, retrospective studies which compared self-reports of the work environment for myocardial infarction survivors and healthy controls may have been biased by differences in recall and reporting (57,58).

An alternative method is to ask individuals who are not in the jobs, for example supervisors, colleagues or trained observers, to assess the work environment, so called external assessments. This method also depends on the observer's perception of the work environment, and is therefore only 'objective' in the sense that it is external to the employees studied. Using this method, a more valid assessment of the effect of the work environment on self-reported outcomes can be made.

However, the practical problems of obtaining external assessments in large studies are considerable. Supervisors may have limited contact with the activities and experiences of individuals in specific jobs. It may therefore be difficult to identify individuals with sufficient knowledge of the jobs to make the assessments. Alternatively, a trained observer could make direct assessments of the work environment. However it is difficult to assess jobs which vary greatly from day to day and the presence of an observer may influence the usual work activities. This method is therefore time-consuming and expensive.

A number of studies have compared self-reports with external assessments by supervisors, colleagues or researchers. In a study of 208 employees in 13 jobs, the average of self-reports for each job was correlated with the external assessments by supervisors and the researchers (25). The two methods were moderately to highly correlated for variety, control and task identity ($r=0.65$ to $r=0.94$), but were not correlated for feedback ($r=-0.22$ to $r=0.09$). Other studies have also reported moderate agreement between self-reports and external assessments by supervisors and colleagues (59-62). However, in a study of 841 manual workers, there was a poor correlation between self-reports and direct assessments of psychological stressors for individual employees ($r=0.37$) (63). In contrast to the other studies, the latter study correlated the two methods for individual employees rather than for jobs.

Few studies have compared self-reports and external assessments in relation to an outcome. In the study of manual workers, there was a higher correlation between psychosomatic complaints and self-reports of psychological stressors ($r=0.35$) than for direct assessments of psychological stressors for individual employees ($r=0.19$) (63). Similarly in a study of 115 nurses, there were higher correlations between job satisfaction and self-reports of variety, control, feedback and social interactions ($r=0.21$ to $r=0.43$) than assessments by supervisors ($r=0.00$ to $r=-0.15$) (64). Although these studies examined different outcomes, self-reports of the work environment were more strongly related to self-reported outcomes than were external assessments. This suggests that the associations were partly, but not completely, explained by reporting differences between individual employees.

2.2 Occupational classifications of the work environment

An alternative to analysing the work environment of individual employees, is to classify occupations according to the average of employees' reports within an occupation. This approach minimises the effect of reporting differences between employees. It has been widely used to re-analyse data from studies in which health outcomes have been measured, but the work environment has not been measured. Large national surveys of work are used to obtain employees' reports of the work environment in different occupations. Each occupation is given a score for job strain, as defined below, which is the average of employees' reports in the occupation. This score can be adjusted for age and other variables which may be associated with differences in the work environment within an occupation. These scores are then linked to individuals in other studies using occupational codes. Consequently, all individuals in the same occupation have the same score.

This approach assumes that the variation in the work environment between occupations is more important than the variation within an occupation. It is therefore a relatively crude measure of the work environment. Certain aspects of the work environment may differ more between occupations than others. For example, in a national survey, 45% of the total variation in control, variety and skill use was observed between occupations, whereas this accounted for only 7% of the total variation in job demands (65).

Simpler occupational classifications are based on external criteria, rather than self-reports. For example, within an organisation it may be possible to compare occupations with high and low levels of control (66). This approach can only be used where the differences between occupations are quite clear and these differences often relate to other differences, such as socioeconomic status.

2.3 The job strain concept

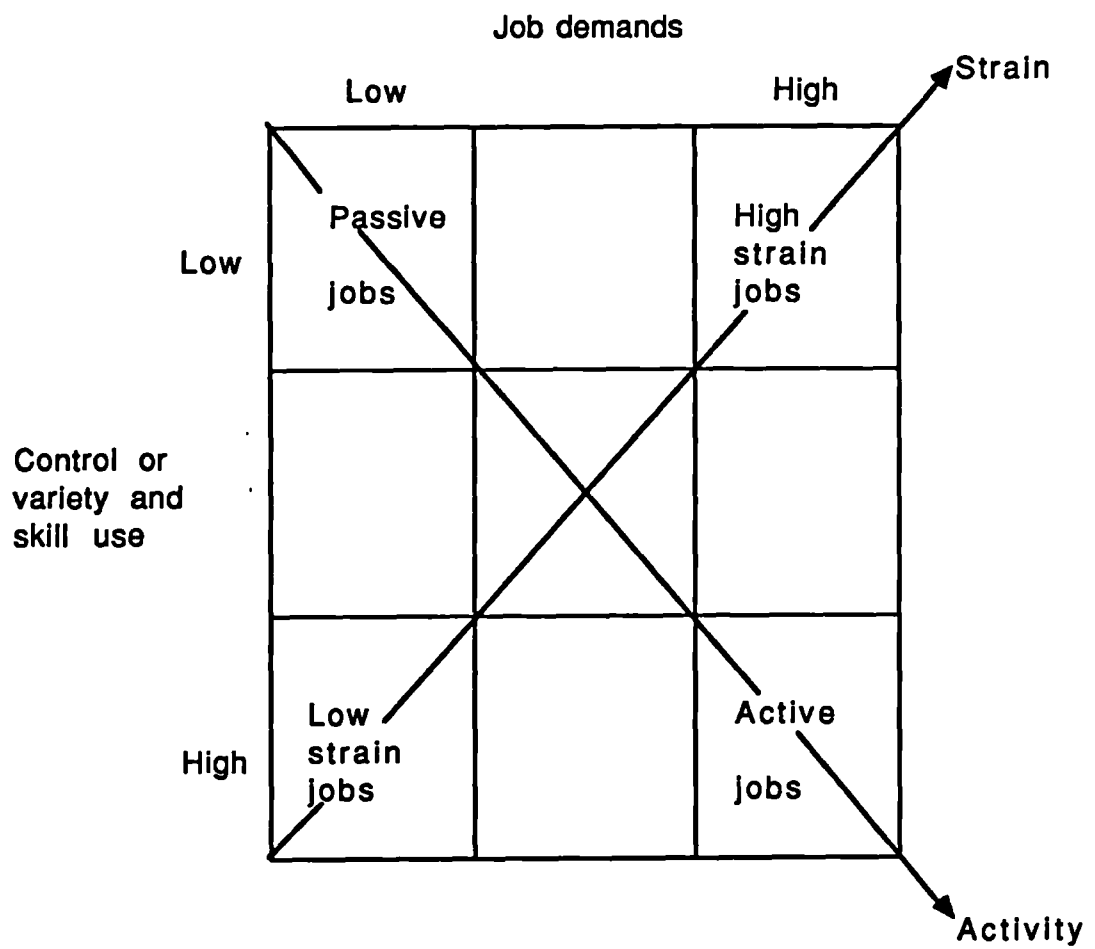
Most studies of coronary heart disease have examined the importance of job demands, such as excessive work pressures, role conflicts and changes in responsibilities (57,67,68). In contrast, most studies of job satisfaction, work performance and sickness absence have assessed the importance of variety, use of skills, control, feedback and social interactions (25,59,69). In 1979, Karasek proposed the job strain concept which integrated these two approaches (70). This concept has influenced many epidemiological studies of work and health in the 1980s.

The job strain concept relates different aspects of the work environment to psychological strain and ill-health. The concept suggests that the combination of job demands and variety, skill use and control is important. Job demands refer to the speed and intensity of work, pressures to meet deadlines and conflicting demands to do tasks which may be difficult to combine. Control or decision authority refers to the extent to which employees are able to influence how their work is done. It does not imply control over or responsibilities for other employees. Skill use or intellectual discretion refers to the level of skill required and the extent to which skills are developed. Jobs with high levels of decision authority usually also have high levels of intellectual discretion. Decision authority and intellectual discretion are therefore often combined into a single measure called decision latitude.

According to the job strain concept, jobs with high demands and low decision latitude are associated with above average strain, fatigue, anxiety, depression and in the long term physical illness ('high strain jobs'). In contrast, jobs with high demands and a great deal of decision latitude are associated with average strain, high levels of job satisfaction and high productivity ('active jobs'). Jobs with few demands and high decision latitude are associated with below average strain ('low strain jobs'), whereas jobs with few demands but low decision latitude are associated with average strain, apathy and low productivity ('passive jobs'). Figure 1 summarises the job strain concept.

Most studies which have evaluated the job strain concept have been exploratory analyses of data collected for other purposes. Consequently, they have been limited by the quality of the information available. Two approaches have been used. First, data from national surveys have been re-analysed to relate self-reports of the work environment to symptoms suggestive of depression or cardiovascular disease. Second, data from large studies with health outcomes have been re-analysed by linking individuals to an occupational classification of job strain. Studies which have used these approaches are discussed separately.

Figure 1 -The job strain concept



2.3.1 Analyses based on individuals

The job strain concept was first assessed in relation to symptoms of exhaustion and depression, job satisfaction and self-reported sickness absence (70). The analyses were based on two samples - 911 men aged between 20 and 65 from the 1972 Quality of Employment Survey (QES) in the United States, a national household sample with a response rate of 76%, and 1,896 men aged between 18 and 66 in the 1968 and 1974 Swedish Surveys of Living Conditions (ULF), which used random samples of the adult population and had response rates above 85%.

There was a stepwise increase in the proportion of men who reported exhaustion from 5% in 'low strain jobs' to 34% in 'high strain jobs' in the QES and from 19% to 53% in the ULF. There was a similar increase in the proportion of men who reported depression from 8% in 'low strain jobs' to 47% in 'high strain jobs' in the QES and 8% to 35% in the ULF. There was a smaller increase in the proportion of men who reported exhaustion from 'passive' to 'active jobs' in both the QES and ULF. However, there were no differences in the proportion of men who reported depression in 'passive' or 'active jobs'.

In this study, job satisfaction and sickness absence related to decision latitude, but there was little to support for a combined effect of job demands and decision latitude. In the QES, men who reported low decision latitude, irrespective of job demands, were more likely to be dissatisfied with their work. In the ULF, men who reported high decision latitude, irrespective of job demands, were less likely to report five or more days of sickness absence per year.

To summarise, in this study there was a relationship between job strain and the prevalence of exhaustion and depression. However decision latitude alone appeared to be more important than job strain for job satisfaction and sickness absence.

Other studies have focussed on the relationship between job strain and cardiovascular disease. Using a similar approach to the study described above, data for 1,641 employed men from the 1974 Swedish Survey of Living Conditions were analysed (71). Based on the available data, a coronary heart disease (CHD) indicator was developed which combined 'cardiovascular' symptoms (ache in breast, trouble breathing), hypertension and heart weakness. Although this CHD indicator is clearly quite different from the usual clinical or epidemiological measures of coronary heart disease, it did predict subsequent CHD mortality. Men in 'high strain jobs' were more likely to have the CHD indicator than other men (18.5% compared to 5.9% overall). However there was no difference in the proportion of men who had the CHD indicator in 'passive' or 'active jobs'.

These findings were supported by an analysis of a larger sample of 13,779 men and women from the 1976 and 1977 Swedish Surveys of Living Conditions (72). In this study, a higher proportion of employees in 'high strain jobs' reported cardiovascular illnesses than those in 'low strain jobs' (7.5% compared to 4.0%). Again, there was no difference in the proportion of men who reported cardiovascular illnesses in 'passive' or 'active jobs'.

This study is particularly interesting because it was large enough to compare the findings for men and women in white-collar and blue-collar occupations (72). The relationship between job strain and the prevalence of cardiovascular illnesses only applied to male blue-collar workers and was not observed in other groups. This raises uncertainty about the extent to which the job strain concept can be applied to different occupational groups.

Another interesting aspect of this study was the hypothesis that lack of social support at work combines with job strain to further increase the prevalence of coronary heart disease (72,73). Overall, the age-adjusted prevalence ratios for coronary heart disease increased as the level of social support decreased. Within each level of social support, 'high strain jobs' were associated with a higher prevalence of coronary heart disease than 'low strain jobs'. The differences persisted after adjusting for age, occupational class, disposable income, smoking and a number of social factors including social support out of work. In contrast to the demand-control combination, the demand-support combination related to prevalence of coronary heart disease in both white-collar and blue-collar occupations.

These analyses were cross-sectional so it is not possible to make causal inferences about the associations. Two further analyses (prospective and case-control) were therefore performed using the 1968 and 1974 Swedish Surveys of Living Conditions (71).

The relationship between job strain in 1968 and the development of the CHD indicator in 1974 was examined in a cohort of men who were asymptomatic in 1968. The findings suggested that men in 'high strain jobs' were no more likely to develop the CHD indicator than men in other jobs (5.0% compared to 5.6% overall). There was also no difference in the proportion of men who developed the CHD indicator in 'passive' or 'active jobs'. It is not clear how the development of the CHD indicator related to documented coronary heart disease.

A more definitive outcome of cardiovascular or cerebrovascular deaths was used in a case-control analysis of the 22 deaths which occurred between 1968 and 1977. The combination of high demands and low decision authority was associated with an increased

risk of CHD mortality (odds ratio (95% confidence interval (CI)) 4.0 (1.1-14.4)). This increased risk was similar to the risk for high demands alone (4.0 (1.2-13.9)). The wide confidence intervals indicate the lack of precision due to the small number of deaths. The findings remained significant after adjusting for age, education, smoking and obesity.

Two prospective studies - a study of industrial workers in Finland and the Framingham Study (74-76) - with information on the work environment and sufficient cardiovascular events have been re-analysed to test the job strain concept.

In the first study of 902 industrial workers, men in 'high strain jobs' were twice as likely as those in 'low strain jobs' to have non-fatal or fatal myocardial infarctions in the subsequent 10 years (74). Despite lower absolute rates of coronary heart disease, the rate ratios for men and women were similar (173/1000 for men in 'high strain jobs' compared to 90/1000 for men in 'low strain jobs', and 83/1000 compared to 48/1000 respectively for women). The increased risk remained significant after adjusting for age, sex, systolic blood pressure, smoking, serum cholesterol, relative weight and alcohol consumption.

This study used a different measure of job strain from other studies. Physical, rather than psychological, demands were used and these are usually more strongly related to occupational status. Although the author referred to the strong association between job strain, education and income in an unpublished thesis, the possible confounding effect of occupational status was not addressed in this paper. A composite score of job strain was calculated by adding levels of job demands, low control and low variety. Jobs were then classified into 'high strain' and 'low strain' above and below the median of job strain. It is therefore surprising that the rate ratios were higher than those observed in earlier cross-sectional analyses of cardiovascular disease which compared 'high strain' and 'low strain' in the highest and lowest quintiles of job strain (71,73). This would be consistent with some confounding effect of occupational status.

In the second study, data from a subsample of 580 employed men and 387 employed women from the Framingham Study were re-analysed (75,76). In contrast to other studies, support from supervisors rather than control was combined with job demands to test the job strain concept. The incidence of coronary heart disease over ten years for women was 31.3% in 'high strain jobs', 2.4% in 'low strain jobs', 5.6% in 'active jobs' and 13.6% in 'passive jobs' (76). The differences remained significant after adjusting for age, smoking, systolic blood pressure and serum cholesterol. There was no support for the job strain concept in men.

This study included angina with other cardiovascular events and this accounted for almost

60% of the events for women. This may partly explain the significant findings for women, but not for men. The findings also need to be considered along with an earlier paper of employment status and coronary heart disease based on the same sample (77). Although clerical women had a higher incidence of coronary heart disease than other employed women, this increased risk was only observed for clerical women with children and, in particular, those who also had husbands in blue collar occupations. Clerical women who were single or married without children had a lower incidence of coronary heart disease than other employed women. This suggests that the necessity to work, family responsibilities and resources outside work may be more important than the work environment itself.

2.3.2 Analyses based on occupational classifications

Two different methods have been used to classify occupations according to the job strain concept.

First, a simple occupational classification has been developed using self-reports from the Swedish Living Conditions Surveys (78,79). The proportion of employees with affirmative responses to questions on different psychosocial and physical aspects of the work environment was calculated for each occupation. Occupations were then divided into high and low risk above and below the median for each work characteristic.

Second, a more detailed occupational classification has been developed using self-reports from the 1969, 1972 and 1977 Quality of Employment Surveys (65,80). Composite measures of job strain were calculated by multiplying the levels of job demands and low decision latitude. Mean scores for job strain were then calculated for each occupation and could be adjusted for age and other demographic details. These occupational classifications have been linked using occupational codes to data from a number of large studies with health outcomes.

In a Swedish case-control study of men below the age of 65 who had a myocardial infarction between 1974 and 1976, the combinations of hectic work and low influence over work pace or few possibilities for learning new things were associated with excess risks (95% CI) of 1.35 (1.01-1.81) and 1.45 (1.02-2.04) respectively (78). In another analysis of the same data, the excess risks remained significant after adjusting for age, education, heavy lifting and smoking. A similar excess risk was also reported for the combination of hectic work and physically demanding work which suggests that the elevated risk is not specific to the combination of demands and control or variety.

In a prospective analysis of all hospital admissions for cardiovascular disease in Sweden, men aged between 20 and 64 in jobs with hectic work and few possibilities for learning new things had an excess risk (95% CI) of 1.28 (1.09-1.48) and those with hectic and monotonous work had an excess risk of 1.18 (1.02-1.35) (79). Women in jobs with hectic and monotonous work had an excess risk of 1.40 (1.12-2.33). In this study the excess risks were adjusted for age, type of employment, income, smoking, heavy lifting and a number of other demographic details and hospital admissions for a number of reasons were examined. Multiple comparisons were therefore made and only those which were significant after adjusting for these variables were reported. This makes it difficult to interpret the importance of the significant findings.

In a cross-sectional analysis of the 1960-62 Health Examination Survey (HES) and the 1971 and 1975 Health and Nutrition Examination Surveys (HANES), men in 'high strain' occupations were more likely have evidence of a past myocardial infarction than men in other jobs (65). The rate ratios for the prevalence of myocardial infarctions for men in the top decile of job strain relative to those in the lowest decile of job strain were 3.80 in the HES and 4.79 in the HANES. The rate ratios did not change after adjusting for age, race, education, systolic blood pressure, serum cholesterol and smoking.

However, there was no support for the job strain concept in a prospective study of coronary heart disease (81) which used the same methods as those described above (65). In this study of 8,006 Japanese in Hawaii, men in 'high strain' and 'low strain' occupations had similar age-adjusted rates for coronary heart disease and men in 'active' occupations had the lowest rates. However, it was probably inappropriate to apply an occupational classification of job strain developed in the United States to Japanese employees in Hawaii.

Another study which did not support the job strain concept was a meta-analysis of 12,555 men from five large studies (82). Men in 'high strain' occupations did not consistently have increased levels of the coronary heart disease risk factors (serum cholesterol, smoking and systolic and diastolic blood pressure). It could, however, be argued that a meta-analysis is inappropriate for assessing the effects of psychosocial factors which have been measured in different ways.

2.4 Conclusion

A number of studies provide support for the job strain concept. However, there are many inconsistencies and unanswered issues.

Most studies have used data from national surveys which include a wide range of occupations. These occupations may differ in a number of ways other than the work environment, in particular in terms of socioeconomic status. Few studies have adequately addressed the potential confounding effect of socioeconomic status.

These studies have related the job strain concept to a number of outcomes, most of which relate to cardiovascular disease. Few studies have related the job strain concept to more general measures of health, such as sickness absence.

Different studies have reported large differences in the strength of the association between job strain and similar outcomes. The reason for these differences are often not clear, but may relate to methodological differences.

Most studies have used self-reported measures of the work environment. Interpretation of these studies is difficult because self-reported measures may reflect differences in perception rather than differences in the work environment.

The present study addresses a number of these issues.

CHAPTER 3

Methods

3.1 Introduction

This study examines risk factors for sickness absence in middle-aged British civil servants.

Participants completed detailed questionnaires about psychosocial aspects of the work environment, social circumstances outside work, health and health-related behaviours. External assessments of the work environment were also obtained from personnel managers. These measurements were related to sickness absence which was recorded from the time of the baseline survey until December 1988.

This study is one component of a large study of psychosocial factors and cardiovascular disease, the Whitehall II Study. Other components of the Whitehall II Study include a cross-sectional study of cardiovascular morbidity, a prospective study of cardiovascular morbidity and mortality and a randomised controlled trial of behavioural modification for individuals at high risk for coronary heart disease. Consequently, all participants had medical examinations and have been flagged at National Health Service Central Registry for notification of deaths and cancer registrations.

This chapter describes the study population, the data collected at the baseline survey, the external assessments of the jobs, sickness absence follow-up and the statistical methods.

3.2 Study population

All non-industrial civil servants, aged between 35 and 55, in 20 departments in central London were invited to a cardiovascular screening examination at their work.

Most participants were office-based, administrative employees. A small proportion were professional or technical employees, for example engineers, surveyors and lawyers, and the remainder provided office support, such as messengers and paperkeepers.

Table 1 shows the distribution of participants by department. The majority of departments were headquarter offices, but two were district offices (Departments 7 and 13). Most participants (73%) worked in eight large headquarter offices (Departments 2-

5,8,14,19 and 20). The type of work is different in headquarter and district offices. Headquarter offices set up and administer policies, whereas district offices implement policies and provide services to the public. Consequently, there are usually more top administrators in headquarter offices and more executive and clerical staff in district offices.

Table 1 - Distribution of participants by department

Department	Total number	Total %	Men %
1	344	3.3	58.7
2	643	6.2	77.9
3	867	8.4	67.9
4	416	4.0	80.3
5	1352	13.1	61.8
6	174	1.7	61.5
7	350	3.4	28.6
8	949	9.2	75.6
9	310	3.0	60.3
10	246	2.4	56.1
11	140	1.4	61.4
12	15	0.2	80.0
13	220	2.1	39.1
14	612	5.9	67.7
15	192	1.9	87.5
16	223	2.2	62.3
17	360	3.5	60.8
18	235	2.3	75.3
19	1687	16.4	71.8
20	979	9.5	69.2
Total	10314	100.0	66.9

3.3 Grade classification

The civil service classifies more than 2,000 non-industrial grades into 13 salary levels (Table 2). Professional, technical and specialist grades are classified according to the equivalent administrative salary level. For analytical purposes, the 13 salary levels were reduced to seven grade categories (Groups 1 to 7) (Table 3).

Levels 1 to 6 were combined into one category (Group 1) because there were relatively few participants in these top administrative grades (1,026 men and 122 women). There were also marked differences in the amount of responsibility between civil servants in Level 6 and those in Level 7.

Clerical grades in Levels 11 to 13 (administrative officers, administrative assistants, typists) were classified as Group 6 and office support grades in Levels 11 to 13 (messengers, porters, paperkeepers, telephonists) were classified as Group 7. Despite similar salaries, clerical and office support staff had different levels of education and responsibility. Clerical staff (Group 6) were generally selected on educational qualifications, whereas office support staff (Group 7) were often selected on past experience (security officers) or special skills (telephonists). The small proportion of senior clerical and office support staff with salaries equivalent to executive officers or above (Group 5 or above) were classified in these higher groups according to their salary.

Table 2 - Salary levels by grade

Salary level	Basic salary £ ^a	
	Minimum	Maximum
1. Grade 1 (Permanent secretary)	-	62,100
2. Grade 2 (Deputy secretary)	41,500	43,500
3. Grade 3 (Under secretary)	32,350	35,350
4. Grade 4	28,975	30,475
5. Grade 5 (Assistant secretary)	23,730	27,065
6. Grade 6 (Senior principal)	18,020	24,302
7. Grade 7 (Principal)	14,318	19,465
8. Senior executive officer	11,639	14,629
9. Higher executive officer	9,430	11,961
10. Executive officer	5,250	9,452
11. Administrative officer (Clerical officer)	3,507	6,791
12. Administrative assistant (Clerical assistant)	3,157	5,499
13. Other eg messengers, porters, telephonists, typists	3,061	5,841

^a Salary at 1 January 1987

Table 3 - Grade classification

Grade category	Basic salary £ ^a	
	Minimum	- Maximum
1. Grade 1 to Grade 6	18,020	- 62,100
2. Grade 7	14,318	- 19,465
3. Senior executive officer	11,639	- 14,629
4. Higher executive officer	9,430	- 11,961
5. Executive officer	5,250	- 9,452
6. Clerical grades	3,061	- 6,791
7. Office support grades	3,061	- 6,791

^a Salary at 1 January 1987

3.4 Participation rates

Of the 14,397 civil servants invited, 10,314 participated in the baseline survey, an overall participation rate of 71.6%. There were striking differences in participation rates by grade of employment, particularly for men (Table 4). The participation rates by grade were based on the 14 departments where the research team organised the mailing of invitations. The remaining six departments organised their own mailing under supervision of the research team because of concern about releasing lists of eligible employees to an institution outside the civil service. These departments provided overall participation rates, rather than participation rates by grade (Table 5).

The participation rates in clerical and office support grades were 46% for men and 65% for women, compared to participation rates of more than 80% in most of the higher grades. Women in top administrative grades (Group 1) had a lower participation rate (69%) than other administrative and executive grades.

Civil servants who had transferred or had left the civil service were classified as ineligible and excluded from the calculation of participation rates. At the time of analysis, this information was incomplete, so the true participation rates were probably slightly higher, particularly in the lower grades where there was higher turnover.

Table 4 - Participation rates, by grade in 14 departments

Grade category	Participation rate		Number invited	
	Men	Women	Men	Women
	%	%	N	N
1 Grade 1 - 6	80.6	68.9	847	122
2 Grade 7	83.0	82.2	1261	202
3 Senior executive officer	80.6	81.3	1181	160
4 Higher executive officer	77.3	82.0	1450	399
5 Executive officer	66.8	75.6	990	583
6/7 Clerical and office support grades	46.1	65.3	837	1628
Total	73.9	71.5	6566	3094

Table 5 - Participation rates in 6 departments

Department	Participation rate	Number
	%	invited
1	65.5	525
Part of 2/3/4	70.2	450
7	73.4	477
9	65.3	475
10	64.4	382
17	69.5	2428
Total	68.7	4737

3.5 Baseline survey

Between November 1985 and March 1988, 10,314 civil servants attended screening clinics at a number of work sites. Participants were sent questionnaires (Appendix 1) for self-completion which were checked at the clinic visit. The questionnaires provided the baseline data used in this study and are therefore discussed in detail below. The medical examination included measurement of height, weight, resting blood pressure, a resting electrocardiogram, serum lipids and clotting profiles. Ambulatory blood pressure monitoring and stress reactivity were undertaken on a subsample of male participants.

The questions on the work environment, social circumstances outside work, health and health-related behaviours which were used in this study are described below. The

question numbers in brackets refer to the questionnaire in Appendix 1. If no question number is given the information was obtained by interview at the screening clinic.

The questionnaire was modified several times during the initial screening phase - 590 participants completed the first version, 2,022 participants completed the second version, and the remaining 7,702 completed the third and fourth versions. Appendix 2 shows the questions included in each version of the questionnaire.

3.5.1 Personal characteristics

This included questions on age (Q1a), sex (Q1b), current grade of employment (Q2a), grade at entry into the civil service (Q2b), date of entry into the civil service (Q3), ethnic group, marital status (Q6), years of full-time education (Q5a), highest level of education (Q5b), employment status and occupation of partner (Q7e-k) and father (Q12b-g), housing tenure (Q8) and car ownership (Q11).

Age was classified into five year age groups at entry into the study - 35-39, 40-44, 45-49 and 50-55 years.

Current grade and grade at entry into the civil service were classified as described above.

Length of service was calculated as the difference between the year of entry into the civil service and the year of the baseline survey.

Participants were classified into Caucasian, Asian (Indian, Pakistani or Bangladeshi) and 'other' ethnic groups. The latter were predominantly Afro-Caribbean (81%) or Chinese (7%). The first 590 participants examined were excluded from the analyses of ethnic group because Asians were not classified separately.

The marital status of participants was classified into married or cohabiting, single (never married), divorced or separated and widowed. In some analyses, the divorced and widowed categories were combined. More than 80% of participants in this combined category were divorced.

Two measures of education were used. First, the highest level of full-time education was classified as primary or secondary, university or polytechnic and 'other'. Second, the number of years of full-time education were classified into the following groups - 0-11 years, 12-13 years and 14 or more years.

Partner's and father's occupations were classified according to the Registrar General's socioeconomic groupings (SEG) (15). The condensed version was used -

Professional occupations (SEG 3,4)

Employer/managerial occupations in large and small organisations (SEG 1,2,13)

Other non-manual occupations including intermediate and junior non-manual (SEG 5,6)

Skilled manual occupations, including foremen, supervisors farmers (SEG 8,9,12,14)

Semi-skilled manual occupations, including personal service workers and general agricultural workers (SEG 7,10,15)

Unskilled manual occupations (SEG 11)

Housing tenure was classified into owner occupiers, privately rented and local authority accommodation.

Car ownership was classified into those who had access to a car and those who did not.

3.5.2 Social circumstances outside work

These questions included number and age of dependent children (Q10f-i), whether partner (Q10a) or parents or parents-in-law (Q10b-e) were in the household, social contact with relatives (Q61a-b) or friends (Q63a-b), attendance at religious services (Q64), amount of support from the closest person (Q59a-o), overall satisfaction with personal relationships (Q59y-z) and financial problems (Q79f).

Participants were classified into two groups, those who had at least one dependent child under the age of 16 in the household and those who did not. Participants with at least one dependent child, but no partner, in the household were classified as solo parents, irrespective of marital status.

The questions on social contacts were based on questions used in the Alameda County Study (83) and in the pilot study in the Department of Employment.

Social contact with relatives and friends was classified according to the number of relatives (or friends) the participant saw regularly (at least once a month). The categories were none, 1-2 and 3 or more.

Attendance at religious services was classified into regular (at least once a month), occasional (once every few months) and never.

The questions on amount of support from the closest person were developed for this study and were based on Henderson's Interview Schedule for Social Interaction (84).

Three indices of support from the closest person were developed from a factor analysis performed by Stephen Stansfeld. The indices were emotional support, practical support and inadequate or negative support. Emotional support referred to the amount of sharing and personal confiding with the closest person. Practical support referred to need for and amount of practical support provided by the closest person. Negative support refers to worries created by the closest person or where talking to the closest person made things worse. Inadequate support referred to wanting more emotional or practical support from the closest person. Emotional and practical support were classified using approximate quartiles for the whole sample into very low, low, moderate and high. Adequacy of support was classified using approximate tertiles for the whole sample into low, moderate and high.

In a test re-test reliability study undertaken by Stephen Stansfeld, 71 participants completed the questions on social supports about four weeks after their baseline examination. Most participants (82%) recorded the same person as the closest person on both occasions. There was moderate to substantial agreement in responses to the questions on the amount of support from the closest person on both occasions with weighted kappa estimates between 0.43 and 0.68 (85,86).

The four categories of satisfaction with personal relationships were very satisfied, satisfied, neither satisfied nor dissatisfied, and dissatisfied or very dissatisfied.

Participants were classified into those who reported very little, slight, some and great or very great difficulty paying bills .

3.5.3 Health

Baseline health was assessed using self-reported measures. The questions included overall health status over the past 12 months (Q16), recurring health problems in the past 12 months (Q18), the presence of longstanding illness, disability or infirmity (Q17) and the number of psychiatric symptoms over the past few weeks (Q80-109).

Overall health status was classified into very good, good, average and poor/very poor.

The checklist of 13 recurring health problems was derived from the General Household Survey (87). The list was compiled from the most common conditions recorded in

earlier General Household Surveys and in studies of general practitioner consultations (88,89). The checklist does not give information on the prevalence or severity of health problems, but can be used to compare the extent of health problems within a study population.

The number of recurring health problems were classified into four categories - none, 1, 2 to 4 and more than 4.

The question on longstanding illness, disability or infirmity was also derived from the General Household Survey (87). This question gives no information on the type or severity of the illness or disability.

Participants were classified according to the presence or absence of a longstanding illness or disability.

The questions on recent psychiatric symptoms were based on the standard 30-item General Health Questionnaire (90,91). This is a validated questionnaire which has been used in population studies to identify individuals who are likely to have minor psychiatric disorders, such as depression or anxiety.

Participants who reported more than four psychiatric symptoms in the 'past few weeks' were classified as 'high scorers' and other participants were classified as 'low scorers'. This threshold between 'high scorers' and 'low scorers' was based on a validity study undertaken by Stephen Stansfeld.

3.5.4 Health-related behaviours

Health-related behaviours included current and past smoking habits (Q39a and Q40a), usual frequency of alcohol consumption in the past 12 months (Q43a), amount of alcohol consumed in the past 7 days (Q44a-d) and average number of hours of mild, moderate or vigorous physical activity per week (Q48d-f).

Participants were classified into current smokers, ex-smokers and non-smokers.

The questions on alcohol consumption were derived from the pilot study in the Department of Employment and the questionnaire used in a survey of drinking habits (54).

Usual frequency of alcohol consumption over the past twelve months was classified as

more than daily, daily, once or twice a week, once or twice a month and never.

The total amount of alcohol (wine, spirits and beer) consumed in the past seven days was measured in 'units' of alcohol. One unit of alcohol was equivalent to half a pint of beer or cider, or a single measure of spirits or a glass of wine. The amount of alcohol consumed in the past 7 days was classified into none, light (1-10 units for men; 1-6 units for women), social (11-15; 7-10), moderate (16-30; 11-20) and heavy (31 or more; 21 or more).

The questions on physical activity were derived from the Whitehall I Study which classified physical activity into 'mild', 'moderate' and 'vigorous' on the basis of energy utilisation (92). Participants who did at least an hour's vigorous activity per week (running, tennis, digging) were classified into the vigorous category, those who did at least an hour's moderate activity per week (cycling, decorating) were classified into the moderate category and those who did neither were classified into the mild category.

3.6 Assessment of the work environment

Two methods were used to assess the work environment, self-reports and external assessments. Both measures were related to sickness absence. Thus, the effects of individual differences in perception of the work environment and of the work environment itself were examined.

3.6.1 Self-reports of the work environment

The questions on the work environment included control (Q49i-j,Q50a-h), variety and skill use (Q49e-h,Q53a,Q53c), work pace (Q49a-d), conflicting demands (Q52a,Q53b), support at work (Q51,Q54,Q55), job clarity and feedback (Q52b-g), perceived job importance (Q53d-f) and job satisfaction (Q56).

Most of the questions were derived from questionnaires used in Britain, the United States or Sweden. Q49 was based on the standard Job Content Instrument which was derived from three national surveys in the United States - the Quality of Employment Surveys (93). The Job Content Questionnaire has been widely used by researchers in different occupational settings. Q50 to Q54 were developed in collaboration with Tores Theorell and many of the items were derived from questionnaires used in Swedish occupational studies. After the pilot study, minor changes were made to the wording of some questions and the response categories were changed to a consistent format.

The work indices used in the analysis were control, variety and skill use, work pace, conflicting demands, support at work, perceived job importance and job satisfaction. Each work index was calculated by adding the responses to the questions described below. The responses for questions marked with an asterisk were reversed. The score for each work index was classified using tertiles for the whole sample into high, medium and low levels.

i) Control

Do you have a choice in deciding HOW you do your work? (Q49i) *

Do you have a choice in deciding WHAT you do at work? (Q49j) *

Others take decisions concerning my work. (Q50a)

I have a great deal of say in decisions about work. (Q50b) *

My working time can be flexible. (Q50d) *

I can decide when to take a break. (Q50e) *

I have a say in choosing with whom I work. (Q50g) *

I have a great deal of say in planning my work environment. (Q50h) *

ii) Variety and skill use

Do you have to do the same thing over and over again? (Q49h)

Does your job provide you with a variety of interesting things? (Q53a) *

Is your job boring? (Q53c)

Do you have the possibility of learning new things through your work? (Q49e) *

Does your work demand a high level of skill or expertise? (Q49f) *

Does your job require you to take the initiative? (Q49g) *

iii) Work pace

Do you have to work very fast? (Q49a) *

Do you have to work very intensively? (Q49b) *

Do you have enough time to do everything? (Q49c)

iv) Conflicting demands

Do different groups at work demand things from you that you think are hard to combine?
(Q52a) *

Is your job too varied and split up? (Q53b) *

v) Support at work

How often do you get help and support from your colleagues? (Q54a) *

How often are your colleagues willing to listen to your work related problems? (Q54b) *

How often do you get help and support from your superiors? (Q54c) *

How often is your immediate superior willing to listen to your work related problems?
(Q54d) *

Do you get sufficient information from line management? (your superiors) (Q52b) *

Do you get consistent information from line management? (your superiors) (Q52c) *

vi) Perceived job importance

Do you consider your job very important? (Q53d) *

Do you feel your immediate superior considers your job very important? (Q53e) *

Do you feel your colleagues consider your job very important? (Q53f) *

vii) Job satisfaction

About your job in general. How satisfied have you been with the following:

- your usual take home pay (Q56a) *
- your career prospects (Q56b) *
- the people you work with (Q56c) *
- physical working conditions (Q56d) *
- the way your department is run (Q56e) *
- the way your abilities are used (Q56f) *
- the interest and skill involved in your job (Q56g) *
- your job as a whole taking everything into consideration (Q56 h)? *

Principal component analysis provided empirical support for the work indices and is described in detail in Appendix 3. The internal consistency of the work indices is also described in this appendix.

In a test re-test reliability study, 58 participants completed the work questionnaire again within six months of their baseline examination. Agreement between responses on the two occasions was examined using tertiles of the work indices. There was fair to moderate agreement with weighted kappa estimates between 0.30 and 0.44.

3.6.2 External assessments of the work environment

The external assessments were developed for this study. A relatively simple technique was used because external assessments were undertaken for the whole study population. Four aspects of the work environment were assessed by personnel managers in each department. These included control, work pace, conflicting demands and importance of mistakes. The selection of these work characteristics was based on findings from earlier studies and on discussions with senior civil servants in the pilot phase.

i) The external assessors

In 18 of the 20 departments personnel managers assessed participants' jobs. Personnel or grade managers recruited and supervised staff in jobs in certain grades. They were therefore familiar with a wide range of jobs, albeit less directly than line managers who provided daily supervision for a smaller number of jobs.

In one department staff inspectors, rather than personnel managers, assessed participants' jobs because they were more familiar with the large number of professional and technical jobs in the department.

The number of personnel managers who undertook the external assessments in each department varied considerably depending on the size and organisation of the department (Table 6). A total of 140 personnel managers were involved.

ii) Description of jobs

Jobs in each department were defined in terms of grade, division, and branch or section. Personnel managers assessed jobs without reference to the participants. When there were several participants in a job, one external assessment was obtained. Of the participants whose jobs were externally assessed, 50.5% were in jobs by themselves and 14.5% were in jobs with more than five participants (Table 7).

Table 6 - Number of jobs assessed by personnel managers in each department

Department	Number of jobs assessed ^a		Number of personnel managers ^b
	N	% of total	
1	-	-	-
2	267	4.6	1
3	499	8.7	1
4	196	3.4	10
5	680	11.8	19
6	125	2.2	2
7	209	3.6	1
8	522	9.1	21
9	151	2.6	1
10	131	2.3	1
11	84	1.5	1
12	-	-	-
13	184	3.2	1
14	405	7.0	10
15	158	2.7	1
16	116	2.0	1
17	201	3.5	1
18	195	3.4	1
19	1118	19.4	31
20	525	9.1	36
Total	5766	100.0	140

^a The total number of jobs was less than the number of participants who had an external assessment (N=8838) because some jobs had more than one participant

^b Number of personnel managers who assessed the jobs in each department

Table 7 - Number of participants in each externally assessed job

Number of participants per job	Number of participants	% of participants
1	4461	50.5
2	1472	16.7
3	819	9.3
4	496	5.6
5	305	3.5
6 or more	1285	14.5
Total	8838	100.0

iii) **The rating procedure**

Briefing sessions were held with personnel managers in each department. A standard rating form was used (Appendix 4). Personnel managers were asked to provide their personal view and to leave the rating form blank only if they were not at all familiar with the job. Personnel managers rated each job for work pace, conflicting demands, importance of mistakes and control. The response categories were similar to those used in the questionnaire, namely 'often, sometimes, seldom and almost never'.

iv) **Agreement between external assessments**

A random sample of 710 jobs were rated independently by two personnel managers. The majority of these external assessments (more than 90%) were within one response category of each other (Table 8). Compared with a maximum difference of three response categories, differences of one response category are relatively large. There was moderate agreement between the external assessments of the same jobs with weighted kappa estimates of between 0.49 and 0.57.

Table 8 - Difference between two external assessments of same jobs

	Difference between external assessments	Jobs number	Jobs %
Work pace			
	-3	0	0
	-2	13	1.8
	-1	162	22.8
	0	432	60.8
	1	100	14.1
	2	2	0.3
	3	1	0.1
Conflicting demands			
	-3	1	0.1
	-2	27	3.8
	-1	155	21.8
	0	394	55.5
	1	117	16.5
	2	16	2.3
	3	0	0
Importance of mistakes			
	-3	1	0.1
	-2	8	1.1
	-1	134	18.9
	0	432	60.8
	1	127	17.9
	2	7	1.0
	3	1	0.1
Control			
	-3	1	0.1
	-2	22	3.1
	-1	132	18.6
	0	404	56.9
	1	112	15.8
	2	36	5.1
	3	3	0.4

3.7 Sickness absence follow-up

3.7.1 Sick leave policy in the civil service

Employees were able to provide their own certificates for absences of seven days or less, but medical certificates were mandatory for longer absences. If employees were absent for more than 14 self-certified days a year or more than 90 days in total over two years, they were referred to the Occupational Health Service for assessment. All employees received full pay during a period of absence up to six months in any twelve months.

3.7.2 Sickness absence records

Computerised absence records were obtained annually from six pay centres. The records included dates of joining and leaving the pay roll, number of part-time hours where applicable, the first and last dates of all absences, type of certificate (self-completed or medical) and, where available, the reason for absence on the final certificate.

3.7.3 Reasons for sickness absence

In four of the six pay centres, a detailed four digit coding system developed by the civil service was used to record the reasons for absence. This coding system was then converted to the Royal College of General Practitioners Morbidity Coding System which is comparable to the International Classification of Diseases (94). The Morbidity Coding System was modified and the following categories were formed - gastroenteritis (previously coded as digestive disorders, infections or poisoning), headaches or migraines (previously coded as ill-defined or nervous system disorders), and depression, anxiety or nervous debility (previously coded as mental disorders or ill-defined disorders).

3.7.4 Accuracy of the sickness absence records

The absence records were used for pay purposes. All absences should therefore have been recorded. It is possible, however, that top administrators had absences which were not recorded. This is discussed further in Chapter 15.

The codes of reasons for absence were probably less accurate because they were not required for pay purposes and the coding was undertaken by clerical staff in the departments. To assess the accuracy of reasons for absence, further diagnostic information is to be obtained from general practitioners for spells of more than three weeks duration.

The sickness absence records were edited for inconsistencies. Overlapping, consecutive and duplicate spells of sickness absence were merged after taking account of weekends and public holidays. Overall, fewer than 1% of all spells were merged in this way. If maternity leave overlapped with a spell of sickness absence, the spells were merged and coded as maternity leave.

3.7.5 Consent for follow-up and linkage of sickness absence records

The baseline data for participants who gave consent were linked to sickness absence records using identity codes. Of participants who attended the screening examinations, 94% gave consent for follow-up (N=9,717) and data for most of these participants were linked to sickness absence records (90% of those screened, N=9,236).

The data on reasons for absence were incomplete from two of the four pay centres which used the four digit coding system. The analyses of reasons for sickness absence were therefore based on data from the two remaining pay centres. This included data for 6,699 (65%) of the participants.

3.7.6 Follow-up period

All participants, except those in Department 5, were followed from the date of their screening examination, between November 1985 and March 1988, until 31st December 1988. Participants in Department 5 were followed until 31st December 1987.

Participants who were lost to follow-up before these dates were followed until the date of leaving the pay roll.

Estimates based on less than six months follow-up were likely to be imprecise, particularly for long spells. For this reason, participants who were followed for less than six months were excluded from the analysis. Maternity leave was not included in the follow-up period.

The analysis of sickness absence was based on 85% of those screened (N=8,797). The follow-up period was measured in person months. Participants who left the civil service during a year were therefore included in the analyses. The mean follow-up was 20 months (range 6-26 months).

The analyses were based on all spells of sickness absence which began after the date of the baseline examination. Spells of sickness absence which continued into 1989 (or 1988

for Department 5) had the last date of absence set to 31st December 1988 (or 1987).

3.7.7 Loss to follow-up

After one year, 5% of those screened were lost to follow-up. In the seven departments (Departments 1-4, and 6-8) with two years of follow-up, 7% of those screened were lost to follow-up. In one large department specific enquiries were made about the reasons for loss to follow-up. Most participants had left the civil service for unspecified reasons.

In the long term, information on medical reasons for loss to follow-up will be available. Information on medical retirements is to be obtained from the Occupational Health Service and all participants are flagged at the National Health Service Central Registry for notification of deaths.

3.8 The outcome measures

Sickness absence was divided into short spells (7 days or less) and long spells (more than 7 days). The division into short and long spells at 7 days was based on the following rationale. First, the risk factors for spells of different duration may be different. Second, spells of more than 7 days were relatively uncommon and more likely to be associated with morbidity than shorter spells. Medical certificates were mandatory for all spells of more than 7 days.

