

Factors affecting sickness absence from work

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CONTENTS

	Page
Declaration	i
Acknowledgements	ii
Abstract	iii
1 INTRODUCTION	
1.1 Absenteeism	2
1.2 Sickness absence	2
1.3 Reasons for sickness absence	5
1.4 Predictors of sickness absence	9
1.5 Models of sickness absence	17
1.6 Absence control policies	22
1.7 Polaroid camera factory	28
1.8 Conclusion	34
1.9 Aims and hypotheses	35
2 METHOD	
2.1 Design	36
2.2 Participants	37
2.3 Measures	37
2.4 Procedure	42
2.5 Statistical analysis	43
3 RESULTS	
3.1 General characteristics of the sample population	44
3.2 Incidence of sickness absence and reasons for absence	46
3.3 Demographic predictors of sickness absence	49

3.4	Physical health and health-related behaviours	52
3.5	Work characteristics, quality of life, mental health and social support	58
3.6	Inhibitory absence policy	65
3.7	Health screening	65
3.8	Motivation at work	66
3.9	Summary of findings in relation to hypotheses	68
4	DISCUSSION	
4.1	Discussion of main findings in relation to hypotheses	69
4.2	Incorporating findings into models of sickness absence	77
4.3	Methodological problems	78
4.4	Implications for future research	81
4.5	The role of Clinical Psychology	83
4.6	Conclusions	85
	REFERENCES	86
	APPENDICES	
1	Health at Work Questionnaire	100
2	Health Screening Questionnaire	109

DECLARATION

The research described in this thesis is the unaided work of the author, except where acknowledgement is made by reference. No part of this work has previously been accepted for any other degree, nor is any part of it being concurrently submitted in candidature for another degree.

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ABSTRACT

The Whitehall studies include a series of papers by Stansfeld et al (1995, 1997a, 1997b) that examine factors predicting sickness absence from work. These include psychological and physical well-being, social support and chronic stressors, including work-related stress.

Psychological ill-health is particularly important in terms of sickness absence. It is thought to account for one third of sickness absence (Jenkins, 1985), often results in repeated absences (Taylor, 1968; Ferguson, 1972) and contributes to long spells of certified absence (Stansfeld et al, 1995). Somatisation of emotional distress highlights the fact that psychological ill-health may be an important contributory factor in absenteeism, even where this is cited as due to physical symptoms.

This study aimed to examine factors affecting sickness absence in one industrial workplace. There were 910 employees within the factory at the time of the study. Absence data was collected over a ten-month period for 810 of these workers. Approximately 200 workers had indices of physical fitness assessed as part of a health screening initiative and 166 employees completed questionnaires evaluating quality of life, attitudes towards work and psychological well-being. Interrelationships amongst these factors are examined. The relationship of these factors to sickness absence is also explored, as is the relationship between sickness absence and other demographic variables, such as gender and grade of employment. Results are discussed with reference to previous research findings.

1 INTRODUCTION

Overview

The importance of examining factors affecting sickness absence has become increasingly apparent, as incidence of absence has grown progressively more expensive both to industry and to the government (e.g. Griffiths, 1998; Semmence, 1971; Stansfeld, Rael, Head, Shipley & Marmot, 1997a; Taylor, 1974). The most commonly cited reasons for sickness absence are musculoskeletal conditions, followed by stress, anxiety and depression. These problems are estimated to account for over one half of all sickness absence (Jones, Hodgson, Clegg & Elliott, 1998), and appear to be increasing whilst other reasons for sickness absence are declining (Griffiths, 1998).

The Whitehall study was developed in order to examine causes of the social gradient in morbidity and mortality and has examined, over a number of years, factors affecting sickness absence in a large cohort of civil service employees (e.g. Marmot, 1994; Marmot, Feeney, Shipley, North & Syme, 1995; Stansfeld et al, 1997a). These risk factors include social support, physical and psychological well-being, health related behaviours and chronic stressors, including work-related stress. More recently, the World Health Organisation has integrated physical health, psychological well-being, environment and social support to an overall concept of quality of life, highlighting the interrelationships amongst these variables (e.g. The WHOQOL Group, 1998a, 1998b).

The aim of this research is to examine predictors of absenteeism in one industrial workplace, the Polaroid camera factory in Dunbartonshire, Scotland. The review of literature examines reasons for sickness absence, the benefits of examining it, potential risk factors, and proposed models of sickness absence. It also looks at the effect of absence control policies on sickness absence and gives an outline of the history of the Polaroid factory and current environment, at the time of study.