Analyses were based on calendar rather than working days because the focus of this study was employees' health and well-being, rather than time lost. Weekends or public holidays within a spell of sickness absence were included in the duration of the spell. Maternity leave was not included in the analysis.

3.9 Statistical methods

3.9.1 Poisson regression

Crude and age- and grade-adjusted rates, rate ratios and 95% confidence intervals were calculated separately for men and women using Poisson regression (95).

It was assumed that for each participant the occurrence of short spells followed a Poisson distribution. This implies that the occurrence of a short spell did not alter the risk of further short spells.

As with short spells, it was assumed that the occurrence of long spells followed a Poisson distribution. However, the occurrence of long spells would almost certainly alter the risk of further long spells. The data were therefore censored at the start of the first long spell. This resulted in minimal loss of data because fewer than 2% of participants had more than one long spell during the follow-up period.

Poisson regression was performed using the statistical package, Generalised Linear Interactive Modelling (GLIM) (96,97). The error term was set as Poisson and the log of the person months at risk was declared as an offset.

The actual model was $\log(N) = \log(T) + A + B_1X_1 + \dots + B_pX_p$ where N was the number of events with Poisson error, T was the person months of follow-up and $X_1 \dots X_p$ were the explanatory variables.

All of the explanatory variables were categorical so no assumption of a linear relationship between the explanatory variables and outcome was made. Crude rates and 95% confidence intervals were estimated by entering each explanatory variable into a separate model. Age and grade were related to many of the explanatory variables and to the outcome. Consequently, age- and grade-adjusted rate ratios and 95% confidence intervals were also estimated. Multiplicative interactions were used to test specific hypotheses, for example the job strain concept.

3.9.2 Overdispersion

The Poisson model assumes that within the groups being compared the variation in the rates of sickness absence is fixed. However it is likely that rates of sickness absence vary between individuals.

There was considerable extra or residual variation in the rates of short spells which could not be explained by the Poisson assumption. This residual variation was largely unchanged when most of the explanatory variables were entered into the same model. This suggests that the residual variation represents variation in excess of the Poisson distribution, so called overdispersion.

Several papers have described iterative techniques for adjusting the precision of estimates for overdispersion (98,99). A simpler method is to adjust the estimates using the deviance divided by the degrees of freedom as a scale factor. This method was compared with the iterative techniques for several models and the results were similar. The simpler approach was therefore used for the remainder of the analyses.

3.9.3 Missing values

Individuals with incomplete data for particular explanatory variables were excluded from analyses involving these variables. Consequently, the number of individuals varied when different explanatory variables were considered. This method assumes that missing values occur randomly, which may not always be the case. For example, men in the lower grades may have fewer social supports and may also be more likely to omit these questions. Appendix 2 shows the proportion of missing values for the variables used. The variables with the highest proportion of missing values were those not included in earlier versions of the questionnaire. For these variables, it is reasonable to assume that the missing values had occurred at random. For the remaining variables, the proportion of missing values was small and therefore unlikely to have an important effect on the results.

3.9.4 Multiple comparisons

The effects of a number of explanatory variables were examined separately. By chance alone, a proportion of the effects will be statistically significant. Instead of adjusting the confidence intervals for the number of comparisons, all of the comparisons were presented whether or not they were statistically significant. The significance of the results needs to be interpreted accordingly.

3.10 Computing

Two computer systems were used during the course of the study. DbaseIII was used for data management on an IBM PC computer system. The statistical package, Statistical Analysis Systems (SAS) (100), was used for data manipulation on the university mainframe computer. The multivariate analyses were performed using GLIM (96). All other analyses were performed using SAS.

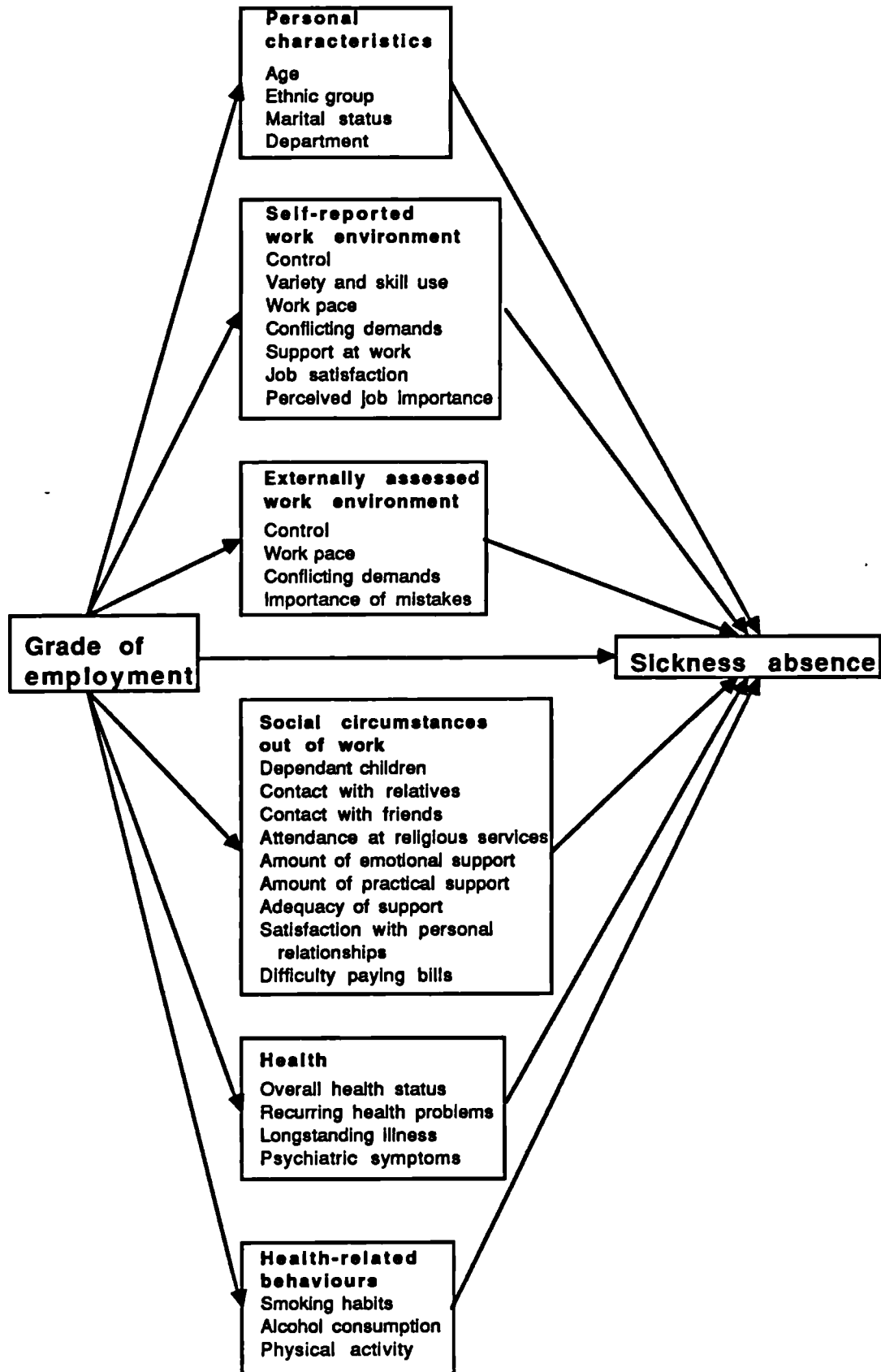
3.11 Presentation of results

The results for men and women are presented separately so that sex differences in the baseline variables and risk factors for sickness absence could be examined.

The results are presented in Chapters 4 to 14. In each chapter, the results are shown in the tables and summarised in the text. The tables are therefore an integral part of the results. Figure 2 illustrates how the relationship between grade, the other explanatory variables and sickness absence is examined. In Chapters 4 and 6 to 9 the personal characteristics,

work environment, social circumstances outside work, health and health-related behaviours of the study population are described. In Chapters 5 and 10 to 14 these factors were related to rates of sickness absence. These chapters use the same format. The results for short spells are followed by those for long spells. Unadjusted and age- and grade-adjusted rate ratios are presented in the tables. Crude rates for these analyses are presented in Appendix 5. Note that there are large differences in the rates of short and long spells which may be less apparent when comparing rate ratios. Age- and grade-adjusted rate ratios are usually described in the text unless the unadjusted rate ratios are particularly relevant. In Chapter 5 and Chapter 10 to 14 the error bars in the figures represents the upper limit of the 95% confidence interval.

Figure 2 - Relationship between explanatory variables and sickness absence



CHAPTER 4

Personal characteristics

In this chapter the personal characteristics of the study population are described. These include sex, age, current grade of employment, length of service, grade at entry into the civil service, ethnic group and marital status. Grade differences in several socioeconomic indicators (education, housing tenure and car ownership) are examined. For married participants, partner's employment and socioeconomic status are described. Finally, the social background of participants is described using father's socioeconomic status.

4.1 Sex

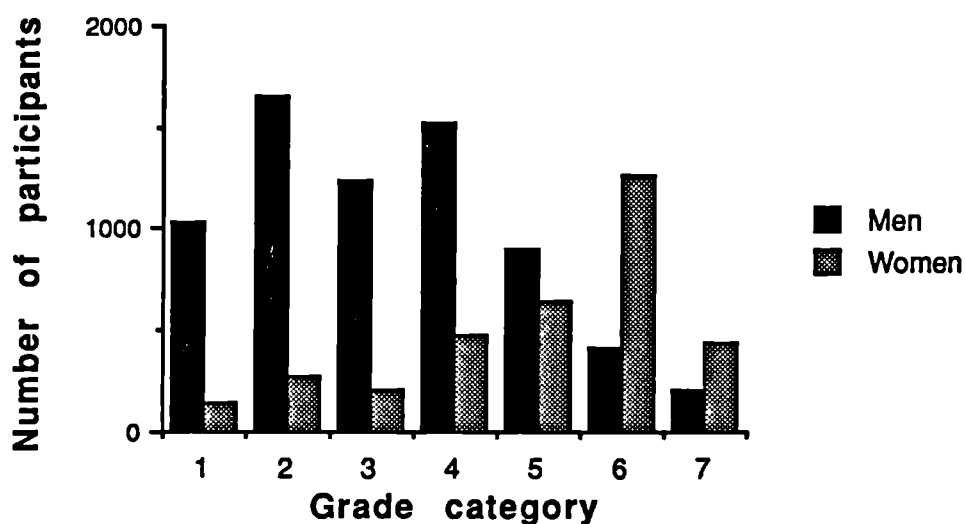
There were 10,314 participants, of whom 67% were men.

4.2 Grade of employment

A similar number of participants were in each grade category, except for office support grades (Group 7) in which there were fewer participants (Table 9).

There were striking differences in the grade distribution by sex (Figure 3). Most men (78%) were in top administrative and higher executive grades (Groups 1 to 4) and most women (69%) were in lower executive, clerical and office support grades (Groups 5 to 7).

Figure 3 - Grade distribution, by sex



4.3 Age

Civil servants aged between 35 and 55 were eligible for entry into the study. The mean age of participants was 44 years. Male top administrators (Group 1) and both men and women in office support grades (Group 7) were older (Table 10).

4.4 Length of service

The study population was very stable, with a mean length of service of 18.8 years for men and 15.1 years for women (Table 11).

The mean length of service for participants in clerical and office support grades (Groups 6 and 7) was approximately half that of participants in the higher grades. The mean length of service for female top administrators (Groups 1 and 2) was, on average, three to four years less than that of their male colleagues and of women in higher executive grades (Groups 3 and 4). Otherwise, the mean length of service was similar for men and women in the same grade categories.

4.5 Grade of employment at entry into the civil service

Most participants (82%) entered the civil service in lower executive, clerical or office support grades (Groups 5 to 7) (Table 12). About half of top administrators (Groups 1 and 2) entered the civil service in higher executive grades (Group 4 and above). More women than men in Group 1 had entered the civil service in these higher grades.

4.6 Ethnic group

Most participants were Caucasian (92% of men and 86% of women) and there were slightly more Asian participants than 'other' ethnic groups (Table 13). 'Other' ethnic groups consisted of Afro-Caribbeans (81%) and a small proportion of Chinese (7%).

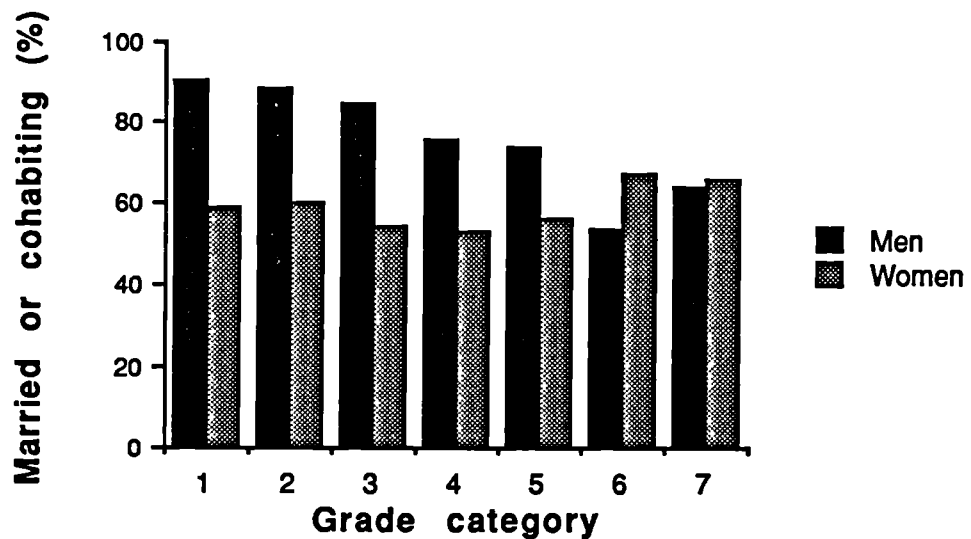
Participants in Asian and 'other' ethnic groups were predominantly in lower executive and clerical grades (Groups 5 and 6), and almost all participants in the higher grades (Groups 1 to 4) were Caucasian.

4.7 Marital status

There were striking differences in marital status by grade and sex (Figure 4 and Table 14).

Most men in the higher grades (Groups 1 to 4) were married or cohabiting. The proportion of married men steadily decreased from 91% of top administrators to 64% of office support staff. In contrast, only 60% of women were married and there were minimal grade differences. Of those who were not married, approximately two thirds were single and one third were divorced or separated. A higher proportion of clerical and office support staff were divorced or separated.

Figure 4 - Marital status, by grade and sex



4.8 Socioeconomic indicators

4.8.1 Education

More than half of the participants only had primary or secondary education (Table 15) and 38% had more than 13 years of full-time education (Table 16).

There were large grade differences in education (Figure 5). Almost 90% of participants in office support grades (Group 7) had 11 years or less of full-time education. There was a stepwise increase in the proportion of participants with university or polytechnic education from office support staff (4%) to top administrators (68%). However even in top administrative grades, 28% of men had 13 years or less of full-time education. Women in top administrative and higher executive grades (Groups 1 to 4) had a higher level of education than men in equivalent grades.

It is of interest that men in clerical grades (Group 6) had more education than those in lower executive grades (Group 5). Participants in Asian and 'other' ethnic groups in these grades had strikingly more education than their Caucasian colleagues (Figure 6, Table 17).

4.8.2 Housing tenure

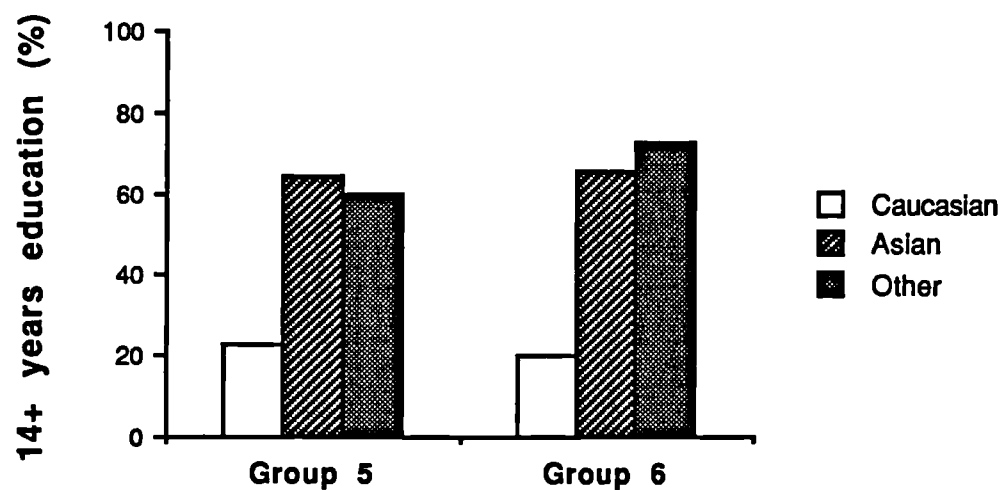
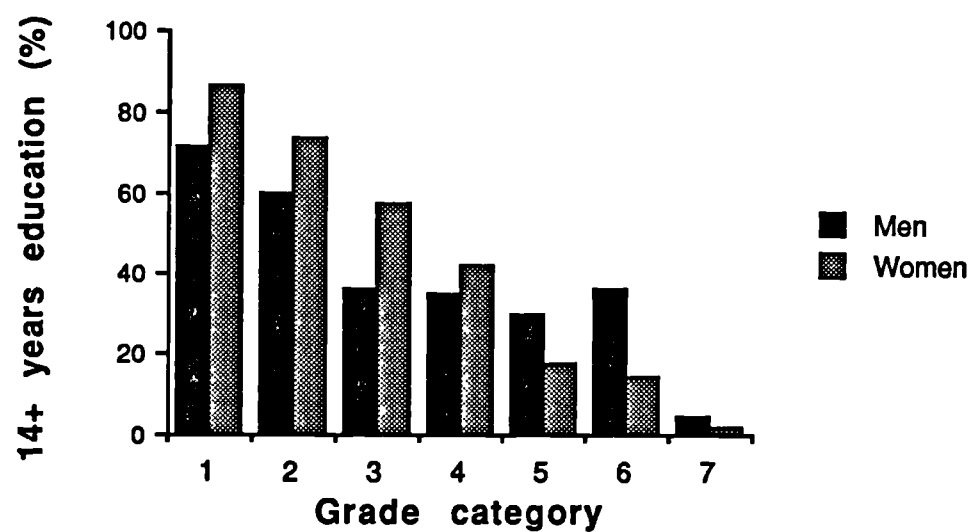
Most participants were owner occupiers (93% of men and 79% of women) (Table 18). Even in clerical and office grades (Groups 6 and 7) approximately half of the participants were owner occupiers. Approximately two thirds of the remainder were in privately rented accommodation and one third were in local authority accommodation. Male clerical staff were more likely than any other group to be in local authority accommodation. In most grade categories, there were minimal sex differences in housing tenure.

4.8.3 Car ownership

Most participants had access to a car (86% of men and 73% of women) (Table 19). The proportion with access to a car steadily decreased from over 90% of top administrators to approximately 60% of clerical and office support staff. In all grade categories except clerical and office support grades, women were less likely to have access to a car than men.

Figure 5 - Years of full-time education, by grade and sex

Figure 6 - Years of full-time education, by ethnic group for men in Groups 5 and 6



4.9 Partners' employment and socioeconomic status

The majority of married participants had partners who were in paid employment (71% of men and 91% of women) (Table 20). Most men had partners in other non-manual occupations (70%) and this did not differ by grade (Table 21). In contrast, there were large grade differences in partner's socioeconomic status for women. In the higher grades (Groups 1 to 4) more than 60% of women had partners in professional or managerial occupations, whereas in clerical and office support grades (Groups 6 and 7) approximately half of the women had partners in manual occupations.

4.10 Father's socioeconomic status

There were striking grade differences in the social background of both men and women (Table 22). Participants in the higher grades (Groups 1 to 4) were more likely to have fathers who were in professional or managerial occupations and participants in the lower grades (Groups 5 to 7) were more likely to have fathers in manual occupations. Compared to men, women in top administrative and higher executive grades (Groups 1 to 4) were more likely to have fathers in professional or managerial occupations.

Table 9 - Grade distribution, by sex

	Grade category							Total number
	1	2	3	4	5	6	7	
Sex								
Men %	14.9	23.6	17.8	21.7	12.8	6.1	3.2	6900
Women %	3.6	7.7	5.8	14.1	19.3	36.9	12.6	3414
Total %	11.1	18.3	13.8	19.2	14.9	16.3	6.3	10314

Table 10 - Age, by grade and sex

Men

	Grade category							Total %
	1	2	3	4	5	6	7	
Age group								
35-39 years %	12.0	25.6	31.5	40.0	34.4	29.5	28.5	29.2
40-44 years %	23.9	30.9	30.0	26.7	25.5	22.6	18.1	27.2
45-49 years %	25.0	21.6	16.9	15.4	18.3	21.6	19.0	19.4
50-55 years %	39.2	21.8	21.6	17.9	21.8	26.4	34.4	24.2
Total number	1026	1627	1228	1496	881	421	221	6900

Women

	Grade category							Total %
	1	2	3	4	5	6	7	
Age group								
35-39 years %	26.2	34.5	39.4	38.1	23.2	16.5	11.9	23.3
40-44 years %	32.0	28.8	31.3	26.2	20.9	22.8	14.7	23.2
45-49 years %	18.0	19.7	18.2	15.2	23.8	25.2	25.8	22.5
50-55 years %	23.8	17.0	11.1	20.4	32.1	35.6	47.7	31.0
Total number	122	264	198	480	660	1260	430	3414

Table 11 - Length of service, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Years of service								
Mean	20.9	19.7	20.0	19.5	17.8	12.5	8.3	18.8
Standard deviation	8.2	8.1	8.4	7.5	7.5	7.6	6.5	8.3
Total number	1019	1623	1222	1489	878	419	215	6865

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Years of service								
Mean	16.0	16.9	19.5	19.0	17.8	13.1	9.0	15.1
Standard deviation	7.7	7.3	6.8	7.6	8.7	7.8	5.8	8.3
Total number	121	264	197	477	650	1245	417	3371

Table 12 - Grade at entry into the civil service, by current grade and sex

Men

	Current grade category						Total %
	1	2	3	4	5	6/7	
Grade category at entry							
1-4 %	60.5	40.9	20.9	7.5	0.5	0	24.1
5 %	26.7	33.1	36.2	35.5	23.6	1.3	29.0
6/7 %	12.8	26.0	42.9	57.0	75.9	98.7	46.9
Total number	999	1590	1191	1471	848	631	6730

Women

	Current grade category						Total %
	1	2	3	4	5	6/7	
Grade category at entry							
1-4	74.3	40.2	12.1	4.9	0.3	0	7.2
5	17.4	40.6	50.3	29.1	9.5	0.3	12.8
6/7	8.3	19.2	37.6	66.0	90.2	99.7	80.0
Total number	121	261	197	474	654	1663	3370

Table 13 - Ethnic group, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Ethnic group								
Caucasian %	98.9	98.7	97.0	93.2	80.4	63.0	83.2	92.2
Asian %	0.8	1.0	2.6	4.0	14.0	27.1	4.5	5.3
Other %	0.3	0.3	0.4	2.7	5.6	9.9	12.3	2.5
Total number	958	1544	1159	1422	840	395	220	6538

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Ethnic group								
Caucasian %	95.6	98.4	97.8	95.9	89.6	75.5	85.1	86.1
Asian %	0.9	1.2	0.5	2.0	6.0	12.9	2.7	6.7
Other %	3.5	0.4	1.6	2.0	4.4	11.6	12.1	7.2
Total number	113	244	183	444	614	1172	404	3174

Table 14 - Marital status, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Marital status								
Married %	90.5	88.3	84.4	75.8	73.4	53.8	64.1	80.5
Single %	5.7	7.3	10.4	18.1	20.0	36.8	24.1	13.9
Divorced %	3.2	4.1	4.8	5.8	5.9	8.9	9.5	5.2
Widowed %	0.6	0.2	0.5	0.3	0.7	0.5	2.3	0.5
Total number	1024	1625	1227	1490	876	418	220	6880

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Marital status								
Married %	59.0	60.1	54.0	52.7	56.1	67.2	65.8	61.2
Single %	26.2	27.8	37.4	30.0	28.2	13.8	12.5	21.6
Divorced %	11.5	11.4	7.6	15.2	13.4	14.8	17.0	14.1
Widowed %	3.3	0.8	1.0	2.1	2.3	4.2	4.7	3.1
Total number	122	263	198	480	656	1253	424	3396

Table 15 - Highest level of full-time education, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Highest education								
Primary/secondary %	25.2	37.0	55.0	58.0	63.2	53.7	88.3	49.8
Univ/polytech %	67.1	56.7	31.4	27.7	21.6	28.9	4.6	38.7
Other %	7.7	6.3	13.6	14.3	15.2	17.4	7.1	11.5
Total number	717	1152	973	1119	685	322	196	5164

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Highest education								
Primary/secondary %	10.6	19.4	35.0	46.0	59.3	68.3	91.5	59.9
Univ/polytech %	80.3	72.9	49.3	34.7	15.7	11.4	2.8	22.2
Other %	9.1	7.7	15.7	19.4	25.0	20.4	5.6	17.9
Total number	66	155	140	346	492	958	319	2476

Table 16 - Years of full-time education, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Years of education								
0 - 11 years %	11.4	15.9	31.3	28.9	41.1	39.3	84.0	28.4
12 - 13 years %	16.7	23.9	32.4	36.2	28.9	24.8	11.3	27.4
14 + years %	71.8	60.2	36.2	34.9	30.0	35.9	4.6	44.2
Total number	717	1153	974	1120	689	326	194	5173

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Years of education								
0 - 11 years %	7.7	3.9	8.6	27.7	50.1	62.5	90.1	50.7
12 - 13 years %	6.2	22.6	34.3	30.3	32.7	23.4	7.8	24.3
14 + years %	86.2	73.5	57.1	41.9	17.2	14.1	2.2	25.0
Total number	65	155	140	346	499	976	322	2503

Table 17 - Years of full-time education, by ethnic group and sex (Groups 5 and 6)

Men

	Group 5			Group 6		
	Cauc.	Asian	Other	Cauc.	Asian	Other
Years of education						
0 - 11 years %	47.2	13.2	14.3	52.6	14.3	7.7
12 - 13 years %	30.2	22.0	25.7	27.4	20.2	19.2
14 + years %	22.6	64.8	60.0	20.0	65.5	73.1
Total number	563	91	35	215	84	26

Women

	Group 5			Group 6		
	Cauc.	Asian	Other	Cauc.	Asian	Other
Years of education						
0 - 11 years %	52.6	17.9	35.3	74.6	15.2	33.0
12 - 13 years %	33.5	17.9	35.3	20.3	25.6	42.7
14 + years %	13.9	64.3	29.4	5.1	59.2	24.3
Total number	454	28	17	747	125	103

Table 18 - Housing tenure, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Housing tenure								
Owner occupier %	98.6	98.5	98.2	94.1	88.9	65.4	47.9	92.7
Private rental %	0.2	0.4	0.3	1.9	5.7	15.7	36.4	3.4
Local authority %	1.2	1.1	1.5	4.0	5.4	18.9	15.7	3.9
Total number	1021	1624	1223	1484	874	413	217	6856

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Housing tenure								
Owner occupier %	96.6	98.1	94.4	95.4	81.8	72.7	46.7	78.5
Private rental %	1.7	0.4	0.5	1.9	8.9	18.0	45.5	14.5
Local authority %	1.7	1.5	5.1	2.7	9.3	9.3	7.8	7.1
Total number	118	263	196	475	653	1247	424	3376

Table 19 - Car ownership, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Car ownership								
Yes %	97.6	93.5	91.5	82.3	75.0	54.2	58.7	85.5
No %	2.4	6.5	8.5	17.7	25.0	45.8	41.3	14.5
Total number	1023	1625	1226	1495	881	413	218	6881

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Car ownership								
Yes %	90.1	86.7	76.1	75.3	70.8	72.2	60.6	72.9
No %	9.9	13.3	23.9	24.7	29.2	27.8	39.4	27.1
Total number	121	264	197	478	658	1250	424	3392

Table 20 - Partner's employment status, by grade and sex

Men

	Grade category							Total %
	1	2	3	4	5	6	7	
Partner's employment status								
Employed %	66.8	68.8	72.7	73.0	74.0	76.0	70.8	71.1
Seeking work %	0.3	0.3	1.0	0.9	1.9	3.5	1.5	0.9
Not working %	2.0	2.6	1.9	2.0	5.2	2.3	3.8	2.6
Domestic work %	30.9	28.2	24.4	24.0	18.8	18.1	23.8	25.3
Total number	653	1024	833	849	516	171	130	4176

Women

	Grade category							Total %
	1	2	3	4	5	6	7	
Partner's employment status								
Employed %	82.5	95.7	90.1	92.4	90.0	90.9	88.2	90.6
Seeking work %	5.0	1.1	2.5	1.1	1.4	1.8	3.8	2.0
Not working %	10.0	2.2	4.9	6.5	7.9	6.7	7.5	6.7
Domestic work %	2.5	1.1	2.5	0	0.7	0.6	0.5	0.7
Total number	40	93	81	184	291	656	212	1557

Table 21 - Partner's socioeconomic status, by grade and sex

Men

	Grade category							Total %
	1	2	3	4	5	6	7	
Partner's socioeconomic status								
Professional %	8.6	5.9	3.5	2.3	3.6	3.2	0	4.5
Employers/managers %	18.0	15.2	12.3	12.7	8.7	12.8	1.2	13.2
Other non-manual %	65.0	71.5	72.3	72.1	69.9	69.6	62.8	70.3
Skilled manual %	3.5	1.9	3.0	2.8	4.4	2.4	5.8	3.0
Semi-skilled manual %	4.7	4.7	7.9	9.2	11.2	11.2	18.6	7.8
Unskilled manual %	0.2	0.9	0.8	1.0	2.2	0.8	11.6	1.3
Total number	428	698	592	612	366	125	86	2907

Women

	Grade category							Total %
	1	2	3	4	5	6	7	
Partner's socioeconomic status								
Professional %	19.4	26.7	25.7	15.3	11.6	8.0	2.9	11.3
Employers/managers %	54.8	59.3	45.7	42.9	31.5	20.2	6.4	27.9
Other non-manual %	16.1	11.6	24.3	35.6	29.9	27.3	15.6	25.8
Skilled manual %	9.7	1.2	4.3	5.5	19.1	34.3	43.9	24.9
Semi-skilled manual %	0	1.2	0	0	6.0	8.3	25.4	8.0
Unskilled manual %	0	0	0	0.6	2.0	1.9	5.8	2.0
Total number	31	86	70	163	251	565	173	1339

Table 22 - Father's socioeconomic status, by grade and sex

Men

	Grade category							Total %
	1	2	3	4	5	6	7	
Father's socioeconomic status								
Professional %	12.5	10.1	8.0	9.9	6.7	9.5	1.8	9.2
Employers/managers %	34.6	28.8	26.2	23.0	20.3	25.5	11.6	26.0
Other non-manual %	22.7	25.1	22.3	24.8	27.5	24.5	14.0	24.0
Skilled manual %	23.8	28.1	32.2	30.6	34.0	28.6	49.4	30.3
Semi-skilled manual %	4.3	6.3	8.3	7.7	8.1	7.1	14.6	7.3
Unskilled manual %	2.1	1.6	3.1	4.1	3.1	4.8	8.5	3.1
Total number	656	1072	902	1004	615	294	164	4707

Women

	Grade category							Total %
	1	2	3	4	5	6	7	
Father's socioeconomic status								
Professional %	29.5	17.3	13.2	13.6	8.3	4.6	0.4	8.2
Employers/managers %	31.1	46.0	34.1	25.6	20.3	19.5	9.1	22.3
Other non-manual %	23.0	18.7	20.2	25.2	18.0	17.7	10.4	18.4
Skilled manual %	14.8	16.5	24.8	27.2	38.7	42.1	48.5	36.5
Semi-skilled manual %	1.6	1.4	6.2	5.5	9.2	9.9	17.0	8.9
Unskilled manual %	0	0	1.6	2.9	5.5	6.3	14.5	5.7
Total number	61	139	129	309	434	827	241	2140

4.11 Discussion

The study population consisted of middle-aged adults in managerial, executive and clerical occupations in the London area. The mean length of service was long, suggesting good job security. Top administrators were predominantly male, whereas clerical and office support staff were predominantly female.

The civil service has a clearly defined career structure for administrative grades. 'Fast-stream' entrants are university graduates who are recruited into special posts equivalent to higher executive officers (Group 4) and are promoted to top administrative grades within five years. 'Main-stream' entrants have either university, polytechnic or A-level education, enter at a similar level but are promoted more slowly. Despite this policy, almost half of top administrators in this study were promoted from lower grades and therefore did not follow these career paths.

Female top administrators were, on average, younger, had higher education and had entered the civil service more recently and at higher grades than their male colleagues. This suggests that they were more likely to have been 'fast-stream' entrants. Their social background was also different. They were more likely to be single and to have fathers in professional or managerial occupations.

The personal and social characteristics of clerical and office support staff was quite different from those in the higher grades. Women in these grades were older, more likely to be married, had less education and had entered the civil service at an older age than their male colleagues.

A surprisingly high proportion of female participants were single. Compared with national figures for this age group, female participants were less likely to be married (61% compared to 82% from the national figures) and more likely to be single (22% compared to 6%) or divorced (14% compared to 10%) (101). In contrast, the marital status of male participants was similar to the national figures. However, national figures included women who were not in paid employment.

Female participants were also less likely to be married and more likely to be single or divorced than employed women with similar socioeconomic status in a national survey, the Labour Force Survey (LFS) (102). For example, 55% of women in the higher grades (Groups 1 to 4) were married, 30% were single and 12% were divorced compared to 80%, 8% and 8% of women in employer/managerial occupations in the LFS. Similar

differences were observed for women in lower executive and clerical grades.

The study population differs from several national samples in terms of a number of socioeconomic indicators. Men in the higher grades had more education than men aged between 25 and 69 in employer/managerial occupations in the General Household Survey (GHS) (45% had no tertiary education compared to 75% in the GHS) (103). Men in the lower executive and clerical grades had a similar level of education to men in other non-manual occupations (60% had no tertiary education compared to 66% in the GHS).

Housing tenure for men in this study was similar to men in the same age group with similar socioeconomic status in the Labour Force Survey (102). However female participants in the higher grades were more likely to be owner occupiers than women in employer/managerial occupations (96% compared to 86% in the LFS) and female participants in the lower executive and clerical grades were less likely to be owner occupiers than women in other non-manual occupations (76% compared to 86% in the LFS).

Fewer male participants in lower executive and clerical grades had access to a car than heads of household in other non-manual occupations in the General Household Survey (32% did not have access to a car compared to 23% in the GHS) (104). A similar proportion of male participants in the higher grades had access to a car to those with similar occupational status in the GHS.

More Asian participants were in lower executive and clerical grades than Caucasian participants, despite higher levels of education. Language or cultural difficulties could account for these differences. However Asian participants in these grades had, on average, worked in the civil service for more than 10 years. It is also possible that the qualifications of Asian participants had been obtained in other countries and were not comparable to British qualifications.

Asian participants in this study were more likely to be in the lower grades compared to Asian employees in the Labour Force Survey (102). Men aged 35-54 years in employer/managerial and other non-manual occupations in the LFS were compared with male participants in the higher grades (Groups 1 to 4) and male participants in lower executive and clerical grades (Groups 5 and 6) respectively. In this subsample of the LFS, there were minimal differences in the proportion of Caucasian and Asian men in other non-manual occupations (37% of Caucasian men were in other non-manual occupations compared to 40% of Asian men). In contrast in the present study, 16% of Caucasian men were in the lower executive and clerical grades, compared to 48% of

Asian men. Note that men in office support grades are not included in this comparison because there was no comparable occupational group in the LFS. It is possible that Asians in the civil service are recruited on different criteria or discriminated against for promotion.

CHAPTER 5

Personal characteristics and sickness absence

In this chapter differences in sickness absence by grade, age, ethnic group and department are described. Note that although rate ratios are presented, there were 10-fold differences in the rates of short and long spells. The analyses were based on 23,026 short spells and 2,650 long spells of sickness absence. Appendix 6 shows the distribution of short and long spells by age and grade.

I. Short spells of sickness absence

5.1 Grade and short spells

There was a striking stepwise increase in the rates of short spells of sickness absence from top administrative (Group 1) to clerical grades (Group 6) (Figure 7, Table 23). Male clerical staff had 6.6 times higher rates of short spells than male top administrators. The equivalent difference was 3.1 for women. This stepwise increase did not apply to office support staff (Group 7) who had lower rates of short spells than clerical staff.

Women had higher rates of short spells than men, particularly in the higher grades (Groups 1 to 4).

5.2 Age and short spells

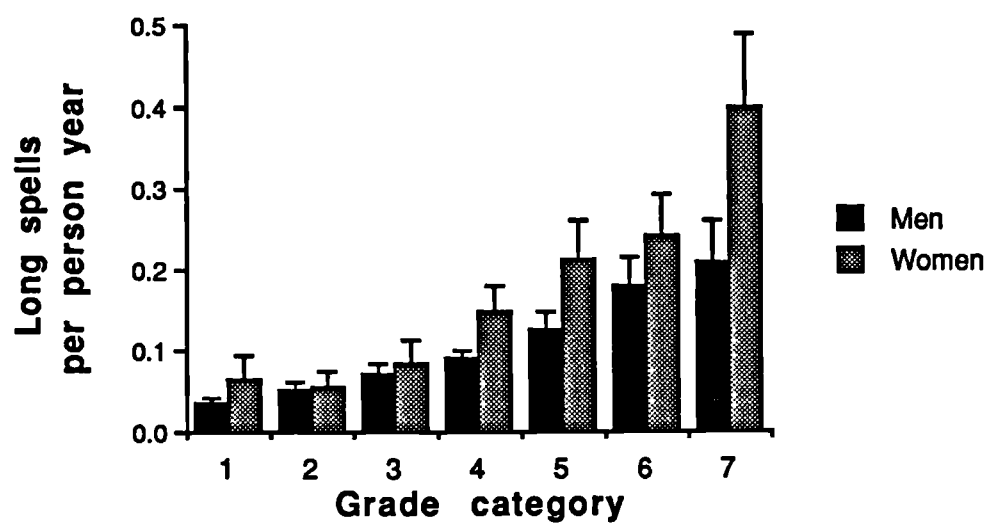
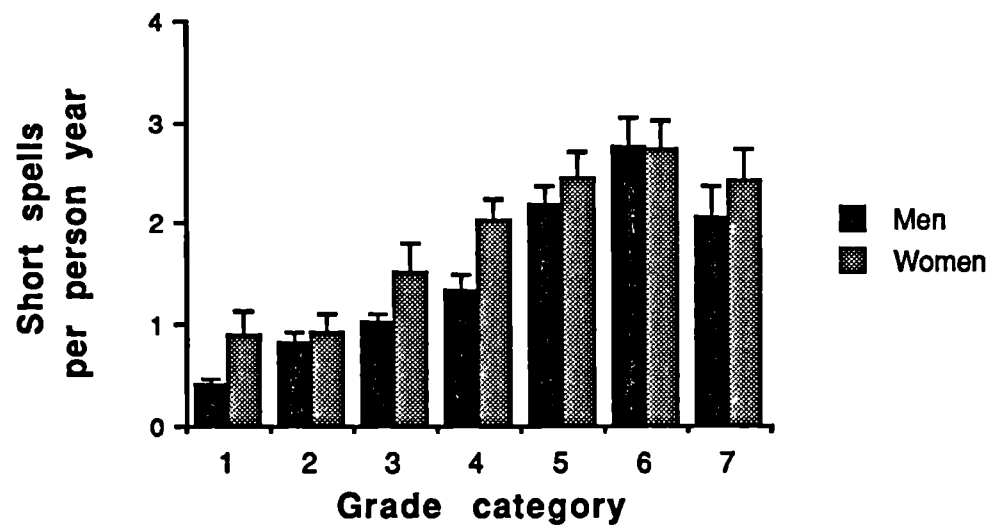
There were minimal age differences in rates of short spells, after adjusting for grade (Table 24). The only age group with lower rates of short spells was women aged between 50 and 55.

5.3 Ethnic group and short spells

Asians had 1.3 times higher rates of short spells than Caucasians, after adjusting for age and grade (Figure 8, Table 25). Women in 'other' ethnic groups also had higher rates of short spells than Caucasian women.

Figure 7 - Grade and short spells, age-adjusted rates by sex

Figure 9 - Grade and long spells, age-adjusted rates by sex



5.4 Marital status and short spells

Divorced, separated or widowed men had slightly higher rates of short spells than married or single men, after adjusting for age and grade (Table 26). There were minimal differences in the rates of short spells by marital status for women.

5.5 Departmental differences in short spells

This analysis was based on eight large departments which represented 73% of participants. Men and women in two departments (Departments 5 and 20) had lower rates of short spells, after adjusting for age and grade (Table 27).

II. Long spells of sickness absence

5.6 Grade and long spells

There were striking grade differences in the rates of long spells (Figure 9, Table 28). These grade differences were similar in magnitude to the differences for short spells, except that office support staff had higher rates of long spells than clerical staff.

Women had higher rates of long spells than men, particularly in the lower grades (Groups 5 to 7).

5.7 Age and long spells

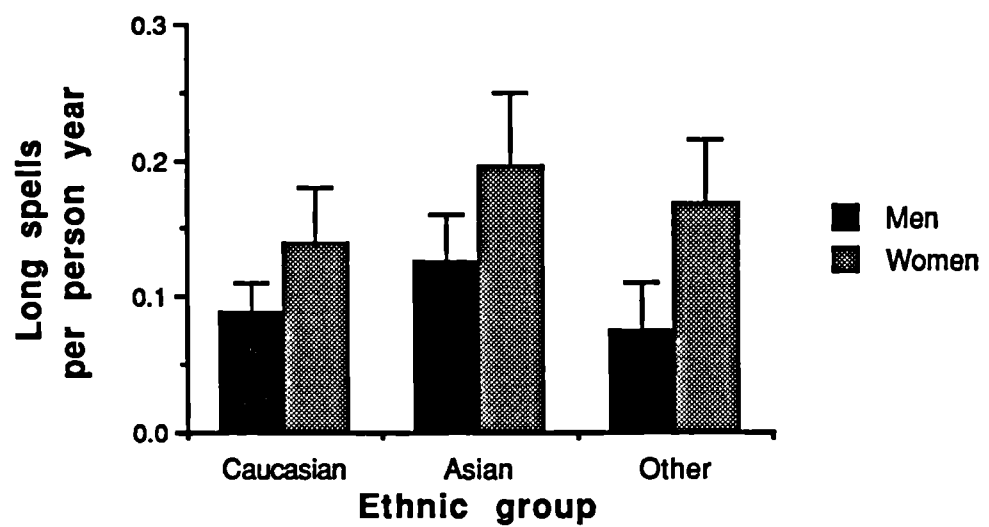
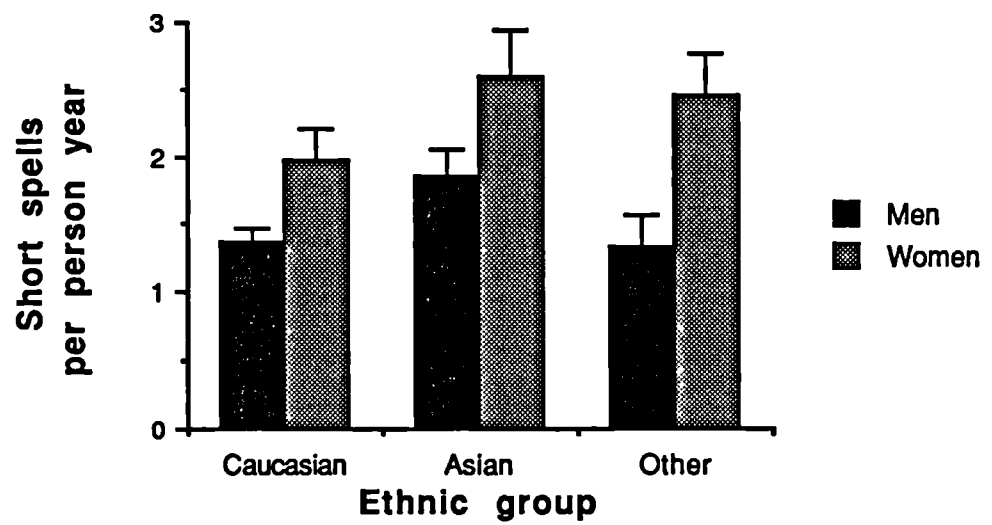
Older participants had higher rates of long spells, after adjusting for grade (Table 29). Men aged between 50 and 55 had 1.5 times higher rates of spells than men aged between 35 and 39. The differences were similar, but less marked, for women.

5.8 Ethnic groups and long spells

Asians had 1.4 times higher rates of long spells than Caucasians, after adjusting for age and grade (Figure 10, Table 30). Women in 'other' ethnic groups also had higher rates of long spells than Caucasian women, although this difference was no longer significant after adjusting for age and grade. These findings were similar to the ethnic differences for short spells.

Figure 8 - Ethnic group and short spells, age-adjusted rates by sex

Figure 10 - Ethnic group and long spells, age-adjusted rates by sex



5.9 Marital status and long spells

There was a tendency for divorced or widowed women to have higher rates of long spells than those who were married, after adjusting for age and grade (Table 31). For men, there were no differences in rates of long spells by marital status.

5.10 Departmental differences in long spells

Participants in the two departments (Departments 5 and 20) which had lower rates of short spells, also tended to have lower rates of long spells. However these differences were not significant, after adjusting for age and grade (Table 32).

Table 23 - Grade and short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years)

Grade category	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
----------------	--	--

Men (N=6037)

1	0.31 (0.27 - 0.36)	0.31 (0.27 - 0.35)
2	0.62 (0.57 - 0.68)	0.62 (0.57 - 0.68)
3	0.76 (0.70 - 0.84)	0.76 (0.70 - 0.83)
4	1.00 ^a	1.00 ^b
5	1.63 (1.50 - 1.76)	1.62 (1.50 - 1.76)
6	2.05 (1.86 - 2.26)	2.04 (1.85 - 2.25)
7	1.53 (1.33 - 1.75)	1.52 (1.33 - 1.75)

Base rate - spells per person year (95% confidence interval)

^a 1.38 (1.31 - 1.46)

^b 1.35 (1.27 - 1.45)

Women (N=2760)

1	0.43 (0.32 - 0.59)	0.44 (0.32 - 0.59)
2	0.47 (0.38 - 0.58)	0.46 (0.38 - 0.57)
3	0.76 (0.63 - 0.92)	0.75 (0.62 - 0.91)
4	1.00 ^c	1.00 ^d
5	1.18 (1.04 - 1.33)	1.20 (1.07 - 1.36)
6	1.29 (1.16 - 1.44)	1.34 (1.20 - 1.49)
7	1.12 (0.98 - 1.28)	1.19 (1.04 - 1.36)

Base rate - spells per person year (95% confidence interval)

^c 1.93 (1.75 - 2.12)

^d 2.04 (1.83 - 2.28)

**Table 24 - Age and short spells - unadjusted rate ratios and
rate ratios adjusted for grade (Group 4)**

Age group	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
-----------	--	--

Men (N=6037)

35-39 years	1.00 ^a	1.00 ^b
40-40 years	0.93 (0.86 - 1.01)	1.04 (0.97 - 1.12)
45-49 years	0.94 (0.86 - 1.02)	1.04 (0.96 - 1.13)
50-55 years	0.90 (0.83 - 0.97)	1.03 (0.95 - 1.11)

Base rate - spells per person year (95% confidence interval)

^a 1.34 (1.27 - 1.42)

^b 1.35 (1.27 - 1.45)

Women (N=2760)

35-39 years	1.00 ^c	1.00 ^d
40-40 years	1.02 (0.92 - 1.14)	0.97 (0.87 - 1.07)
45-49 years	1.06 (0.95 - 1.17)	0.94 (0.85 - 1.04)
50-55 years	0.95 (0.86 - 1.05)	0.83 (0.75 - 0.91)

Base rate - spells per person year (95% confidence interval)

^c 2.08 (1.93 - 2.25)

^d 2.04 (1.83 - 2.28)

**Table 25 - Ethnic group and short spells - unadjusted rate ratios and
rate ratios adjusted for age (35-39 years) and grade (Group 4)**

Grade category	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N=5760)

Caucasian	1.00 ^a	1.00 ^b
Asian	2.21 (2.00 - 2.43)	1.36 (1.23 - 1.50)
Other	1.63 (1.39 - 1.91)	0.98 (0.84 - 1.14)

Base rate - spells per person year (95% confidence interval)

^a 1.18 (1.15 - 1.22)	^b 1.37 (1.28 - 1.47)
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Women (N=2603)

Caucasian	1.00 ^c	1.00 ^d
Asian	1.55 (1.37 - 1.75)	1.32 (1.17 - 1.49)
Other	1.43 (1.26 - 1.62)	1.25 (1.10 - 1.41)

Base rate - spells per person year (95% confidence interval)

^c 1.93 (1.85 - 2.01)	^d 1.97 (1.76 - 2.21)
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Table 26 - Marital status and short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Marital status	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N= 6020)

Married	1.00 ^a	1.00 ^b
Single	1.34 (1.23 - 1.45)	0.96 (0.89 - 1.04)
Divorced/widowed	1.40 (1.24 - 1.57)	1.14 (1.03 - 1.27)

Base rate - spells per person year (95% confidence interval)

^a 1.19 (1.15 - 1.23)

^b 1.35 (1.26 - 1.45)

Women (N=2743)

Married	1.00 ^c	1.00 ^d
Single	0.93 (0.85 - 1.02)	1.00 (0.92 - 1.10)
Divorced/widowed	1.05 (0.95 - 1.16)	1.05 (0.96 - 1.16)

Base rate - spells per person year (95% confidence interval)

^c 2.10 (2.10 - 2.20)

^d 2.02 (1.81 - 2.27)

Table 27 - Departmental differences in short spells - rate ratios adjusted for age (35-39 years) and grade (Group 4)

Adjusted rate ratio (95% confidence interval)		
	<u>Men</u> (N=4685)	<u>Women</u> (N=1840)
Department		
2	1.12 (1.00 - 1.26)	1.15 (0.98 - 1.34)
3	1.00 (0.89 - 1.11)	0.99 (0.86 - 1.14)
4	1.07 (0.94 - 1.21)	0.88 (0.72 - 1.09)
5	0.67 (0.58 - 0.77)	0.71 (0.60 - 0.83)
8	1.09 (0.98 - 1.21)	1.16 (1.00 - 1.34)
14	1.05 (0.90 - 1.22)	1.10 (0.92 - 1.32)
19	1.00 ^a	1.00 ^b
20	0.75 (0.64 - 0.88)	0.87 (0.71 - 1.06)
Base rate - spells per person year (95% confidence interval)		
	^a 1.36 (1.13 - 1.51)	^b 2.21 (1.88 - 2.60)

Table 28 - Grade and long spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years)

Grade category	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
Men (N=6037)		
1	0.42 (0.32 - 0.56)	0.38 (0.29 - 0.51)
2	0.59 (0.48 - 0.73)	0.57 (0.46 - 0.71)
3	0.79 (0.64 - 0.98)	0.78 (0.63 - 0.96)
4	1.00 ^a	1.00 ^b
5	1.42 (1.16 - 1.74)	1.40 (1.14 - 1.71)
6	2.06 (1.63 - 2.62)	1.99 (1.57 - 2.53)
7	2.49 (1.88 - 3.30)	2.34 (1.76 - 3.10)
Base rate - spells per person year (95% confidence interval)		
	^a 0.11 (0.09 - 0.12)	^b 0.09 (0.08 - 0.11)
Women (N=2760)		
1	0.44 (0.23 - 0.81)	0.43 (0.23 - 0.80)
2	0.36 (0.23 - 0.58)	0.36 (0.23 - 0.58)
3	0.54 (0.34 - 0.85)	0.55 (0.35 - 0.86)
4	1.00 ^c	1.00 ^d
5	1.48 (1.15 - 1.90)	1.43 (1.11 - 1.84)
6	1.71 (1.36 - 2.15)	1.62 (1.29 - 2.04)
7	2.86 (2.23 - 3.67)	2.66 (2.06 - 3.44)
Base rate - spells per person year (95% confidence interval)		
	^c 0.17 (0.14 - 0.21)	^d 0.15 (0.12 - 0.19)

Table 29 - Age and long spells - unadjusted rate ratios and
rate ratios adjusted for grade (Group 4)

Age group	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N=6037)

35-39 years	1.00 ^a	1.00 ^b
40-40 years	1.01 (0.84 - 1.21)	1.13 (0.94 - 1.36)
45-49 years	1.06 (0.87 - 1.29)	1.18 (0.97 - 1.44)
50-55 years	1.31 (1.10 - 1.56)	1.48 (1.24 - 1.77)

Base rate - spells per person year (95% confidence interval)

^a 0.09 (0.08 - 0.10)

^b 0.09 (0.08 - 0.11)

Women (N=2760)

35-39 years	1.00 ^c	1.00 ^d
40-40 years	1.26 (1.02 - 1.56)	1.17 (0.94 - 1.46)
45-49 years	1.43 (1.16 - 1.76)	1.15 (0.93 - 1.43)
50-55 years	1.79 (1.48 - 2.16)	1.31 (1.08 - 1.60)

Base rate - spells per person year (95% confidence interval)

^c 0.17 (0.15 - 0.20)

^d 0.15 (0.12 - 0.19)

Table 30 - Ethnic group and long spells - unadjusted rate ratios and
rate ratios adjusted for age (35-39 years) and grade (Group 4)

Ethnic group	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N=5760)

Caucasian	1.00 ^a	1.00 ^b
Asian	2.29 (1.83 - 2.87)	1.39 (1.09 - 1.78)
Other	1.53 (1.05 - 2.24)	0.83 (0.57 - 1.23)

Base rate - spells per person year (95% confidence interval)

^a 0.09 (0.08 - 0.10)	^b 0.09 (0.08 - 0.11)
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Women (N=2603)

Caucasian	1.00 ^c	1.00 ^d
Asian	1.58 (1.25 - 2.00)	1.39 (1.09 - 1.78)
Other	1.55 (1.22 - 1.96)	1.21 (0.95 - 1.54)

Base rate - spells per person year (95% confidence interval)

^c 0.23 (0.21 - 0.24)	^d 0.14 (0.11 - 0.18)
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Table 31 - Marital status and long spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Marital status	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
Men (N= 6020)		
Married	1.00 ^a	1.00 ^b
Single	1.02 (0.84 - 1.23)	0.75 (0.62 - 0.92)
Divorced/widowed	1.30 (1.00 - 1.70)	1.00 (0.77 - 1.30)
Base rate - spells per person year (95% confidence interval)		
	^a 0.09 (0.09 - 0.10)	^b 0.10 (0.08 - 0.12)
Women (N=2743)		
Married	1.00 ^c	1.00 ^d
Single	0.80 (0.67 - 0.95)	0.94 (0.79 - 1.12)
Divorced/widowed	1.23 (1.04 - 1.46)	1.18 (0.99 - 1.40)
Base rate - spells per person year (95% confidence interval)		
	^c 0.24 (0.22 - 0.26)	^d 0.15 (0.12 - 0.19)

Table 32 - Departmental differences in long spells - rate ratios adjusted for age (35-39 years) and grade (Group 4)

Adjusted rate ratio (95% confidence interval)		
	<u>Men</u> (N=4685)	<u>Women</u> (N=1840)
Department		
2	0.89 (0.67 - 1.18)	0.91 (0.66 - 1.26)
3	0.95 (0.73 - 1.23)	0.89 (0.68 - 1.18)
4	0.99 (0.73 - 1.34)	0.97 (0.64 - 1.46)
5	0.90 (0.67 - 1.19)	0.85 (0.64 - 1.13)
8	0.84 (0.65 - 1.08)	1.11 (0.83 - 1.47)
14	1.06 (0.76 - 1.48)	0.99 (0.70 - 1.41)
19	1.00 ^a	1.00 ^b
20	0.56 (0.39 - 0.81)	0.74 (0.51 - 1.06)
Base rate - spells per person year (95% confidence interval)		
	^a 0.10 (0.08 - 0.13)	^b 0.15 (0.10 - 0.21)

5.11 Discussion

There were striking grade differences in sickness absence, with a stepwise increase in the rates of both short and long spells from top administrators to clerical and office support staff. These differences were similar for short and long spells, except that office support staff had lower rates of short spells than clerical staff, but strikingly higher rates of long spells. Similar grade and occupational differences in sickness absence have been reported in other studies (4-6,105). Despite the consistency of occupational differences, few studies have attempted to explain them.

Women had higher rates of sickness absence than men, particularly in the higher grades for short spells and in the lower grades for long spells. Other studies have reported similar sex differences in sickness absence (5-7,18). In contrast to these studies, the present study suggests that both occupational status and type of sickness absence (short or long spells) are relevant when considering sex differences in sickness absence.

Age was not related to the rates of short spells, but older participants had higher rates of long spells. These findings are consistent with other studies (5,38-41).

Asians had more frequent short and long spells than Caucasians, after adjusting for age and grade. These findings are consistent with ethnic differences in sickness absence reported in two other studies (19,20). Both studies were of manual workers and compared recent immigrants with workers born in the host country. In the present study, Asians had long service and were unlikely to have been recent immigrants.

It is of interest that men and women in two departments had lower rates of both short and long spells of sickness absence, even after adjusting for grade. There were no differences in the self-reports of the work environment in these departments. Possible reasons for these differences are discussed in Chapter 15.

CHAPTER 6

The work environment

This chapter describes participants' reports and external assessments of the work environment. Attitudes towards work, for example perceived job importance and job satisfaction, are also described.

6.1 Self-reports of the work environment

There were large grade differences in self-reports of the work environment. Participants in the lower grades reported less control, less variety and skill use, slower work pace, fewer conflicting demands and less support at work (Tables 33 to 37). There was a stepwise change in each of these work characteristics from top administrative to office support grades. The differences between top administrative and office support grades were 10-fold for both variety and skill use and control, 5-fold for work pace, 3-fold for conflicting demands and less than 2-fold for support at work (Figures 11 to 13).

There were no differences in the self-reports of the work environment for men and women in the same grade categories.

6.2 External assessments of the work environment

There were also large grade differences in the external assessments of control, work pace and conflicting demands (Figure 14, Tables 38 to 40). Jobs in the lower grades had less control, slower work pace and fewer conflicting demands. In contrast to the self-reports, the differences for each work characteristic were of a similar size. There were similar, but less marked, grade differences in the external assessments of the importance of making mistakes (Table 41).

As with the self-reports, the external assessments of the work environment were similar for men and women in the same grade categories.

Figure 11 - Self-reports of variety and skill use, by grade and sex

Figure 12 - Self-reports of support at work, by grade and sex

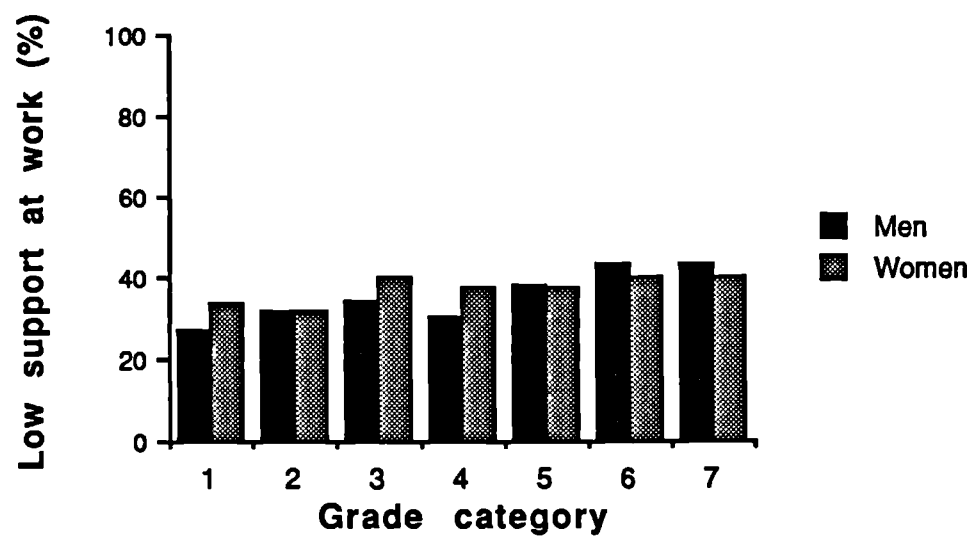
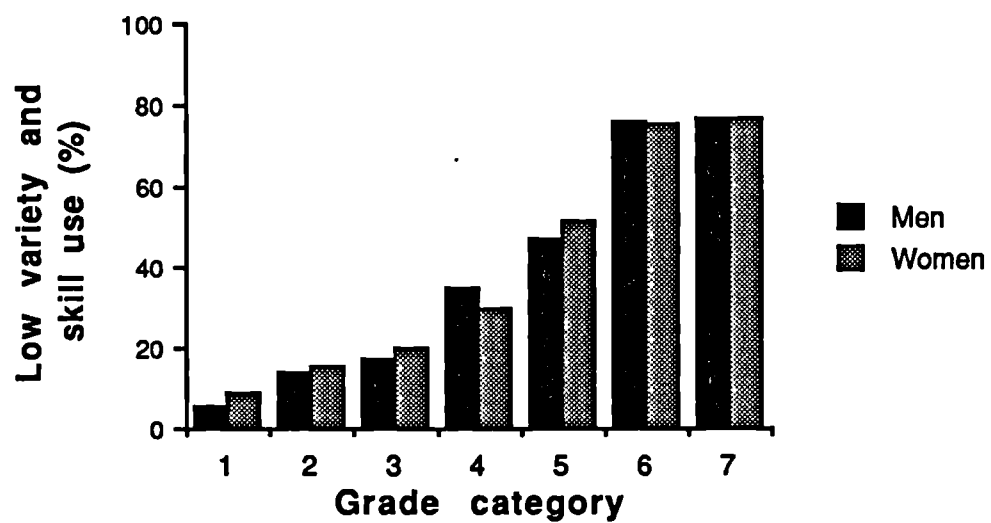
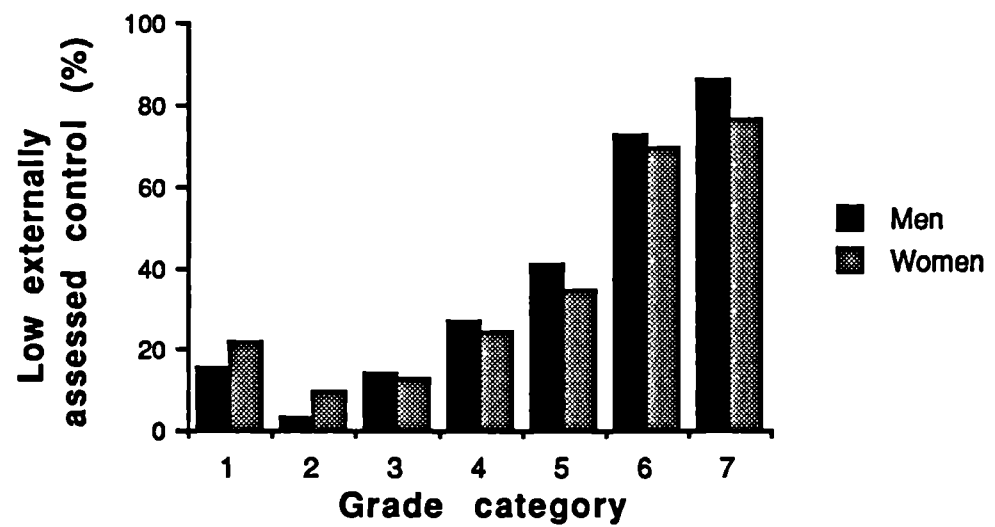
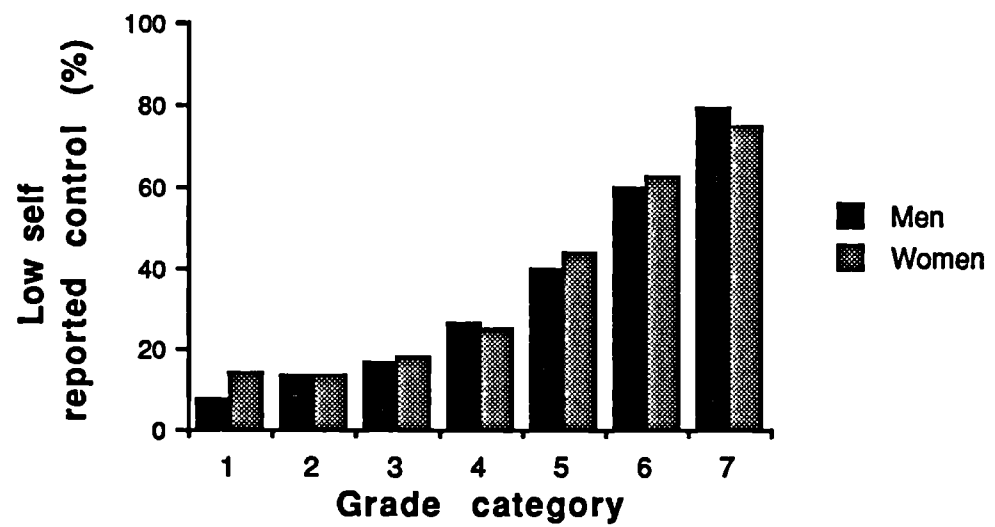


Figure 13 - Self-reports (SR) of control, by grade and sex

Figure 14 - External assessments (EA) of control, by grade and sex



6.3 Attitudes towards work

In contrast to the self-reports and external assessments of the work environment, there were minimal grade differences for perceived job importance (Table 42). Groups with the highest levels of perceived job importance were men and women in office support grades and men in top administrative grades. Men tended to have higher levels of perceived job importance than women.

The grade differences were similar for levels of job satisfaction (Table 43). Top administrators and office support staff had the highest levels of job satisfaction (Figure 13). Women were generally more satisfied with their jobs than men.

Figure 13 - Job satisfaction, by grade and sex

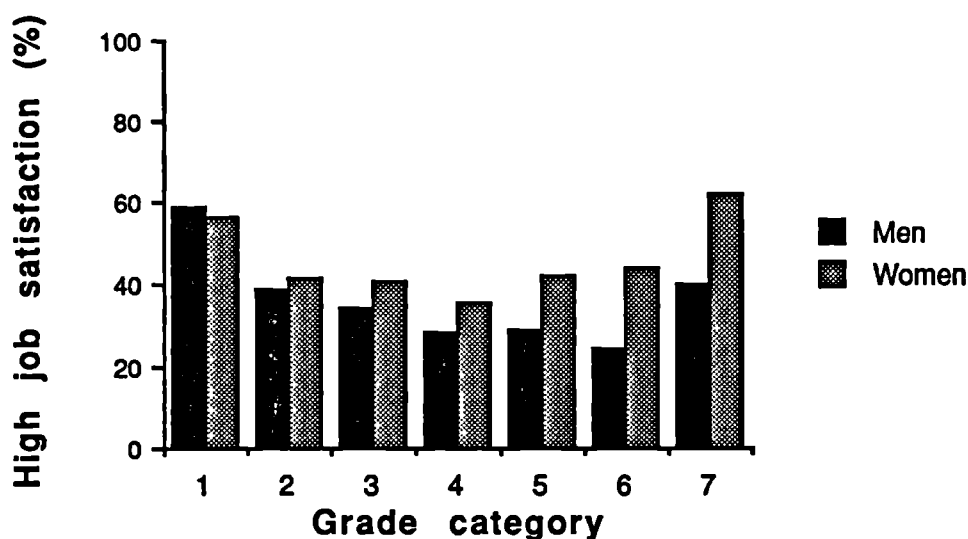


Table 33 - Self-reports of control, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Control								
Low %	7.5	13.5	16.5	26.2	40.0	60.0	79.6	24.2
Medium %	32.2	36.4	40.1	42.4	35.4	25.7	13.0	36.2
High %	60.2	50.0	43.4	31.4	24.6	14.3	7.4	39.5
Total number	1021	1625	1224	1492	879	420	216	6877

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Control								
Low %	13.9	13.4	17.8	25.4	43.6	62.3	75.1	46.7
Medium %	34.4	42.4	33.5	43.3	35.6	26.7	16.8	31.5
High %	51.6	44.3	48.7	31.3	20.9	11.0	8.0	21.8
Total number	122	262	197	480	652	1218	410	3341

Table 34 - Self-reports of variety and skill use, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Variety and skill use								
Low %	6.1	14.4	17.7	34.6	47.2	76.4	76.7	28.0
Medium %	24.0	33.4	40.7	38.7	34.7	19.0	20.5	33.3
High %	69.9	52.2	41.6	26.8	18.1	4.5	2.8	38.6
Total number	1021	1626	1225	1490	878	420	215	6875

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Variety and skill use								
Low %	9.0	15.3	19.8	29.8	51.5	75.7	76.7	54.1
Medium %	19.7	30.5	37.6	38.7	34.8	19.0	20.6	27.1
High %	71.3	54.2	42.6	32.0	13.7	5.3	2.7	18.8
Total number	122	262	197	478	655	1230	412	3356

Table 35 - Self-reports of work pace, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Work pace								
Low %	12.6	19.5	25.2	30.8	39.5	47.0	63.9	27.6
Medium %	29.7	36.9	39.8	41.2	39.5	34.1	27.9	37.2
High %	57.6	43.5	35.0	28.0	21.0	18.9	8.2	35.2
Total number	1022	1624	1224	1492	878	419	219	6878

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Work pace								
Low %	12.3	16.0	17.3	23.7	30.4	46.7	62.2	36.8
Medium %	27.9	34.0	40.6	44.8	39.9	33.5	26.3	35.7
High %	59.8	50.0	42.1	31.5	29.7	19.8	11.5	27.5
Total number	122	262	197	480	657	1228	410	3356

Table 36 - Self-reports of conflicting demands, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Conflicting demands								
Low %	13.9	18.6	16.8	21.7	26.7	33.1	42.9	20.9
Medium %	47.4	44.9	48.2	47.8	45.3	45.6	41.5	46.5
High %	38.7	36.6	35.0	30.5	28.0	21.3	15.7	32.6
Total number	1020	1627	1227	1493	881	417	217	6882

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Conflicting demands								
Low %	16.7	16.5	17.7	24.1	37.6	51.6	58.9	39.9
Medium %	43.3	42.5	47.5	48.7	39.8	36.2	30.0	39.3
High %	40.0	41.0	34.8	27.2	22.6	12.2	11.1	20.8
Total number	120	261	198	478	654	1236	416	3363

Table 37 - Self-reports of support at work, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Support at work								
Low %	27.2	31.7	34.3	30.6	38.2	43.4	43.1	33.1
Medium %	35.4	35.0	32.6	34.0	30.5	27.2	29.8	33.2
High %	37.4	33.3	33.1	35.4	31.3	29.4	27.1	33.7
Total number	1015	1626	1226	1490	878	419	218	6872

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Support at work								
Low %	33.3	31.8	40.1	37.4	37.3	39.9	40.0	38.2
Medium %	34.2	34.5	28.9	29.4	32.3	28.2	21.1	29.1
High %	32.5	33.7	31.0	33.2	30.4	31.9	38.8	32.8
Total number	120	261	197	479	654	1229	412	3352

Table 38 - External assessments of control, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Control								
Low %	15.2	3.1	14.5	27.0	41.3	73.2	86.7	24.2
Medium %	27.8	43.1	60.1	44.6	42.6	20.0	11.0	42.1
High %	57.0	53.8	25.4	28.3	16.1	6.8	2.2	33.7
Total number	809	134	1114	1302	816	355	181	5920

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Control								
Low %	21.7	9.7	13.2	24.3	34.6	69.5	76.8	47.7
Medium %	29.3	38.2	61.0	49.0	44.8	18.9	17.0	32.5
High %	48.9	52.2	25.8	26.7	20.6	11.6	6.2	19.8
Total number	92	207	182	408	596	1063	370	2918

Table 39 - External assessments of work pace, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Work pace								
Low %	12.0	12.7	25.9	34.8	42.0	43.4	81.8	28.0
Medium %	34.0	62.2	51.0	38.1	30.5	35.5	12.7	43.5
High %	54.0	25.0	23.1	27.1	27.5	21.1	5.5	28.6
Total number	809	1343	1114	1302	816	355	181	5920

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Work pace								
Low %	14.1	11.6	26.4	31.9	32.9	38.2	74.6	37.5
Medium %	35.9	57.5	46.7	41.2	36.1	37.8	18.4	37.4
High %	50.0	30.9	26.9	27.0	31.0	24.0	7.0	25.2
Total number	92	207	182	408	596	1063	370	2918

Table 40 - External assessments of conflicting demands, by grade and sex

Men

	Grade category							Total %
	1	2	3	4	5	6	7	
Conflicting demands								
Low %	17.9	25.8	21.3	20.8	46.3	50.4	84.5	28.9
Medium %	24.4	33.7	31.3	36.3	34.1	31.0	13.3	31.8
High %	57.7	40.5	47.4	42.9	19.6	18.6	2.2	39.3
Total number	809	1343	1114	1302	816	355	181	5920

Women

	Grade category							Total %
	1	2	3	4	5	6	7	
Conflicting demands								
Low %	27.2	33.8	18.1	15.7	27.9	48.9	83.0	40.6
Medium %	29.3	24.2	33.0	40.2	34.9	27.0	12.4	28.9
High %	43.5	42.0	48.9	44.1	37.2	24.1	4.6	30.5
Total number	92	207	182	408	596	1063	370	2918

Table 41 - External assessments of importance of mistakes, by grade and sex

Men

		Grade category							Total
		1	2	3	4	5	6	7	%
Importance of mistakes									
Low	%	20.0	26.9	41.7	39.2	49.6	41.4	69.6	36.8
Medium	%	15.0	17.5	14.2	19.3	14.6	10.7	7.2	15.8
High	%	65.0	55.6	44.1	41.6	35.8	47.9	23.2	47.4
Total number		809	1343	1114	1302	816	355	181	5920

Women

		Grade category							Total %
		1	2	3	4	5	6	7	
Importance of mistakes									
Low	%	15.2	23.2	29.7	33.1	37.2	43.6	67.0	40.6
Medium	%	8.7	13.0	17.6	23.5	18.5	13.7	4.9	15.0
High	%	76.1	63.8	52.7	43.4	44.3	42.7	28.1	44.4
Total number		92	207	182	408	596	1063	370	2918

Table 42 - Perceived job importance, by grade and sex

Men

		Grade category							Total
		1	2	3	4	5	6	7	%
Perceived job importance									
Low	%	11.8	18.6	20.8	26.8	25.7	38.9	21.5	22.0
Medium	%	38.8	45.5	40.8	41.5	34.1	31.0	29.7	40.0
High	%	49.4	35.9	38.5	31.7	40.3	30.1	48.9	38.1
Total number		1020	1625	1224	1491	877	419	219	6875

Women

		Grade category							Total
		1	2	3	4	5	6	7	%
Perceived job importance									
Low	%	18.0	29.0	33.8	30.8	28.2	35.3	21.2	30.3
Medium	%	50.8	40.8	39.4	40.3	39.2	32.1	27.7	35.9
High	%	31.1	30.2	26.8	28.9	32.6	32.6	51.1	33.8
Total number		122	262	198	477	653	1229	415	3356

Table 43 - Job satisfaction, by grade and sex

Men

	Grade category							Total %
	1	2	3	4	5	6	7	
Job satisfaction								
Low %	19.4	33.2	38.1	45.9	46.6	53.1	35.2	37.8
Medium %	22.1	28.0	28.0	25.8	24.7	22.4	24.5	25.8
High %	58.5	38.9	33.9	28.2	28.8	24.5	40.3	36.4
Total number	1014	1624	1224	1491	876	420	216	6865

Women

	Grade category							Total %
	1	2	3	4	5	6	7	
Job satisfaction								
Low %	21.4	31.3	33.2	37.3	34.8	32.0	15.3	30.9
Medium %	22.2	27.1	26.0	27.2	23.1	24.1	22.8	24.5
High %	56.4	41.6	40.8	35.6	42.1	43.9	61.9	44.7
Total number	117	262	196	475	655	1220	412	3337

6.4 Discussion

The grade differences in the work environment were striking. Although differences in the work environment between top administrators and clerical staff were anticipated, it is interesting that each of the work characteristics changed in a stepwise manner from top administrators to office support staff.

It is possible that the self-reported differences reflect differences in how employees perceive their work, rather than differences in the work environment itself. However, the grade differences in the external assessments were similar to the self-reports. This suggests that differences in employees' perceptions are unlikely to explain the grade differences in the work environment.

The grade differences in self-reports of control and variety and skill use were larger than the grade differences in other aspects of the work environment. In contrast, the size of the grade differences in external assessments of control, work pace and conflicting demands was similar. The correlation between different aspects of the work environment were higher for the external assessments than the self-reports (Appendix 7). Personnel managers may have been less able to distinguish between different aspects of the work environment than employees in the jobs.

It is interesting that according to the external assessments, jobs in Group 2 had higher levels of control than jobs in Group 1. The personnel managers who undertook the external assessments were generally in Group 2. In contrast, self-reports of control were higher in Group 1 than Group 2, consistent with the stepwise differences in control observed in other grade categories. This discrepancy may indicate differences in the personnel managers' perceptions, rather than differences in the work environment itself. These differences were not observed for the external assessments of other aspects of the work environment.

Job satisfaction correlated with support at work, perceived job importance and, for men, control and variety and skill use (Appendix 7). This is consistent with earlier studies which have reported moderate correlations between job satisfaction and variety, autonomy and feedback (25,59).

Despite large grade differences in the work environment, there were minimal grade differences in perceived job importance and job satisfaction. Office support staff reported the highest levels of job satisfaction and perceived job importance, but the lowest levels

of control and variety and skill use. Compared to men, women were generally more satisfied with their jobs but perceived their jobs as less important, despite similar self-reports and external assessments of the work environment. These findings suggest that job satisfaction and perceived job importance are complex and do not necessarily relate directly to the work environment. Other factors, such as past experience and expectations, may be important.

In contrast to the present study, other studies have reported socioeconomic differences in job satisfaction. For example in the General Household Survey, 52% of men and 61% of women in managerial occupations were very satisfied with their jobs compared to 39% of men and 40% of women in junior non-manual occupations (106). It is interesting that in the GHS, women in managerial and professional occupations reported higher levels of job satisfaction than men, but otherwise there were minimal sex differences in job satisfaction.

CHAPTER 7

Social circumstances outside work

Marital status was discussed in Chapter 4. This chapter describes participants' social circumstances outside work, including the proportion of participants who had dependent children, were solo parents and had parents living with them. Social supports outside work including social contacts, the amount of emotional and practical support from the closest person, adequacy of support and satisfaction with personal relationships are also described. Finally, the proportion of participants who reported difficulty with paying bills is described.

7.1 Dependent children

There were large grade and sex differences in the proportion of participants with dependent children (Table 44).

In the higher grades, more than two thirds of men had dependent children, compared to about a third of women. In the lower grades about a half of both men and women had dependent children.

7.2 Solo parents

Participants with dependent children, but who did not have a spouse or partner in the household, were classified as solo parents. Solo parents who were married were presumably separated (Table 45). Most solo parents were separated or divorced.

Participants in the lower grades (Groups 5 to 7) were more likely to be solo parents than participants in the higher grades (Table 46). Women were eight times more likely to be solo parents than men.

7.3 Parents in the household

Less than 10% of participants had their parents or parents-in-law living with them (Table 47). More men in clerical and office support grades (Groups 6 and 7) had parents living with them.

7.4 Social contact with relatives or friends

Overall, 30% of participants had no regular contact with relatives and about 10% had no regular contact with friends (Tables 48 and 49).

There were interesting grade differences in the type of social contact (Figures 16 and 17). Women in clerical grades (Group 6), and men and women in office support grades (Group 7) had more frequent contact with relatives, but less frequent contact with friends. These grade differences were greater for women than men.

7.5 Attendance at religious services

Overall, 24% of participants regularly attended religious services (Table 50). There were minimal grade differences in attendance at religious services, except that office support staff were less regular attenders.

7.6 Emotional and practical support

More men in clerical grades (Group 6) reported very low levels of emotional and practical support from the closest person (Tables 51 and 52). Otherwise, there were minimal grade differences in emotional or practical support. Women tended to report lower levels of practical support than men.

7.7 Adequacy of support

Men in the lower grades were more likely to have reported low level of 'adequacy of support' than men in the higher grades (Table 53). For women, there were minimal grade differences.

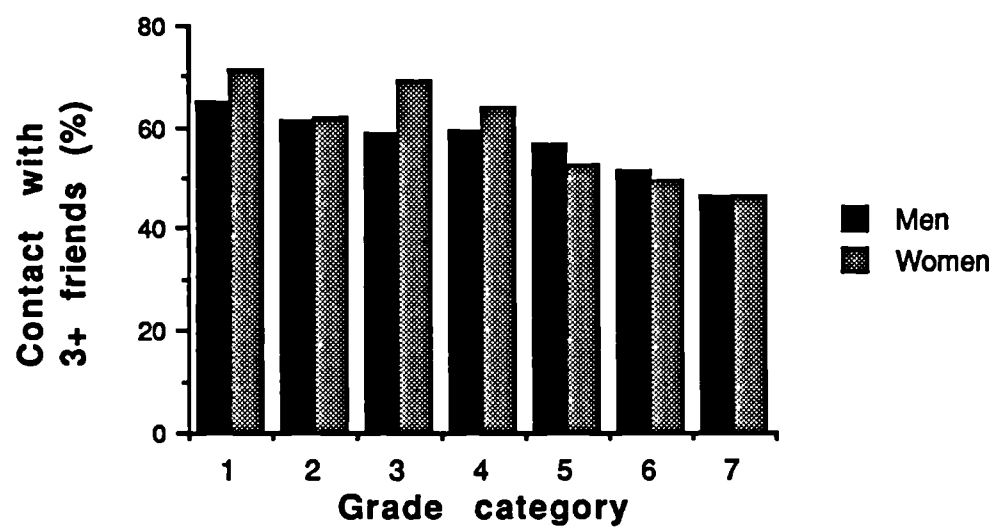
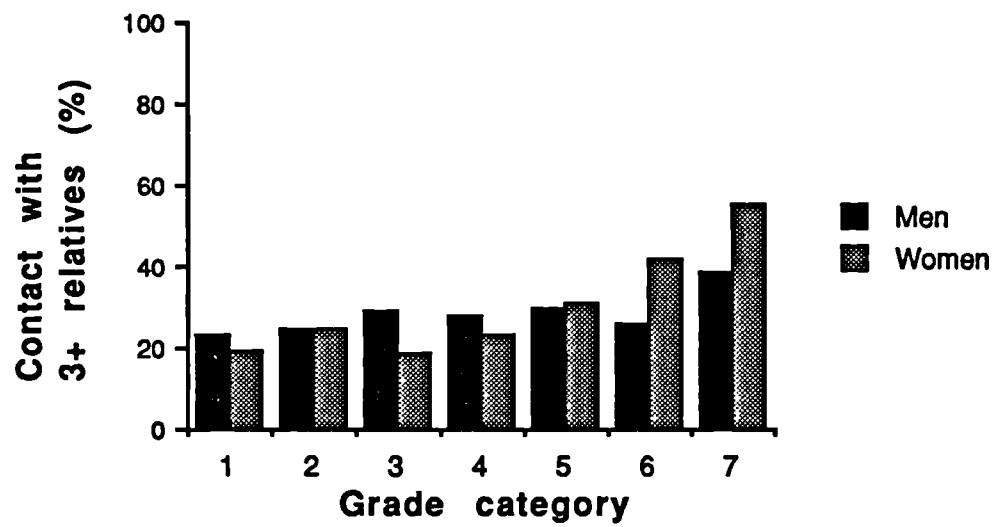
7.8 Satisfaction with personal relationships

Two thirds of participants were moderately or very satisfied with their personal relationships (Figure 18, Table 54).

Participants in the lower grades were more satisfied with their personal relationships than participants in the higher grades.

Figure 16 - Social contact with relatives, by grade and sex

Figure 17 - Social contact with friends, by grade and sex



7.9 Difficulty paying bills

Overall, 20% of participants reported some or great difficulty paying bills (Table 55).

More participants in the lower grades reported some or great difficulty paying bills. For men, there was a stepwise increase from top administrative to lower executive grades (Groups 1 to 5) in the proportion who reported some or great difficulty paying bills. For women, there were minimal differences in the higher grades. Consequently, fewer women than men in the higher executive grades (Groups 3 and 4) reported some or great difficulty paying bills. Otherwise, there were minimal sex differences in the proportion of participants who reported difficulty paying bills.