1.1 Absenteeism

In a recent review, it was observed that over 500 articles and books have been published on absenteeism, from disciplines including economics, sociology, medicine, management, ergonomics and psychology (Harrison & Martocchio, 1998). Whilst it is beyond the scope of this thesis to provide a comprehensive outline of this literature, major theories and findings are examined.

1.2 Sickness absence

Sickness absence has long been recognised as the largest cause of absenteeism, contributing over two-thirds of absence from work (Brooke, 1986). Taylor (1974), in one of the first papers reviewing sickness absence, noted the problem as a growing one, the cost of which was thought to equal the entire annual expenditure on the NHS. More recently, the cost of accidents and illness in the UK has been estimated at 1-2% of the gross domestic product (Faculty of Public Health Medicine, 1995), with around 19.5 million days lost due to work-related sickness absence in 1995 (Jones et al, 1998). Additionally, the number of employees taking early ill-health retirements from work was estimated to have increased by 66% from 1972-1996 (Office for National Statistics, 1997). Despite this, illness as a cause of absence has received very little attention, leading to it being called the 'black hole' of absence research (see Harrison & Martocchio, 1998).

Definition of sickness absence

Taylor defined sickness absence as 'absence from work *attributed* to incapacity'. Much research since then has highlighted the difference between illness and illness behaviour, or involuntary versus voluntary absence (e.g. Allegro & Veerman, 1998; Marmot et al, 1995; Stansfeld et al, 1997a).

Sickness absence is clearly related to illness, especially in cases where medical certificates are required (Marmot et al, 1995). Illness behaviour may simply reflect the severity of pain, distress or impairment (Waddell, 1998), with self-reported physical health known to be a strong predictor of

mortality (e.g. Idler & Angel, 1990). There is literature to suggest that decreasing risk of illness decreases absenteeism. In a double-blind experiment, for example, it was found that giving influenza vaccines reduced cold- and flu-related sick leave by approximately 40%, compared to those given placebos, an estimated organisational saving of 3-5 times the cost of the vaccine (Nichol, Lind, Margolis, Murdoch, McFadden, Hauge, Magran & Drake, 1995). Illness behaviour may also be associated with medical advice on cessation or limiting of activities (Waddell, 1998).

Not all individuals who are ill, however, take absence from work whilst others take absence when only minor complaints exist (Stansfeld et al, 1997a). Mechanic (1968) defined illness behaviour as 'the ways in which given symptoms may be differentially perceived, evaluated and acted (or not acted) upon by different kinds of persons and in different social situations'. It has been estimated that in up to 70% of cases, the need for sickness absence is not fully compelling and is a voluntary behaviour (Buunk, de Jonge, Ybema & de Wolff, 1998; Marmot et al, 1995).

Recently, the substantial proportion of sickness absence that is self-certified has led to doubts over the legitimacy of some 'sickness absence'. In 1982, UK legislation obliged employers to allow five working days of sickness absence without the need for a sickness certificate. In a recent study by Marmot et al (1995), spells of sickness absence for which employees were able to complete their own certificate of absence were fourteen times more common in males and seven times more in females than spells of absence for which a medical certificate was required.

For sickness absence due to psychiatric illness, Stansfeld et al (1997a) reported that spells of sickness absence for which employees were able to complete their own certificate of absence were four times more common in males and three times more in females than spells of absence for which a medical certificate was required. This highlights the substantial amount of time lost to work for short-term, self-reported sickness.

Adding to doubts over the legitimacy of some sickness absence, a US study reported that 24% of employees taking 'sickness absence' admitted that they had not actually been sick (Martinez, 1995). A Canadian study noted 72% of employees to admit to this (Haccoun & Desgent, 1993). In a study of firms where absence entitlements expired if not used within a certain period, absence was found to peak near the end of this period (Harrison & Hullin, 1989).

Illness behaviour may also be important in long-term sickness absence. Parsons (1951) described illness as a social phenomenon, defining the 'sick role' as one that 'renders the individual relieved of normal duties and responsibilities and gives them the right to extra support'. This role may offer several advantages, with the concept of secondary gain suggesting that a person is rewarded economically, physically or emotionally as a result of illness (Fishbain, Rosomoff, Cutler & Rosomoff, 1995). It has been suggested that sickness absence may be a common reason for absence-taking because it is seen as one of the most socially acceptable reasons for absence (e.g. Harrison & Martucchio, 1998). In summary, sickness absence is a composite measure of both illness and illness behaviour.