Figure 18 - Satisfaction with personal relationships, by grade and sex

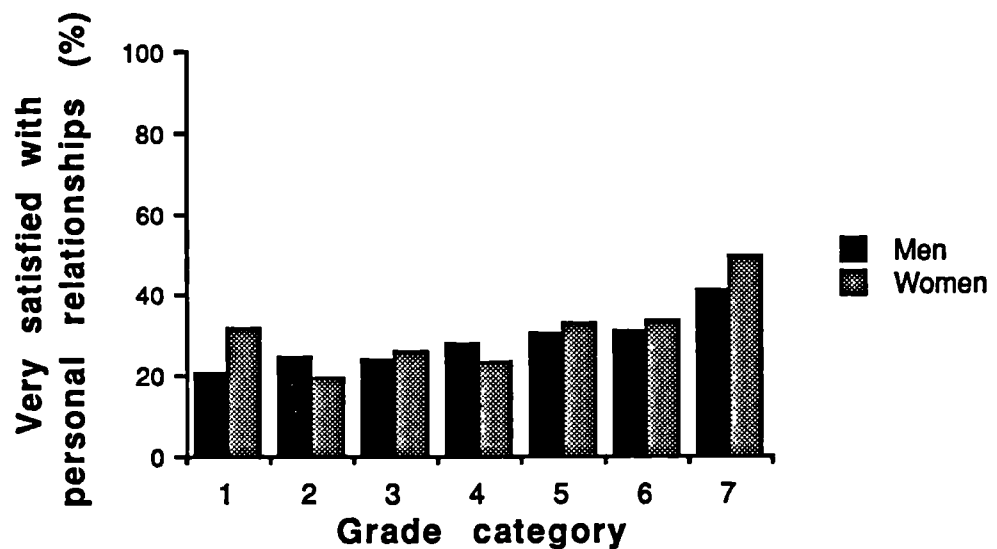


Table 44 - Dependent children, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Dependent children								
No dependent child %	15.2	28.9	31.6	39.1	44.9	58.5	51.7	35.5
1+ dependent child %	74.8	71.1	68.4	60.9	55.1	41.5	48.3	64.5
Total number	988	1576	1183	1421	831	390	207	6596

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Dependent children								
No dependent child %	59.6	60.7	80.8	74.2	64.6	41.3	47.2	55.4
1+ dependent child %	40.4	39.3	19.2	25.8	35.4	58.7	52.8	44.6
Total number	104	234	177	434	605	1177	398	3129

Table 45 - Marital status of solo parents

	% of solo parents	
	<u>Men</u>	<u>Women</u>
Marital status		
Married %	35.7	8.3
Single %	4.5	15.6
Divorced %	42.0	63.3
Widowed %	17.9	12.8
Total number	112	289

Table 46 - Solo parents, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Solo parent								
Yes %	2.6	1.3	3.0	2.7	3.8	6.4	6.1	2.7
No %	97.4	98.7	97.0	97.3	96.2	93.6	93.9	97.3
Total number	734	1110	803	850	452	156	98	4203

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Solo parent								
Yes %	9.8	14.8	15.2	18.7	27.5	22.4	20.9	21.6
No %	90.2	85.2	84.8	81.3	72.5	77.6	79.1	78.4
Total number	41	88	33	107	211	665	201	1346

Table 47 - Parents in household, by grade and sex

Men

		Grade category							Total
		1	2	3	4	5	6	7	%
Parents in household									
Yes	%	3.4	4.1	5.1	7.1	8.9	18.0	15.3	6.6
No	%	96.6	95.9	94.9	92.9	91.1	82.0	84.7	93.4
Total number		952	1521	1135	1386	822	388	203	6407

Women

		Grade category							Total
		1	2	3	4	5	6	7	%
Parents in household									
Yes	%	5.4	6.5	6.8	9.5	12.8	7.7	8.8	8.9
No	%	94.6	93.5	93.2	90.5	87.2	92.3	91.2	91.1
Total number		112	247	190	444	616	1132	376	3117

Table 48 - Social contact with relatives, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Number of relatives contacted regularly								
None %	30.8	31.2	30.6	29.8	30.5	31.5	26.2	30.5
1 - 2 relatives %	46.1	44.2	40.4	42.2	40.0	42.6	35.1	42.5
3 + relatives %	23.1	24.6	29.0	28.0	29.4	25.8	38.6	27.0
Total number	953	1526	1148	1401	809	387	202	6426

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Number of relatives contacted regularly								
None %	31.4	29.5	33.7	34.6	26.7	18.3	14.5	24.0
1 - 2 relatives %	49.2	45.8	47.6	42.2	42.5	39.8	30.2	40.7
3 + relatives %	19.5	24.7	18.7	23.1	30.9	41.9	55.4	35.3
Total number	118	251	187	445	619	1166	401	3187

Table 49 - Social contact with friends, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Number of friends contacted regularly								
None %	11.1	11.9	11.3	11.7	9.2	11.6	21.0	11.6
1 - 2 friends %	24.1	26.6	29.9	28.7	34.2	36.6	32.3	29.2
3 + friends %	64.8	61.5	58.8	59.6	56.6	51.8	46.7	59.2
Total number	713	1148	976	1120	682	328	195	5162

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Number of friends contacted regularly								
None %	7.6	9.1	8.6	7.0	13.1	11.8	13.5	11.2
1 - 2 friends %	21.2	29.2	22.3	28.8	34.3	38.3	40.4	34.5
3 + friends %	71.2	61.7	69.1	64.2	52.5	49.8	46.2	54.3
Total number	66	154	139	344	495	963	312	2473

Table 50 - Attendance at religious services, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Attendance at religious services								
Regular %	30.0	23.8	21.5	23.4	22.7	31.6	11.5	24.2
Occasional %	9.7	8.8	10.2	8.9	11.2	14.0	10.6	9.9
Never %	60.3	67.4	68.3	67.7	66.1	54.4	77.9	65.9
Total number	1019	1619	1225	1491	877	421	217	6869

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Attendance at religious services								
Regular %	18.9	25.6	19.8	21.2	21.4	25.8	16.0	22.4
Occasional %	7.4	9.2	11.2	9.2	10.8	12.5	10.5	10.9
Never %	73.8	65.3	69.0	69.6	67.8	61.7	73.6	66.6
Total number	122	262	197	480	655	1246	420	3382

Table 51 - Amount of emotional support, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Amount of emotional support								
Very low %	20.5	21.2	25.1	25.9	23.8	32.5	27.2	24.1
Low %	26.9	27.6	27.2	27.1	23.2	22.3	29.5	26.5
Moderate %	35.0	31.4	30.4	30.0	33.2	31.8	26.6	31.5
High %	17.6	19.7	17.2	17.0	19.8	13.4	16.8	17.9
Total number	703	1130	963	1094	651	292	173	5006

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Amount of emotional support								
Very low %	21.2	22.9	21.2	22.2	22.0	24.0	22.7	22.9
Low %	22.7	24.2	24.1	26.3	26.0	26.0	21.9	25.2
Moderate %	37.9	35.9	32.8	35.4	33.5	32.4	36.7	34.0
High %	18.2	17.0	21.9	16.1	18.5	17.6	18.7	17.9
Total number	66	153	137	342	481	908	278	2365

Table 52 - Amount of practical support, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Amount of practical support								
Very low %	18.3	18.1	20.3	22.8	21.8	38.1	27.0	21.5
Low %	27.9	29.9	29.4	32.1	30.5	25.8	27.6	29.8
Moderate %	22.0	22.1	23.0	20.5	21.5	17.9	17.2	21.4
High %	31.7	29.9	27.3	24.7	26.2	18.2	28.2	27.3
 Total number	 703	 1133	 961	 1094	 652	 291	 174	 5008

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Amount of practical support								
Very low %	25.8	34.0	38.0	35.0	33.7	30.3	26.4	31.7
Low %	36.4	30.1	21.2	32.4	32.6	32.3	27.5	31.1
Moderate %	22.7	18.3	21.9	21.9	15.7	19.5	21.1	19.4
High %	15.2	17.6	19.0	10.8	18.0	18.0	25.0	17.7
 Total number	 66	 153	 137	 343	 478	 908	 284	 2369

Table 53 - Adequacy of support, by grade and sex

Men

	Grade category							Total %
	1	2	3	4	5	6	7	
Adequacy of support								
Low %	14.1	17.7	21.1	19.8	26.4	28.9	29.3	20.5
Moderate %	47.3	43.0	40.6	42.7	40.6	38.7	35.9	42.3
High %	38.6	39.2	38.3	37.6	33.0	32.4	34.7	37.2
Total number	702	1122	958	1083	643	287	167	4962

Women

	Grade category							Total %
	1	2	3	4	5	6	7	
Adequacy of support								
Low %	24.6	23.7	20.4	24.0	20.0	21.6	21.0	21.7
Moderate %	43.1	48.0	41.6	43.1	37.4	39.7	35.9	40.0
High %	32.3	28.3	38.0	32.8	42.7	38.7	43.1	38.3
Total number	65	152	137	341	471	892	276	2334

Table 54 - Satisfaction with personal relationships, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Satisfaction with personal relationships								
Very satisfied %	20.7	24.2	23.6	27.6	30.4	31.0	41.4	26.2
Mod. satisfied %	45.1	38.8	35.6	34.8	37.6	31.3	25.3	37.1
No feelings %	24.8	25.1	29.0	25.5	21.0	24.7	22.0	25.2
Dissatisfied %	9.4	11.9	11.8	12.1	10.9	13.0	11.3	11.5
Total number	710	1149	975	1116	667	316	186	5119

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Satisfaction with personal relationships								
Very satisfied %	31.8	19.1	26.1	23.3	33.1	33.5	49.7	32.6
Mod. satisfied %	27.3	42.1	36.2	36.3	36.1	36.6	29.4	35.6
No feelings %	33.3	26.3	25.4	26.7	21.7	21.1	15.0	22.2
Dissatisfied %	7.6	12.5	12.3	13.7	9.1	8.8	5.9	9.6
Total number	66	152	138	344	493	941	306	2440

Table 55 - Difficulty paying bills, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Difficulty paying bills								
Great %	1.0	2.1	3.0	4.1	7.6	9.2	6.7	3.9
Some %	9.7	14.4	19.9	21.3	22.6	23.0	19.2	18.1
Slight %	15.9	22.3	23.8	23.3	18.7	18.4	20.7	21.1
Very little %	73.4	61.3	53.4	51.3	51.1	49.4	53.4	56.9
Total number	715	1149	976	1123	685	326	193	5167

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Difficulty paying bills								
Great %	-	1.3	1.4	2.3	4.2	6.2	6.7	4.6
Some %	15.2	12.4	7.1	14.7	13.8	17.7	21.9	16.1
Slight %	6.1	13.1	18.6	18.7	18.6	19.1	17.8	18.0
Very little %	78.8	73.2	72.9	64.3	63.3	57.0	53.7	61.3
Total number	66	153	140	347	499	970	315	2490

7.10 Discussion

A surprisingly high proportion of women in the higher grades were single and had no children. In contrast, most men in these grades were married and had children. Women with careers may have children at an older age than other women. However of women who have children, most would have at least one child by the age of 35. This is therefore unlikely to explain the differences. Women in these grades were also less likely to have dependent children than women in employer/managerial occupations in the Labour Force Survey (30% compared to 45%) (102). In contrast, a similar proportion of participants in other grade categories had dependent children compared to employees in the LFS. The social circumstances of women in the higher grades therefore differed from women in the lower grades and from women with similar occupational status outside the civil service.

The type of social contacts differed by grade of employment with participants in the higher grades having less contact with relatives and more contact with friends. Participants in these grades had greater job mobility and changed posts, on average, every four years. They may therefore often live some distance from relatives. Socioeconomic differences in social contacts have also been observed in other studies. In the Health and Lifestyle Survey (HLS), a national survey of 9,000 adults (107), employees in manual occupations had more contact with relatives than those in non-manual occupations. However within non-manual occupations, men and women in professional or employer/managerial occupations had less contact with both relatives and friends than those in other non-manual occupations. It is not possible to compare the findings with other studies because contact with relatives and friends are usually combined into a single measure (83,108-110). In the HLS, more non-manual than manual employees attended church regularly, but data within non-manual occupations were not presented (107).

There were minimal grade differences in the amount of support provided by the closest person, except that male clerical staff reported less emotional and practical support and lower levels of 'adequacy of support'. Support from the closest person may not be representative of the total amount of support available. However in a validity study undertaken by Stephen Stansfeld, information on the amount of support provided by the closest person was more reliable than information on support provided by other people.

The amount of emotional and practical support from the closest person were moderately correlated ($r=0.48$ for men and $r=0.41$ for women). However 'adequacy of support' did not correlate with either emotional or practical support. This suggests that availability and adequacy of support are different measures. The latter may reflect personality traits

and a greater need for supportive relationships. This is discussed further in Chapter 15.

Office support staff were more satisfied with their personal relationships than other participants, despite minimal grade differences in the amount of emotional or practical support provided by the closest person. These grade differences were similar to those observed for job satisfaction. This suggests that a more general explanation for the grade differences in satisfaction needs to be considered.

A higher proportion of participants in the lower grades reported some or great difficulty paying bills. Similarly, more men than women in the executive grades (Groups 3 to 5) reported difficulties paying bills. These findings are consistent with differences in salaries and family responsibilities. However, it is also possible that reported difficulties paying bills reflect other differences, for example an inability to cope with 'daily hassles' (111). This is discussed further in Chapter 15.

CHAPTER 8

Health

In this chapter, differences in self-reported measures of health at the time of the baseline survey are described. These include overall health status, the number of recurring health problems, the presence of longstanding illness and 'high scores' for recent psychiatric symptoms.

The relationship between overall health status and more specific aspects of health (recurring health problems, longstanding illness and psychiatric symptoms) is examined to determine if the former could be used as a global measure of health in the analyses of sickness absence.

8.1 Overall health status

About 22% of men and 36% of women reported average, poor or very poor overall health in the past twelve months (Table 56).

There was a stepwise increase in the proportion of participants who reported average, poor or very poor health from top administrators to office support staff. In all grade categories, women reported worse health than men.

8.2 Recurring health problems

Overall, 37% of men and 46% of women had two or more recurring health problems (Table 57).

Women in the lower grades were more likely to report recurring health problems than those in the higher grades. There were minimal grade differences for men.

8.3 Longstanding illness

Overall, 30% of participants reported a longstanding illness or disability (Table 58). There were minimal differences by grade or sex.

8.4 Psychiatric symptoms

Overall, 25% of men and 30% of women had more than four recent psychiatric symptoms ('high scorers') (Table 59).

Somewhat surprisingly, participants in the higher grades were more likely to report psychiatric symptoms than participants in the lower grades. These grade differences were particularly striking for women.

8.5 Relationship between overall health status and other measures of health

Overall health status related to the number of recurring health problems, longstanding illnesses and psychiatric symptoms (Tables 60 to 62). Of participants who reported poor or very poor overall health, more than 90% had at least one recurring health problem, about 70% had a longstanding illness and 58% had more than four psychiatric symptoms. There were minimal differences for men and women in the relationship between overall health status and the other measures of health.

On the other hand, of participants who reported very good overall health, 55% had at least one recurring health problem, 16% had a longstanding illness and 16% had more than four psychiatric symptoms.

In relation to the other health measures, 'average' overall health status was between 'good' and 'poor/very poor' overall health status.

Table 56 - Overall health status, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Overall health status								
Very good %	43.2	38.5	35.4	35.7	29.3	26.0	25.9	35.7
Good %	41.3	42.1	43.2	41.2	42.8	41.0	38.6	41.9
Average %	13.1	16.6	17.7	19.0	22.8	24.8	29.5	18.5
Poor/very poor %	2.4	2.8	3.7	4.0	5.1	8.3	5.9	3.9
Total number	1020	1619	1223	1494	878	420	220	6874

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Overall health status								
Very good %	34.4	29.7	30.5	28.1	25.8	20.7	21.0	24.5
Good %	40.2	44.5	42.1	43.6	39.9	38.0	31.1	39.1
Average %	21.3	22.1	20.3	21.2	26.6	32.9	40.7	29.0
Poor/very poor %	4.1	3.8	7.1	7.1	7.7	8.3	7.2	7.3
Total number	122	263	197	477	659	1258	428	3404

Table 57 - Recurring health problems, by grade and sex

Men

		Grade category							Total
		1	2	3	4	5	6	7	%
Recurring health problems									
None	%	30.9	32.1	33.7	33.2	33.3	26.9	33.5	32.3
1	%	31.8	33.0	29.6	31.4	28.2	29.4	31.9	30.9
2-4	%	35.2	33.3	34.9	33.4	34.9	39.4	31.9	34.4
>4	%	2.1	1.6	1.9	2.1	3.5	4.4	2.6	2.3
Total number		719	1147	971	1116	684	320	191	5148

Women

		Grade category							Total
		1	2	3	4	5	6	7	%
Recurring health problems									
None	%	30.3	31.6	30.7	28.6	24.7	22.6	24.4	25.3
1	%	31.8	26.5	28.6	28.3	29.6	29.2	25.0	28.5
2-4	%	34.8	36.1	39.3	38.7	40.7	42.1	43.3	40.8
>4	%	3.0	5.8	1.4	4.3	5.1	6.1	7.4	5.4
Total number		66	155	140	346	494	950	312	2463

Table 58 - Longstanding illness, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Longstanding illness								
Absent %	69.3	69.6	70.6	70.1	68.6	62.2	65.5	69.1
Present %	30.7	30.4	29.4	29.9	31.4	37.8	34.5	30.9
Total number	716	1148	973	1116	684	323	197	5157

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Longstanding illness								
Absent %	72.3	67.1	72.9	68.5	67.3	67.7	69.7	68.4
Present %	27.7	32.9	27.1	31.5	32.7	32.3	30.3	31.6
Total number	65	155	140	346	495	967	317	2485

Table 59 - Psychiatric symptoms, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Psychiatric symptoms								
Low scorers %	75.6	74.4	74.2	73.6	75.6	77.8	78.6	74.9
High scorers %	24.4	25.6	25.8	26.4	24.4	22.2	21.4	25.1
Total number	988	1587	1197	1450	856	405	210	6693

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Psychiatric symptoms								
Low scorers %	66.7	62.6	63.2	63.1	68.7	73.3	78.1	69.9
High scorers %	33.3	37.4	36.8	36.9	31.3	26.7	21.9	30.1
Total number	117	254	190	466	633	1196	393	3249

Table 60 - Relationship between overall health status and recurring health problems, by sex

Men

		Overall health status				Total
		Very good	Good	Average	Poor/ very poor	%
Recurring health problems						
None	%	45.7	28.9	16.5	9.8	32.3
1	%	32.5	31.6	27.9	23.2	30.9
2-4	%	21.1	38.2	49.7	55.7	34.4
>4	%	0.7	1.4	5.9	11.3	2.3
Total number		1928	2119	897	194	5138

Women

		Overall health status				Total
		Very good	Good	Average	Poor/ very poor	%
Recurring health problems						
None	%	41.1	27.4	13.1	6.7	25.3
1	%	32.9	31.2	24.0	16.2	28.5
2-4	%	25.0	38.1	55.3	53.6	40.8
>4	%	1.1	3.3	7.6	23.5	5.4
Total number		621	959	701	179	2460

Table 61 - Relationship between overall health status and longstanding illness, by sex

Men

	Overall health status				Total
	Very good	Good	Average	Poor/ very poor	%
Longstanding illness					
Absent %	83.6	67.6	51.6	23.5	69.1
Present %	16.4	32.4	48.4	76.5	30.9
Total number	1931	2119	902	196	5148

Women

	Overall health status				Total
	Very good	Good	Average	Poor/ very poor	%
Longstanding illness					
Absent %	84.8	73.4	55.2	36.6	68.3
Present %	15.2	26.6	44.8	63.4	31.7
Total number	624	969	707	183	2483

Table 62 - Relationship between overall health status and psychiatric symptoms, by sex

Men

	Overall health status				Total
	Very good	Good	Average	Poor/ very poor	%
Psychiatric symptoms					
Low scorers %	84.5	75.5	61.0	44.0	74.8
High scorers %	15.5	24.5	39.0	56.0	25.2
Total number	2391	2793	1229	257	6670

Women

	Overall health status				Total
	Very good	Good	Average	Poor/ very poor	%
Psychiatric symptoms					
Low scorers %	81.8	72.6	63.4	40.3	69.9
High scorers %	18.2	27.4	36.6	59.7	30.1
Total number	791	1285	929	236	3241

8.6 Discussion

Participants in the lower grades reported worse overall health, but there were minimal grade differences for the other health measures. The only exceptions were women in the lower grades who reported more recurring health problems, and male clerical staff who reported poorer overall health, more recurring health problems and more longstanding illness. Women generally reported worse health than men, except for longstanding illness.

Similar differences in overall health status have been reported between low and high income groups within non-manual occupations in the Health and Lifestyle Survey (HLS) (112).

Fewer participants reported a longstanding illness than adults aged between 45 and 64 in non-manual occupations in the General Household Survey (GHS) (31% of male participants compared to 40% of men in the GHS; 32% of female participants compared to 42% of women in the GHS) (103). However the national sample was slightly older and included people who may not have been working for health reasons. In contrast to the present study, there were moderate socioeconomic differences in longstanding illness in the GHS. For example, 48% of women in intermediate and junior occupations in the GHS reported a longstanding illness compared to 38% of women in employer/managerial occupations.

Somewhat unexpectedly, men and women in the lower grades reported fewer psychiatric symptoms than participants in higher grades. Female participants also reported more psychiatric symptoms than men in the same grade categories. These sex differences may be real or may reflect systematic reporting differences (113). Based on clinical interviews undertaken by Stephen Stansfeld, the estimated case prevalence of minor psychiatric disorders was higher in the lower grades and similar for men and women in the same grade categories. For men, the estimated case prevalence of minor psychiatric disorders was 22% in the higher grades (Groups 1 to 5) compared to 42% in clerical grades (Group 6), and for women 25% in the higher grades compared to 42% in clerical grades. These findings suggest that there were grade and sex differences in responses to the questionnaire on recent psychiatric symptoms. Minimal sex differences in the estimated case prevalence of minor psychiatric disorders are consistent with an earlier study of executive officers in the civil service (114).

Systematic reporting differences by socioeconomic status have also been reported for

other health measures. For example in the HLS, men in lower socioeconomic groups reported fewer health problems, despite other evidence such as use of medications (112). They were also less likely to report a longstanding illness unless it was associated with some functional impairment.

In the present study, overall health status did not relate directly to other measures of health, such as recurring health problems, longstanding illness and recent psychiatric symptoms. A moderate proportion of participants who reported very good overall health reported at least one recurring health problem, a longstanding illness or more than four psychiatric symptoms. In addition, few participants had perfect health defined as very good overall health status, no recurring health problems, no longstanding illness and few psychiatric symptoms. These differences have been previously reported (107,112) and support the view that health is multidimensional. The different health measures are therefore examined separately in relation to sickness absence in Chapter 12.

CHAPTER 9

Health related-behaviours

In this chapter grade and sex differences in smoking, alcohol consumption and physical activity are described. The relationship between these health-related behaviours is also examined.

9.1 Smoking habits

Overall, 14% of men and 23% of women were smokers (Table 63).

There were striking grade differences in smoking habits (Figure 19). More participants in the lower grades were smokers and fewer were ex-smokers. A particularly high proportion of office support staff were smokers (30% of men and 41% of women). Somewhat surprisingly, female top administrators (Group 1) were more likely to smoke than women in other administrative or higher executive grades (Groups 2 and 3).

More women in top administrative and office support grades were smokers than men, but otherwise there were minimal sex differences in the smoking habits.

9.2 Alcohol consumption

There were large grade differences in the frequency and amount of alcohol consumption.

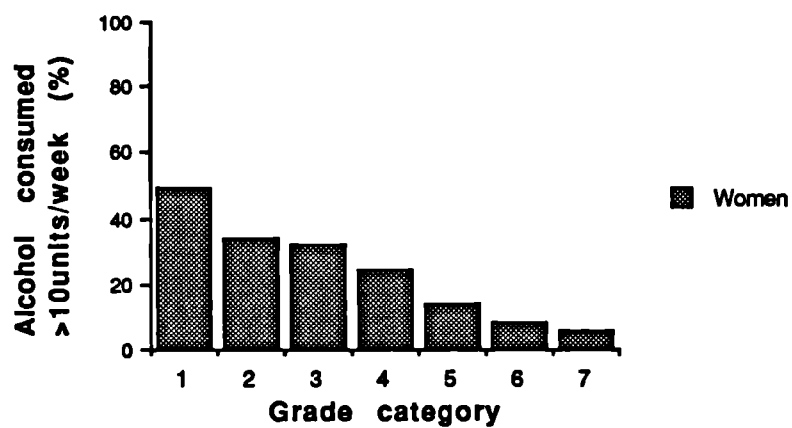
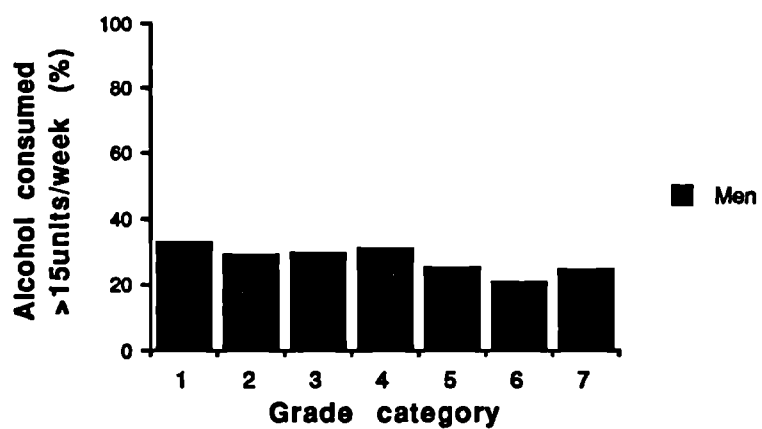
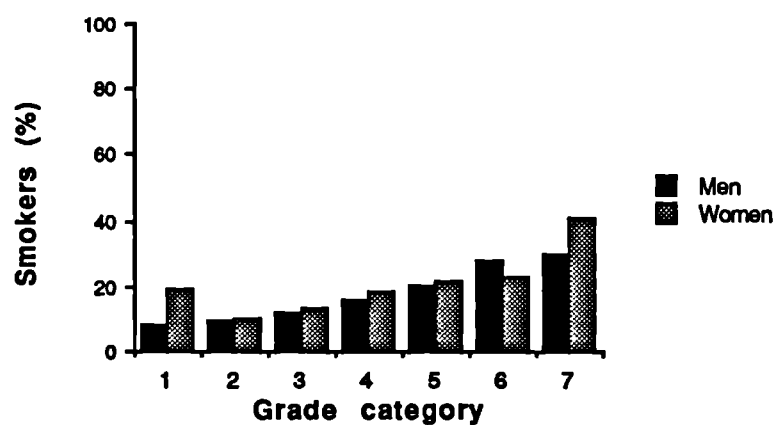
9.2.1 Frequency of alcohol consumption

The proportion of participants who drank alcohol at least daily decreased in a stepwise manner from 50% of top administrators to 11% of office support staff (Table 64). The proportion of participants who had never drunk alcohol in the previous 12 months was small but higher in the lower grades (7% compared to 2% of top administrators).

In the higher grades (Groups 1 to 5) there were minimal sex differences in the frequency of alcohol consumption. In the clerical and office support grades, men were more likely to drink alcohol at least daily.

Figure 19 - Smoking habits, by grade and sex

Figure 20 - Amount of alcohol consumed, by grade and sex



9.2.2 Amount of alcohol consumed

There was a stepwise increase in the proportion of men who had not drunk alcohol in the previous 7 days, from 6% of top administrators to 29% of office support staff (Table 65). Although fewer men in office support grades drank alcohol at least daily, there were minimal grade differences in the proportion who had drunk more than 30 units in the previous 7 days. This suggests that although men in the lower grades drank alcohol less frequently, they tended to drink more heavily on these occasions. For women, there were striking grade differences in the amount of alcohol consumed (Figure 20). The proportion of women who had drunk more than 10 units of alcohol in the previous 7 days decreased from 49% of top administrators to 6% of office support staff. Conversely, the proportion who had not drunk alcohol increased from 10% of top administrators to 41% of office support staff.

In the higher grades (Groups 1 to 4), men and women drank similar amounts of alcohol, assuming that an equivalent amount of alcohol for women was two thirds the level for men. In the lower grades, men drank more alcohol than women.

9.3 Relationship between smoking and alcohol consumption

There was a clear association between smoking and alcohol consumption for both men and women (Table 66). Participants who drank at least daily were more likely to smoke or to have smoked in the past, whereas those who had not drunk alcohol in the previous 12 months were more likely to be non-smokers. These differences were particularly striking for women.

9.4 Physical activity

Overall, 51% of men and 25% of women reported doing at least an hour of vigorous physical activity in a week (Table 67). Top administrators were about twice as likely as clerical and office support staff to report vigorous physical activity. In all grade categories, fewer women than men reported moderate or vigorous physical activity.

9.5 Relationship between smoking and physical activity

The association between smoking and physical activity was weaker than the association between smoking and alcohol consumption (Table 68). However, participants who did minimal physical activity were more likely to smoke, and those who did vigorous activity were more likely to be ex-smokers .

Table 63 - Smoking habits, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Smoking habits								
Non-smoker %	54.9	54.6	47.6	44.2	43.4	43.5	39.5	48.6
Ex-smoker %	37.0	35.7	40.0	39.8	36.0	28.4	30.3	37.0
Smoker %	8.1	9.7	12.4	16.0	20.6	28.1	30.3	14.4
Total number	1012	1598	1202	1454	855	405	185	6711

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Smoking habits								
Non-smoker %	47.9	60.7	60.9	52.4	55.6	56.1	38.4	53.6
Ex-smoker %	33.1	29.0	25.4	28.9	22.4	20.8	20.5	23.6
Smoker %	19.0	10.3	13.7	18.7	22.0	23.1	41.1	22.8
Total number	121	262	197	471	651	1242	419	3363

Table 64 - Frequency of alcohol consumption, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Frequency of alcohol consumption								
Never %	1.7	2.0	2.0	3.1	5.2	9.9	5.5	3.2
1-2 times/month %	8.4	16.7	20.0	23.3	26.6	31.7	40.9	20.5
1-2 times/week %	40.6	44.3	46.7	41.4	41.6	38.0	34.5	42.5
Daily %	43.0	32.4	27.3	27.7	23.3	17.8	16.4	29.5
More than daily %	6.3	4.6	3.9	4.5	3.3	2.6	2.7	4.3
Total number	1019	1625	1227	1496	877	416	220	6880

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Frequency of alcohol consumption								
Never %	1.6	2.7	2.0	2.3	5.2	10.0	7.7	6.4
1-2 times/month %	10.7	15.2	18.2	27.8	41.2	49.1	54.8	39.5
1-2 times/week %	35.2	34.6	39.4	39.7	36.3	31.4	30.8	34.3
Daily %	47.5	42.2	36.4	28.7	16.1	8.8	6.5	18.3
More than daily %	4.9	5.3	4.0	1.5	1.2	0.7	0.2	1.6
Total number	122	263	198	478	658	1256	429	3404

Table 65 - Amount of alcohol consumed, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Amount of alcohol consumed								
None %	6.1	8.7	11.3	13.3	19.5	28.8	28.8	13.0
1-10 units %	44.1	48.7	46.9	44.8	43.7	43.5	40.2	45.6
11-15 units %	17.0	14.1	12.5	10.8	11.8	7.2	6.8	12.6
16-30 units %	22.3	19.8	20.3	19.2	15.2	11.8	15.5	18.9
31 + units %	10.5	8.8	8.9	11.8	9.8	8.7	8.7	9.8
Total number	1021	1613	1221	1485	870	416	219	6845

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Amount of alcohol consumed								
None %	9.8	9.5	11.7	16.4	28.5	37.9	40.6	28.6
1-6 units %	27.0	33.6	37.2	44.2	45.9	44.9	41.6	42.6
7-10 units %	13.9	22.9	18.9	15.1	11.6	9.0	12.3	12.6
11-20 units %	32.8	22.1	18.9	19.3	10.1	6.0	4.1	11.5
21 + units %	16.4	11.8	13.3	5.0	3.8	2.1	1.4	4.7
Total number	122	262	196	477	653	1224	416	3350

**Table 66 - Relationship between smoking and frequency of alcohol consumption,
by sex**

Men

	Frequency of alcohol consumption					Total %
	Never	1-2/mth	1-2/wk	Daily	>Daily	
Smoking habits						
Non-smoker %	67.6	57.5	50.2	41.0	29.6	48.6
Ex-smoker %	19.4	28.6	37.1	42.7	49.6	37.0
Smoker %	13.0	13.9	12.7	16.2	20.8	14.4
Total number	216	1352	2860	1983	284	6695

Women

	Frequency of alcohol consumption					Total %
	Never	1-2/mth	1-2/wk	Daily	>Daily	
Smoking habits						
Non-smoker %	77.2	57.1	51.0	44.3	34.0	53.6
Ex-smoker %	10.7	18.9	25.3	33.7	39.6	23.6
Smoker %	12.1	24.0	23.7	22.1	26.4	22.8
Total number	215	1327	1146	612	53	3353

Table 67 - Physical activity, by grade and sex

Men

	Grade category							Total
	1	2	3	4	5	6	7	%
Physical activity								
Mild %	6.9	6.6	5.6	9.0	17.9	31.9	41.0	11.0
Moderate %	40.9	37.2	38.1	37.3	38.1	35.5	34.1	37.8
Vigorous %	52.2	56.2	56.3	53.8	44.0	32.6	24.9	51.1
Total number	1022	1625	1227	1495	873	417	217	6876

Women

	Grade category							Total
	1	2	3	4	5	6	7	%
Physical activity								
Mild %	17.6	17.6	11.6	17.4	23.6	37.3	48.3	29.4
Moderate %	47.9	47.1	46.5	49.8	48.7	44.0	41.3	45.9
Vigorous %	34.5	35.2	41.9	32.8	27.7	18.7	10.4	24.6
Total number	119	261	198	478	657	1248	412	3373

Table 68 - Relationship between smoking and physical activity, by sex

Men

	Physical activity			Total %
	Mild	Moderate	Vigorous	
Smoking habits				
Non-smoker %	46.8	47.5	49.7	48.6
Ex-smoker %	31.8	37.5	37.9	37.1
Smoker %	21.3	15.0	12.4	14.4
Total number	726	2538	3426	6690

Women

	Physical activity			Total %
	Mild	Moderate	Vigorous	
Smoking habits				
Non-smoker %	53.0	52.8	56.5	53.8
Ex-smoker %	22.0	23.1	26.2	23.6
Smoker %	25.1	24.1	17.3	22.7
Total number	974	1525	823	3322

9.6 Discussion

There were striking grade differences in the prevalence of smoking. Participants in the lower grade were three to four times more likely to be smokers than top administrators. In contrast to men, an unexpectedly high proportion of female top administrators were smokers.

In the present study, the prevalence of smoking was lower than in several national surveys, but the grade differences were greater than socioeconomic differences reported in these surveys (103,107). For example, 12% of men in the higher grades were smokers compared to 28% of men in employer/managerial occupations in these surveys and 23% of men in lower executive and clerical grades were smokers compared to 28% of men in other non-manual occupations. Similar differences were observed for women.

Overall, a high proportion of the study population had drunk alcohol in the previous 7 days (87% of men and 71% women). This level of alcohol consumption was similar to adults of a similar age in a recent national survey (115). Participants also reported drinking a similar amount of alcohol in the previous 7 days compared to adults with similar socioeconomic status in this survey. The large grade differences in alcohol consumption, particularly for women, were consistent with, but greater than, socioeconomic differences in several national surveys (107,115).

Participants, on average, under-estimated their usual alcohol consumption. Of those who reported drinking alcohol 'once or twice a month', 75% of men and 73% of women had drunk alcohol in the previous 7 days.

The relationship between smoking and alcohol consumption is well recognised and has been previously reported (107). There was a weaker relationship between smoking and physical activity. These findings illustrate the difficulties of separating the effects of one health-related behaviour from another.

The grade differences in the proportion of participants who reported doing regular vigorous physical activity was the opposite of socioeconomic differences observed in the Health and Lifestyle Survey (107). In the HLS, more non-manual than manual employees reported physical activity in their leisure time, but those in managerial occupations reported less physical activity than those in other non-manual occupations.

CHAPTER 10

The work environment and sickness absence

In this chapter, the relationship between rates of sickness absence and self-reports of the work environment, external assessments of the work environment and attitudes towards work are described.

I. Short spells of sickness absence

10.1 Self-reports of the work environment and short spells

The unadjusted and age- and grade-adjusted rate ratios for short spells of sickness absence for different levels of each of the self-reported work characteristics are shown in Table 69.

Before adjusting for age and grade, men who reported high control or high variety and skill use had about half the rates of short spells than those who reported low levels of these characteristics. After adjusting for age and grade, men who reported high levels of control or high variety and skill use had about 20% fewer short spells (Figure 21).

The differences were similar, but smaller, for work pace. After adjusting for age and grade, men who reported fast work pace had 9% fewer short spells.

The amount of support at work also related to the rates of short spells of sickness absence. Men who reported high support at work had about 20% fewer short spells. The differences were unchanged after adjusting for age and grade (Figure 22). This reflects the weaker association between grade and support at work.

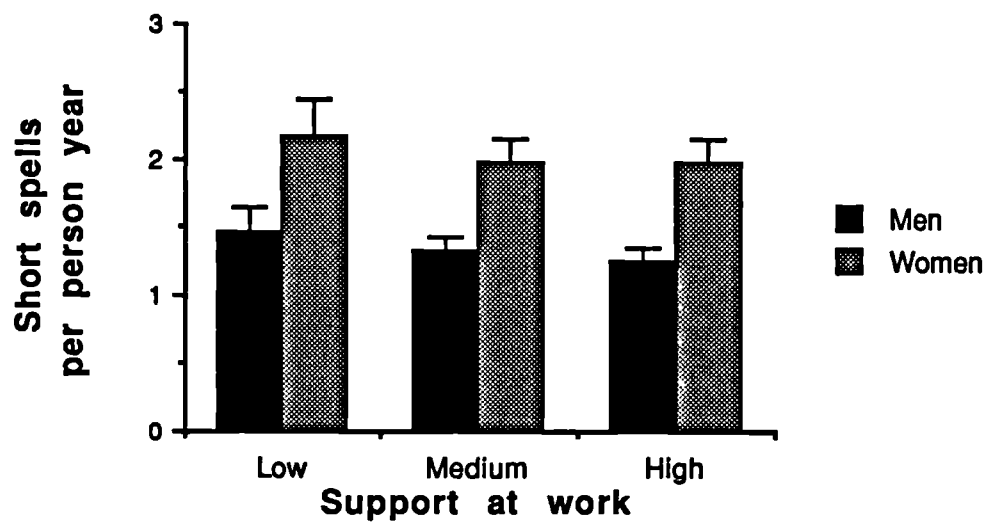
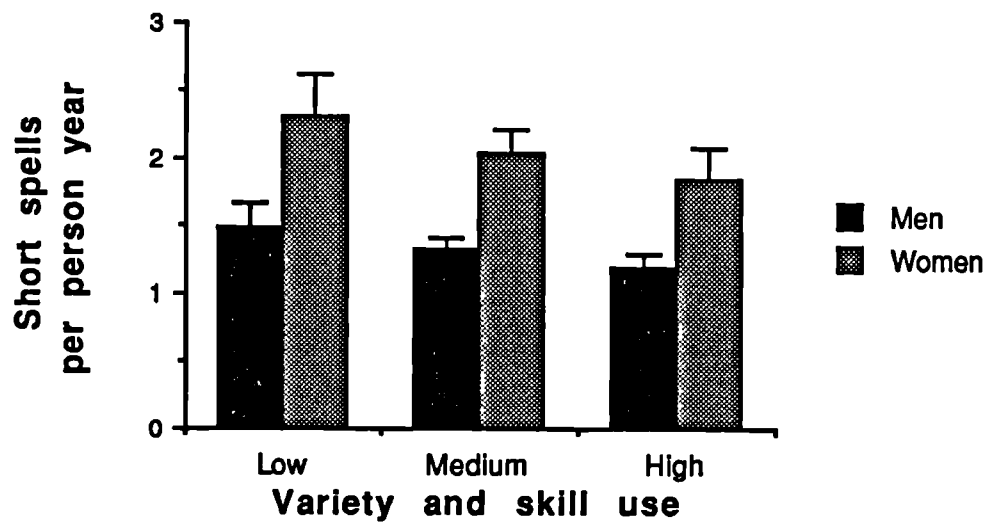
Before adjusting for age and grade, men who reported high conflicting demands had slightly lower rates of short spells than those who reported low conflicting demands. After adjusting for age and grade, the differences were in the opposite direction, with men who reported high conflicting demands having 14% more short spells. The unadjusted rate ratios probably reflect the higher levels of conflicting demands reported by participants in the higher grades.

For women, the work characteristics which were related to short spells were variety and skill use, and support at work. The size and direction of these associations were similar to

those observed for men. In contrast to men, work pace and control for women did not relate to rates of short spells, after adjusting for age and grade.

Figure 21 - Self-reports of variety and skill use and short spells, age- and grade-adjusted rates by sex

Figure 22 - Self-reports of support at work and short spells, age- and grade-adjusted rates by sex



10.2 External assessments of the work environment and short spells

The unadjusted and age- and grade-adjusted rate ratios for short spells of sickness absence for different levels of each of the externally assessed work characteristics are shown in Table 70.

The association between short spells of sickness absence and the external assessments of control and work pace were similar to those observed for the self-reports. Before adjusting for age and grade, participants in jobs with high control and high work pace had about half the rates of short spells. After adjusting for grade and age, participants in jobs with high control and high work pace had about 20% fewer short spells.

In contrast to the self-reports, participants in jobs with externally assessed conflicting demands had lower rates of short spells, before and after adjusting for age and grade.

The differences in short spells of sickness absence were similar for externally assessed control, work pace and conflicting demands.

The importance of mistakes did not relate to rates of short spells of sickness absence, after adjusting for age and grade.

The relationship between external assessments of the work environment and short spells of sickness absence was similar for men and women.

10.3 Attitudes towards work and short spells

Participants who had high levels of job satisfaction had lower rates of short spells of sickness absence (Figure 23 and Table 71). Men who had high levels of job satisfaction had 26% fewer short spells, and women 21% fewer short spells, than those who had low levels of job satisfaction.

High levels of perceived job importance were also associated with fewer short spells of sickness absence. Men and women who perceived their job as more important had 11% fewer short spells than those who perceived their jobs as less important.

10.4 Combined effects of self-reported work pace, control and variety and skill use on short spells

To test the job strain concept in relation to sickness absence, the combined effects of work pace and control, and work pace and variety and skill use were examined.

Table 72 shows the combined effects of work pace and control and Table 73 shows the combined effects of work pace and variety and skill use. The unadjusted rate ratios for combinations of work characteristics are difficult to interpret because of the confounding effect of grade. The age- and grade-adjusted rates are therefore discussed.

For men, high control and high work pace were independently related to lower rates of short spells of sickness absence. At low and medium levels of control, higher work pace was not associated with lower rates of short spells. However, at high levels of control, there was a steady decrease in the rates of short spells with increasing work pace. Those with high control and high work pace ('active jobs') had approximately 30% fewer spells than those with high control but low work pace ('low strain jobs'). The relationship between short spells and the combination of work pace and variety and skill use was similar.

The findings were different for women. There was no relationship between short spells and the combination of work pace and control. This is not be surprising because neither control nor work pace related independently to rates of short spells of sickness absence. However, variety and skill use related independently to short spells. In contrast to men, women with high variety and skill use and low work pace ('low strain jobs') had about 40% fewer short spells than those with high variety and skill use and high work pace ('active' jobs').

II. Long spells of sickness absence

10.5 Self-reports and external assessments of the work environment and long spells

The unadjusted and age- and grade-adjusted rate ratios for long spells of sickness absence for different levels of each of the self-reported and externally assessed work characteristics are shown in Tables 74 and 75.

Both age and grade were related to rates of long spells. Age- and grade-adjusted rates of long spells are therefore discussed. For both self-reports and external assessments, the relationship between each of the work characteristics and long spells of sickness absence

was weak and not significant. The only exception was for women in jobs with high externally assessed conflicting demands who had fewer long spells of sickness absence. This was not observed for the self-reports of conflicting demands.

10.6 Attitudes towards work and long spells

There was no relationship between levels of perceived job importance and long spells, after adjusting for age and grade (Table 76).

Job satisfaction was the only work characteristic which related to rates of long spells of sickness absence (Figure 24 and Table 76). After adjusting for age and grade, participants with high levels of job satisfaction had 23% fewer long spells than those with low levels of job satisfaction. The differences were similar for men and women.

Figure 23 - Job satisfaction and short spells, age- and grade adjusted rates by sex

Figure 24 - Job satisfaction and long spells, age- and grade adjusted rates by sex

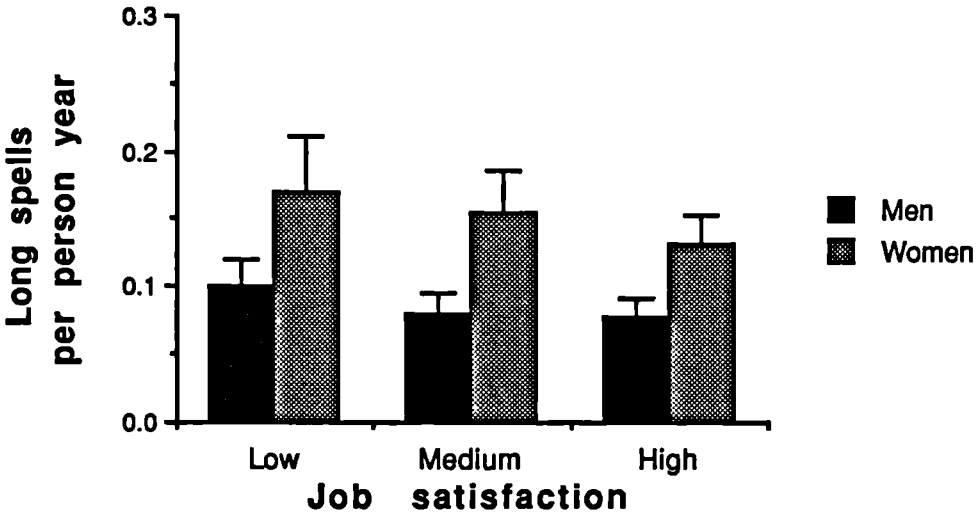
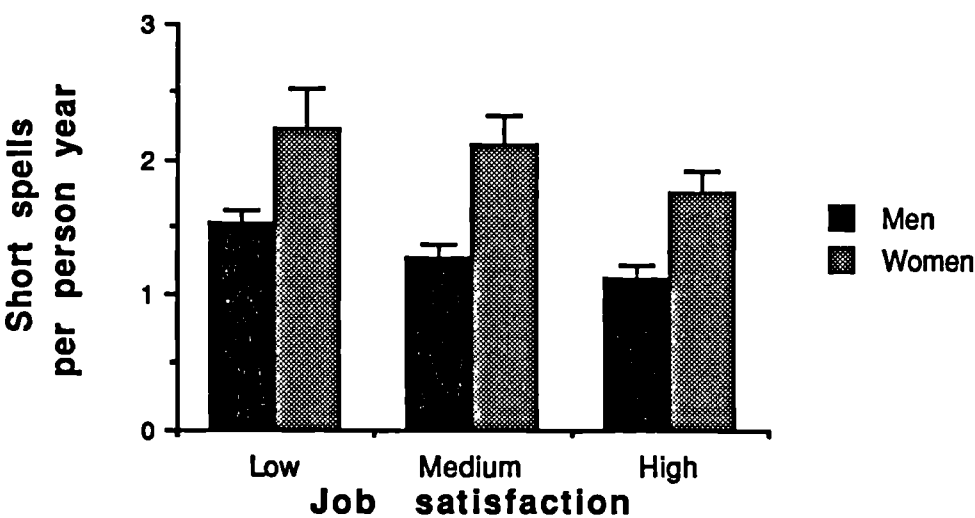


Table 69 - Self-reports of the work environment and short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Men (N=5983)

Self-reported work characteristic	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
Control		
Low	1.00 ^a	1.00 ^f
Medium	0.68 (0.63 - 0.73)	0.91 (0.84 - 0.97)
High	0.52 (0.48 - 0.56)	0.80 (0.74 - 0.86)
Variety and skill use		
Low	1.00 ^b	1.00 ^g
Medium	0.68 (0.63 - 0.72)	0.89 (0.83 - 0.95)
High	0.48 (0.44 - 0.51)	0.81 (0.75 - 0.87)
Work pace		
Low	1.00 ^c	1.00 ^h
Medium	0.76 (0.71 - 0.81)	0.90 (0.84 - 0.96)
High	0.63 (0.58 - 0.68)	0.91 (0.85 - 0.98)
Conflicting demands		
Low	1.00 ^d	1.00 ⁱ
Medium	0.91 (0.85 - 0.99)	1.04 (0.97 - 1.12)
High	0.92 (0.85 - 1.00)	1.14 (1.05 - 1.23)
Support at work		
Low	1.00 ^e	1.00 ^j
Medium	0.84 (0.78 - 0.91)	0.91 (0.85 - 0.97)
High	0.79 (0.74 - 0.85)	0.86 (0.80 - 0.92)

Base rate - spells per person year (95% confidence interval)

^a 1.84 (1.75 - 1.94)	^f 1.51 (1.39 - 1.63)
^b 1.85 (1.77 - 1.94)	^g 1.49 (1.38 - 1.61)
^c 1.63 (1.55 - 1.71)	^h 1.45 (1.34 - 1.57)
^d 1.36 (1.27 - 1.45)	ⁱ 1.27 (1.17 - 1.39)
^e 1.45 (1.38 - 1.52)	^j 1.47 (1.36 - 1.59)

Table 69 (continued)

Women (N=2658)

Self-reported work characteristic	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
Control		
Low	1.00 ^k	1.00 ^P
Medium	0.84 (0.77 - 0.91)	0.92 (0.84 - 1.00)
High	0.78 (0.71 - 0.86)	0.96 (0.87 - 1.07)
Variety and skill use		
Low	1.00 ^l	1.00 ^Q
Medium	0.81 (0.74 - 0.88)	0.88 (0.81 - 0.96)
High	0.60 (0.54 - 0.67)	0.80 (0.70 - 0.90)
Work pace		
Low	1.00 ^m	1.00 ^r
Medium	0.90 (0.83 - 0.98)	0.97 (0.89 - 1.05)
High	0.82 (0.74 - 0.90)	0.96 (0.87 - 1.05)
Conflicting demands		
Low	1.00 ⁿ	1.00 ^s
Medium	1.00 (0.93 - 1.09)	1.11 (1.02 - 1.20)
High	0.89 (0.81 - 1.00)	1.09 (0.98 - 1.21)
Support at work		
Low	1.00 ^o	1.00 ^t
Medium	0.89 (0.82 - 0.98)	0.91 (0.83 - 0.99)
High	0.91 (0.83 - 0.99)	0.91 (0.83 - 0.99)
Base rate - spells per person year (95% confidence interval)		
	^k 2.30 (2.18 - 2.42)	^P 2.13 (1.88 - 2.41)
	^l 2.37 (2.26 - 2.48)	^Q 2.30 (2.03 - 2.61)
	^m 2.25 (2.13 - 2.38)	^r 2.09 (1.84 - 2.37)
	ⁿ 2.11 (1.99 - 2.23)	^s 1.88 (1.66 - 2.14)
	^o 2.21 (2.08 - 2.34)	^t 2.17 (1.92 - 2.44)

**Table 70 - External assessments of the work environment and short spells -
unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and
grade (Group 4)**

Men (N=5248)

Externally assessed work characteristic	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
Control		
Low	1.00 ^a	1.00 ^e
Medium	0.65 (0.61 - 0.70)	0.92 (0.85 - 0.99)
High	0.46 (0.43 - 0.50)	0.79 (0.72 - 0.86)
Work pace		
Low	1.00 ^b	1.00 ^f
Medium	0.67 (0.63 - 0.72)	0.89 (0.83 - 0.96)
High	0.55 (0.51 - 0.60)	0.77 (0.71 - 0.83)
Conflicting demands		
Low	1.00 ^c	1.00 ^g
Medium	0.70 (0.65 - 0.75)	0.84 (0.78 - 0.90)
High	0.51 (0.48 - 0.56)	0.73 (0.67 - 0.79)
Importance of mistakes		
Low	1.00 ^d	1.00 ^h
Medium	0.80 (0.73 - 0.88)	0.94 (0.86 - 1.03)
High	0.76 (0.71 - 0.81)	0.95 (0.89 - 1.01)

Base rate - spells per person year (95% confidence interval)

^a 1.94 (1.84 - 2.05)	^e 1.50 (1.38 - 1.64)
^b 1.77 (1.69 - 1.86)	^f 1.52 (1.40 - 1.65)
^c 1.84 (1.75 - 1.93)	^g 1.65 (1.51 - 1.80)
^d 1.53 (1.46 - 1.60)	^h 1.41 (1.30 - 1.53)

Table 70 (continued)

Women (N=2408)

Externally assessed work characteristic	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
Control		
Low	1.00 ⁱ	1.00 ^m
Medium	0.83 (0.77 - 0.91)	0.94 (0.86 - 1.03)
High	0.59 (0.53 - 0.66)	0.73 (0.65 - 0.82)
Work pace		
Low	1.00 ^j	1.00 ⁿ
Medium	0.86 (0.79 - 0.94)	0.92 (0.84 - 1.00)
High	0.63 (0.57 - 0.70)	0.68 (0.61 - 0.75)
Conflicting demands		
Low	1.00 ^k	1.00 ^o
Medium	0.88 (0.81 - 0.96)	0.90 (0.82 - 0.98)
High	0.66 (0.60 - 0.72)	0.70 (0.64 - 0.78)
Importance of mistakes		
Low	1.00 ^l	1.00 ^p
Medium	0.91 (0.81 - 1.02)	0.95 (0.85 - 1.07)
High	0.85 (0.79 - 0.93)	0.93 (0.85 - 1.01)
Base rate - spells per person year (95% confidence interval)		
	ⁱ 2.39 (2.27 - 2.51)	^m 2.28 (2.00 - 2.60)
	^j 2.39 (2.27 - 2.53)	ⁿ 2.35 (2.07 - 2.66)
	^k 2.39 (2.27 - 2.53)	^o 2.46 (2.15 - 2.81)
	^l 2.24 (2.11 - 2.37)	^p 2.14 (1.88 - 2.43)

Table 71 - Attitudes towards work and short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Men (N=5983)

Attitudes towards work	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
Perceived job importance		
Low	1.00 ^a	1.00 ^c
Medium	0.75 (0.70 - 0.81)	0.89 (0.83 - 0.95)
High	0.76 (0.70 - 0.82)	0.89 (0.83 - 0.96)
Job satisfaction		
Low	1.00 ^b	1.00 ^d
Medium	0.76 (0.71 - 0.82)	0.84 (0.79 - 0.90)
High	0.60 (0.56 - 0.64)	0.74 (0.70 - 0.80)
Base rate - spells per person year (95% confidence interval)		
	^a 1.58 (1.49 - 1.68)	^c 1.47 (1.36 - 1.60)
	^b 1.61 (1.54 - 1.68)	^d 1.52 (1.41 - 1.63)

Women (N=2658)

Perceived job importance		
Low	1.00 ^e	1.00 ^g
Medium	0.88 (0.81 - 0.97)	0.91 (0.83 - 0.99)
High	0.89 (0.82 - 0.98)	0.89 (0.81 - 0.97)
Job satisfaction		
Low	1.00 ^f	1.00 ^h
Medium	0.95 (0.86 - 1.05)	0.95 (0.87 - 1.04)
High	0.80 (0.73 - 0.87)	0.79 (0.73 - 0.86)
Base rate - spells per person year (95% confidence interval)		
	^e 2.24 (2.10 - 2.40)	^g 2.19 (1.94 - 2.47)
	^f 2.31 (2.17 - 2.47)	^h 2.23 (1.98 - 2.50)

Table 72 - Combined effects of self-reported work pace and control on short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Men (N=5983)

Unadjusted rate ratio (95% confidence interval)

	Work pace		
	Low	Medium	High
Control			
Low	1.00 ^a	0.81 (0.72 - 0.91)	0.75 (0.65 - 0.85)
Medium	0.67 (0.60 - 0.76)	1.07 (0.91 - 1.26)	1.02 (0.85 - 1.22)
High	0.65 (0.57 - 0.73)	0.82 (0.69 - 0.97)	0.71 (0.59 - 0.85)

Adjusted rate ratio (95% confidence interval)

	Work pace		
	Low	Medium	High
Control			
Low	1.00 ^b	0.94 (0.84 - 1.05)	1.06 (0.94 - 1.20)
Medium	0.91 (0.81 - 1.02)	1.04 (0.89 - 1.22)	0.93 (0.78 - 1.10)
High	0.96 (0.85 - 1.08)	0.81 (0.69 - 0.95)	0.68 (0.57 - 0.81)

Base rate - spells per person year (95% confidence interval)

^a 2.15 (1.98 - 2.33)

^b 1.52 (1.37 - 1.69)

Table 72 (continued)

Women (N=2658)

Unadjusted rate ratio (95% confidence interval)

	Work pace		
	Low	Medium	High
Control			
Low	1.00 ^c	0.92 (0.82 - 1.03)	0.87 (0.76 - 1.00)
Medium	0.87 (0.76 - 1.00)	0.99 (0.81 - 1.20)	0.93 (0.75 - 1.15)
High	0.80 (0.68 - 0.95)	1.04 (0.82 - 1.31)	0.95 (0.74 - 1.23)

Adjusted rate ratio (95% confidence interval)

	Work pace		
	Low	Medium	High
Control			
Low	1.00 ^d	0.94 (0.84 - 1.06)	0.93 (0.81 - 1.06)
Medium	0.93 (0.79 - 1.02)	1.04 (0.86 - 1.25)	1.05 (0.85 - 1.29)
High	0.90 (0.77 - 1.07)	1.10 (0.87 - 1.37)	1.11 (0.86 - 1.42)

Base rate - spells per person year (95% confidence interval)

^c 2.43 (2.25 - 2.62)

^d 2.23 (1.93 - 2.56)

Table 73 - Combined effects of self-reported work pace and variety/skill use on short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Men (N=5983)

Unadjusted rate ratio (95% confidence interval)

Variety and skill use	Work pace		
	Low	Medium	High
Low	1.00 ^a	0.88 (0.79 - 0.97)	0.91 (0.80 - 1.03)
Medium	0.73 (0.65 - 0.73)	0.97 (0.83 - 1.14)	0.84 (0.70 - 1.01)
High	0.61 (0.53 - 0.70)	0.81 (0.67 - 0.98)	0.73 (0.60 - 0.89)

Adjusted rate ratio (95% confidence interval)

Variety and skill use	Work pace		
	Low	Medium	High
Low	1.00 ^b	0.96 (0.87 - 1.06)	1.05 (0.93 - 1.19)
Medium	0.94 (0.84 - 1.05)	0.95 (0.82 - 1.11)	0.86 (0.72 - 1.03)
High	0.94 (0.82 - 1.07)	0.83 (0.70 - 0.99)	0.80 (0.66 - 0.96)

Base rate - spells per person year (95% confidence interval)

^a 1.98 (1.85 - 2.12)

^b 1.50 (1.37 - 1.65)

Table 73 (continued)

Women (N=2658)

Unadjusted rate ratio (95% confidence interval)

Variety and skill use	Work pace		
	Low	Medium	High
Low	1.00 ^c	1.05 (0.95 - 1.17)	0.98 (0.86 - 1.12)
Medium	0.96 (0.84 - 1.10)	0.73 (0.60 - 0.89)	0.95 (0.69 - 1.02)
High	0.62 (0.47 - 0.80)	0.95 (0.69 - 1.31)	1.01 (0.73 - 1.38)

Adjusted rate ratio (95% confidence interval)

Variety and skill use	Work pace		
	Low	Medium	High
Low	1.00 ^d	1.06 (0.96 - 1.17)	1.00 (0.88 - 1.13)
Medium	1.02 (0.89 - 1.16)	0.76 (0.63 - 0.92)	0.86 (0.69 - 1.07)
High	0.72 (0.56 - 0.93)	1.03 (0.75 - 1.41)	1.20 (0.88 - 1.65)

Base rate - spells per person year (95% confidence interval)

^c 2.34 (2.19 - 2.49)

^d 2.28 (1.99 - 2.62)

Table 74 - Self-reports of the work environment and long spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Men (N=5983)

Self-reported work characteristic	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
Control		
Low	1.00 ^a	1.00 ^f
Medium	0.71 (0.60 - 0.83)	1.00 (0.84 - 1.19)
High	0.58 (0.50 - 0.69)	0.93 (0.77 - 1.11)
Variety and skill use		
Low	1.00 ^b	1.00 ^g
Medium	0.66 (0.56 - 0.77)	0.91 (0.77 - 1.08)
High	0.55 (0.46 - 0.64)	0.95 (0.79 - 1.14)
Work pace		
Low	1.00 ^c	1.00 ^h
Medium	0.87 (0.75 - 1.02)	1.10 (0.93 - 1.29)
High	0.70 (0.59 - 0.82)	1.05 (0.88 - 1.25)
Conflicting demands		
Low	1.00 ^d	1.00 ⁱ
Medium	0.94 (0.80 - 1.12)	1.12 (0.94 - 1.33)
High	0.92 (0.77 - 1.11)	1.18 (0.98 - 1.43)
Support at work		
Low	1.00 ^e	1.00 ^j
Medium	0.91 (0.77 - 1.06)	0.97 (0.82 - 1.14)
High	0.87 (0.74 - 1.02)	0.92 (0.79 - 1.09)

Base rate - spells per person year (95% confidence interval)

^a 0.13 (0.12 - 0.15)	^f 0.09 (0.08 - 0.11)
^b 0.14 (0.12 - 0.15)	^g 0.10 (0.08 - 0.12)
^c 0.11 (0.10 - 0.13)	^h 0.09 (0.07 - 0.11)
^d 0.10 (0.09 - 0.12)	ⁱ 0.08 (0.07 - 0.10)
^e 0.10 (0.09 - 0.12)	^j 0.10 (0.08 - 0.11)

Table 74 (continued)

Women (N=2658)

Self-reported work characteristic	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
Control		
Low	1.00 ^k	1.00 ^p
Medium	0.65 (0.55 - 0.76)	0.84 (0.72 - 0.99)
High	0.55 (0.45 - 0.66)	0.87 (0.70 - 1.06)
Variety and skill use		
Low	1.00 ^l	1.00 ^q
Medium	0.73 (0.62 - 0.86)	0.94 (0.79 - 1.11)
High	0.48 (0.38 - 0.59)	0.91 (0.72 - 1.16)
Work pace		
Low	1.00 ^m	1.00 ^r
Medium	1.00 (0.86 - 1.17)	1.28 (1.09 - 1.51)
High	0.80 (0.67 - 0.95)	1.20 (1.00 - 1.44)
Conflicting demands		
Low	1.00 ⁿ	1.00 ^s
Medium	0.88 (0.76 - 1.02)	1.13 (0.97 - 1.32)
High	0.80 (0.67 - 0.97)	1.24 (1.02 - 1.51)
Support at work		
Low	1.00 ^o	1.00 ^t
Medium	0.77 (0.65 - 0.92)	0.83 (0.70 - 0.98)
High	0.87 (0.74 - 1.02)	0.86 (0.74 - 1.01)
Base rate - spells per person year (95% confidence interval)		
	^k 0.30 (0.27 - 0.33)	^p 0.17 (0.13 - 0.22)
	^l 0.29 (0.26 - 0.31)	^q 0.16 (0.12 - 0.20)
	^m 0.25 (0.22 - 0.27)	^r 0.12 (0.10 - 0.16)
	ⁿ 0.26 (0.23 - 0.29)	^s 0.13 (0.10 - 0.17)
	^o 0.26 (0.24 - 0.29)	^t 0.16 (0.13 - 0.21)

**Table 75 - External assessments of the work environment and long spells -
unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and
grade (Group 4)**

Men (N=5248)

Externally assessed work characteristic	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
Control		
Low	1.00 ^a	1.00 ^e
Medium	0.68 (0.58 - 0.80)	1.02 (0.85 - 1.23)
High	0.51 (0.42 - 0.61)	0.90 (0.72 - 1.12)
Work pace		
Low	1.00 ^b	1.00 ^f
Medium	0.74 (0.63 - 0.87)	1.06 (0.89 - 1.26)
High	0.63 (0.52 - 0.76)	0.92 (0.76 - 1.12)
Conflicting demands		
Low	1.00 ^c	1.00 ^g
Medium	0.79 (0.67 - 0.94)	1.01 (0.84 - 1.21)
High	0.65 (0.55 - 0.77)	0.97 (0.80 - 1.18)
Importance of mistakes		
Low	1.00 ^d	1.00 ^h
Medium	0.83 (0.67 - 1.03)	1.01 (0.81 - 1.25)
High	0.75 (0.64 - 0.87)	0.95 (0.81 - 1.11)
Base rate - spells per person year (95% confidence interval)		
	^a 0.14 (0.12 - 0.16)	^e 0.09 (0.07 - 0.12)
	^b 0.12 (0.11 - 0.14)	^f 0.09 (0.07 - 0.11)
	^c 0.12 (0.11 - 0.14)	^g 0.09 (0.07 - 0.11)
	^d 0.11 (0.10 - 0.13)	^h 0.09 (0.08 - 0.11)

Table 75 (continued)

Women (N=2408)

Externally assessed work characteristic	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
Control		
Low	1.00 ⁱ	1.00 ^m
Medium	0.67 (0.57 - 0.79)	0.93 (0.78 - 1.11)
High	0.55 (0.45 - 0.68)	0.89 (0.72 - 1.11)
Work pace		
Low	1.00 ^j	1.00 ⁿ
Medium	0.74 (0.63 - 0.87)	1.01 (0.85 - 1.19)
High	0.66 (0.54 - 0.79)	0.92 (0.76 - 1.12)
Conflicting demands		
Low	1.00 ^k	1.00 ^o
Medium	0.62 (0.52 - 0.73)	0.78 (0.65 - 0.94)
High	0.53 (0.45 - 0.64)	0.77 (0.63 - 0.94)
Importance of mistakes		
Low	1.00 ^l	1.00 ^p
Medium	0.96 (0.79 - 1.18)	1.26 (1.02 - 1.56)
High	0.70 (0.60 - 0.81)	0.92 (0.78 - 1.08)
Base rate - spells per person year (95% confidence interval)		
	ⁱ 0.31 (0.28 - 0.34)	^m 0.14 (0.11 - 0.19)
	^j 0.30 (0.27 - 0.33)	ⁿ 0.14 (0.10 - 0.18)
	^k 0.33 (0.30 - 0.36)	^o 0.17 (0.12 - 0.22)
	^l 0.28 (0.26 - 0.32)	^p 0.13 (0.10 - 0.18)

Table 76 - Attitudes towards work and long spells - unadjusted rate ratios
and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Men (N=5983)

Attitudes towards work	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Perceived job importance

Low	1.00 ^a	1.00 ^c
Medium	0.80 (0.68 - 0.95)	0.96 (0.81 - 1.14)
High	0.82 (0.69 - 0.97)	0.94 (0.79 - 1.12)

Job satisfaction

Low	1.00 ^b	1.00 ^d
Medium	0.74 (0.63 - 0.87)	0.80 (0.68 - 0.95)
High	0.66 (0.57 - 0.77)	0.77 (0.66 - 0.91)

Base rate - spells per person year (95% confidence interval)

^a 0.11 (0.10 - 0.13)	^c 0.10 (0.08 - 0.12)
^b 0.12 (0.11 - 0.13)	^d 0.10 (0.09 - 0.12)

Women (N=2658)

Perceived job importance

Low	1.00 ^e	1.00 ^g
Medium	0.91 (0.76 - 1.08)	0.96 (0.81 - 1.14)
High	1.07 (0.90 - 1.26)	0.99 (0.84 - 1.18)

Job satisfaction

Low	1.00 ^f	1.00 ^h
Medium	0.95 (0.79 - 1.14)	0.91 (0.76 - 1.09)
High	0.87 (0.74 - 1.02)	0.77 (0.65 - 0.90)

Base rate - spells per person year (95% confidence interval)

^e 0.24 (0.21 - 0.27)	^g 0.15 (0.12 - 0.19)
^f 0.25 (0.22 - 0.28)	^h 0.17 (0.13 - 0.21)

10.7 Discussion

A number of aspects of the work environment related to the rates of short spells of sickness absence. The rate ratios were greatly reduced after adjusting for age and grade. This is consistent with the association between grade and the work environment, and grade and sickness absence described in Chapters 5 and 6. Grade may be a good global measure of the work environment and by adjusting for grade, the relationship between specific aspects of the work environment and sickness absence may be under-estimated. On the other hand, the unadjusted rate ratios are confounded by grade of employment.

The rate ratios can be compared for each of the work characteristics because the analyses were based on tertiles. However these comparisons need to be interpreted cautiously because the confidence intervals were relatively wide.

For men, self-reports of control, variety and skill use, work pace, conflicting demands and support at work related to short spells of sickness absence. However, for women only variety and skill use, and support at work related to short spells of sickness absence. These findings are consistent with an earlier study which suggested that support at work, rather than control, was more important for women (72).

When comparing the findings for men and women, it is important to consider that men were predominantly in administrative and higher executive grades, whereas women were predominantly in clerical and office support grades. High work pace for a top administrator is likely to have different implications to high work pace for clerical staff. This may explain some of the differences between men and women.

Both self-reports and external assessments of the work environment predicted rates of short spells of sickness absence. This suggests that the relationship between the work environment and sickness absence is unlikely to be explained only in terms of employees' perception of the work environment. The work environment itself appears to be important. The one exception was the differences in sickness absence associated with self-reported and externally assessed conflicting demands. The findings suggest that participants and personnel managers have interpreted conflicting demands in different ways. Personnel managers may have been more likely to assess conflicts inherent in the work, for example those associated with high levels of responsibility, whereas participants may have assessed inter-personal conflicts. This is discussed further in Chapter 15.

In contrast to the self-reports, the rate ratios were similar for each of the externally assessed work characteristics. These findings are consistent with the possibility that personnel managers were less able to distinguish between different aspects of the work environment than employees.

A number of studies have reported an increased risk of coronary heart disease with increased work pressures (67,116). In this study, jobs with slow work pace tended to be monotonous and require few skills, whereas jobs with fast work pace were more varied and required more skill. This probably explains the higher rates of sickness absence in jobs with slow work pace.

The findings are discussed in relation to the job strain concept in Chapter 15.

Job satisfaction was the only aspect of the work environment which related to rates of both short and long spells. Job satisfaction is a global measure of the work environment and different aspects of the work environment may contribute to the levels of job satisfaction for different employees.

CHAPTER 11

Social circumstances outside work and sickness absence

I. Short spells of sickness absence

11.1 Dependent children and short spells

Neither men nor women with dependent children had higher rates of short spells, after adjusting for age and grade (Table 77).

11.2 Social contact with relatives or friends and short spells

There was no clear relationship between short spells of sickness absence and the frequency of contact with relatives (Table 78) or friends (Table 79).

11.3 Attendance at religious services and short spells

Attendance at religious services was not related to the rates of short spells of sickness absence (Tables 80).

11.4 Emotional and practical support and short spells

The amount of emotional or practical support from the closest person did not relate to rates of short spells of sickness absence (Tables 81 and 82).

11.5 Adequacy of support and short spells

Participants who reported moderate and low levels of 'adequacy of support' had higher rates of short spells. Compared to those who reported high levels of 'adequacy of support', men who reported low levels of 'adequacy of support' had 1.3 times higher rates of short spells and women had 1.2 times higher rates (Table 83).

11.6 Satisfaction with personal relationships and short spells

Men who were dissatisfied with their personal relationships had 1.2 times higher rates of short spells compared to men who were very satisfied (Table 84). For women, satisfaction with personal relationships did not relate to rates of short spells.

11.7 Difficulty paying bills and short spells

There was a large increase in the rates of short spells for participants who reported difficulty paying bills (Table 85). Before adjusting for grade, men who 'very often' had difficulty had twice the rates of short spells of those who 'seldom' had difficulty paying bills. For women, there was a 1.5-fold difference. These differences were reduced to 1.3-fold differences, after adjusting for age and grade.

II. Long spells of sickness absence

11.8 Dependent children and long spells

Participants with dependent children did not have significantly higher rates of long spells of sickness absence (Table 86).

11.9 Social contact with relatives and friends and long spells

There was no relationship between regular contact with relatives or friends and long spells of sickness absence, after adjusting for age and grade (Tables 87 and 88).

11.10 Attendance at religious services and long spells

There were no differences in the rates of long spells by attendance at religious services (Table 89).

11.11 Emotional and practical support and long spells

Participants who reported low or very low emotional or practical support had approximately 25% less frequent long spells of sickness absence than those who reported high emotional or practical support (Tables 90 and 91). These differences persisted after adjusting for age and grade.

11.12 Adequacy of support and long spells

Men who reported moderate or low levels of 'adequacy of support' had higher rates of long spells (Table 92). These differences persisted after adjusting for age and grade. For women, 'adequacy of support' did not relate to rates of long spells.

11.13 Satisfaction with personal relationships and long spells

There was no clear relationship between satisfaction with personal relationships and long spells of sickness absence (Table 93).

11.14 Difficulty paying bills and long spells

There was a striking increase in the rates of long spells of sickness absence for participants who reported difficulty paying bills (Table 94). Participants who 'very often' had difficulty had twice the rates of long spells than those who 'seldom' had difficulty paying bills. After adjusting for age and grade, there was a 1.7-fold difference for men and 1.9-fold difference for women.

Table 77 - Dependent children and short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Dependent children	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N= 4004)

No dependent child	1.00 ^a	1.00 ^b
1+ dependent child	0.86 (0.79 - 0.93)	1.01 (0.94 - 1.09)

Base rate - spells per person year (95% confidence interval)

^a 1.51 (1.42 - 1.60)	^b 1.33 (1.20 - 1.46)
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Women (N=1717)

No dependent child	1.00 ^c	1.00 ^d
1+ dependent child	1.09 (1.00 - 1.19)	0.97 (0.88 - 1.06)

Base rate - spells per person year (95% confidence interval)

^c 2.13 (2.01 - 2.26)	^d 1.94 (1.68 - 2.23)
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Table 78 - Social contact with relatives and short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Number of relatives contacted regularly	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N= 4004)

None	0.94 (0.86 - 1.03)	0.95 (0.88 - 1.04)
1 - 2 relatives	1.00 ^a	1.00 ^b
3 + relatives	0.92 (0.84 - 1.01)	0.91 (0.83 - 0.99)

Base rate - spells per person year (95% confidence interval)

^a 1.43 (1.35 - 1.52)

^b 1.40 (1.27 - 1.54)

Women (N = 1717)

None	0.93 (0.83 - 1.04)	0.97 (0.87 - 1.09)
1 - 2 relatives	1.00 ^c	1.00 ^d
3 + relatives	1.04 (0.94 - 1.16)	0.99 (0.89 - 1.09)

Base rate - spells per person year (95% confidence interval)

^c 2.21 (2.06 - 2.38)

^d 1.95 (1.68 - 2.27)

Table 79 - Social contact with friends and short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Number of friends contacted regularly	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N= 4004)

None	0.94 (0.83 - 1.08)	0.98 (0.87 - 1.11)
1 - 2 friends	1.00 ^a	1.00 ^b
3 + friends	0.96 (0.88 - 1.04)	1.02 (0.94 - 1.10)

Base rate - spells per person year (95% confidence interval)

^a 1.41 (1.32 - 1.52)	^b 1.32 (1.19 - 1.47)
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Women (N = 1717)

None	1.05 (0.90 - 1.23)	1.05 (0.90 - 1.23)
1 - 2 friends	1.00 ^c	1.00 ^d
3 + friends	1.04 (0.94 - 1.14)	1.08 (0.98 - 1.18)

Base rate - spells per person year (95% confidence interval)

^c 2.16 (2.00 - 2.33)	^d 1.83 (1.57 - 2.14)
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Table 80 - Attendance at religious services and short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Attendance at religious services	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N = 4004)

Regular	1.00 ^a	1.00 ^b
Occasional	1.14 (1.01 - 1.30)	1.08 (0.96 - 1.22)
Never	1.04 (0.95 - 1.15)	1.02 (0.93 - 1.12)

Base rate - spells per person year (95% confidence interval)

^a 1.31 (1.21 - 1.41)

^b 1.31 (1.17 - 1.47)

Women (N = 1717)

Regular	1.00 ^c	1.00 ^d
Occasional	0.93 (0.80 - 1.08)	0.93 (0.80 - 1.08)
Never	1.00 (0.89 - 1.12)	1.02 (0.92 - 1.14)

Base rate - spells per person year (95% confidence interval)

^c 2.24 (2.03 - 2.47)

^d 1.91 (1.63 - 2.25)

Table 81 - Amount of emotional support and short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Amount of emotional support	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N= 4004)

High	1.00 ^a	1.00 ^b
Moderate	1.15 (1.03 - 1.29)	1.16 (1.04 - 1.28)
Low	1.07 (0.95 - 1.21)	1.09 (0.98 - 1.21)
Very low	0.97 (0.85 - 1.09)	0.92 (0.82 - 1.03)

Base rate - spells per person year (95% confidence interval)

^a 1.30 (1.18 - 1.42)

^b 1.28 (1.13 - 1.44)

Women (N=1717)

High	1.00 ^c	1.00 ^d
Moderate	0.99 (0.87 - 1.12)	0.99 (0.88 - 1.12)
Low	0.95 (0.83 - 1.09)	0.94 (0.82 - 1.07)
Very low	0.95 (0.83 - 1.09)	0.95 (0.83 - 1.08)

Base rate - spells per person year (95% confidence interval)

^c 2.27 (2.05 - 2.52)

^d 1.98 (1.68 - 2.34)

Table 82 - Amount of practical support and short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Amount of practical support	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N= 4004)

High	1.00 ^a	1.00 ^b
Moderate	1.01 (0.91 - 1.13)	0.98 (0.89 - 1.08)
Low	0.99 (0.90 - 1.10)	0.95 (0.87 - 1.04)
Very low	1.05 (0.95 - 1.17)	0.93 (0.84 - 1.02)

Base rate - spells per person year (95% confidence interval)

^a 1.36 (1.26 - 1.46)

^b 1.39 (1.25 - 1.54)

Women (N=1717)

High	1.00 ^c	1.00 ^d
Moderate	0.93 (0.81 - 1.07)	0.95 (0.83 - 1.09)
Low	0.91 (0.80 - 1.03)	0.91 (0.81 - 1.03)
Very low	0.85 (0.75 - 0.97)	0.88 (0.77 - 0.99)

Base rate - spells per person year (95% confidence interval)

^c 2.43 (2.20 - 2.68)

^d 2.10 (1.77 - 2.49)

Table 83 - Adequacy of support and short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Adequacy of support	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N= 4004)

High	1.00 ^a	1.00 ^b
Moderate	1.10 (1.01 - 1.20)	1.11 (1.02 - 1.20)
Low	1.44 (1.30 - 1.59)	1.26 (1.15 - 1.39)

Base rate - spells per person year (95% confidence interval)

^a 1.21 (1.14 - 1.29)	^b 1.22 (1.10 - 1.35)
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Women (N=1717)

High	1.00 ^c	1.00 ^d
Moderate	1.14 (1.03 - 1.26)	1.16 (1.05 - 1.28)
Low	1.16 (1.03 - 1.31)	1.19 (1.06 - 1.34)

Base rate - spells per person year (95% confidence interval)

^c 2.03 (1.89 - 2.19)	^d 1.72 (1.47 - 2.00)
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Table 84 - Satisfaction with personal relationships and short spells
- unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and
grade (Group 4)

Satisfaction with relationships	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95%confidence interval)
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Men (N= 4004)

Very satisfied	1.00 ^a	1.00 ^b
Satisfied	0.93 (0.84 - 1.02)	1.03 (0.94 - 1.12)
No feelings	0.95 (0.85 - 1.05)	1.05 (0.95 - 1.16)
Dissatisfied	1.15 (1.02 - 1.31)	1.21 (1.08 - 1.36)

Base rate - spells per person year (95% confidence interval)

^a 1.41 (1.31 - 1.51)

^b 1.27 (1.14 - 1.41)

Women (N=1717)

Very satisfied	1.00 ^c	1.00 ^d
Satisfied	0.94 (0.84 - 1.04)	0.95 (0.85 - 1.05)
No feelings	0.89 (0.79 - 1.01)	0.92 (0.81 - 1.04)
Dissatisfied	0.96 (0.81 - 1.13)	1.01 (0.86 - 1.18)

Base rate - spells per person year (95% confidence interval)

^c 2.33 (2.16 - 2.51)

^d 2.01 (1.72 - 2.35)

Table 85 - Difficulty paying bills and short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Difficulty paying bills	Unadjusted rate ratio 95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N=3884)

Seldom	1.00 ^a	1.00 ^b
Sometimes	1.18 (1.07 - 1.30)	1.15 (1.05 - 1.25)
Often	1.33 (1.21 - 1.47)	1.21 (1.01 - 1.24)
Very often	2.03 (1.75 - 2.36)	1.39 (1.24 - 1.57)

Base rate - spells per person year (95% confidence interval)

^a 1.14 (1.08 - 1.20)

^b 1.19 (1.07 - 1.31)

Women (N=1494)

Seldom	1.00 ^c	1.00 ^d
Sometimes	1.34 (1.18 - 1.50)	1.07 (0.95 - 1.21)
Often	1.35 (1.18 - 1.53)	1.18 (1.04 - 1.34)
Very often	1.54 (1.27 - 1.87)	1.31 (1.10 - 1.57)

Base rate - spells per person year (95% confidence interval)

^c 1.95 (1.82 - 2.08)

^d 2.10 (1.81 - 2.43)

Table 86 - Dependent children and long spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Dependent children	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N= 4004)

No dependent child	1.00 ^a	1.00 ^b
1+ dependent child	0.96 (0.80 - 1.15)	1.17 (0.97 - 1.41)

Base rate - spells per person year (95% confidence interval)

^a 0.10 (0.08 - 0.11)	^b 0.08 (0.07 - 0.11)
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Women (N=1717)

No dependent child	1.00 ^c	1.00 ^d
1+ dependent child	1.15 (0.96 - 1.37)	0.94 (0.78 - 1.13)

Base rate - spells per person year (95% confidence interval)

^c 0.23 (0.20 - 0.25)	^d 0.11 (0.08 - 0.16)
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**Table 87 - Social contact with relatives and long spells - unadjusted rate ratios
rate ratios adjusted for age (35-39 years) and grade (Group 4)**

Number of relatives contacted regularly	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N= 4004)

None	0.93 (0.75 - 1.15)	0.95 (0.77 - 1.18)
1 - 2 relatives	1.00 ^a	1.00 ^b
3 + relatives	1.15 (0.94 - 1.42)	1.12 (0.91 - 1.38)

Base rate - spells per person year (95% confidence interval)

^a 0.09 (0.08 - 0.11)

^b 0.09 (0.07 - 0.12)

Women (N = 1717)

None	0.75 (0.58 - 0.96)	0.84 (0.66 - 1.08)
1 - 2 relatives	1.00 ^c	1.00 ^d
3 + relatives	1.19 (0.97 - 1.45)	0.98 (0.80 - 1.20)

Base rate - spells per person year (95% confidence interval)

^c 0.24 (0.21 - 0.28)

^d 0.12 (0.08 - 0.17)

Table 88 - Social contact with friends and long spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Number of friends contacted regularly	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N= 4004)

None	0.83 (0.61 - 1.14)	0.86 (0.63 - 1.18)
1 - 2 friends	1.00 ^a	1.00 ^b
3 + friends	0.87 (0.72 - 1.06)	0.95 (0.78 - 1.15)

Base rate - spells per person year (95% confidence interval)

^a 0.11 (0.09 - 0.12)

^b 0.10 (0.08 - 0.13)

Women (N = 1717)

None	0.87 (0.63 - 1.21)	0.87 (0.63 - 1.21)
1 - 2 friends	1.00 ^c	1.00 ^d
3 + friends	1.04 (0.86 - 1.26)	1.16 (0.96 - 1.41)

Base rate - spells per person year (95% confidence interval)

^c 0.24 (0.20 - 0.28)

^d 0.10 (0.07 - 0.14)

Table 89 - Attendance at religious services and long spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Attendance at religious services	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N = 4004)

Regular	1.00 ^a	1.00 ^b
Occasional	1.03 (0.76 - 1.40)	0.97 (0.71 - 1.32)
Never	1.01 (0.81 - 1.25)	0.96 (0.77 - 1.20)

Base rate - spells per person year (95% confidence interval)

^a 0.09 (0.08 - 0.11)

^b 0.10 (0.07 - 0.13)

Women (N = 1717)

Regular	1.00 ^c	1.00 ^d
Occasional	1.04 (0.77 - 1.40)	1.03 (0.76 - 1.38)
Never	0.97 (0.77 - 1.22)	0.96 (0.77 - 1.20)

Base rate - spells per person year (95% confidence interval)

^c 0.24 (0.19 - 0.30)

^d 0.11 (0.08 - 0.16)

Table 90 - Amount of emotional support and long spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Amount of emotional support	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N= 4004)

High	1.00 ^a	1.00 ^b
Moderate	0.92 (0.72 - 1.17)	0.93 (0.73 - 1.18)
Low	0.78 (0.60 - 1.01)	0.79 (0.61 - 1.02)
Very low	0.73 (0.55 - 0.95)	0.69 (0.52 - 0.90)

Base rate - spells per person year (95% confidence interval)

^a 0.11 (0.09 - 0.14)

^b 0.11 (0.08 - 0.15)

Women (N=1717)

High	1.00 ^c	1.00 ^d
Moderate	1.06 (0.83 - 1.36)	1.08 (0.84 - 1.38)
Low	0.82 (0.62 - 1.08)	0.84 (0.63 - 1.10)
Very low	0.76 (0.57 - 1.02)	0.76 (0.57 - 1.02)

Base rate - spells per person year (95% confidence interval)

^c 0.26 (0.21 - 0.32)

^d 0.12 (0.08 - 0.17)

Table 91 - Amount of practical support and long spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Amount of practical support	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N= 4004)

High	1.00 ^a	1.00 ^b
Moderate	0.87 (0.68 - 1.11)	0.83 (0.65 - 1.06)
Low	0.78 (0.62 - 0.99)	0.72 (0.57 - 0.91)
Very low	0.86 (0.67 - 1.10)	0.72 (0.56 - 0.93)

Base rate - spells per person year (95% confidence interval)

^a 0.11 (0.09 - 0.13)

^b 0.11 (0.09 - 0.15)

Women (N=1717)

High	1.00 ^c	1.00 ^d
Moderate	0.87 (0.67 - 1.14)	0.96 (0.73 - 1.26)
Low	0.67 (0.52 - 0.87)	0.75 (0.58 - 0.97)
Very low	0.67 (0.52 - 0.86)	0.74 (0.57 - 0.95)

Base rate - spells per person year (95% confidence interval)

^c 0.31 (0.26 - 0.38)

^d 0.14 (0.09 - 0.20)

Table 92 - Adequacy of support and long spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Adequacy of support	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N= 4004)

High	1.00 ^a	1.00 ^b
Moderate	1.24 (1.01 - 1.52)	1.27 (1.04 - 1.56)
Low	1.61 (1.28 - 2.03)	1.45 (1.15 - 1.82)

Base rate - spells per person year (95% confidence interval)

^a 0.08 (0.07 - 0.09)

^b 0.08 (0.06 - 0.10)

Women (N=1717)

High	1.00 ^c	1.00 ^d
Moderate	0.89 (0.73 - 1.09)	1.00 (0.81 - 1.22)
Low	0.89 (0.70 - 1.14)	0.99 (0.78 - 1.27)

Base rate - spells per person year (95% confidence interval)

^c 0.26 (0.22 - 0.29)

^d 0.11 (0.08 - 0.16)

**Table 93 - Satisfaction with personal relationships and long spells
- unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and
grade (Group 4)**

Satisfaction with relationships	Unadjusted rate ratio 95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N= 4004)

Very satisfied	1.00 ^a	1.00 ^b
Satisfied	0.68 (0.55 - 0.84)	0.76 (0.61 - 0.95)
No feelings	0.67 (0.53 - 0.86)	0.76 (0.59 - 0.96)
Dissatisfied	0.91 (0.69 - 1.22)	0.98 (0.74 - 1.30)

Base rate - spells per person year (95% confidence interval)

^a 0.12 (0.11 - 0.14)

^b 0.11 (0.08 - 0.14)

Women (N=1717)

Very satisfied	1.00 ^c	1.00 ^d
Satisfied	0.76 (0.62 - 0.94)	0.85 (0.69 - 1.05)
No feelings	0.65 (0.50 - 0.83)	0.76 (0.59 - 0.98)
Dissatisfied	0.81 (0.59 - 1.12)	1.00 (0.72 - 1.39)

Base rate - spells per person year (95% confidence interval)

^c 0.29 (0.25 - 0.34)

^d 0.13 (0.09 - 0.18)

Table 94 - Difficulty paying bills and long spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Difficulty paying bills	Unadjusted rate ratio 95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N=3884)

Seldom	1.00 ^a	1.00 ^b
Sometimes	1.31 (1.05 - 1.63)	1.31 (1.05 - 1.63)
Often	1.48 (1.18 - 1.85)	1.36 (1.09 - 1.71)
Very often	2.08 (1.45 - 3.00)	1.71 (1.18 - 2.46)

Base rate - spells per person year (95% confidence interval)

^a 0.08 (0.07 - 0.09)

^b 0.08 (0.06 - 0.10)

Women (N=1494)

Seldom	1.00 ^c	1.00 ^d
Sometimes	1.40 (1.10 - 1.78)	1.25 (0.99 - 1.60)
Often	1.58 (1.23 - 2.03)	1.40 (1.09 - 1.78)
Very often	2.36 (1.65 - 3.38)	1.90 (1.32 - 2.73)

Base rate - spells per person year (95% confidence interval)

^c 0.21 (0.18 - 0.24)

^d 0.12 (0.08 - 0.17)

11.15 Discussion

In contrast to earlier studies (23,32-34), participants with dependent children did not have higher rates of sickness absence. This may partly be explained by the small proportion of participants with young children.

Participants who reported inadequate or negative support from the closest person had higher rates of both short and long spells of sickness absence. In the Health and Lifestyle Survey (HLS), mental health was strongly related to the adequacy of support within different socioeconomic groups (107).

An unexpected finding was participants who reported low levels of emotional or practical support from the closest person had lower rates of long spells of sickness absence. The practical support index included questions on both the amount of practical support available and amount needed. These differences may therefore reflect differences in the requirements for support, rather than differences in the adequacy of support.

Social contact with relatives or friends did not relate to rates of sickness absence. Social contact is a relatively simple measure of social support and does not take account of the quality of these social contacts. The lack of an association between social contacts and sickness absence is discussed further in Chapter 15.

It is interesting that participants who reported some or great difficulties paying bills had higher rates of both short and long spells. These differences were large and persisted after adjusting for grade. This finding is discussed in Chapter 15.

CHAPTER 12

Health and sickness absence

This chapter describes the relationship between self-reported measures of health and sickness absence. In Section III, the certified reasons for sickness absence for a subsample of the study population are described. These were obtained either from medical or self-completed certificates for short spells, and from medical certificates for long spells.

I. Short spells of sickness absence

12.1 Overall health status and short spells

There was a stepwise increase in rates of short spells from participants who perceived their overall health as very good to those who perceived their health as very poor (Figure 25 and Table 95). After adjusting for age and grade, there was a 2.4-fold difference for men and a 2.3-fold difference for women.

12.2 Recurring health problems and short spells

There was a stepwise increase in rates of short spells for participants who reported an increasing number of recurring health problems (Table 96). This difference persisted after adjusting for age and grade.

12.3 Longstanding illness and short spells

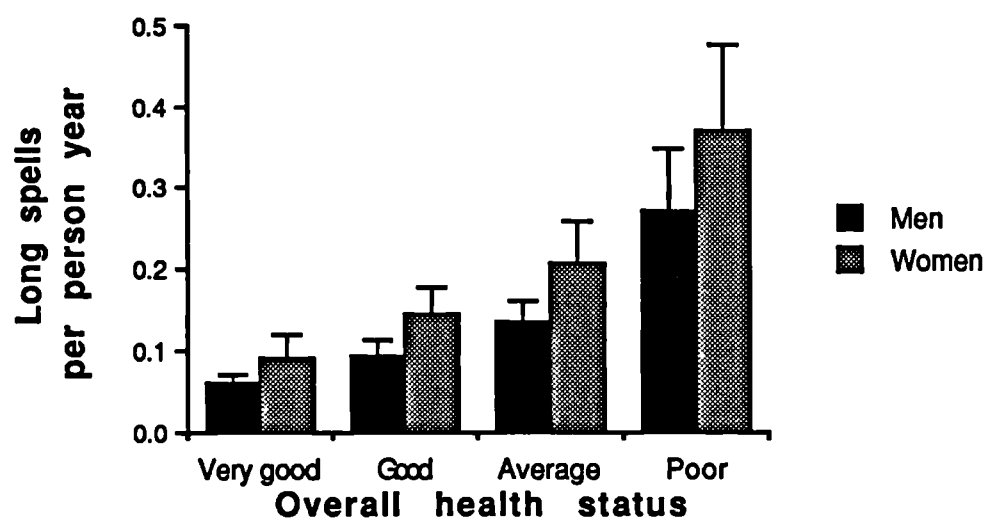
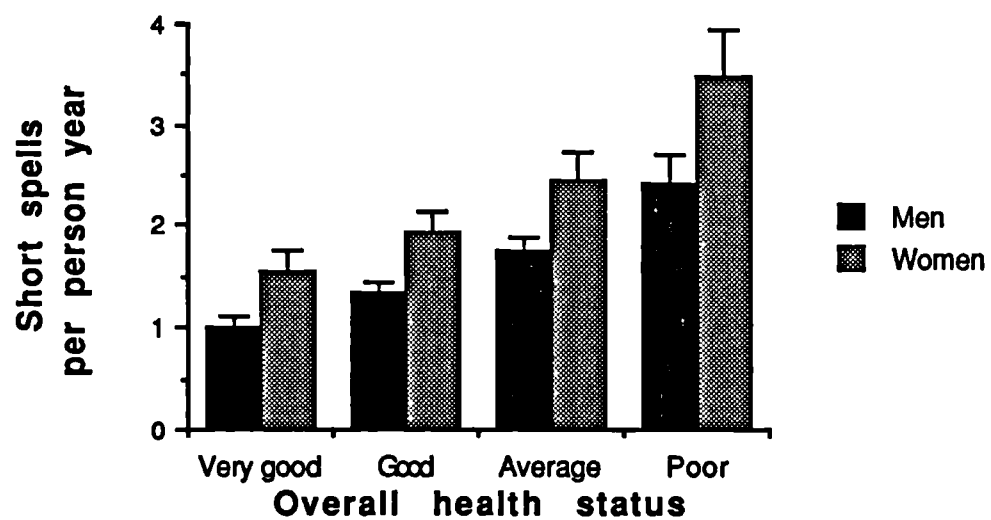
Participants who reported a longstanding illness had higher rates of short spells, adjusting for age and grade (Table 97).