Problems in defining reasons for absence

In addition to problems associated with the definition of sickness absence, reasons for sickness absence may be hard to define due to the significant overlap between psychological and physical well-being. A review of ten studies noted psychological illness to be between one and a half to three times more likely when physical illness was present (Weyerer, 1990). There are several separate ways in which physical illness may produce psychological ill health: through increased anxiety about an illness, as a direct result of the disease process, medication or pain, or due to a decrease in mobility (Goldberg & Huxley, 1992). Progressing from this idea, Vilhjalmsson (1998) suggests that physical illness also has indirect effects on psychological health by aggravating domestic, occupational and financial strains. By contrast, mental health may also affect physical health. Recent longitudinal research has proposed a relationship between anxiety and the subsequent development of hypertension (e.g. Jonas, Franks & Ingram 1997).

In other circumstances, physical symptoms may reflect psychological distress, as in somatisation disorder (e.g. Gureje, Simon, Üstün & Goldberg, 1997). Back pain has been described as 'truly psychosomatic' in the sense that the resulting disability depends as much on psychological factors as it does on the underlying physical problem (Waddell, 1998). Mental distress is a significant predictor of future reporting of back pain (Bigos, Battie, Spengler, Fisher, Fordyce, Hansson, Nachemson & Wortley, 1991; Mannion, Dolan & Adams, 1996). In a study of police officers, it was noted that, although physical loading on the spine predicted first onset of back pain, chronic pain and work loss were predicted by psychosocial factors (Burton, Tillotson, Symonds, Burke & Mathewson, 1996). Several studies have shown mental health to be the best predictor of return to

work in individuals experiencing back pain (Waddell, 1998). Hence, it is possible that the reason for the onset of sickness absence may be physical, whilst longer-term reasons for absence are psychological.

Other studies note more general relationships between physical and psychological symptoms. Data from the Whitehall II study noted self-reported physical symptoms to be strongly associated with psychiatric disorder, as measured by the General Health Questionnaire (Stansfeld, Smith & Marmot, 1993). This association held both for recurrent medical conditions (e.g. asthma) and for physical symptoms in the last 14 days (e.g. sore throat). Stansfeld et al (1993) reason that somatisation may be a common reason for sickness absence because it is a powerful coping strategy that is likely to elicit nurturance, and is seen as a 'blame free' way of expressing negative affect.

1.3 Reasons for sickness absence

As has been noted above, research on illness and sickness absence has found that individuals consider their main work-related illness to be musculoskeletal disorders, followed by job stress, anxiety and depression (Hodgson, Jones, Elliott & Osman, 1993; Jones et al, 1998). Both musculoskeletal conditions and mental health problems have been linked to psychosocial and organisational factors at work, and are believed to be a sequel to stressful working conditions (e.g. Bongers, de Winter, Kompier & Hildebrandt, 1993; Griffiths, 1998; Sauter & Murphy, 1995). In a US study of occupational stress, reporting of stress related illnesses was observed to double from 1985-1990 (Northwestern National Life, 1991). Hence, increase in sickness absence may be linked to increased stress of the working environment. Before discussing this further, musculoskeletal conditions and mental health problems are outlined and general predictors of sickness absence are reviewed.

Musculoskeletal disorders

Musculoskeletal conditions represent the largest cause of sickness absence and represent one of the most common causes of chronic sickness (Griffiths, 1998; Waddell, 1998). In a recent study of 40,000 individuals, 57% of respondents who had taken sickness absence noted this to be for

musculoskeletal conditions (Jones et al, 1998). Musculoskeletal conditions include back pain, neck pain, sciatica and upper limb pain, including repetitive strain injury (Buckle, 1997; Waddell, 1998). Repetitive strain injury is associated with repeated movements or activities, usually affecting the upper limbs, although both diagnosis and cause are currently much disputed (Waddell, 1998). Sciatica is caused by neuritis of the long nerve passing down the back of the thigh, which produces back and/or leg pain (Heliovaara, Impivaara, Sievers, Melkas, Knekt, Korpi & Aromaa, 1987).

Prevalence

By far the most prevalent musculoskeletal disorder is back pain. Recent reports suggest a point prevalence of 14% (Mason, 1994), one-year prevalence of 20-40% (Mason, 1994; Volinn, 1997; Walsh, Crudas & Coggon, 1992), and lifetime prevalence of 58% (Papageorgiou, MacFarlane, Thomas, Croft, Jayson & Silman, 1995; Walsh et al, 1992). It is usually recurrent and intermittent (see Waddell, 1998). Life-time prevalence of sciatica has been estimated at 5.3% in men and 3.7% in women (Heliovaara et al, 1987).