12.4 Psychiatric symptoms and short spells

Participants who reported more than four psychiatric symptoms ('high scorers') had higher rates of short spells, after adjusting for age and grade (Table 98).

Figure 25 - Overall health status and short spells, age- and grade-adjusted rates by sex

Figure 26 - Overall health status and long spells, age- and grade-adjusted rates by sex



II. Long spells of sickness absence

The rate ratios for each of the health measures were generally higher for long spells than for short spells.

12.5 Overall health status and long spells

There was a stepwise increase in rates of long spells from participants who perceived their overall health as very good to those who perceived their health as very poor, after adjusting for age and grade (Figure 26 and Table 99). There was a 4.5-fold difference for men and a 4.1-fold difference for women.

12.6 Recurring health problems and long spells

There was also a stepwise increase in rates of long spells for participants who reported an increasing number of recurring health problems, after adjusting for age and grade (Table 100).

12.7 Longstanding illness and long spells

Participants who reported a longstanding illness had higher rates of long spells, after adjusting for age and grade (Table 101).

12.8 Psychiatric symptoms and long spells

Participants who had more than four psychiatric symptoms ('high scorers') had higher rates of long spells (Table 102). This difference persisted after adjusting for age and grade.

III. Certified reasons for sickness absence

Tables 103 and 104 show the distributions of reasons for short and long spells of sickness absence.

Respiratory disorders, such as influenza or colds, were the most common reason for short spells of sickness absence, followed by gastroenteritis, migraines or headaches and musculoskeletal disorders.

Respiratory disorders were also the most common reason for long spells of sickness absence, followed by musculoskeletal disorders which consisted mainly of back problems, surgery, viral infections and depression, anxiety or nervous debility.

Despite sex differences in rates of sickness absence, the distribution of reasons for sickness absence for men and women were similar. The only difference was more women had migraines or headaches (12.4% of short spells for women compared to 6.6% for men).

Table 95 - Overall health status and short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Overall health status	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men(N=5850)

Very good	1.00 ^a	1.00 ^b
Good	1.42 (1.23 - 1.53)	1.34 (1.25 - 1.43)
Average	2.02 (1.86 - 3.20)	1.73 (1.60 - 1.87)
Poor/very poor	3.03 (2.68 - 3.42)	2.39 (2.14 - 2.68)

Base rate - spells per person year (95% confidence interval)

^a 0.88 (0.83 - 0.93)

^b 1.01 (0.94 - 1.10)

Women (N=2641)

Very good	1.00 ^c	1.00 ^d
Good	1.28 (1.15 - 1.42)	1.26 (1.14 - 1.39)
Average	1.68 (1.52 - 1.87)	1.60 (1.45 - 1.77)
Poor/very poor	2.44 (2.14 - 2.78)	2.27 (2.00 - 2.57)

Base rate - spells per person year (95% confidence interval)

^c 1.46 (1.34 - 1.59)

^d 1.54 (1.36 - 1.75)

Table 96 - Recurring health problems and short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Recurring health problems	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N=4505)

None	1.00 ^a	1.00 ^b
1	1.20 (1.09 - 1.32)	1.22 (1.12 - 1.33)
2-4	1.51 (1.38 - 1.64)	1.50 (1.38 - 1.62)
>4	2.70 (2.27 - 3.21)	2.37 (2.02 - 2.78)

Base rate - spells per person year (95% confidence interval)

^a 1.07 (1.00 - 1.15)	^b 1.07 (0.97 - 1.18)
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Women (N=1966)

None	1.00 ^c	1.00 ^d
1	1.24 (1.10 - 1.40)	1.22 (1.08 - 1.37)
2-4	1.46 (1.31 - 1.46)	1.44 (1.29 - 1.61)
>4	1.68 (1.40 - 2.01)	1.64 (1.37 - 1.96)

Base rate - spells per person year (95% confidence interval)

^c 1.73 (1.57 - 1.90)	^d 1.70 (1.46 - 1.97)
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Table 97 - Longstanding illness and short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Longstanding illness	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men(N=4505)

Absent	1.00 ^a	1.00 ^b
Present	1.33 (1.24 - 1.43)	1.28 (1.19 - 1.36)

Base rate - spells per person year (95% confidence interval)	^a 1.25 (1.19 - 1.30)	^b 1.25 (1.15 - 1.36)
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Women (N=1966)

Absent	1.00 ^c	1.00 ^d
Present	1.18 (1.08 - 1.29)	1.20 (1.10 - 1.31)

Base rate - spells per person year (95% confidence interval)	^c 2.12 (2.01 - 2.23)	^d 2.01 (1.76 - 2.30)
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Table 98 - Psychiatric symptoms and short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Psychiatric symptoms	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men(N=5850)

Low scorers	1.00 ^a	1.00 ^b
High scorers	1.26 (1.18 - 1.35)	1.29 (1.22 - 1.37)

Base rate - spells per person year (95% confidence interval)

^a 1.19 (1.15 - 1.23)	^b 1.24 (1.16 - 1.34)
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Women (N=2641)

Low scorers	1.00 ^c	1.00 ^d
High scorers	1.13 (1.05 - 1.23)	1.19 (1.10 - 1.28)

Base rate - spells per person year (95% confidence interval)

^c 1.98 (1.89 - 2.07)	^d 1.93 (1.72 - 2.16)
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Table 99 - Overall health status and long spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Overall health status	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men(N=5850)

Very good	1.00 ^a	1.00 ^b
Good	1.66 (1.39 - 1.97)	1.57 (1.32 - 1.87)
Average	2.58 (2.13 - 3.11)	2.24 (1.85 - 2.71)
Poor/very poor	5.47 (4.26 - 7.02)	4.51 (3.50 - 5.80)

Base rate - spells per person year (95% confidence interval)

^a 0.06 (0.05 - 0.07)	^b 0.06 (0.05 - 0.07)
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Women (N=2641)

Very good	1.00 ^c	1.00 ^d
Good	1.64 (1.33 - 2.02)	1.60 (1.30 - 1.98)
Average	2.68 (2.17 - 3.30)	2.31 (1.88 - 2.85)
Poor/very poor	4.52 (3.50 - 5.84)	4.11 (3.18 - 5.31)

Base rate - spells per person year (95% confidence interval)

^c 0.13 (0.11 - 0.15)	^d 0.09 (0.07 - 0.12)
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Table 100 - Recurring health problems and long spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Recurring health problems	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men(N=4505)

None	1.00 ^a	1.00 ^b
1	1.32 (1.06 - 1.65)	1.36 (1.09 - 1.70)
2-4	1.67 (1.36 - 2.06)	1.66 (1.34 - 2.04)
>4	5.24 (3.67 - 7.46)	4.45 (3.11 - 6.38)

Base rate - spells per person year (95% confidence interval)

^a 0.07 (0.06 - 0.08)

^b 0.07 (0.05 - 0.09)

Women (N=1966)

None	1.00 ^c	1.00 ^d
1	1.42 (1.11 - 1.82)	1.39 (1.08 - 1.79)
2-4	1.80 (1.43 - 2.26)	1.71 (1.36 - 2.15)
>4	3.05 (2.19 - 4.25)	2.65 (1.90 - 3.71)

Base rate - spells per person year (95% confidence interval)

^c 0.16 (0.14 - 0.20)

^d 0.09 (0.07 - 0.13)

Table 101 - Longstanding illness and long spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Longstanding illness	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
<u>Men</u> (N=4505)		
Absent	1.00 ^a	1.00 ^b
Present	1.86 (1.58 - 2.19)	1.78 (1.51 - 2.09)
Base rate - spells per person year (95% confidence interval)		
	^a 0.08 (0.07 - 0.09)	^b 0.08 (0.06 - 0.09)
<u>Women</u> (N=2641)		
Absent	1.00 ^c	1.00 ^d
Present	1.74 (1.47 - 2.05)	1.71 (1.45 - 2.02)
Base rate - spells per person year (95% confidence interval)		
	^c 0.21 (0.19 - 0.23)	^d 0.11 (0.08 - 0.16)

Table 102 - Psychiatric symptoms and long spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Psychiatric symptoms	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men(N=5850)

Low scorers	1.00 ^a	1.00 ^b
High scorers	1.36 (1.18 - 1.56)	1.43 (1.24 - 1.65)

Base rate - spells per person year (95% confidence interval)

^a 0.09 (0.08 - 0.10)	^b 0.08 (0.07 - 0.10)
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Women (N=2641)

Low scorers	1.00 ^c	1.00 ^d
High scorers	1.17 (1.01 - 1.35)	1.38 (1.19 - 1.60)

Base rate - spells per person year (95% confidence interval)

^c 0.23 (0.21 - 0.25)	^d 0.13 (0.10 - 0.17)
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Table 103 - Reasons for short spells of sickness absence

Category ^a	%	Main reasons within category
Respiratory	43.2	Flu, cold
Gastroenteritis	16.3	Stomach upset, diarrhoea
Migraines/headaches	9.0	Migraines, headaches
Musculoskeletal	6.3	Back pain or ache
Ill-defined	5.6	Sickness, treatment, nausea, chill
Infections	4.7	Virus
Injury	4.0	Injury, strains
Total	72.8	

^a All categories which accounted for at least 4% of the spells

Table 104 - Reasons for long spells of sickness absence

Category ^a	%	Main reasons within category
Respiratory	28.4	Flu, bronchitis
Musculoskeletal	12.5	Back ache, sciatica
Surgery	11.2	
Infections	9.3	Virus
Depression/anxiety	9.2	Depression, anxiety, nervous debility
Injury	7.4	Injury, fractures, strains
Ill-defined	4.0	Treatment
Total	82.0	

^a All categories which accounted for at least 4% of the spells

12.9 Discussion

Overall health status, the number of recurring health problems, longstanding illness and psychiatric symptoms were strongly related to rates of short spells and, to an even greater extent, long spells of sickness absence. This suggests that long spells may be a better indicator of morbidity than short spells.

As discussed in Chapter 8, different health measures contribute to an individual's assessment of overall health status. This probably explains the stronger association between a global measure of overall health status and sickness absence than for the other health measures. When rate ratios for different health measures are compared, it is important to consider the proportion of participants in each health category. This may, in part, account for large differences between participants who reported poor overall health compared to those who reported very good health. However, large differences were also observed for those who reported average overall health status.

The distributions of reasons for sickness absence are similar to those reported elsewhere (5,23). It is interesting that the most common reasons for sickness absence, namely respiratory, gastrointestinal, musculoskeletal and mental disorders, only make a small contribution to other morbidity measures such as admissions to hospital.

CHAPTER 13

Health-related behaviours and sickness absence

In this chapter, the relationship between sickness absence and smoking habits, alcohol consumption and physical activity is described.

I. Short spells of sickness absence

13.1 Smoking habits and short spells

After adjusting for age and grade, smokers had slightly higher rates of short spells than non-smokers (Table 105). Women who were ex-smokers also had slightly higher rates of short spells.

13.2 Alcohol consumption and short spells

Compared with participants who drank alcohol once or twice a week, those who had not drunk alcohol in the previous 12 months had slightly higher rates of short spells, after adjusting for age and grade (Table 106).

Men who drank alcohol more than daily or had drunk more than 30 units of alcohol in the previous 7 days had slightly higher rates of short spells than light drinkers, after adjusting for age and grade (Tables 106 and 107).

13.3 Physical activity and short spells

After adjusting for age and grade, there were minimal differences in the rates of short spells for different levels of physical activity, except that men who did vigorous activity had slightly lower rates of short spells (Table 108).

II. Long spells of absence

13.4 Smoking habits and long spells

Smokers had higher rates of long spells than non-smokers, after adjusting for age and grade (Table 109). These differences were greater than those observed for short spells.

13.5 Alcohol consumption and long spells

There were no clear differences in the rates of long spells for either the frequency of alcohol consumption or amount of alcohol consumed, except that women who drank infrequently tended to have higher rates of long spells (Tables 110 and 111). The wide confidence intervals for each of the drinking categories suggest considerable variation in rates of long spells within each category.

13.6 Physical activity and long spells

There were no clear differences in the rates of long spells for different levels of physical activity, except that women who did vigorous activity had lower rates of long spells (Table 112).

Table 105 - Smoking habits and short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Smoking habits	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men(N=5812)

Non-smoker	1.00 ^a	1.00 ^b
Ex-smoker	1.06 (0.99 - 1.13)	1.04 (0.98 - 1.11)
Smoker	1.45 (1.34 - 1.58)	1.15 (1.06 - 1.24)

Base rate - spells per person year (95% confidence interval)

^a 1.16 (1.11 - 1.21)	^b 1.29 (1.20 - 1.39)
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Women (N=2642)

Non-smoker	1.00 ^c	1.00 ^d
Ex-smoker	1.06 (0.97 - 1.16)	1.10 (1.01 - 1.20)
Smoker	1.10 (1.01 - 1.21)	1.07 (0.98 - 1.17)

Base rate - spells per person year (95% confidence interval)

^c 2.00 (1.90 - 2.10)	^d 1.95 (1.74 - 2.19)
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Table 106 - Frequency of alcohol consumption and short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Frequency of alcohol consumption	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N=5812)

Never	1.56 (1.35 - 1.81)	1.15 (1.00 - 1.32)
1-2 times/month	1.15 (1.06 - 1.25)	0.98 (0.91 - 1.05)
1-2 times/week	1.00 ^a	1.00 ^b
Daily	0.96 (0.89 - 1.04)	1.04 (0.97 - 1.12)
More than daily	1.10 (0.94 - 1.29)	1.15 (1.00 - 1.33)

Base rate - spells per person year (95% confidence interval)

^a 1.21 (1.15 - 1.27)

^b 1.32 (1.23 - 1.42)

Women (N=2642)

Never	1.33 (1.15 - 1.53)	1.18 (1.02 - 1.36)
1-2 times/month	1.15 (1.06 - 1.26)	1.06 (0.98 - 1.16)
1-2 times/week	1.00 ^c	1.00 ^d
Daily	0.81 (0.72 - 0.91)	0.94 (0.84 - 1.05)
More than daily	0.83 (0.60 - 1.13)	1.04 (0.76 - 1.41)

Base rate - spells per person year (95% confidence interval)

^c 1.99 (1.87 - 2.12)

^d 2.00 (1.78 - 2.26)

Table 107 - Amount of alcohol consumed and short spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Amount of alcohol consumed	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N=5812)

None	1.28 (1.17 - 1.40)	1.02 (0.94 - 1.11)
1-10 units	1.00 ^a	1.00 ^b
11-15 units	0.89 (0.80 - 0.98)	0.95 (0.87 - 1.05)
15-30 units	0.97 (0.89 - 1.05)	1.02 (0.94 - 1.10)
31 + units	1.14 (1.03 - 1.27)	1.12 (1.01 - 1.23)

Base rate - spells per person year (95% confidence interval)

^a 1.22 (1.17 - 1.28)

^b 1.33 (1.23 - 1.43)

Women (N=2642)

None	1.17 (1.07 - 1.27)	1.10 (1.01 - 1.20)
1-6 units	1.00 ^c	1.00 ^d
7-10 units	1.01 (0.90 - 1.14)	1.10 (0.99 - 1.24)
11-20 units	0.83 (0.72 - 0.94)	0.99 (0.87 - 1.13)
21 + units	0.85 (0.70 - 1.02)	1.08 (0.90 - 1.29)

Base rate - spells per person year (95% confidence interval)

^c 2.03 (1.92 - 2.15)

^d 1.96 (1.74 - 2.21)

Table 108 - Physical activity and short spells- unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Physical activity	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
Men (N=5812)		
Mild	1.00 ^a	1.00 ^b
Moderate	0.68 (0.64 - 0.72)	0.92 (0.84 - 1.01)
Vigorous	0.64 (0.60 - 0.67)	0.91 (0.83 - 0.99)
Base rate - spells per person year (95% confidence interval)		
	^a 1.83 (1.69 - 1.99)	^b 1.47 (1.32 - 1.63)
Women (N=2642)		
Mild	1.00 ^c	1.00 ^c
Moderate	0.92 (0.84 - 1.00)	0.97 (0.89 - 1.05)
Vigorous	0.87 (0.78 - 0.96)	0.95 (0.86 - 1.05)
Base rate - spells per person year (95% confidence interval)		
	^c 2.23 (2.09 - 2.39)	^d 2.10 (1.84 - 2.39)

Table 109 - Smoking habits and long spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Smoking habits	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
----------------	--	--

Men(N=5812)

Non-smoker	1.00 ^a	1.00 ^b
Ex-smoker	1.15 (0.99 - 1.23)	1.09 (0.94 - 1.27)
Smoker	1.73 (1.44 - 2.07)	1.39 (1.16 - 1.68)

Base rate - spells per person year (95% confidence interval)

^a 0.08 (0.07 - 0.09)

^b 0.08 (0.07 - 0.10)

Women (N=2642)

Non-smoker	1.00 ^c	1.00 ^d
Ex-smoker	1.13 (0.95 - 1.34)	1.15 (0.97 - 1.36)
Smoker	1.56 (1.33 - 1.83)	1.32 (1.12 - 1.56)

Base rate - spells per person year (95% confidence interval)

^c 0.21 (0.19 - 0.23)

^d 0.14 (0.11 - 0.18)

Table 110 - Frequency of alcohol consumption and long spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Frequency of alcohol consumption	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N=5812)

Never	1.46 (1.03 - 2.07)	1.09 (0.77 - 1.55)
1-2 times/month	1.39 (1.17 - 1.65)	1.15 (0.97 - 1.37)
1-2 times/week	1.00 ^a	1.00 ^b
Daily	1.02 (0.86 - 1.20)	1.10 (0.93 - 1.30)
More than daily	1.05 (0.74 - 1.50)	1.10 (0.77 - 1.58)

Base rate - spells per person year (95% confidence interval)

^a 0.09 (0.08 - 0.10)

^b 0.08 (0.07 - 0.10)

Women (N=2642)

Never	1.46 (1.11 - 1.92)	1.23 (0.94 - 1.62)
1-2 times/month	1.41 (1.18 - 1.69)	1.20 (1.03 - 1.40)
1-2 times/week	1.00 ^c	1.00 ^d
Daily	0.62 (0.49 - 0.78)	0.78 (0.62 - 0.99)
More than daily	0.69 (0.37 - 1.30)	1.05 (0.56 - 1.98)

Base rate - spells per person year (95% confidence interval)

^c 0.22 (0.19 - 0.25)

^d 0.15 (0.12 - 0.19)

Table 111 - Amount of alcohol consumed and long spells - unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Amount of alcohol consumed	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
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Men (N=5812)

None	1.26 (1.04 - 1.53)	1.00 (0.83 - 1.22)
1-10 units	1.00 ^a	1.00 ^b
11-15 units	0.77 (0.61 - 0.97)	0.84 (0.67 - 1.06)
16-30 units	0.83 (0.69 - 1.01)	0.87 (0.72 - 1.06)
31 + units	0.95 (0.75 - 1.21)	0.97 (0.76 - 1.23)

Base rate - spells per person year (95% confidence interval)

^a 0.10 (0.09 - 0.11)

^b 0.09 (0.08 - 0.11)

Women (N=2642)

None	1.29 (1.10 - 1.51)	1.17 (0.97 - 1.39)
1-6 units	1.00 ^c	1.00 ^d
7-10 units	0.73 (0.58 - 0.93)	0.86 (0.66 - 1.13)
11-20 units	0.69 (0.54 - 0.89)	0.98 (0.73 - 1.31)
21 + units	0.61 (0.42 - 0.88)	0.92 (0.60 - 1.42)

Base rate - spells per person year (95% confidence interval)

^c 0.31 (0.28 - 0.35)

^d 0.15 (0.11 - 0.20)

Table 112 - Physical activity and long spells- unadjusted rate ratios and rate ratios adjusted for age (35-39 years) and grade (Group 4)

Physical activity	Unadjusted rate ratio (95% confidence interval)	Adjusted rate ratio (95% confidence interval)
Men (N=5812)		
Mild	1.00 ^a	1.00 ^b
Moderate	0.73 (0.59 - 0.91)	1.04 (0.83 - 1.29)
Vigorous	0.60 (0.48 - 0.73)	0.91 (0.73 - 1.14)
Base rate - spells per person year (95% confidence interval)		
	^a 0.14 (0.11 - 0.16)	^b 0.09 (0.07 - 0.12)
Women (N=2642)		
Mild	1.00 ^c	1.00 ^d
Moderate	0.85 (0.73 - 0.99)	1.01 (0.86 - 1.18)
Vigorous	0.56 (0.46 - 0.68)	0.78 (0.64 - 0.96)
Base rate - spells per person year (95% confidence interval)		
	^c 0.29 (0.26 - 0.33)	^d 0.16 (0.13 - 0.22)

13.7 Discussion

The association between smoking and rates of sickness absence has been reported elsewhere (47-50). The slightly higher rate ratios for long spells may indicate increased morbidity associated with smoking.

There was a weaker association between alcohol consumption and sickness absence. Men who were heavy, frequent drinkers had higher rates of short spells of sickness absence. This is consistent with earlier studies (54-56,117). In the present study, non-drinkers also had higher rates of short spells of sickness absence. Non-drinkers were more likely to be non-smokers and did not report more health problems. It is therefore unlikely that the inclusion of individuals who had stopped drinking for health reasons can explain these differences in sickness absence. It is difficult to separate the effect of one behaviour from another. The differences in sickness absence probably reflect other differences in lifestyle, rather than direct effects of smoking, alcohol or physical activity.

One study has reported higher rates of sickness absence with physical inactivity for salaried employees (51). In the present study, there were large grade differences in physical activity and, after adjusting for grade, there were minimal differences in sickness absence for different levels of physical activity.

CHAPTER 14

Grade differences in sickness absence after adjusting for other factors

The grade differences in short and long spells of sickness absence were described earlier (Chapter 5). A number of aspects of the work environment, social circumstances outside work, health and health-related behaviours have been shown to relate to sickness absence (Chapters 10 to 13). In this chapter the grade differences in short and long spells are re-examined after adjusting for the factors which related to short spells of sickness absence independently of grade.

I. Short spells of sickness absence

There was a stepwise increase in rates of short spells of sickness absence from top administrators and clerical staff. These differences were reduced by approximately 30%, after adjusting for the effects of self-reports of the work environment, attitudes towards work, social circumstances outside work, health and health-related behaviours as described in Table 113.

The findings were similar when external assessments of the work environment were substituted for self-reports in the analysis (Table 114).

II. Long spells of sickness absence

There was also a stepwise increase in rates of long spells of sickness absence from top administrators to office support staff (Table 115). For men, office support staff had 7.6 times more short spells than top administrators. For women, office support staff had 15.9 times more short spells than top administrators. These differences were reduced by 18% for men and 43% for women, after adjusting for the effects of self-reports of the work environment, attitudes towards work, social circumstances outside work, health and health-related behaviours as described in Table 115.

The findings were similar when external assessments of the work environment were substituted for self-reports in the analysis (Table 116).

Table 113 - Grade and short spells - age-adjusted rate ratios and rate ratios adjusted for age, self-reports of the work environment, social circumstances outside work, health and health-related behaviours

Grade category	Age-adjusted rate ratio (95% confidence interval)	Adjusted rate ratio ^e (95% confidence interval)
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Men (N=4173)

1	0.36 (0.31 - 0.43)	0.43 (0.36 - 0.51)
2	0.68 (0.61 - 0.76)	0.75 (0.67 - 0.84)
3	0.76 (0.68 - 0.85)	0.78 (0.70 - 0.87)
4	1.00 ^a	1.00 ^b
5	1.72 (1.56 - 1.90)	1.54 (1.40 - 1.70)
6	2.18 (1.93 - 2.46)	1.76 (1.54 - 2.00)
7	1.71 (1.45 - 2.02)	1.43 (1.20 - 1.70)

Base rate - spells per person year (95% confidence interval)

^a 1.30 (1.19 - 1.42)

^b 1.08 (0.92 - 1.26)

Women (N=1756)

1	0.37 (0.22 - 0.60)	0.43 (0.27 - 0.70)
2	0.58 (0.44 - 0.76)	0.64 (0.49 - 0.83)
3	0.80 (0.63 - 1.00)	0.88 (0.70 - 1.10)
4	1.00 ^c	1.00 ^d
5	1.09 (0.93 - 1.26)	1.01 (0.87 - 1.17)
6	1.27 (1.11 - 1.46)	1.06 (0.91 - 1.23)
7	1.05 (0.88 - 1.26)	0.80 (0.66 - 0.98)

Base rate - spells per person year (95% confidence interval)

^c 2.13 (1.86 - 2.44)

^d 1.59 (1.27 - 1.99)

^e Adjusted for age, self-reports of the work environment (control, variety and skill use, work pace and support), attitudes towards work (perceived job importance and job satisfaction), social circumstances outside work (marital status, adequacy of support and difficulty paying bills), overall health status and health-related behaviours (smoking habits and frequency of alcohol consumption)

Table 114 - Grade and short spells - age-adjusted rate ratios and rate ratios adjusted for age, external assessments of the work environment, social circumstances outside work, health and health-related behaviours

Grade category	Age-adjusted rate ratio (95% confidence interval)	Adjusted rate ratio ^e (95% confidence interval)
----------------	--	---

Men (N=3849)

1	0.36 (0.30 - 0.43)	0.40 (0.34 - 0.48)
2	0.70 (0.62 - 0.78)	0.71 (0.63 - 0.81)
3	0.74 (0.66 - 0.83)	0.72 (0.64 - 0.80)
4	1.00 ^a	1.00 ^b
5	1.71 (1.55 - 1.90)	1.46 (1.32 - 1.62)
6	2.05 (1.80 - 2.32)	1.61 (1.41 - 1.84)
7	1.76 (1.48 - 2.09)	1.31 (1.10 - 1.56)

Base rate - spells per person year (95% confidence interval)

^a 1.31 (1.20 - 1.43)

^b 1.10 (0.95 - 1.28)

Women (N=1657)

1	0.41 (0.24 - 0.69)	0.44 (0.27 - 0.72)
2	0.62 (0.47 - 0.82)	0.67 (0.51 - 0.88)
3	0.83 (0.65 - 1.05)	0.86 (0.68 - 1.07)
4	1.00 ^c	1.00 ^d
5	1.11 (0.95 - 1.31)	1.02 (0.88 - 1.20)
6	1.30 (1.12 - 1.50)	1.02 (0.88 - 1.20)
7	1.04 (0.86 - 1.26)	0.71 (0.58 - 0.87)

Base rate - spells per person year (95% confidence interval)

^c 2.09 (1.81 - 2.40)

^d 1.71 (1.38 - 2.12)

^e Adjusted for age, self-reports of the work environment (control, variety and skill use, work pace and support), attitudes towards work (perceived job importance and job satisfaction), social circumstances outside work (marital status, adequacy of support and difficulty paying bills), overall health status and health-related behaviours (smoking habits and frequency of alcohol consumption)

Table 115 - Grade and long spells - age-adjusted rate ratios and rate ratios adjusted for age, self-reports of the work environment, social circumstances outside work, health and health-related behaviours

Grade category	Age-adjusted rate ratio (95% confidence interval)	Adjusted rate ratio ^c (95% confidence interval)
----------------	--	---

Men (N=4173)

1	0.34 (0.25 - 0.48)	0.35 (0.25 - 0.50)
2	0.61 (0.48 - 0.78)	0.62 (0.49 - 0.79)
3	0.75 (0.59 - 0.94)	0.72 (0.57 - 0.91)
4	1.00 ^a	1.00 ^b
5	1.29 (1.02 - 1.62)	1.12 (0.89 - 1.41)
6	1.87 (1.43 - 2.46)	1.51 (1.12 - 2.04)
7	2.60 (1.91 - 3.52)	2.21 (1.59 - 3.08)

Base rate - spells per person year (95% confidence interval)

^a 0.10 (0.08 - 0.12)

^b 0.05 (0.03 - 0.06)

Women (N=1756)

1	0.21 (0.05 - 0.99)	0.26 (0.06 - 1.19)
2	0.62 (0.32 - 1.22)	0.77 (0.40 - 1.51)
3	0.63 (0.33 - 1.21)	0.76 (0.39 - 1.45)
4	1.00 ^c	1.00 ^d
5	1.68 (1.16 - 2.44)	1.62 (1.11 - 2.37)
6	1.62 (1.14 - 2.30)	1.37 (0.93 - 2.02)
7	3.35 (2.28 - 4.92)	2.36 (1.51 - 3.70)

Base rate - spells per person year (95% confidence interval)

^c 0.13 (0.09 - 0.19)

^d 0.08 (0.04 - 0.14)

^c Adjusted for age, self-reports of the work environment (control, variety and skill use, work pace and support), attitudes towards work (perceived job importance and job satisfaction), social circumstances outside work (marital status, adequacy of support and difficulty paying bills), overall health status and health-related behaviours (smoking habits and frequency of alcohol consumption)

Table 116 - Grade and long spells - age-adjusted rate ratios and rate ratios adjusted for age, external assessments of the work environment, social circumstances outside work, health and health-related behaviours

Grade category	Age-adjusted rate ratio (95% confidence interval)	Adjusted rate ratio ^c (95% confidence interval)
----------------	--	---

Men (N=3849)

1	0.35 (0.24 - 0.50)	0.37 (0.26 - 0.53)
2	0.64 (0.50 - 0.82)	0.61 (0.47 - 0.79)
3	0.74 (0.58 - 0.95)	0.68 (0.53 - 0.87)
4	1.00 ^a	1.00 ^b
5	1.26 (0.99 - 1.60)	1.10 (0.86 - 1.41)
6	1.80 (1.36 - 2.40)	1.48 (1.09 - 2.01)
7	2.42 (1.74 - 3.37)	2.02 (1.42 - 2.89)

Base rate - spells per person year (95% confidence interval)

^a 0.09 (0.08 - 0.11)

^b 0.05 (0.03 - 0.07)

Women (N=1657)

1	0.40 (0.11 - 1.48)	0.43 (0.12 - 1.55)
2	0.68 (0.33 - 1.38)	0.74 (0.36 - 1.51)
3	0.64 (0.32 - 1.28)	0.71 (0.36 - 1.40)
4	1.00 ^c	1.00 ^d
5	1.85 (1.25 - 2.74)	1.65 (1.11 - 2.45)
6	1.72 (1.18 - 2.50)	1.27 (0.84 - 1.90)
7	3.78 (2.51 - 5.68)	2.31 (1.45 - 3.67)

Base rate - spells per person year (95% confidence interval)

^c 0.12 (0.08 - 0.18)

^d 0.09 (0.05 - 0.16)

^c Adjusted for age, self-reports of the work environment (control, variety and skill use, work pace and support), attitudes towards work (perceived job importance and job satisfaction), social circumstances outside work (marital status, adequacy of support and difficulty paying bills), overall health status and health-related behaviours (smoking habits and frequency of alcohol consumption)

14.1 Discussion

In this chapter, possible explanations for the striking grade differences in sickness absence were examined. The grade differences in short and long spells were re-examined after adjusting for individual differences in the work environment, social circumstances outside work and health measures. These factors explained approximately one third of the grade differences in both short and long spells of sickness absence.

The grade differences in sickness absence were adjusted for each factor separately, before adjusting for the combined effect of all of the factors. The results of these analyses were not presented but they can be deduced from the relationship between each factor and grade, and between each factor and sickness absence after adjusting for grade. Overall health status explained a larger proportion of the grade differences than the other factors. However each of the other factors explained an additional proportion of the grade differences.

The adjusted grade differences in both short and long spells of sickness absence did not change when external assessments of the work environment were substituted for self-reported measures. This is consistent with the earlier observation that self-reports and external assessments were associated with similar differences in short spells and neither were associated with long spells.

Possible explanations for the persistent grade differences in sickness absence are discussed in the next chapter.

CHAPTER 15

Discussion

15.1 Summary of results

This study identified a number of risk factors for sickness absence. It also identified factors which were not related to sickness absence. Short and long spells of sickness absence were examined separately and differed in a number of ways. Short spells were much more frequent than long spells, and there were some important differences in their risk factors.

Grade of employment and self-reported health were the two factors which were most strongly related to rates of short spells and, to an even greater extent, long spells of sickness absence. Job satisfaction was the only measure of the work environment which related to rates of both short and long spells. Adequacy of support and difficulty paying bills were the two factors outside work which related to rates of both short and long spells. Low levels of emotional or practical support were associated with lower rates of long spells, but not short spells. Smoking was the only health-related behaviour which related to rates of both short and long spells.

Women had higher rates of sickness absence than men, particularly in the higher grades for short spells and in the lower grades for long spells. Asians had higher rates of both short and long spells than participants in other ethnic groups, even after adjusting for age and grade.

A number of psychosocial factors at work related to rates of short spells, but not long spells. These included variety and skill use and support at work for both sexes, and control, work pace and conflicting demands for men.

Non-drinkers had slightly higher rates of short spells, but other patterns of alcohol consumption did not relate to sickness absence.

Finally, there were factors which did not relate to either short or long spells of sickness absence. These included marital status, dependent children, social contacts and physical activity.

15.2 Grade and sickness absence

Grade of employment was the single factor which related most strongly to rates of sickness absence. There was a stepwise increase in the rates of both short and long spells of sickness absence from top administrators to clerical and office support staff. These findings are similar to grade and occupational differences in sickness absence observed in earlier studies in the British civil service (5,105) and in other large organisations (4,6,7).

To my knowledge, this study is the first attempt to explain grade or occupational differences in sickness absence in terms of individual differences in psychosocial factors at work and outside work, and health and health-related behaviours. Individual differences in these factors accounted for a third of the 4 to 6-fold grade differences in sickness absence.

The grade differences in sickness absence are similar to, though more striking than, socioeconomic differences in morbidity and mortality. Grade of employment is a job description which is specific to the British civil service. In the present study, it related to other indicators of socioeconomic status including education, housing tenure and car ownership. However the grade categories were relatively homogeneous compared with the Registrar General's social classes or socioeconomic groupings. As shown in Table 117, most participants were classified into two social classes or three socioeconomic groupings. Yet participants' salaries varied from £3,000 to above £40,000 per annum (Table 2). Data from other sources also suggest that there are large differences in income within each of the Registrar General's social classes (118). The grade classification was primarily based on salary and probably relates more closely to standard of living than other occupational classifications.

Table 117 - Grade and the Registrar General's social classes (SC) and socioeconomic groupings (SEG)

Grade	SC	SEG
Grades 1 - 5	I	1
Grade 6 - Higher executive officer	II	1
Executive officer	II	5
Clerical grades	IIIN	5,6
Office support grades	IIIN,IV,V	6,8,10,11

A number of studies have attempted to explain socioeconomic differences in morbidity and mortality by individual differences in known or suspected risk factors (119-121). In the Whitehall I Study, individual differences in risk factors such as age, smoking, systolic blood pressure, plasma cholesterol, height and blood glucose accounted for about a fifth of the 2 to 3-fold grade differences in coronary heart disease mortality (119). Similarly, in the British Regional Heart Study, individual differences in age, smoking, systolic blood pressure and serum cholesterol accounted for less than a sixth of the 1.5-fold social class differences in coronary heart disease morbidity and mortality (120). In the Alameda County Study, individual differences in age, sex, race, socioeconomic factors, health-related behaviours, psychological factors and social networks accounted for less than a sixth of the 1.7-fold differences in mortality from all causes between poverty and non-poverty areas (121). These studies suggest that, even when risk factors have been recognised, as for coronary heart disease, and individual differences in these risk factors are taken into account, the relationship between socioeconomic status and health remains largely unexplained.

There are several possible explanations for the persistent grade differences in sickness absence. The grade differences in sickness absence may have been spurious. Anecdotal evidence suggests that managers and professional employees are more likely to have sickness absence which is not recorded than employees with lower occupational status. There was general agreement among senior civil servants that the recording of sickness absence may be incomplete among top administrators in Group 1, but that this was unlikely to occur in other grade categories. Although it was not possible to evaluate the accuracy of the sickness absence records directly, the records were used for pay purposes and were therefore likely to be complete for most employees. Incomplete recording may partly account for the extremely low rates of sickness absence among top administrators, but is unlikely to explain the stepwise increase in sickness absence below these grades. In addition, it is more likely that short spells, rather than long spells, were incompletely recorded. However the grade differences in long spells were as great as those for short spells. To summarise, incomplete recording of sickness absence undoubtedly occurs among top administrators, but it is unlikely to account for the observed grade differences in sickness absence.

Another possible explanation is the observed grade differences could have been caused by one or more of the other factors measured, despite adjustment for their apparent effects. Psychosocial factors are difficult to measure and are likely to be misclassified. There was only moderate agreement between repeated self-reports of the work environment and between two external assessments for the same jobs. Misclassification would result in both an under-estimation of the effects of psychosocial factors and incomplete adjustment

for their effects in the analysis of grade differences in sickness absence (122). Psychosocial factors may therefore have explained more of the grade differences in sickness absence than were observed.

Alternatively, factors which were not measured may have contributed to the persistent grade differences in sickness absence. For example, work ethic or commitment to the organisation, may influence rates of sickness absence.

Perhaps more important is the possibility that group attitudes may influence sickness absence. Several papers have discussed the concept of 'absence cultures' and have concluded that these may modify the level and pattern of sickness absence within groups (123,124). Absence cultures refer to shared attitudes about the level of sickness absence which is tolerated by groups within and between organisations. Over forty years ago, Hill and Trist described how sickness absence changed with different phases of tenure (125). It was proposed that on joining an organisation, employees observe the formal and informal responses of the organisation towards different levels of sickness absence and adopt levels of sickness absence which reflect these observations.

Psychological contracts, defined as reciprocal expectations between an employee and the organisation, may also influence sickness absence (126). These refer to the mutual agreement that, on the one hand, the employer has the right to enforce work schedules and, on the other, some absence from work is necessary and mutually beneficial for both the employer and employee.

It is plausible that within the civil service, different absence cultures and psychological contracts may operate. This may explain the grade and departmental differences in sickness absence observed in this study.

15.3 Self-reports and external assessments of the work environment

A major objective of this study was to assess the importance of psychosocial aspects of the work environment in relation to rates of sickness absence. These included control, variety and skill use, work pace, conflicting demands and support at work. Control, work pace and conflicting demands were assessed in two ways, namely self-reports and external assessments. Employees' reports of the work environment reflect their perception, attitudes and expectations, which themselves may influence rates of sickness absence. External assessments provide a more objective measure of the work environment. Both self-reports and external assessments of the work environment were examined in relation to sickness absence.

The associations between sickness absence and both self-reports and external assessments of control and work pace were similar. This suggests that differences in the work environment itself account for differences in sickness absence, irrespective of how employees' perceive their work.

It is of interest that high levels of self-reported conflicting demands were associated with higher rates of short spells, whereas high levels of externally assessed conflicting demands were associated with lower rates of short spells. This probably reflects differences in the interpretation of conflicting demands. External assessments of conflicting demands were moderately correlated with external assessments of work pace and control, whereas self-reports of conflicting demands were not correlated with self-reports of other aspects of the work environment. It is possible that personnel managers rated conflicts inherent in the job, whereas employees' rated other conflicts including inter-personal conflicts.

15.4 The job strain concept and sickness absence

The job strain concept suggests that the combined effects of job demands and control or variety and skill use cause strain and, in the long term ill-health (70,71,73). The results of the present study provided minimal support for this concept when it was applied to individuals, after adjusting for age and grade. High control, high variety and skill use, and high work pace were separately associated with fewer short spells, but there was no consistent relationship between the combined effects of these work characteristics and sickness absence. Men in 'active jobs' (high work pace and high control or high variety and skill use) had lower rates of short spells, but women in 'active jobs' did not. Women in 'low strain jobs' (low work pace and high control or high variety and skill use) had lower rates of short spells, but men in 'low strain jobs' did not. There was no association between 'high strain jobs' (high work pace and low control or low variety and skill use) and sickness absence for either men or women.

On the other hand, it is of interest that analysis at the level of occupational grade would have supported the job strain concept. Top administrative jobs had high work pace, high control and high variety and skill use, features of 'active jobs' according to the job strain concept. Top administrators had lower rates of both short and long spells of sickness absence. Clerical and office support jobs had low work pace, low control and low variety and skill use, features of 'passive jobs'. Participants in these grades had higher rates of both short and long spells of sickness absence.

An analysis at the level of occupational grade is comparable to studies which have evaluated the job strain concept using occupational classifications of job strain, rather than employees' reports of job strain (74,78-80,82). The association between 'high strain' occupations and health observed in these studies may reflect other differences between occupations, for example in occupational status.

It is not clear whether the job strain concept has general validity. Studies which have applied the job strain concept to individuals in different occupational groups have reported inconsistent findings (72,73,75). It is possible that a single concept of strain cannot be applied to different occupational groups. For example in the latter studies, the combination of job demands and support at work was a better predictor of cardiovascular prevalence in white-collar occupations than the combination of job demands and control (72,73).

It could be argued that differences in the work environment within the civil service, and even more so within grade, were insufficient to adequately test the job strain concept. However there was sufficient variation in the work environment for the separate, but not combined, effects of different aspects of the work environment to be identified. In contrast to the findings from national surveys, these effects were less likely to have been confounded by other differences between occupations.

15.5 Attitudes towards work and sickness absence

Of the two measures of attitudes towards work, job satisfaction was associated with lower rates of both short and long spells of sickness absence, whereas perceived job importance was only associated with lower rates of short spells.

Job satisfaction is a global measure to which different aspects of the work environment, such as control, variety and skill use and support, may contribute. For individual employees, different aspects of the work environment probably contribute to job satisfaction. The effect of a global measure, such as job satisfaction, would therefore be greater than the separate effects of different aspects of the work environment.

The sex and grade differences in job satisfaction suggest that job satisfaction are complex and are not directly related to the work environment.

15.6 Social circumstances outside work and sickness absence

Adequacy of support and difficulty paying bills were the two factors outside work which related to rates of sickness absence. There were no consistent relationship between sickness absence and marital status, dependent children, social contacts and attendance at religious services. Somewhat surprisingly, low levels of emotional or practical support were associated with lower rates of long spells, but not short spells.

It is of interest that the amount of emotional and practical support from the closest person did not correlate with adequacy of support from this person, an observation which has previously been reported (84). This suggests that availability and adequacy of support are different measures. This can be interpreted in several ways. First, adequacy of support may reflect personality traits and a high requirement for supportive relationships. Second, individuals who experience adverse situations, for example ill-health, may be more likely to perceive their available support as inadequate. Third, individuals who are generally not coping may be more likely to report inadequate support regardless of the amount of support available.

The lack of an association between sickness absence and contact with relatives and friends may reflect difficulties in measuring social supports. Both the quantity and quality of support need to be considered. For example, a great deal of contact with relatives may be supportive to one person, but stressful to another. In earlier studies, similar measures of social supports have predicted mortality in different ways (83,108-110). Contact with friends and relatives predicted mortality in the Alameda County Study (83), but not in the Tecumseh Community Health Study (108). In the Durham County Study, perceived support, and roles and attachments were stronger predictors of mortality than the frequency of social interactions (109).

Another explanation for the lack of an association is there may have been insufficient variation in the amount of social support participants experienced. By being employed, all participants had a certain level of social contact. Compared to the population surveys described above, few participants in the present study would have experienced extreme social isolation.

The strong relationship between perceived financial problems and sickness absence is striking and can be interpreted in several ways. Difficulty paying bills may indicate financial problems and individuals who have financial problem or lack other resources are more likely to have poor health and increased sickness absence. Alternatively, individuals who report difficulties paying bills may have a number of other difficulties

which themselves relate to rates of sickness absence. As described in relation to adequacy of support, individuals who are generally not coping may be more likely to report difficulty paying bills.

The present study does not support the widely held view that employees, particularly female employees, with dependent children have higher rates of sickness absence. As discussed in Chapter 11, this may partly reflect the small proportion of participants who had young children.

15.7 Health and sickness absence

It was anticipated that self-reported health at the time of the baseline survey would relate to sickness absence. The stronger relationship between health and rates of long spells suggests that long spells are a better indicator of morbidity than short spells. In the long term it will be possible to assess whether long spells predict serious morbidity and mortality.

Health is multidimensional and a large number of factors probably contribute to an individual's assessment of overall health status (14). As discussed in relation to job satisfaction, a global measure of health would therefore be more strongly related to sickness absence than other more specific measures of health.

15.8 Smoking, alcohol consumption and sickness absence

The association between smoking and sickness absence is consistent with the findings of earlier studies (47-50). The association between smoking and long spells is compatible with the explanation that smokers have increased morbidity and therefore increased rates of sickness absence.

In contrast to other studies, this study provides only limited support for an association between heavy drinking and sickness absence (54-56). However the definition of heavy drinking differs between studies, and in the present study, heavy drinking was defined using relatively low levels of alcohol consumption. It is also interesting that non-drinkers had slightly higher rates of short spells than other participants. Although it is unlikely that alcohol has a protective effect on sickness absence, non-drinkers may differ from regular drinkers in ways other than their drinking habits. These difference may explain the higher rates of sickness absence observed for non-drinkers. It is less likely that the inclusion individuals who have stopped drinking alcohol for health reasons could explain these differences.

15.9 Sex differences in psychosocial factors and sickness absence

Most studies which have assessed the relationship between the work environment and health for women have compared those in paid employment with those not in paid employment (127-129). Few studies have compared women with different occupational status or men and women with similar occupational status. In this study a third of the study population were female. However there striking differences in the grade distribution of men and women with top administrators being predominantly male, and clerical and office support staff predominantly female. These differences are consistent with differences in the sex distribution of other occupations. In Sweden, more than 80% of the workforce were employed in occupations which were dominated by 80% of the same sex (130).

Men and women also differed in a number of other ways. Women in the higher grades tended to be younger, more educated, were more likely to be single and less likely to have children than men in these grades. The opposite pattern was seen in the lower grades. These differences may partly explain the larger sex differences in rates of long spells observed in the lower grades.

Despite similar self-reports of the work environment, women were generally more satisfied, but perceived their jobs as less important than men. Different aspects of the work environment also appeared to be more relevant for men than women in relation to sickness absence. Control and work pace were related to rates of short spells for men, but not for women. This is consistent with an earlier study which suggested that support at work may be more important than control for women (72).

Although the findings for men and women were presented separately and comparisons have been made, this study did not specifically investigate the reasons for the observed sex differences in sickness absence. These findings warrant further investigation.

15.10 Ethnic differences in sickness absence

Asians had higher rates of both short and long spells of sickness absence than other ethnic groups. This is consistent with other studies which have reported higher rates of sickness absence for recent immigrants (19,20). Asians also have higher rates of general practitioner consultations than other ethnic groups (131-133). These differences are independent of socioeconomic status. Differences in health, illness behaviour, attitudes towards work and family structure may be important.

15.11 Measurement of sickness absence

This study examined differences in the frequency of sickness absence between groups of individuals. However, it is well recognised that a small proportion of employees account for a high proportion of sickness absence in an organisation (134,135). In the present study, there was considerable variation in rates of short spells in excess of the Poisson assumption. This supports the view that certain employees were more prone to sickness absence than others. An alternative approach to the analysis of sickness absence would have been to categorise individuals according to their patterns of sickness absence and compare differences in the baseline variables between these groups.

15.12 Internal validity

Internal validity refers to the validity of the observed associations within the study population. Various types of bias could have distorted the observed associations between the explanatory variables and sickness absence. These include selection bias, information bias and confounding effects.

15.12.1 Selection bias

Selection bias will have occurred if the relationship between the explanatory variables and sickness absence was different for those who participated in the study and those who were eligible but did not participate. The overall participation rate was relatively high, particularly in view of the personal nature of the baseline questionnaire. However, there were large differences in participation rates by grade of employment from 81% for top administrators to 59% for office support staff (Table 1). These differences in participation rates are similar to those reported in the Whitehall I Study (136).

Although it was not possible to compare sickness absence of participants and non-participants, the grade differences in sickness absence could only be explained by selection bias if, in the higher grades participants had lower rates of sickness absence than non-participants, or in the lower grades participants had higher rates of sickness absence than non-participants. Other studies have reported higher rates of sickness absence for non-participants (137). This suggests that rates of sickness absence in the lower grades were more likely to be under-estimated than rates in the higher grades because of the lower participation rates in the lower grades. This would result in an under-estimation of the grade differences in sickness absence.

15.12.2 Information bias

Psychosocial factors are difficult to measure and are more likely to be misclassified than other factors. This may partly account for the weaker association between sickness absence and many of the psychosocial factors at and outside work.

Another important effect of misclassification is incomplete adjustment for confounding. This possibility was discussed in Section 15.1 in relation to the persistent grade differences in sickness absence.

Changes in the work environment over time could also increase the extent of misclassification. In the Swedish Living Conditions Surveys, the association between job strain and the CHD indicator was stronger in a subsample of 292 employees who reported no change in job demands or intellectual discretion between their interviews in 1968 and 1974 (71). Similarly, in a subsample of 288 men in the Tecumseh Community Health Study, men who reported work pressures on two occasions had three times higher coronary heart disease mortality than those who reported work pressures on one or neither occasion (8.7% compared to 2.9%) (68). Changes in the work environment are particularly relevant when long term or cumulative effects are likely to be important, as for coronary heart disease. These effects may be less important in relation to sickness absence. Repeated measures of the work environment are to be obtained and will be used in the long term prospective component of this study.

15.12.3 Confounding effects

Grade of employment was the strongest predictor of sickness absence. It also related to many of the explanatory variables. The analyses were therefore presented before and after adjusting for grade. In some analyses, this may have resulted in an under-estimation of the effect of the explanatory variables. For example, grade may be a good global measure of the work environment. When the effects of specific aspects of the work environment were adjusted for grade, some of the effects of interest may have been removed.

A large number of risk factors for sickness absence were identified and many of these were inter-related. It is difficult to separate the effects of a single factor from other factors. This study adopted a relatively simple approach for the evaluation of psychosocial factors and sickness absence. Generally only direct effects between the explanatory variables and sickness absence were examined. Indirect effects were assessed when they were relevant to the relationship between the work environment and

sickness absence. For example, the possibility that health, smoking or alcohol consumption mediated between the work environment and sickness absence was examined. These analyses were not presented, but they provided little support for any indirect effects. A more detailed assessment of interactions between different factors may have provided further information, but would considerably increase the complexity of the study and would probably be difficult to interpret.

15.13 Implications

An intervention which improves employees' health and well-being is unlikely to be attractive to employers if it is associated with reduced productivity. In this study, sickness absence, which is one measure of loss of productivity, also related to measures of health and well-being. This suggests that there is not necessarily a conflict between employees' health and productivity.

A number of risk factors for sickness absence were identified. However, factors such as sex, ethnic group, health and social circumstances outside work are difficult to modify. The one area which could potentially be modified to reduce sickness absence is the work environment.

Most of the psychosocial aspects of the work environment were associated with relatively small differences in the rates of sickness absence. However an intervention within a large organisation, such as the civil service, which reduced these differences could potentially prevent a large number of spells of sickness absence. To illustrate this, the observed rates of sickness absence for different levels of job satisfaction were applied to staffing figures for the whole civil service (265,000 men and 242,000 women). It was assumed that the age and grade distribution of the study population was similar to the whole civil service. For men, 49,980 short spells and 2,510 long spells could be prevented each year if all, rather than the observed 36%, of men were very satisfied with their jobs. Similarly for women, 56,560 short spells and 4,370 long spells could be prevented each year if all, rather than the observed 45% of women, were very satisfied with their jobs. This simple calculation assumes that a change in the work environment results in all employees adopting the rates of sickness absence observed in the group who have high levels of job satisfaction. Although this is unlikely, it illustrates that an effective, but simple intervention could potentially prevent a large number of spells of sickness absence.

Job satisfaction is complex and unlikely to be modified by a simple change of the work environment. Instead, other specific aspects of the work environment which related to rates of sickness absence may be more amenable to intervention. For example, increasing

levels of variety and skill use, support at work and control may be associated with a reduction in sickness absence. These changes may also improve productivity. Recommendations on intervention must, however, be made cautiously on the basis of this study. The value of an intervention will depend on its expense, how effective it is in changing the work environment and whether the changes are associated with improvements in sickness absence and productivity.

There is a large literature on different types of formal strategies to control sickness absence. Incentive schemes appear to be more effective than punitive measures (138,139). Field experiments have been conducted which have suggested that schemes which involve the participation of employees are more effective than schemes which are imposed by management (140,141).

Group attitudes or absence cultures may be important in relation to the grade, sex, ethnic and departmental differences in sickness absence. Further investigation is required to understand differences in absence cultures and to identify ways in which these differences could be modified.

APPENDIX 1

Baseline questionnaire

Six to eight weeks following the examination you will be sent a letter about your results and appropriate advice. A letter for your general practitioner will be enclosed for you to give him/her

This questionnaire asks about features of your way of life which may affect your health. To study this we need to monitor your health over the next 5-7 years. Therefore, **we are asking your permission to obtain your sickness record from your department** and in cases of serious illness to obtain details from your general practitioner.

Again we wish to assure you that such information will be **absolutely confidential**. **Under no circumstances will an individual record be made available to anyone: either connected with the Civil Service or outside.** It will not be possible for anyone to be identified from any scientific publication.

Consent given: Yes No
(Please circle one)

If yes, please sign your name here

If you have given your consent, please could you provide the following information:

NATIONAL INSURANCE NUMBER
(you can get this from your payslip)

PAYROLL NUMBER/PAY REFERENCE
(also on your payslip)

NATIONAL HEALTH SERVICE NUMBER
(You can find your National Health Service No. on your medical card or obtain it from your general practitioner. Please note that it is not the same as your National Insurance No.)

Your General Practitioner's name NAME
and address

ADDRESS

THANK YOU

HEALTH SURVEY

General Instructions

Please read these notes before filling in the rest of the form

Please answer all the questions.

The answer to most questions
can be indicated by circling
the appropriate number.

e.g. What is your sex?

Male ①
Female 2

Where the answer requires
you to write numbers,
a rectangle is used.

e.g. What is your
date of birth?

12	3	19	45
Day	Month		Year

Where the answer is likely to
involve a phrase or sentence
lines are given.

e.g. What is your civil
service grade?

H E O

Continued

e) Is your spouse [partner] currently doing any paid work?

Circle one
only

Yes: Full-time (over 30 hours/week) 1

Yes: Part-time (less than 30 hours/week) 2

No: Unemployed — seeking work 3

No: Looking after the house/family 4

No: Not working — other reasons 5

If, Not Working, go to Question 8

If spouse/partner is working:

f) What is your spouse's [partner's] main current job. What kind of work does he/she do in it?

g) What qualifications or training if any are necessary for that job?

h) Is he/she an employee 1

or: self employed 2

i) How many people work at his/her place of work?

Less than 25 employees 1

25 or more employees 2

j) Is he/she in charge of other people?

Yes 1

No 2

k) If Yes, how many?

8. Is the accommodation in which you live owned or rented?

Own outright or have mortgage 1

Rent from local authority 2

Rent privately unfurnished 3

Rent privately furnished 4

9. Does anyone live in your household besides you?

Yes 1

No 2

If No, go to Question 11

If Yes,

10. Who lives in your household besides you? Answer all parts

Yes No

a) Spouse or partner 1 2

b) Your mother i 2

c) Your father 1 2

d) Your spouse's mother 1 2

e) Your spouse's father 1 2

f) Children under 5 number
(If none write 0)

g) Children aged 5-15
(If none write 0)

h) Children over 15
(If none write 0)

i) Any other people?
(If none write 0)

11. Is there a car or van normally available for use by you or other members of your household?

Yes 1

No 2

12. a) How old was your father when he finished full-time education?

age

b) What is/was your father's main job, what kind of work does/did he do in it?

c) What qualifications or training, if any, are/were necessary for that job?

d) Is/was he an employee 1

or: self employed 2

e) How many people work/worked at his place of work?

Less than 25 employees 1

25 or more employees 2

f) Is/was he in charge of other people?

Yes 1

No 2

g) If Yes, how many?

18. There are some kinds of health problems that keep recurring and some that people have all the time. In the last 12 months have you suffered from any of the following health problems?
(Please answer all questions)

	Yes	No
a) Bronchitis	1	2
b) Arthritis or rheumatism	1	2
c) Sciatica, lumbago or recurring backache	1	2
d) Persistent skin trouble (e.g. eczema)	1	2
.....		
e) Asthma	1	2
f) Hay fever	1	2
g) Recurring stomach trouble/indigestion	1	2
h) Being constipated all or most of the time	1	2
i) Piles	1	2
.....		
j) Persistent foot trouble (e.g. bunions, ingrowing toenails)	1	2
k) Trouble with varicose veins	1	2
l) Nervous trouble or persistent depression	1	2
m) Persistent trouble with your gums or mouth	1	2
.....		
n) Any other recurring health problem (Please specify)	1	2
.....		

PLEASE MAKE SURE YOU HAVE ANSWERED ALL THE ABOVE QUESTIONS.

19. Have you had any of the following symptoms in the last fourteen days?
(Please answer all questions)

	Yes	No
a) A cough, catarrh or phlegm	1	2
b) Diarrhoea	1	2
c) Heartburn, wind or indigestion	1	2
d) Shortness of breath	1	2
e) Dizziness or giddiness	1	2
.....		
f) Earache or discomfort in the ears	1	2
g) Swollen ankles	1	2
h) Nervy, tense or depressed	1	2
i) A cold or 'flu	1	2
j) A sore throat	1	2
.....		
k) Difficulty in sleeping	1	2
l) Pains in the chest	1	2
m) A backache or pains in the back	1	2
n) Nausea or vomiting	1	2
o) Feeling tired for no apparent reason	1	2
.....		
p) Rashes, itches or other skin trouble	1	2
q) Toothache or trouble with the gums	1	2
r) Any other complaint(s) in the last 14 days (Please specify)	1	2

PLEASE MAKE SURE YOU HAVE ANSWERED ALL THE ABOVE QUESTIONS.

23. Has your blood pressure ever been checked?

Yes	1
No	2

If No go to Question 26

24. If Yes, who has it been checked by?
(circle all that apply)

	Yes	No
a) General Practitioner (or practice nurse)	1	2
b) Hospital doctor (or nurse)	1	2
c) At work	1	2
d) Insurance exam	1	2
e) Others	1	2

25. a) Has a doctor ever told you that your blood pressure was above normal?

Yes	1
No	2

If No, go to Question 26

If Yes

b) when was the first time?

year

c) Have you ever had treatment for high blood pressure?

Yes	1
No	2

d) Are you taking drug treatment for high blood pressure now?

Yes	1
No	2

26. a) Do you get any pains in either leg on walking?

Yes	1
No	2

If No, go to Question 27

If Yes,

b) Does this pain ever begin when you are standing still or sitting?

Yes	1
No	2

c) Do you get this pain in your calf or calves?

Yes	1
No	2

d) Do you get it when you walk uphill or hurry?

Yes	1
No	2

e) Do you get it when you walk at an ordinary pace or on the level?

Yes	1
No	2

f) Does this pain ever disappear while you are still walking?

Yes	1
No	2

g) What do you do if you get it when you are walking?

Stop	1
Slow down	2
Continue at the same pace	3

h) What happens to it if you stand still?

Usually continues more than 10 mins.	1
Usually disappears in 10 mins. or less	2

27. Do you suffer from Diabetes?

Yes	1
No	2

FOR WOMEN ONLY

33. a) Are you taking any contraceptive pills?

Yes 1

No 2

If No, go to Question 34

If Yes

b) At what age did you first start?

age

c) For how many years altogether have you taken the pill?

years

d) Which pill are you currently taking? Specify brand

.....

GO TO QUESTION 35

IF NOT NOW TAKING CONTRACEPTIVE PILLS

34. a) Did you ever take contraceptive pills?

Yes 1

No 2

If No, go to Question 35

If yes,

b) For how many years altogether did you take contraceptive pills?

years

35. a) Are you still having your periods?

Yes 1

No 2

If Yes, go to Question 36

If No,

b) At what age did you stop?

age

c) What was the cause of menopause?

Natural menopause 1

Hysterectomy (removal of womb only) 2

Hysterectomy plus removal of ovaries 3

d) Have you ever had hormone replacement therapy?

Yes 1

No 2

If No, go to Question 36

If Yes,

e) For how many months?

number

f) Please specify the name of the tablets

.....

g) Are you still taking hormone replacement therapy?

Yes 1

No 2

SMOKING HABITS

39. a) Do you smoke cigarettes now?
(i.e. not cigars/pipe)

Yes	1
No	2

If No, go to Question 40

If Yes,

b) What kind of cigarettes do you smoke?

circle all that apply

Manufactured with filters	1
Manufactured without filters	2
Hand rolled	3

c) How many manufactured cigarettes do you smoke per day?

cigarettes

and/or

d) About how many ounces of tobacco do you use per week for handrolled cigarettes?

ounces

GO TO QUESTION 41

40. a) If not a present cigarette smoker did you smoke in the past?

Yes	1
No	2

If No, go to Question 42

If Yes,

b) How many manufactured cigarettes did you smoke per day?

cigarettes

and/or

c) How many ounces of tobacco did you use per week for handrolled cigarettes?

ounces

d) How old were you when you stopped smoking?

age

41. How old were you when you started smoking?

age

42. a) Do you smoke cigars?

Yes	1
No	2

If No, go to Question 42c

If Yes,

b) How many cigars per week?

cigars

c) Do you smoke a pipe?

Yes	1
No	2

If Yes,

d) How many ounces of tobacco do you smoke per week?

ounces

DRINKING HABITS

43. a) In the past 12 months have you taken an alcoholic drink?

	<i>circle one only</i>
Twice a day or more	1
Almost daily	2
Once or twice a week	3
Once or twice a month	4
Special occasions only	5
No	6

b) In the last 5 years have you changed your drinking habits?

Yes	1
No	2

If No, go to Question 44

If Yes,

c) Compared with your current habits did you drink?

A lot more	1
A bit more	2
A bit less	3
A lot less	4

Continued

If you drink coffee:

46. c) What sort of coffee do you mostly drink?

(Circle one only)

Instant	1
Filtered	2
Percolated	3
Decaffeinated	4
Other (specify)	5

FOOD CONSUMPTION

Please answer the following questions about your food habits (if you are not sure you may discuss this question with the person responsible for buying and cooking your food.)

47. a) What type of bread do you eat most frequently?

Circle one only

White	1
Wholemeal	2
Granary or wheatmeal	3
Other brown	4
Both brown and white	5

b) How many slices of bread do you usually eat daily?

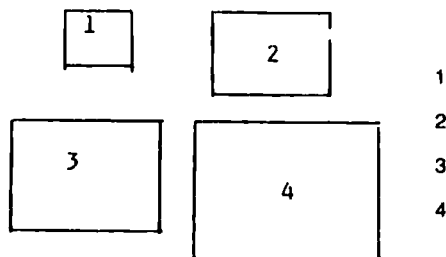
None	1
1 - 2	2
3 - 6	3
7 - 12	4
13 slices or more	5

c) What type of butter or margarine do you use most frequently?

Circle one only

Butter	1
Hard margarine	2
Soft margarine	3
Margarine high in polyunsaturates (e.g. Flora)	4
Low calorie spread (e.g. Outline)	5
Rarely use butter or margarine	6

d) The drawing below shows cubes of butter or margarine in true scale. Pick the cube which most resembles the average amount you use for one slice of bread. If in doubt try buttering a slice [do not place butter or margarine on the questionnaire]



e) What type of milk do you usually use?

Circle one only

Do not use milk	1
Channel Islands Whole Milk (gold top)	2
Whole Milk (silver/red top or sterilised)	3
Skimmed milk	4
Semi-Skimmed milk	5
Other (please specify)	6

Continued

Continued

- n) Which of the following breakfast cereals do you eat nowadays?
(Circle one only)

Allbran	1
Muesli	2
Weetabix	3
Branflakes	4
Puffed wheat	5
Other cereal (specify)	6

PHYSICAL ACTIVITY

48. How often do you take part in sports or activities that are:

	3 times a week or more	once or twice a week	about once to three times a month	Never/ Hardly ever
a) Mildly energetic (e.g. walking, woodwork, weeding, hoeing, bicycle repair, playing darts, general housework)	1	2	3	4
b) Moderately energetic (e.g. scrubbing, polishing car, chopping, dancing, golf, cycling, decorating, lawn mowing, leisurely swimming).	1	2	3	4
c) Vigorous (e.g. running, hard swimming, tennis, squash, digging, cycle racing)	1	2	3	4

Please give the average number of
hours per week you spend in such
sports or activities.

Please give details of
these activities:

- d) Mildly energetic hours
- e) Moderately energetic hours
- f) Vigorous hours

50. About your position at work — how often do the following statements apply?
[please answer all questions]

	Often	Sometimes	Seldom	Never/ Almost never
a) Others take decisions concerning my work	1	2	3	4
b) I have a good deal of say in decisions about work	1	2	3	4
c) I have a say in my own work speed	1	2	3	4
d) My working time can be flexible	1	2	3	4
e) I can decide when to take a break	1	2	3	4
f) I can take my holidays more or less when I wish	1	2	3	4
g) I have a say in choosing with whom I work	1	2	3	4
h) I have a great deal of say in planning my work environment	1	2	3	4

51. If problems occur at work concerning the way the job should be done, how are they solved?
[please answer all questions]

	Often	Sometimes	Seldom	Never/ Almost never	Not Applicable
a) By discussing it at a meeting	1	2	3	4	5
b) By discussing it with a superior	1	2	3	4	5
c) By discussing it with colleagues at work	1	2	3	4	5
d) By discussing it with colleagues out of work time	1	2	3	4	5
e) By discussing it with trade union representatives	1	2	3	4	5
f) Others take decisions and just tell me how to do my job.	1	2	3	4	5

54. When you are having difficulties in your work:

[please answer all questions]

	Often	Sometimes	Seldom	Never	Not Applicable
a) How often do you get help and support from your colleagues?	1	2	3	4	5
b) How often are your colleagues willing to listen to your work related problems?	1	2	3	4	5
c) How often do you get help and support from your immediate superior?	1	2	3	4	5
d) How often is your immediate superior willing to listen to your problems?	1	2	3	4	5
e) How often can you delegate work effectively to your juniors?	1	2	3	4	5
f) How often can you get support from your trade union representative?	1	2	3	4	5

55. If you were to be treated unfairly or to come into conflict with your boss or supervisor, what would be your immediate reaction?

[please answer all questions]

	Often	Sometimes	Seldom	Never or Almost Never
a) Let it pass without saying anything	1	2	3	4
b) Walk away feeling strongly but not saying anything	1	2	3	4
c) Say something at once	1	2	3	4
d) Reason with the person	1	2	3	4
e) Become angry	1	2	3	4
What happens then?	Often	Sometimes	Seldom	Never or Almost Never
f) Forget about it	1	2	3	4
g) Talk to the person when you have calmed down	1	2	3	4
h) Complain to a colleague	1	2	3	4
i) Go to someone higher in position	1	2	3	4
j) Go to trade union representative	1	2	3	4
k) Feel ill (headache, stomach ache etc.)	1	2	3	4
l) Become miserable	1	2	3	4
m) Get angry and short tempered at home	1	2	3	4
n) Contemplate revenge	1	2	3	4

HERE IS A LIST OF SEVERAL TRAITS OR QUALITIES

58. For each will you circle the appropriate number to show whether each trait describes you very well, fairly well, somewhat or not at all.
[Please answer all questions]

	Very Well	Fairly Well	Somewhat	Not at all
a) Being bossy or dominating	1	2	3	4
b) Having a strong need to excel (be best) in most things	1	2	3	4
c) Usually being pressed for time	1	2	3	4
d) Being hard driving and competitive	1	2	3	4
e) Eating too quickly	1	2	3	4

Now we want to know how you have generally felt at the end of an average day at work:

	Yes	No
f) Have you often felt very pressed for time?	1	2
g) Has your work often stayed with you so that you were thinking about it after working hours?	1	2
h) Has your work often stretched you to the very limits of energy and capacity?	1	2
i) Have you often felt uncertain, uncomfortable or dissatisfied with how well you were doing in your work?	1	2

Finally in this section:

j) Do you get quite upset when you have to wait for anything?	Yes	1
	No	2
k) When you are faced with slow people, do you feel agitated or irritable?	Not at all	1
	Somewhat	2
	Very much	3
l) When you are being held up in a queue do you feel agitated or irritable?	Not at all	1
	Somewhat	2
	Very much	3

Rate each person on the scale from 1 - 4 to show how well they have provided each stated type of support:
1 = not at all, 2 = a little, 3 = quite a lot, 4 = a great deal

	Closest Person	Second Person	Third Person	Fourth Person	Spouse [if not already covered]
Write in the people you are closest to here:—					
a) . . . How much in the last 12 months . . . did this person give you information , suggestions and guidance that you found helpful?					
b) . . . How much in the last 12 months . . . could you rely on this person (was this person there when you needed him/her?)					
c) . . . How much in the last 12 months . . . did this person make you feel good about yourself?					
d) . . . How much in the last 12 months . . . did you share interests, hobbies and fun with this person?					
e) . . . How much in the last 12 months . . . did this person give you worries , problems and stress ?					

This section is about **confiding** in people, that is talking frankly or sharing feelings with them.

Rate each person on the scale from 1 - 4 to show how well they have provided each stated type of support:
1 = not at all, 2 = a little, 3 = quite a lot, 4 = a great deal.

	Closest Person	Second Person	Third Person	Fourth Person	Spouse [if not already covered]
Write in the people you are closest to here:—					
f) . . . How much in the last 12 months . . . did you want to confide in (talk frankly, share feelings with this person)?					
g) . . . How much in the last 12 months . . . did you confide in this person?					
h) . . . How much in the last 12 months . . . did you trust this person with your most personal worries and problems?					
i) . . . How much in the last 12 months . . . would you have liked to have confided more in this person?					
j) . . . How much in the last 12 months . . . did talking to this person make things worse?					
k) . . . How much in the last 12 months . . . did he/she talk about his/her personal worries with you?					

Continued

We would also like a few details on each of these people:-

	Closest Person	Second Person	Third Person	Fourth Person	Spouse [if not already covered]
Write in the people you are closest to here:—
p) How old are they? (in years)?					
q) What sex are they? (male/female)	M F	M F	M F	M F	M F
r) What is their marital status (married, single other)?	M S O	M S O	M S O	M S O	
s) Do they have children aged 16 or under now? (Yes/No)	Yes No	Yes No	Yes No	Yes No	Yes No
t) How long have you known them? (in years)					
u) Did they have further education after 18 years? Yes No Don't know Not applicable	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
v) Do they work with you? (Yes/No)	Yes No	Yes No	Yes No	Yes No	Yes No
w) About how many days did you see them in the last year (1 - 365)?					
x) How close do they live to you (with you, or number of miles away)?					

y) All things considered how satisfied or dissatisfied are you overall with your own personal relationships?
Please circle one of the numbers on the 1 - 7 scale below to show how satisfied or dissatisfied you feel:-

Very dissatisfied	Moderately dissatisfied	A little dissatisfied	No feelings either way	A little satisfied	Moderately satisfied	Very satisfied
1	2	3	4	5	6	7

z) All things considered how satisfied or dissatisfied are you with the way you spend your leisure time?
Please circle one of the numbers on the 1 - 7 scale below to show how satisfied or dissatisfied you feel:-

Very dissatisfied	Moderately dissatisfied	A little dissatisfied	No feelings either way	A little satisfied	Moderately satisfied	Very satisfied
1	2	3	4	5	6	7

65. Do you do any voluntary work for other people (e.g. visiting sick, disabled or elderly, belonging to Friends of the Hospital etc.)?

- | | |
|-----------------------|---|
| Almost daily | 1 |
| About once/week | 2 |
| About once/month | 3 |
| Once every few months | 4 |
| Never/almost never | 5 |

66. a) Do you belong to any clubs or organisations? (Social or recreational groups, trade union, commercial groups, professional organisations, political parties, sports clubs, cultural groups, pressure groups etc.)

- | | |
|-----|---|
| Yes | 1 |
| No | 2 |

If No, go to Question 67

If Yes,

b) Taking all of the above together, how often do you attend?

- | | |
|-----------------------|---|
| Almost daily | 1 |
| About once/week | 2 |
| About once/month | 3 |
| Once every few months | 4 |
| Never/almost never | 5 |

67. How often do you have parties at home? (including small dinner parties)

- | | |
|------------------------|---|
| 4 or more times a week | 1 |
| About once/week | 2 |
| About once/month | 3 |
| Once every few months | 4 |
| Never/almost never | 5 |

68. a) Do you have any hobbies? (other than watching TV or reading the newspaper)

- | | |
|-----|---|
| Yes | 1 |
| No | 2 |

If No, go to Question 69

If Yes,

b) In an average week how much time do you spend on your hobbies?

hours

Please specify your hobbies

69. How often do you have the feeling that there is little meaning in the things you do in your daily life?

- | | |
|--------------|---|
| Often | 1 |
| Sometimes | 2 |
| Seldom | 3 |
| Almost never | 4 |

70. When you have difficulties in important aspects of your life, do you feel you will succeed in overcoming them?

- | | |
|--------------|---|
| Often | 1 |
| Sometimes | 2 |
| Seldom | 3 |
| Almost never | 4 |

71. How often do you have the feeling that you do not have a clear idea of how your personal life will work out?

- | | |
|--------------|---|
| Often | 1 |
| Sometimes | 2 |
| Seldom | 3 |
| Almost never | 4 |

75-78. The following is a list of things that can happen to people. Try to think back over the past 12 months and remember if any of these things happened to you and, if so, how much you were upset or disturbed by it?

	Very much	Moderately	Not too much	Not at all
a) Personal serious illness, injury or operation				
Yes 1				
No 2				
If Yes, How much did it upset you?	1	2	3	4
b) Death of a close relative or friend				
Yes 1				
No 2				
If Yes, How much did it upset you?	1	2	3	4
c) Serious illness, injury or operation of a close relative or friend				
Yes 1				
No 2				
If Yes, How much did it upset you?	1	2	3	4
d) Major financial difficulty				
Yes 1				
No 2				
If Yes, How much did it upset you?	1	2	3	4
e) Divorce, separation or break up of personal intimate relationship				
Yes 1				
No 2				
If Yes, How much did it upset you?	1	2	3	4
f) Other marital or family problem				
Yes 1				
No 2				
If Yes, How much did it upset you?	1	2	3	4
g) Any mugging, robbery, accident or similar event				
Yes 1				
No 2				
If Yes, How much did it upset you?	1	2	3	4
h) Change of job or residence				
Yes 1				
No 2				
If Yes, How much did it upset you?	1	2	3	4

GENERAL HEALTH QUESTIONS

Please read this carefully:

We should like to know if you have had any medical complaints, and how your health has been in general, **over the past few weeks**. Please answer **ALL** the questions on the following pages simply by circling the answer which you think most nearly applies to you. Remember that we want to know about present and recent complaints, not those that you had in the past.

It is important that you try to answer **ALL** the questions.

HAVE YOU RECENTLY:—

- | | | | | | |
|-----|--|------------------------------|-----------------------------|-----------------------------------|------------------------------|
| 80. | — been able to concentrate on whatever you're doing? | Better
than usual
1 | Same
as usual
2 | Less
than usual
3 | Much less
than usual
4 |
| 81. | — lost much sleep over worry? | Not at all
1 | No more
than usual
2 | Rather more
than usual
3 | Much more
than usual
4 |
| 82. | — been having restless, disturbed nights? | Not
at all
1 | No more
than usual
2 | Rather more
than usual
3 | Much more
than usual
4 |
| 83. | — been managing to keep your-
self busy and occupied? | More so
than usual
1 | Same
as usual
2 | Rather less
than usual
3 | Much less
than usual
4 |
| 84. | — been getting out of the
house as much as usual? | More so
than usual
1 | Same
as usual
2 | Less
than usual
3 | Much less
than usual
4 |
| 85. | — been managing as well as
most people would in your shoes? | Better
than most
1 | About
the same
2 | Rather less
well
3 | Much less
well
4 |
| 86. | — felt on the whole you were doing
things well? | Better
than usual
1 | About
the same
2 | Less well
than usual
3 | Much
less well
4 |
| 87. | — been satisfied with the way you've
carried out your task? | More
satisfied
1 | About same
as usual
2 | Less satisfied
than usual
3 | Much
less satisfied
4 |
| 88. | — been able to feel warmth and affection
for those near to you? | Better
than usual
1 | About same
as usual
2 | Less well
than usual
3 | Much
less well
4 |
| 89. | — been finding it easy to get on
with other people? | Better
than usual
1 | About same
as usual
2 | Less well
than usual
3 | Much
less well
4 |
| 90. | — spent much time chatting
with people | More time
than usual
1 | About same
as usual
2 | Less time
than usual
3 | Much less
than usual
4 |
| 91. | — felt that you are playing
a useful part in things? | More so
than usual
1 | Same
as usual
2 | Less useful
than usual
3 | Much less
useful
4 |

HAVE YOU RECENTLY:—

106.	— been feeling reasonably happy, all things considered?	More so than usual 1	About same as usual 2	Less so than usual 3	Much less than usual 4
107.	— been feeling nervous and strung-up all the time?	Not at all 1	No more than usual 2	Rather more than usual 3	Much more than usual 4
108.	— felt that life isn't worth living?	Not at all 1	No more than usual 2	Rather more than usual 3	Much more than usual 4
109.	— found at times you couldn't do anything because your nerves were too bad?	Not at all 1	No more than usual 2	Rather more than usual 3	Much more than usual 4

110. Below are some of the statements which describe people's beliefs and attitudes and the way they might react to some situations. If the statement applies to you or describes you in general, circle "1" for True. If the statement does not describe you circle "2" for False.

	TRUE	FALSE
1) When someone does me a wrong I feel I should pay him back if I can, just for the principle of the thing.	1	2
2) I prefer to pass by school friends, or people I know but have not seen for a long time, unless they speak to me first.	1	2
3) I have often had to take orders from someone who did not know as much as I did.	1	2
4) I think a great many people exaggerate their misfortunes in order to gain the sympathy and help of others.	1	2
5) It takes a lot of argument to convince most people of the truth.	1	2
6) I think most people would lie to get ahead.	1	2
7) Someone has it in for me.	1	2
8) Most people are honest chiefly through fear of being caught.	1	2
9) Most people will use somewhat unfair means to gain profit or an advantage rather than to lose it.	1	2
10) I commonly wonder what hidden reason another person may have for doing something nice for me.	1	2
11) It makes me impatient to have people ask my advice or otherwise interrupt me when I am working on something important.	1	2
12) I feel that I have often been punished without cause.	1	2
13) Some of my family have habits that bother and annoy me very much.	1	2
14) My way of doing things is apt to be misunderstood by others.	1	2
15) I don't blame anyone for trying to grab everything he can get in this world.	1	2
16) No one cares much what happens to you.	1	2
17) It is safer to trust nobody.	1	2
18) I do not blame a person for taking advantage of someone who lays himself open to it.	1	2

Continued

APPENDIX 2

Missing values of questions used in the analyses

A2.1 Missing values for questions on the work environment

Questions about trade union support (Q51e and Q54f) and delegation to junior staff (Q54e) were not included in Version 1 of the questionnaire. Consequently, 6-7% of the responses to these questions were missing. The questions on coping strategies (Q55) were modified several times in different versions of the questionnaire and 11%-91% of the responses to these questions were missing. Q55 was therefore excluded from the analysis. The question on work pace (Q49a) was omitted from Version 3 of the questionnaire. Consequently, 10% of the responses to this question were missing. For the remaining questions on the work environment fewer than 1% of the responses were missing.

These modifications to the questions on the work environment could have altered participants' responses to questions which were not modified. However, the distribution of responses to the questions which were not modified was similar in each version of the questionnaire. This suggests that the modifications did not have an important effect on participants' responses.

The response categories for these questions were 'often, sometimes, seldom and never or almost never'. Versions 3 and 4 of the questionnaire were modified to include a 'not applicable' response category in Q51 to Q54. For most of the items in Q51 to Q54 this response category was probably unnecessary, particularly when fewer than 1% of participants had omitted these questions. In the analysis, 'not applicable' responses for Q51 to Q54 in Versions 3 and 4 could either be combined with 'never' responses or treated as missing values. Table 118 shows the distribution of responses before and after the 'not applicable' response category was added. When the 'not applicable' responses were combined with 'never' responses, the distribution of responses before and after the modification was similar. In contrast, when the 'not applicable' responses were treated as missing values, the distribution of responses before and after the modification was usually very different. The 'not applicable' and 'never' responses to Q51 to Q54 were therefore combined in the analyses.

Table 118 - Distribution of responses before and after 'not applicable' (NA)
response category was added

Question and response category	Before NA added %	After NA added NA set to 'never' %	After NA added NA set to missing %
Q51a - never	19	24	11
- missing	1	1	14
Q51b - never	3	4	3
- missing	1	0	2
Q51c - never	5	8	4
- missing	1	1	5
Q51d - never	49	66	50
- missing	1	1	17
Q51e - never	66	83	51
- missing	23	1	32
Q51f - never	43	56	41
- missing	1	1	16
Q52a - never	21	24	13
- missing	1	1	13
Q52b - never	3	4	2
- missing	1	0	3
Q52c - never	4	5	3
- missing	1	1	3
Q52d - never	25	20	18
- missing	0	0	3

Table 118 (continued)

Question and response category	Before NA added %	After NA added NA set to 'never' %	After NA added NA set to missing %
Q52e - never	9	7	6
- missing	1	1	1
Q52f - never	18	15	13
- missing	1	1	3
Q52g - never	44	34	31
- missing	1	1	3
Q53a - never	4	4	4
- missing	0	0	1
Q53b - never	31	31	22
- missing	1	1	9
Q53c - never	38	28	27
- missing	0	0	1
Q53d - never	4	4	3
- missing	1	1	2
Q53e - never	3	3	2
- missing	1	1	2
Q53f - never	4	7	3
- missing	1	1	5
Q53g - never	15	13	12
- missing	1	0	1
Q53h - never	24	22	21
- missing	1	1	2

Table 118 (continued)

Question and response category	Before NA added %	After NA added NA set to 'never' %	After NA added NA set to missing %
Q54a - never	3	4	2
- missing	1	0	3
Q54b - never	2	6	1
- missing	1	0	5
Q54c - never	4	4	2
- missing	1	0	2
Q54d - never	3	4	1
- missing	1	0	3
Q54e - never	15	28	9
- missing	24	0	19
Q54f - never	48	69	18
- missing	27	1	52

A2.2 Missing values for other questions

Table 119 shows the proportion of missing values and the questions included in each version of the questionnaire.

Table 119 - Missing values and inclusion of questions in different versions of the questionnaire

Question	Total missing %	Questionnaire version			
		1	2	3	4
Q1a	0	Y	Y	Y	Y
Q1b	0	Y	Y	Y	Y
Q2a	0	Y	Y	Y	Y
Q2b	2.1	Y	Y	Y	Y
Q3	0.8	Y	Y	Y	Y
Q5a	25.6	N	N	Y	Y
Q5b	25.9	N	N	Y	Y
Q6	0.4	Y	Y	Y	Y
Q7e	44.4	N	N	Y	Y
Q7f	58.8	N	N	Y	Y
Q8	0.8	Y	Y	Y	Y
Q11	0.4	Y	Y	Y	Y
Q12b-g	33.6	N	N	Y	Y
Q10f-i	5.7	Y	Y	Y	Y
Q10a	7.7	Y	Y	Y	Y
Q16	0.3	Y	Y	Y	Y
Q17	25.9	N	N	Y	Y
Q18	26.2	N	N	Y	Y
Q39a-40a	2.3	Y	Y	Y	Y
Q43a	0.3	Y	Y	Y	Y
Q44a-d	1.2	Y	Y	Y	Y
Q48d-f	0.6	Y	Y	Y	Y
Q59a-o	29.2	N	N	Y	Y
Q59y-z	26.7	N	N	Y	Y
Q61a-b	6.8	Y	Y	Y	Y
Q63a-b	26.0	N	N	Y	Y
Q64	0.6	Y	Y	Y	Y
Q79f	25.8	N	N	Y	Y
Q80-109	3.6	Y	Y	Y	Y

APPENDIX 3

Development of the self-reported work indices

A3.1 Introduction

Before data were collected it was anticipated that the questions would form the following a priori groups -

Control (Q49i-j,Q50a-h)

Variety and skill use (Q49e-h, Q53a,Q53c)

Work pace (Q49a-d)

Conflicting demands (Q52a,Q53b)

Support from colleagues and supervisors (Q51,Q54,Q55)

Job clarity and feedback (Q52b-g)

Perceived job importance (Q53d-f)

Job satisfaction (Q56)

However it was possible that, in practice, questions within these groups would be poorly correlated with other questions in the same group or highly correlated with questions in different groups. Principal component analysis was therefore used to examine whether there was empirical support for these a priori groups. It was not used to obtain component scores for the analysis.

A3.2 Principal component analysis

Principal component analysis (PCA) combines the original variables into a smaller number of variables (or principal components) which provide most of the information about the way one individual differs from another. The principal components are linear combinations of the original variables. The first principal component explains the largest proportion of the variation between observations, the second principal component explains the next largest proportion and so on. The principal components are not correlated.

To illustrate this, if there were three principal components, the observations can be visualised as a three-dimensional scatter diagram with 'n' points scattered. The first principal component represents distances along the length of the scatter, the second represents distances along the widest direction perpendicular to the length and the third

represents distances from top to bottom. The principal components (or axes) can be rotated to fit the observations better. When the axes are kept perpendicular the rotation is orthogonal and the components remain uncorrelated. When the axes are rotated independently the rotation is oblique and the components are correlated. The component loadings describe how each of the original variables correlate to the axes.

A3.2.1 Selection of the variables

Perceived job importance (Q53d to Q53f) and job satisfaction (Q53g, Q53h and Q56a-h) were moderately correlated with a number of the more specific questions on the work environment (Appendix 7). The way in which these questions varied between individuals could have obscured the variation in the other questions. These questions were therefore omitted from the PCA, but were used in other analyses in this study. The remaining 40 questions on the work environment were included in the PCA.

A3.2.2 The sample

All participants with complete data for the 40 variables (N=7,829) were included in the PCA. Fewer than 2% of participants had four or more missing values for these variables (Table 120).

Table 120 - Proportion of participants with missing values for 40 variables included in principal component analysis

Missing values number	Participants %	Participants number
0	75.9	7829
1	14.3	1476
2	2.1	221
3	5.9	609
4 or more	1.7	179
Total	100.0	10314

A3.2.3 The correlation matrix

Variety and skill use were moderately correlated with work pace and control variables. This suggests that variety and skill use were likely to relate to more than one principal component.

A3.2.4 The component loadings

Initially, the PCA was run restricting the number of principal components to those with eigenvalues greater than one. This is standard practice based on the rationale that if all of the variables were completely independent there would be the same number of principal components as variables, each with an eigenvalue of one.

There were ten principal components with eigenvalues above one. After the fifth principal component, only a small proportion of the total variance was explained by each principal component. When the analysis was restricted to five principal components only the first three principal components had intrinsic meaning. The analysis was therefore restricted to three principal components.

Table 121 shows the proportion of total variance explained by the first three principal components before and after orthogonal rotation. The results were similar after orthogonal and oblique rotations. The findings for orthogonal rotation are therefore presented.

Table 121 - Eigenvalues and proportion of total variance explained by first three principal components before and after orthogonal rotation

Before rotation			After rotation		
Principal component	Eigenvalue	%	Component	Eigenvalue	%
1	7.0	17.5	1	5.7	14.3
2	3.4	8.5	2	3.9	9.8
3	2.8	7.1	3	3.6	9.0
Total	13.2	33.1	Total	13.2	33.1

Tables 122 and 123 show the component loadings before and after orthogonal rotation. Component loadings of more than 0.40 were regarded as important, although this was somewhat arbitrary and loadings around 0.40 were not ignored. Variables with negative loadings varied in the opposite direction to variables in the same component with positive loadings. Before rotation, many of the variables had component loadings above 0.40 in several principal components. After rotation, no variable had a component loadings above 0.40 in more than one component. However, the variables on variety and skill use had loadings around 0.40 in the first and third components.

Table 122 - Principal component loadings before rotation

Question	PC1	PC2	PC3
Q49i Choice how	<u>0.61</u>	-0.04	-0.32
Q49j Choice what	<u>0.62</u>	-0.09	-0.25
Q50a Others take decisions	-0.28	0.18	<u>0.47</u>
Q50b Say in decisions	<u>0.73</u>	-0.13	-0.24
Q50c Say in speed	0.28	0.19	<u>-0.43</u>
Q50d Flexible working time	<u>0.42</u>	0.06	-0.22
Q50e Say in breaks	<u>0.47</u>	0.07	-0.31
Q50f Say in holidays	0.08	0.24	-0.33
Q50g Say with whom I work	<u>0.49</u>	-0.02	-0.10
Q50h Say in work environment	<u>0.47</u>	-0.03	-0.20
Q51f If problems others take decisions	<u>-0.50</u>	0.14	<u>0.44</u>
Q49h Repetitive work	<u>-0.51</u>	0.20	0.09
Q53a Variety	<u>0.70</u>	-0.11	-0.02
Q53c Boring	<u>-0.52</u>	0.09	0.12
Q49e Learning new things	<u>0.58</u>	-0.09	0.09
Q49f High skill	<u>0.55</u>	-0.30	0.01
Q49g Initiative	<u>0.62</u>	-0.26	0.01
Q49a Work fast	0.27	-0.32	0.30
Q49b Work intensively	<u>0.42</u>	-0.39	0.26
Q49c Enough time	-0.30	<u>0.42</u>	-0.26
Q52a Things difficult to combine	0.36	-0.35	<u>0.43</u>
Q53b Things too varied and split up	0.19	-0.25	0.36
Q49d Tasks such that other can help	0.07	0.31	0.17
Q54a Support from colleagues	0.33	<u>0.45</u>	0.28
Q54b Colleagues listen to problems	0.32	<u>0.44</u>	0.24
Q54c Support from superiors	0.30	<u>0.67</u>	0.17
Q54d Superiors listen to problems	0.34	<u>0.60</u>	0.08
Q54e Delegate to juniors	<u>0.51</u>	-0.03	0.17
Q54f Support from trade union	-0.07	0.11	0.29
Q51a Discuss problems at meetings	<u>0.58</u>	-0.02	0.23
Q51b Discuss problems with superiors	0.21	<u>0.43</u>	0.26
Q51c Discuss problems with colleagues at work	<u>0.44</u>	0.18	0.28
Q51d Discuss problems with colleagues out of work	0.35	-0.10	0.27
Q51e Discuss problems with trade unions	0.02	0.04	0.34

Table	122 (continued)			
	Question	PC1	PC2	PC3
	Q52b Sufficient information from superiors	0.34	<u>0.56</u>	0.04
	Q52c Consistent information from superiors	0.35	<u>0.54</u>	0.04
	Q52d Uncertain about way to do job	0.19	-0.15	0.35
	Q52e Praised for work	0.37	0.33	-0.02
	Q52f Criticised constructively	0.36	0.15	-0.03
	Q52g Criticised unfairly	0.01	-0.31	<u>0.44</u>

Table 123 - Component loadings after orthogonal rotation

Question	C1	C2	C3
Q49i Choice how	<u>0.69</u>	0.09	0.01
Q49j Choice what	<u>0.66</u>	0.08	0.10
Q50a Others take decisions	<u>-0.51</u>	0.21	0.16
Q50b Say in decisions	<u>0.75</u>	0.10	0.17
Q50c Say in speed	<u>0.43</u>	0.12	-0.32
Q50d Flexible working time	<u>0.46</u>	0.14	-0.03
Q50e Say in breaks	<u>0.54</u>	0.14	-0.10
Q50f Say in holidays	0.20	0.11	-0.34
Q50g Say with whom I work	<u>0.46</u>	0.15	0.12
Q50h Say in work environment	<u>0.50</u>	0.09	0.04
Q51f If problems others take decisions	<u>-0.67</u>	0.08	0.08
Q49h Repetitive work	<u>-0.50</u>	-0.00	-0.24
Q53a Variety	<u>0.60</u>	0.18	0.32
Q53c Boring	<u>-0.51</u>	-0.09	-0.16
Q49e Learning new things	<u>0.44</u>	0.19	0.34
Q49f High skill	<u>0.50</u>	-0.03	0.37
Q49g Initiative	<u>0.55</u>	-0.04	0.38
Q49a Work fast	0.12	-0.05	<u>0.51</u>
Q49b Work intensively	0.28	-0.06	<u>0.56</u>
Q49c Enough time	-0.18	0.14	<u>-0.53</u>
Q52a Things difficult to combine	0.13	0.01	<u>0.65</u>
Q53b Things too varied and split up	0.01	-0.00	<u>0.48</u>
Q49d Tasks such that other can help	-0.08	0.35	-0.01
Q54a Support from colleagues	0.05	<u>0.61</u>	0.10
Q54b Colleagues listen to problems	0.06	<u>0.58</u>	0.08
Q54c Support from superiors	0.05	<u>0.74</u>	-0.10
Q54d Superiors listen to problems	0.14	<u>0.67</u>	-0.12
Q54e Delegate to juniors	0.34	0.24	0.34
Q54f Support from trade union	-0.24	0.17	0.13
Q51a Discuss problems at meetings	0.36	0.30	<u>0.41</u>
Q51b Discuss problems with superiors	-0.04	<u>0.54</u>	0.06
Q51c Discuss problems with colleagues at work	0.18	<u>0.43</u>	0.30
Q51d Discuss problems with colleagues out of work	0.16	0.16	<u>0.40</u>
Q51e Discuss problems with trade unions	-0.17	0.16	0.25

Table 123 (continued)

Question	C1	C2	C3
Q52b Sufficient information from superiors	0.16	<u>0.63</u>	-0.13
Q52c Consistent information from superiors	0.18	<u>0.61</u>	-0.11
Q52d Uncertain about way to do job	-0.01	0.08	<u>0.41</u>
Q52e Praised for work	0.26	<u>0.42</u>	-0.04
Q52f Criticised constructively	0.09	<u>0.40</u>	0.33
Q52g Criticised unfairly	-0.17	-0.10	<u>0.50</u>

A3.2.5 Reliability of the components

The large sample made it possible to assess the repeatability of the principal component estimates in four random subsamples of men and women (N=2,801 and 2,704 for men, and N=1,124 and 1,200 for women). As shown in Table 124, the first three components were similar in the four subsamples. The most striking difference was between men and women for the questions on feedback and coping strategies. For men, praise and constructive criticism had high loadings in the second component, whereas for women discussing problems at meetings and with colleagues outside work and being able to delegate to juniors had high loadings in the third component.

Table 124 - Variables making a significant contribution^a to first three components in the total sample and four subsamples

Component 1

Question	49i	49j	50a	50b	50c	50d	50e	50g	50h	51f	49h	53a	53c	49e	49f	49g
Total	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Men 1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Men 2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Women 1	x	x	x	x	-	x	x	x	x	x	x	x	x	x	x	x
Women 2	x	x	x	x	-	x	x	x	x	x	x	x	x	x	x	x

Table 124 (continued)

Component 2

	Question									
	54a	54b	54c	54d	51b	51c	52b	52c	52e	52f
Total	x	x	x	x	x	x	x	x	x	x
Men 1	x	x	x	x	x	x	x	x	x	x
Men 2	x	x	x	x	x	x	x	x	x	x
Women 1	x	x	x	x	x	x	x	x	-	-
Women 2	x	x	x	x	x	x	x	x	-	-

Component 3

	Question																
	49a	49b	49c	49e	49f	49g	50c	50f	52a	53b	54e	51a	51d	51e	52d	52f	52g
Total	x	x	x	-	-	-	-	-	x	x	-	x	x	-	x	-	x
Men 1	x	x	x	-	-	-	x	x	x	x	-	-	-	-	-	-	-
Men 1	x	x	x	-	-	-	-	-	x	x	-	-	-	-	-	-	-
Women 1	x	x	x	x	x	x	-	-	x	x	x	x	x	-	x	x	x
Women 2	-	x	x	-	-	-	-	-	x	x	x	x	x	-	-	x	x

^a Component loading above 0.40

A3.2.6 The components

i) First component

The first component represented most of the variables in the a priori groups of control and variety and skill use. The variety and skill use variables also contributed to the third component with loadings which were close 0.40 in the whole sample and above 0.40 in one subsample of women.

ii) Second component

The second component represented support and feedback at work. Constructive criticism and praise had high loadings in the second component in the male subsamples.

iii) Third component

The third component represented work pace and conflicting demands. Other variables had component loadings above 0.40 but these loadings were not consistent in all subsamples.

A3.3 Work indices

A3.3.1 Comparison between a priori groups and components

The PCA provided empirical support for most of the a priori groups. However, the a priori groups of support from colleagues and supervisors, and job clarity and feedback, were modified as a result of the PCA. A number of variables in the a priori groups did not have high loadings in the second component. These a priori groups were therefore reduced to a single index of support at work. This index included the variables which had consistently high loadings in the second component, namely Q54a-d and Q52b-c. The other variables with high loadings in the whole sample (Q51b-c and Q52e-f) had low loadings in either the male or female subsamples.

A3.3.2 Calculation of the work indices

Scores for each work index were calculated by adding the response categories of the questions listed in Section 3.6.1 in the main part of the thesis. This simple approach has several advantages over the use of component scores. First, the findings can be compared with other studies more easily. Second, it is possible to calculate adjusted indices for individuals who had a limited number of missing values. Third, a simple approach is more appropriate in view of the precision of the original questions. The scores for individuals with three or less missing values were adjusted according to their responses to the other variables in the index.

A3.3.2 Internal consistency

Two methods were used to examine the internal consistency of the work indices, namely Cronbach's alpha coefficients and item:score correlation coefficients.

As shown in Table 125, the internal consistency of the work indices measured by Cronbach's alpha coefficients was high. These are similar to alpha coefficients reported in an earlier study for similar indices of control and support at work (72).

The item:score correlation coefficients were moderate to high (Table 126). These are also similar to correlation coefficients reported in other studies for autonomy and skill variety (25,59).

A3.4 Computing

The data were divided into two groups of men and women for the principal components analysis using the random number function, uniform, in SAS. By chance alone the groups are slightly different sizes.

To perform the principal component analyses, the factor procedure in SAS was used with the default method of principal component analysis. It was therefore possible to rotate the components using both orthogonal (varimax) and oblique (promax) rotations.

Table 125 - Internal consistency of work indices - Cronbach's alpha coefficients

Index	Cronbach's alpha coefficient
Control	0.76
Variety and skill use	0.78
Pace	0.68
Conflicting demands	0.54
Support at work	0.79
Perceived job importance	0.82
Job satisfaction	0.78

Table 126 - Internal consistency of work indices
- Item:score correlation coefficients (Spearman's rank correlation)

Index	Item:score correlation coefficients							
	Question							
Control	49i	49j	50a	50b	50d	50e	50g	50h
	0.63	0.72	0.47	0.68	0.46	0.50	0.61	0.65
Variety and skill use	49h	53a	53c	49e	49f	49g		
	0.67	0.77	0.69	0.66	0.65	0.60		
Work pace	49a	49b	49c					
	0.72	0.76	0.82					
Conflicting demands	52a	53b						
	0.82	0.83						
Support at work	52a	52c	54a	54b	54c	54d		
	0.69	0.68	0.64	0.64	0.75	0.70		
Perceived job importance	53d	53e	53f					
	0.84	0.85	0.87					
Job satisfaction	56a	56b	56c	56d	56e	56f	56g	56h
	0.50	0.70	0.48	0.48	0.62	0.73	0.59	0.73

APPENDIX 4

External assessment form

STRESS AND HEALTH STUDY: JOB ASSESSMENTS

Here is a list of jobs, described by grade, division and branch/section.

We are interested in your personal view. It is therefore not necessary to make special enquiries about the jobs. Each job should take seconds, rather than minutes, of thought.

If you are in considerable doubt about your rating, mark it with an asterisk. You should only leave it blank if you are not at all familiar with the job.

EXAMPLE:

=====

GRADE:

DIV/BRANCH OR SECN:

Pace

Mistakes

Conflicts

Discretion

:
:
:

:
:
:

:
:
:

:
:
:

=====

:	:	:	:	:	:	:	:	:	:	:	:
: 1	2	3	: 4	5	6	: 7	8	9	: 10	11	12 :
:---	---	---	:---	---	---	:---	---	---	:---	---	---
:	OFTEN	:	SOMETIMES	:	SELDOM	:	ALMOST	:	NEVER	:	:
:	:	:	:	:	:	:	:	:	:	:	:

Using this 12 point rating scale please consider the following for this job:

- i) Work pace: How often does the job involve working very fast?
- ii) Seriousness of mistakes: How often is it extremely important to do the work without mistakes?
- iii) Conflicting demands: How often do different groups at work demand things which are difficult to combine?
- iv) Discretion: How often does the job permit complete discretion and independence in determining how, and when, the work is to be done?

APPENDIX 5

Crude rates of short and long spells of sickness absence

Chapter 5

Table 127 - Grade and short spells - crude rates (spells per person year)

Grade category	Crude rate (95% confidence interval)	
	<u>Men</u> (N=6037)	<u>Women</u> (N=2760)
1	0.43 (0.38 - 0.49)	0.83 (0.62 - 1.12)
2	0.86 (0.80 - 0.92)	0.90 (0.75 - 1.09)
3	1.06 (0.98 - 1.13)	1.46 (1.23 - 1.73)
4	1.38 (1.31 - 1.46)	1.93 (1.75 - 2.12)
5	2.25 (2.12 - 2.38)	2.26 (2.10 - 2.44)
6	2.83 (2.62 - 3.06)	2.49 (2.37 - 2.63)
7	2.11 (1.86 - 2.39)	2.16 (1.97 - 2.38)

Table 128 - Age and short spells - crude rates (spells per person year)

Grade category	Crude rate (95% confidence interval)	
	<u>Men</u> (N=6037)	<u>Women</u> (N=2760)
35-39 years	1.34 (1.27 - 1.42)	2.08 (1.93 - 2.25)
40-49 years	1.25 (1.18 - 1.33)	2.12 (1.97 - 2.29)
45-49 years	1.26 (1.18 - 1.35)	2.20 (2.04 - 2.36)
50-55 years	1.20 (1.13 - 1.28)	1.98 (1.86 - 2.12)

Table 129 - Ethnic group and short spells - crude rates (spells per person year)

Grade category	Crude rate (95% confidence interval)	
	<u>Men</u> (N=5760)	<u>Women</u> (N=2603)
Caucasian	1.18 (1.15 - 1.22)	1.93 (1.85 - 2.01)
Asian	2.62 (2.39 - 2.87)	2.99 (2.66 - 3.35)
Other	1.93 (1.65 - 2.26)	2.75 (2.44 - 3.10)

Table 130 - Marital status and short spells - crude rates (spells per person year)

Marital status	Crude rate (95% confidence interval)	
	<u>Men</u> (N= 6020)	<u>Women</u> (N=2743)
Married	1.19 (1.15 - 1.23)	2.10 (2.01 - 2.20)
Single	1.59 (1.48 - 1.71)	1.95 (1.80 - 2.11)
Divorced/widowed	1.66 (1.48 - 1.85)	2.20 (2.02 - 2.40)

Table 131 - Departmental differences in short spells - crude rates (spells per person year)

Department	Crude rate (95% confidence interval)	
	<u>Men</u> (N=4685)	<u>Women</u> (N=1840)
2	1.27 (1.16 - 1.39)	2.47 (2.19 - 2.79)
3	1.18 (1.09 - 1.28)	1.85 (1.68 - 2.04)
4	1.19 (1.07 - 1.32)	1.69 (1.41 - 2.03)
5	0.80 (0.71 - 0.91)	1.31 (1.15 - 1.48)
8	1.60 (1.49 - 1.72)	2.48 (2.23 - 2.76)
14	1.20 (1.05 - 1.38)	2.22 (1.90 - 2.59)
19	1.16 (1.06 - 1.26)	2.00 (1.79 - 2.24)
20	1.01 (0.88 - 1.17)	1.78 (1.50 - 2.11)

Table 132 - Grade and long spells - crude rates (spells per person year)

Grade category	Crude rate (95% confidence interval)	
	<u>Men</u> (N=6037)	<u>Women</u> (N=2760)
1	0.04 (0.04 - 0.06)	0.07 (0.04 - 0.13)
2	0.06 (0.05 - 0.07)	0.06 (0.04 - 0.09)
3	0.08 (0.07 - 0.10)	0.09 (0.06 - 0.14)
4	0.11 (0.09 - 0.12)	0.17 (0.14 - 0.21)
5	0.15 (0.13 - 0.17)	0.25 (0.22 - 0.29)
6	0.22 (0.18 - 0.26)	0.29 (0.26 - 0.32)
7	0.26 (0.20 - 0.34)	0.48 (0.42 - 0.56)

Table 133 - Age and long spells - crude rates (spells per person year)

Grade category	Crude rate (95% confidence interval)	
	<u>Men</u> (N=6037)	<u>Women</u> (N=2760)
35-39 years	0.09 (0.08 - 0.10)	0.17 (0.15 - 0.20)
40-49 years	0.09 (0.08 - 0.10)	0.22 (0.19 - 0.25)
45-49 years	0.09 (0.08 - 0.11)	0.25 (0.21 - 0.28)
50-55 years	0.12 (0.10 - 0.13)	0.31 (0.28 - 0.34)

Table 134 - Ethnic group and long spells - crude rates (spells per person year)

Grade category	Crude rate (95% confidence interval)	
	<u>Men</u> (N=5760)	<u>Women</u> (N=2603)
Caucasian	0.09 (0.08 - 0.10)	0.23 (0.21 - 0.24)
Asian	0.20 (0.16 - 0.25)	0.36 (0.28 - 0.44)
Other	0.14 (0.09 - 0.20)	0.35 (0.28 - 0.44)

Table 135 - Marital status and long spells - crude rates (spells per person year)

Marital status	Crude rate (95% confidence interval)	
	<u>Men</u> (N= 6020)	<u>Women</u> (N=2743)
Married	0.09 (0.09 - 0.10)	0.24 (0.22 - 0.26)
Single	0.10 (0.08 - 0.11)	0.19 (0.17 - 0.23)
Divorced/widowed	0.12 (0.10 - 0.16)	0.30 (0.26 - 0.35)

Table 136 - Departmental differences in long spells - crude rates (spells per person year)

Department	Crude rate (95% confidence interval)	
	<u>Men</u> (N=4685)	<u>Women</u> (N=1840)
2	0.08 (0.07 - 0.11)	0.25 (0.19 - 0.32)
3	0.09 (0.07 - 0.11)	0.21 (0.17 - 0.25)
4	0.09 (0.07 - 0.11)	0.20 (0.14 - 0.29)
5	0.09 (0.08 - 0.12)	0.19 (0.15 - 0.23)
8	0.10 (0.09 - 0.12)	0.31 (0.25 - 0.37)
14	0.11 (0.08 - 0.14)	0.24 (0.18 - 0.32)
19	0.10 (0.08 - 0.12)	0.26 (0.21 - 0.32)
20	0.07 (0.05 - 0.09)	0.20 (0.15 - 0.28)

Chapter 10

Table 137 - Self-reports of the work environment and short spells
- crude rates (spells per person year)

Self-reported work characteristic	Crude rate (95% confidence interval)	
	<u>Men</u> (N=5983)	<u>Women</u> (N=2658)
Control		
Low	1.84 (1.75 - 1.94)	2.30 (2.18 - 2.42)
Medium	1.25 (1.19 - 1.31)	1.92 (1.80 - 2.05)
High	0.96 (0.91 - 1.01)	1.80 (1.65 - 1.96)
Variety and skill use		
Low	1.85 (1.77 - 1.94)	2.37 (2.26 - 2.48)
Medium	1.25 (1.19 - 1.32)	1.91 (1.78 - 2.05)
High	0.88 (0.84 - 0.94)	1.43 (1.29 - 1.58)
Work pace		
Low	1.63 (1.55 - 1.71)	2.25 (2.13 - 2.38)
Medium	1.24 (1.18 - 1.30)	2.03 (1.91 - 2.16)
High	1.03 (0.97 - 1.08)	1.84 (1.70 - 1.98)
Conflicting demands		
Low	1.36 (1.27 - 1.45)	2.11 (1.99 - 2.23)
Medium	1.24 (1.19 - 1.30)	2.11 (2.00 - 2.24)
High	1.25 (1.19 - 1.32)	1.89 (1.74 - 2.06)
Support at work		
Low	1.45 (1.38 - 1.52)	2.21 (2.08 - 2.34)
Medium	1.22 (1.16 - 1.29)	1.97 (1.84 - 2.11)
High	1.15 (1.09 - 1.21)	2.00 (1.87 - 2.13)

Table 138 - External assessments of the work environment and short spells
- crude rates (spells per person year)

Externally assessed work characteristic	Crude rate (95% confidence interval)	
	<u>Men</u> (N=5248)	<u>Women</u> (N=2408)
Control		
Low	1.94 (1.84 - 2.05)	2.39 (2.27 - 2.51)
Medium	1.27 (1.21 - 1.33)	2.00 (1.87 - 2.13)
High	0.90 (0.84 - 0.96)	1.42 (1.28 - 1.57)
Work pace		
Low	1.77 (1.69 - 1.86)	2.39 (2.27 - 2.53)
Medium	1.19 (1.13 - 1.25)	2.06 (1.94 - 2.20)
High	0.98 (0.92 - 1.05)	1.51 (1.39 - 1.65)
Conflicting demands		
Low	1.84 (1.75 - 1.93)	2.39 (2.27 - 2.53)
Medium	1.28 (1.21 - 1.35)	2.10 (1.97 - 2.25)
High	0.94 (0.89 - 1.00)	1.57 (1.45 - 1.70)
Importance of mistakes		
Low	1.53 (1.46 - 1.60)	2.24 (2.11 - 2.37)
Medium	1.22 (1.12 - 1.33)	2.04 (1.84 - 2.25)
High	1.16 (1.10 - 1.22)	1.91 (1.80 - 2.02)

Table 139 - Attitudes towards work and short spells - crude rates (spells per person year)

Attitudes towards work	Crude rate (95% confidence interval)	
	<u>Men</u> (N=5983)	<u>Women</u> (N=2658)
Perceived job importance		
Low	1.58 (1.49 - 1.68)	2.24 (2.10 - 2.40)
Medium	1.19 (1.13 - 1.25)	1.98 (1.86 - 2.11)
High	1.19 (1.13 - 1.25)	2.00 (1.88 - 2.13)
Job satisfaction		
Low	1.61 (1.54 - 1.68)	2.31 (2.17 - 2.47)
Medium	1.23 (1.16 - 1.30)	2.20 (2.04 - 2.36)
High	0.97 (0.91 - 1.02)	1.85 (1.75 - 1.95)

Table 140 - Self-reports of the work environment and long spells
- crude rates (spells per person year)

Self-reported work characteristic	Crude rate (95% confidence interval)	
	<u>Men</u> (N=5983)	<u>Women</u> (N=2658)
Control		
Low	0.13 (0.12 - 0.15)	0.30 (0.27 - 0.33)
Medium	0.09 (0.08 - 0.10)	0.19 (0.17 - 0.22)
High	0.08 (0.07 - 0.09)	0.16 (0.14 - 0.19)
Variety and skill use		
Low	0.14 (0.12 - 0.15)	0.29 (0.26 - 0.31)
Medium	0.09 (0.08 - 0.10)	0.21 (0.18 - 0.24)
High	0.07 (0.07 - 0.08)	0.14 (0.11 - 0.17)
Work pace		
Low	0.11 (0.10 - 0.13)	0.25 (0.22 - 0.27)
Medium	0.10 (0.09 - 0.11)	0.25 (0.22 - 0.28)
High	0.08 (0.07 - 0.09)	0.20 (0.17 - 0.23)
Conflicting demands		
Low	0.10 (0.09 - 0.12)	0.26 (0.23 - 0.29)
Medium	0.10 (0.09 - 0.10)	0.23 (0.20 - 0.25)
High	0.09 (0.08 - 0.10)	0.21 (0.18 - 0.24)
Support at work		
Low	0.10 (0.09 - 0.12)	0.26 (0.24 - 0.29)
Medium	0.09 (0.08 - 0.11)	0.20 (0.18 - 0.23)
High	0.09 (0.08 - 0.10)	0.23 (0.20 - 0.26)

Table 141 - Externally assessments of the work environment and long spells
- crude rates (spells per person year)

Externally assessed work characteristic	Crude rate (95% confidence interval)	
	<u>Men</u> (N=5248)	<u>Women</u> (N=2408)
Control		
Low	0.14 (0.12 - 0.16)	0.31 (0.28 - 0.34)
Medium	0.09 (0.08 - 0.10)	0.21 (0.18 - 0.23)
High	0.07 (0.06 - 0.08)	0.17 (0.14 - 0.20)
Work pace		
Low	0.12 (0.11 - 0.14)	0.30 (0.27 - 0.33)
Medium	0.09 (0.08 - 0.10)	0.22 (0.19 - 0.25)
High	0.08 (0.07 - 0.09)	0.19 (0.17 - 0.23)
Conflicting demands		
Low	0.12 (0.11 - 0.14)	0.33 (0.30 - 0.36)
Medium	0.10 (0.08 - 0.11)	0.20 (0.18 - 0.23)
High	0.08 (0.07 - 0.09)	0.18 (0.15 - 0.20)
Importance of mistakes		
Low	0.11 (0.10 - 0.13)	0.28 (0.26 - 0.32)
Medium	0.09 (0.08 - 0.11)	0.27 (0.23 - 0.33)
High	0.08 (0.08 - 0.09)	0.20 (0.18 - 0.22)

Table 142 - Attitudes towards work and long spells - crude rates (spells per person year)

Attitudes towards work	Crude rate (95% confidence interval)	
	<u>Men</u> (N=5983)	<u>Women</u> (N=2658)
Perceived job importance		
Low	0.11 (0.10 - 0.13)	0.24 (0.21 - 0.27)
Medium	0.09 (0.08 - 0.10)	0.21 (0.19 - 0.24)
High	0.09 (0.08 - 0.10)	0.25 (0.22 - 0.28)
Job satisfaction		
Low	0.12 (0.11 - 0.13)	0.25 (0.22 - 0.28)
Medium	0.09 (0.08 - 0.10)	0.24 (0.21 - 0.27)
High	0.08 (0.07 - 0.09)	0.22 (0.20 - 0.24)

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Table 143 - Dependent children and short spells - crude rates (spells per person year)

Dependent children Crude rate (95% confidence interval)

	<u>Men</u> (N= 4004)	<u>Women</u> (N=1717)
No dependent child	1.51 (1.42 - 1.60)	2.13 (2.01 - 2.26)
1+ dependent child	1.29 (1.23 - 1.36)	2.32 (2.17 - 2.32)

Table 144 - Social contact with relatives and short spells
- crude rates (spells per person year)

Number of relatives Crude rate (95% confidence interval)
contacted regularly

	<u>Men</u> (N= 4004)	<u>Women</u> (N = 1717)
None	1.35 (1.26 - 1.44)	2.05 (1.87 - 2.25)
1 - 2 relatives	1.43 (1.35 - 1.52)	2.21 (2.06 - 2.38)
3 + relatives	1.32 (1.23 - 1.42)	2.31 (2.16 - 2.48)

Table 145 - Social contact with friends and short spells
- crude rates (spells per person year)

Number of friends Crude rate (95% confidence interval)
contacted regularly

	<u>Men</u> (N= 4004)	<u>Women</u> (N = 1717)
None	1.34 (1.19 - 1.50)	2.26 (1.98 - 2.59)
1 - 2 friends	1.41 (1.32 - 1.52)	2.16 (2.00 - 2.33)
3 + friends	1.36 (1.29 - 1.43)	2.24 (2.11 - 2.37)

Table 146 - Attendance at religious services and short spells
- crude rates (spells per person year)

Attendance at religious services	Crude rate (95% confidence interval)	
	<u>Men</u> (N = 4004)	<u>Women</u> (N = 1717)
Regular	1.31 (1.21 - 1.41)	2.24 (2.03 - 2.47)
Occassional	1.50 (1.36 - 1.66)	2.07 (1.84 - 2.33)
Never	1.37 (1.30 - 1.43)	2.23 (2.12 - 2.36)

Table 147 - Amount of emotional support and short spells
- crude rates (spells per person year)

Amount of emotional support	Crude rate (95% confidence interval)	
	<u>Men</u> (N= 4004)	<u>Women</u> (N=1717)
High	1.30 (1.18 - 1.42)	2.27 (2.05 - 2.52)
Moderate	1.49 (1.40 - 1.59)	2.25 (2.09 - 2.42)
Low	1.39 (1.29 - 1.49)	2.15 (1.97 - 2.36)
Very low	1.25 (1.15 - 1.35)	2.16 (1.97 - 2.38)

Table 148 - Amount of practical support and short spells
- crude rates (spells per person year)

Amount of practical support	Crude rate (95% confidence interval)	
	<u>Men</u> (N= 4004)	<u>Women</u> (N=1717)
High	1.36 (1.26 - 1.46)	2.43 (2.20 - 2.68)
Moderate	1.37 (1.26 - 1.49)	2.26 (2.05 - 2.50)
Low	1.35 (1.25 - 1.44)	2.20 (2.03 - 2.38)
Very low	1.43 (1.32 - 1.55)	2.06 (1.90 - 2.24)

Table 149 - Adequacy of support and short spells - crude rates (spells per person year)

Adequacy of support Crude rate (95% confidence interval)

	<u>Men</u> (N= 4004)	<u>Women</u> (N=1717)
High	1.21 (1.14 - 1.29)	2.03 (1.89 - 2.19)
Moderate	1.34 (1.26 - 1.42)	2.31 (2.16 - 2.47)
Low	1.74 (1.62 - 1.88)	2.35 (2.14 - 2.59)

**Table 150 - Satisfaction with personal relationships and short spells
- crude rates (spells per person year)**

Satisfaction with Crude rate (95% confidence interval)
relationships

	<u>Men</u> (N= 4004)	<u>Women</u> (N=1717)
Very satisfied	1.41 (1.31 - 1.51)	2.33 (2.16 - 2.51)
Satisfied	1.30 (1.22 - 1.38)	2.18 (2.03 - 2.35)
No feelings	1.33 (1.23 - 1.44)	2.08 (1.88 - 2.29)
Dissatisfied	1.62 (1.46 - 1.79)	2.23 (1.93 - 2.58)

Table 151 - Difficulty paying bills and short spells - crude rates (spells per person year)

Difficulty paying Crude rate (95% confidence interval)
bills

	<u>Men</u> (N=3884)	<u>Women</u> (N=1494)
Seldom	1.14 (1.08 - 1.20)	1.95 (1.82 - 2.08)
Sometimes	1.34 (1.24 - 1.45)	2.60 (2.35 - 2.87)
Often	1.51 (1.40 - 1.64)	2.62 (2.35 - 2.92)
Very often	2.31 (2.00 - 2.65)	3.00 (2.49 - 3.60)

Table 152 - Dependent children and long spells - crude rates (spells per person year)

Dependent children Crude rate (95% confidence interval)

	<u>Men</u> (N= 4004)	<u>Women</u> (N=1717)
No dependent child	0.10 (0.08 - 0.11)	0.23 (0.20 - 0.25)
1+ dependent child	0.09 (0.08 - 0.10)	0.26 (0.23 - 0.29)

**Table 153 - Social contact with relatives and long spells
- crude rates (spells per person year)**

**Number of relatives Crude rate (95% confidence interval)
contacted regularly**

	<u>Men</u> (N= 4004)	<u>Women</u> (N = 1717)
None	0.09 (0.07 - 0.10)	0.18 (0.15 - 0.22)
1-2 relatives	0.09 (0.08 - 0.11)	0.24 (0.21 - 0.28)
3+ relatives	0.11 (0.09 - 0.12)	0.28 (0.25 - 0.32)

**Table 154 - Social contact with friends and long spells
- crude rates (spells per person year)**

**Number of friends Crude rate (95% confidence interval)
contacted regularly**

	<u>Men</u> (N= 4004)	<u>Women</u> (N = 1717)
None	0.09 (0.07 - 0.11)	0.21 (0.15 - 0.28)
1-2 friends	0.11 (0.09 - 0.12)	0.24 (0.20 - 0.28)
3+ friends	0.09 (0.08 - 0.10)	0.25 (0.22 - 0.28)

Table 155 - Attendance at religious services and long spells
- crude rates (spells per person year)

Attendance at religious services	Crude rate (95% confidence interval)	
	<u>Men</u> (N = 4004)	<u>Women</u> (N = 1717)
Regular	0.09 (0.08 - 0.11)	0.24 (0.19 - 0.30)
Occasional	0.10 (0.08 - 0.12)	0.25 (0.20 - 0.31)
Never	0.09 (0.09 - 0.11)	0.23 (0.21 - 0.26)

Table 156 - Amount of emotional support and long spells
- crude rates (spells per person year)

Amount of emotional support	Crude rate (95% confidence interval)	
	<u>Men</u> (N= 4004)	<u>Women</u> (N=1717)
High	0.11 (0.09 - 0.14)	0.26 (0.21 - 0.32)
Moderate	0.10 (0.09 - 0.12)	0.28 (0.24 - 0.32)
Low	0.09 (0.07 - 0.10)	0.21 (0.18 - 0.26)
Very low	0.08 (0.07 - 0.10)	0.20 (0.16 - 0.24)

Table 157 - Amount of practical support and long spells
- crude rates (spells per person year)

Amount of practical support	Crude rate (95% confidence interval)	
	<u>Men</u> (N= 4004)	<u>Women</u> (N=1717)
High	0.11 (0.09 - 0.13)	0.31 (0.26 - 0.38)
Moderate	0.09 (0.08 - 0.11)	0.27 (0.23 - 0.33)
Low	0.09 (0.07 - 0.10)	0.21 (0.18 - 0.25)
Very low	0.09 (0.08 - 0.11)	0.21 (0.18 - 0.25)

Table 158 - Adequacy of support and long spells - crude rates (spells per person year)

Adequacy of support Crude rate (95% confidence interval)

	<u>Men</u> (N= 4004)	<u>Women</u> (N=1717)
High	0.08 (0.07 - 0.09)	0.26 (0.22 - 0.29)
Moderate	0.10 (0.08 - 0.11)	0.23 (0.20 - 0.26)
Low	0.13 (0.11 - 0.15)	0.23 (0.19 - 0.28)

**Table 159 - Satisfaction with personal relationships and long spells
- crude rates (spells per person year)**

Satisfaction with Crude rate (95% confidence interval)
relationships

	<u>Men</u> (N= 4004)	<u>Women</u> (N=1717)
Very satisfied	0.12 (0.11 - 0.14)	0.29 (0.25 - 0.34)
Satisfied	0.08 (0.07 - 0.10)	0.22 (0.19 - 0.26)
No feelings	0.08 (0.07 - 0.10)	0.19 (0.16 - 0.23)
Dissatisfied	0.11 (0.09 - 0.14)	0.24 (0.18 - 0.32)

Table 160 - Difficulty paying bills and long spells - crude rates (spells per person year)

Difficulty paying Crude rate (95% confidence interval)
bills

	<u>Men</u> (N=3884)	<u>Women</u> (N=1494)
Seldom	0.08 (0.07 - 0.09)	0.21 (0.18 - 0.24)
Sometimes	0.10 (0.09 - 0.12)	0.29 (0.24 - 0.36)
Often	0.12 (0.10 - 0.14)	0.33 (0.27 - 0.41)
Very often	0.17 (0.12 - 0.24)	0.49 (0.35 - 0.69)

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Table 161 - Overall health status and short spells - crude rates (spells per person year)

Overall health status	Crude rate (95% confidence interval)	
	<u>Men</u> (N=5850)	<u>Women</u> (N=2641)
Very good	0.88 (0.83 - 0.93)	1.46 (1.34 - 1.59)
Good	1.25 (1.19 - 1.31)	1.87 (1.76 - 1.98)
Average	1.78 (1.68 - 1.89)	2.45 (2.31 - 2.60)
Poor/very poor	2.66 (2.40 - 2.96)	3.56 (3.22 - 3.93)

Table 162 - Recurring health problems and short spells - crude rates (spells per person year)

Recurring health problems	Crude rate (95% confidence interval)	
	<u>Men</u> (N=4505)	<u>Women</u> (N=1966)
None	1.07 (1.00 - 1.15)	1.73 (1.57 - 1.90)
1	1.29 (1.21 - 1.38)	2.14 (1.98 - 2.32)
2-4	1.62 (1.53 - 1.71)	2.53 (2.38 - 2.69)
>4	2.90 (2.47 - 3.40)	2.90 (2.49 - 3.38)

Table 163 - Longstanding illness and short spells - crude rates (spells per person year)

Longstanding illness	Crude rate (95% confidence interval)	
	<u>Men</u> (N=4505)	<u>Women</u> (N=1966)
Absent	1.25 (1.19 - 1.30)	2.12 (2.01 - 2.23)
Present	1.65 (1.56 - 1.75)	2.50 (2.33 - 2.68)

Table 164 - Psychiatric symptoms and short spells - crude rates (spells per person year)

Psychiatric symptoms	Crude rate (95% confidence interval)	
	<u>Men</u> (N=5850)	<u>Women</u> (N=2641)
Low scorers	1.19 (1.15 - 1.23)	1.98 (1.89 - 2.07)
High scorers	1.50 (1.42 - 1.59)	2.25 (2.11 - 2.40)

Table 165 - Overall health status and long spells - crude rates (spells per person year)

Overall health status	Crude rate (95% confidence interval)	
	<u>Men</u> (N=5850)	<u>Women</u> (N=2641)
Very good	0.06 (0.05 - 0.07)	0.13 (0.11 - 0.15)
Good	0.10 (0.09 - 0.11)	0.21 (0.18 - 0.23)
Average	0.15 (0.13 - 0.17)	0.34 (0.30 - 0.37)
Poor/very poor	0.31 (0.25 - 0.39)	0.57 (0.47 - 0.68)

**Table 166 - Recurring health problems and long spells
- crude rates (spells per person year)**

Recurring health problems	Crude rate (95% confidence interval)	
	<u>Men</u> (N=4505)	<u>Women</u> (N=1966)
None	0.07 (0.06 - 0.08)	0.16 (0.14 - 0.20)
1	0.09 (0.08 - 0.11)	0.23 (0.20 - 0.27)
2-4	0.12 (0.10 - 0.13)	0.30 (0.26 - 0.33)
>4	0.36 (0.27 - 0.50)	0.50 (0.38 - 0.66)

Table 167 - Longstanding illness and long spells - crude rates (spells per person year)

Longstanding illness	Crude rate (95% confidence interval)	
	<u>Men</u> (N=4505)	<u>Women</u> (N=1966)
Absent	0.08 (0.07 - 0.09)	0.21 (0.19 - 0.23)
Present	0.15 (0.13 - 0.16)	0.36 (0.32 - 0.41)

**Table 168 - Psychiatric symptoms and long spells
- crude rates (spells per person year)**

Psychiatric symptoms	Crude rate (95% confidence interval)	
	<u>Men</u> (N=5850)	<u>Women</u> (N=2641)
Low scorers	0.09 (0.08 - 0.10)	0.23 (0.21 - 0.25)
High scorers	0.12 (0.11 - 0.14)	0.27 (0.24 - 0.30)

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Table 169 - Smoking habits and short spells - crude rates (spells per person year)

Smoking habits	Crude rate (95% confidence interval)	
	<u>Men</u> (N=5812)	<u>Women</u> (N=2642)
Non-smoker	1.16 (1.11 - 1.21)	2.00 (1.90 - 2.10)
Ex-smoker	1.23 (1.16 - 1.29)	2.12 (1.96 - 2.28)
Smoker	1.69 (1.57 - 1.81)	2.20 (2.04 - 2.37)

Table 170 - Frequency of alcohol consumption and short spells
- crude rates (spells per person year)

Frequency of alcohol consumption	Crude rate (95% confidence interval)	
	<u>Men</u> (N=5812)	<u>Women</u> (N=2642)
Never	1.89 (1.64 - 2.17)	2.65 (2.32 - 3.01)
1-2 times/month	1.39 (1.30 - 1.49)	2.30 (2.17 - 2.43)
1-2 times/week	1.21 (1.15 - 1.27)	1.99 (1.87 - 2.12)
Daily	1.16 (1.10 - 1.23)	1.61 (1.46 - 1.77)
More than daily	1.33 (1.15 - 1.55)	1.64 (1.21 - 2.24)

Table 171 - Amount of alcohol consumed and short spells
- crude rates (spells per person year)

Amount of alcohol consumed	Crude rate (95% confidence interval)
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Men (N=5812)

None	1.56 (1.45 - 1.69)
1-10 units	1.22 (1.17 - 1.28)
11-15 units	1.08 (0.99 - 1.19)
15-30 units	1.18 (1.10 - 1.27)
31 + units	1.39 (1.27 - 1.53)

Women (N=2642)

None	2.37 (2.22 - 2.53)
1-6 units	2.03 (1.92 - 2.15)
7-10 units	2.06 (1.86 - 2.28)
11-20 units	1.68 (1.49 - 1.89)
21+ units	1.72 (1.44 - 2.06)

Table 172 - Physical activity and short spells - crude rates (spells per person year)

Physical activity	Crude rate (95% confidence interval)
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Men (N=5812)

Women (N=2642)

Mild	1.83 (1.69 - 1.99)	2.23 (2.09 - 2.39)
Moderate	1.24 (1.18 - 1.30)	2.05 (1.94 - 2.17)
Vigorous	1.17 (1.12 - 1.22)	1.93 (1.79 - 2.08)

Table 173 - Smoking habits and long spells - crude rates (spells per person year)

Smoking habits	Crude rate (95% confidence interval)	
	<u>Men</u> (N=5812)	<u>Women</u> (N=2642)
Non-smoker	0.08 (0.07 - 0.09)	0.21 (0.19 - 0.23)
Ex-smoker	0.09 (0.08 - 0.11)	0.23 (0.20 - 0.27)
Smoker	0.14 (0.12 - 0.16)	0.32 (0.28 - 0.37)

**Table 174 - Frequency of alcohol consumption and long spells
- crude rates (spells per person year)**

Frequency of alcohol consumption	Crude rate (95% confidence interval)	
	<u>Men</u> (N=5812)	<u>Women</u> (N=2642)
Never	0.13 (0.09 - 0.17)	0.32 (0.25 - 0.41)
1-2 times/month	0.12 (0.10 - 0.14)	0.31 (0.28 - 0.34)
1-2 times/week	0.09 (0.08 - 0.10)	0.22 (0.19 - 0.25)
Daily	0.09 (0.08 - 0.10)	0.14 (0.11 - 1.16)
More than daily	0.09 (0.06 - 0.13)	0.15 (0.08 - 0.28)

**Table 175 - Amount of alcohol consumed and long spells
- crude rates (spells per person year)**

Amount of alcohol consumed	Crude rate (95% confidence interval)
-------------------------------	--------------------------------------

Men (N=5812)

None	0.12 (0.10 - 0.15)
1-10 units	0.10 (0.09 - 0.11)
11-15 units	0.08 (0.06 - 0.09)
16-30 units	0.08 (0.07 - 0.10)
31 + units	0.09 (0.08 - 0.12)

Women (N=2642)

None	0.24 (0.22 - 0.27)
1-6 units	0.31 (0.28 - 0.35)
7-10 units	0.18 (0.14 - 0.22)
11-20 units	0.17 (0.13 - 0.21)
21+ units	0.15 (0.10 - 0.21)

Table 176 - Physical activity and long spells - crude rates (spells per person year)

Physical activity	Crude rate (95% confidence interval)	
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	<u>Men</u> (N=5812)	<u>Women</u> (N=2642)
Mild	0.14 (0.11 - 0.16)	0.29 (0.26 - 0.33)
Moderate	0.10 (0.09 - 0.11)	0.25 (0.23 - 0.27)
Vigorous	0.08 (0.07 - 0.09)	0.17 (0.14 - 0.19)

APPENDIX 6

Distribution of spells of sickness absence

Table 177 - Short spells of sickness absence, by age and grade

Men

Age group	Grade category							Total number
	1	2	3	4	5	6	7	
35 - 39 years	88	548	683	1211	1020	402	191	4143
40 - 44 years	145	617	521	852	747	384	119	3385
45 - 49 years	161	438	316	486	560	392	154	2507
50 - 55 years	263	489	498	609	641	448	164	3112
Total number	657	2092	2018	3158	2968	1626	628	13147

Women

Age group	Grade category							Total number
	1	2	3	4	5	6	7	
35 - 39 years	58	104	144	511	422	842	164	2245
40 - 44 years	13	122	112	276	489	967	196	2175
45 - 49 years	16	65	99	237	497	1130	346	2390
50 - 55 years	47	39	50	253	702	1354	624	3069
Total number	134	330	405	1277	2110	4293	1330	9879

Table 178 - Long spells of sickness absence^a, by age and grade

Men

	Grade category							Total number
	1	2	3	4	5	6	7	
Age group								
35 - 39 years	6	29	58	97	82	27	21	320
40 - 44 years	16	49	40	81	68	35	11	300
45 - 49 years	14	35	23	51	39	38	29	229
50 - 55 years	42	60	64	48	65	62	33	374
Total number	28	173	185	277	254	162	94	1223

Women

	Grade category							Total number
	1	2	3	4	5	6	7	
Age group								
35 - 39 years	4	9	10	40	38	90	27	218
40 - 44 years	1	10	9	40	55	132	51	298
45 - 49 years	3	4	11	29	71	128	102	348
50 - 55 years	7	2	2	39	102	233	178	563
Total number	15	25	32	148	266	583	358	1427

^a Includes the small proportion with more than one long spell

APPENDIX 7

Correlation between work characteristics

Table 179 - Correlation between externally assessed work characteristics
- Spearman's rank correlation coefficients

Men (N = 5920)

	Work Pace	Conflicting demands	Importance of mistakes	Control
Work pace	1.00			
Conflicting demands	0.56	1.00		
Importance of mistakes	0.49	0.41	1.00	
Control	0.31	0.30	0.25	1.00

Women (N = 2918)

	Work Pace	Conflicting demands	Importance of mistakes	Control
Work pace	1.00			
Conflicting demands	0.49	1.00		
Importance of mistakes	0.50	0.41	1.00	
Control	0.29	0.44	0.26	1.00

Table 180 - Correlation between self-reported work characteristics
- Spearman's rank correlation coefficients

Men (N = 6821)

	WP	CD	VS	C	SW	PJI	JS
Work pace	1.00						
Conflicting demands	0.30	1.00					
Variety and skill use	0.33	0.13	1.00				
Control	0.11	0.03	0.41	1.00			
Support at work	-0.03	-0.12	0.15	0.15	1.00		
Perceived job importance	0.20	0.02	0.35	0.20	0.23	1.00	
Job satisfaction	0.00	-0.12	0.32	0.25	0.32	0.31	1.00

Women (N= 3257)

	WP	CD	VS	C	SW	PJI	JS
Work pace	1.00						
Conflicting demands	0.34	1.00					
Variety and skill use	0.33	0.24	1.00				
Control	0.14	0.17	0.44	1.00			
Support at work	-0.07	-0.05	0.14	0.15	1.00		
Perceived job importance	0.13	0.04	0.27	0.15	0.25	1.00	
Job satisfaction	-0.10	-0.15	0.17	0.16	0.31	0.26	1.00

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