Cost

In 1995, work loss due to musculoskeletal conditions was estimated at 11 million days in the UK, with the worst affected group being manual workers (Jones et al, 1998; see also Clinical Standards Advisory Group, 1994). Estimates suggest 9% of adults see their GP each year because of back pain alone (see Waddell, 1998). Around one in five are given sickness certificates (Mason, 1994). The estimated cost of back pain in the UK, in 1993, was £421 million in NHS costs, of which £70 million was estimated as the cost of GP consultation (Waddell, 1998). A further £3.8 billion was estimated to be lost as a consequence of decreased production, although this latter estimate is approximate (Coyle & Richardson, 1994 in Waddell, 1998).

More importantly, perhaps, is the cost to industry that remains unrecognised. In a study of 1136 people with back pain, 6% said they had taken some time off within the last four weeks, whilst only half of those who had experienced significant back pain in the previous year had sought medical help for it (Mason, 1994). This highlights the substantial proportion of employees who will remain at work in spite of back pain, but who may be working below capacity due to this.

Psychological ill health

Psychological ill health is particularly important in terms of sickness absence because it often results in repeated absences (Ferguson, 1972), and is the second most common cause of longer spells of certified absence (Stansfeld, Feeney, Head, Canner, North & Marmot, 1995). Many studies have found a relationship between absence and severity of anxiety and depression (e.g. Harrison & Martucchio, 1998; Jenkins, 1985; Kopp, Skrabski & Szedmak, 1995; Kouzis & Eaton, 1994; Skodol, Schwartz, Dohrenwend, Levav & Shrout, 1994).

Prevalence

Lifetime prevalence of major depression is estimated at 17.1% (Blazer, Kessler, McGonagle & Swartz, 1994), whilst UK estimates for anxiety stand at 11% of the adult population (Andrews, Crino, Lampe, Hunt & Page, 1994). In addition to single diagnosis, there is significant co-morbidity in anxiety and depression (Andrews et al, 1994; Baldwin, 1998; Kessler, Stang, Wittchen, Stein & Walters, 1999), with certain types of anxiety, such as social phobia, thought to predate secondary depressive symptoms (Kessler et al, 1999).

It has been estimated that a GP with a list size of 2500 identifies approximately 300 patients with a non-psychotic mental illness in any given year (Goldberg & Huxley, 1992). Almost as many attenders again have an undiagnosed mental illness, most commonly depression or anxiety (Goldberg & Huxley, 1992).

Cost

There have been relatively few studies that have examined the economic costs of mental illness to health care, with the impact of anxiety disorders on the overall costs being largely overlooked (Salvador-Carulla, Segui, Fernandez-Cano & Canet, 1995). The most recent published study estimated the total cost to the NHS of depressive illness to be £222 million per year, at 1990 prices (Jönsson & Bebbington, 1993). The authors note that this is likely to be a conservative estimate, given that the definition of depression used did not include the ICD category of neurotic depression.

As diagnosis of neurotic depression lies towards the mild end of the depressive spectrum, it is likely to significantly underestimate the costs of outpatient and GP attendance. In view of these methodological problems in their study, Jönsson & Bebbington predict the true cost as between £220 million and £400 million.

In terms of cost to industry, Croft-Jeffreys & Wilkinson (1989) estimated the true cost of lost production due to neurosis to be in the region of £5.6 billion (1985 prices), whilst, Kind & Sorenson (1993) estimated that £3 billion is lost in productivity as a result of depression alone (1991 prices). For anxiety states, cost can also be high. In a study, examining lost productivity in 61 patients with panic disorder, costs were estimated at \$65,600 per annum (Salvador-Carulla et al, 1995). It has been noted that individuals not meeting full criteria for panic disorder incur high health care costs and also display marked impairment in occupational functioning (Klerman, Weismann & Ouellette, Johnson & Greenwald, 1991).

In spite of these costs, it may well be that a large loss in productivity remains undetected. Self-reported mental health is inversely related with colleagues' ratings of performance (Motowidlo, Packard & Manning, 1986). Similarly, a metaanalytic study noted 40% of depressed individuals to report some level of work impairment (Mintz, Mintz, Arruda & Hwang, 1992). The authors commented that many outcome studies in depression take into account only reduction of symptoms and ignore the effects of depression on occupational productivity, when importantly, work recovery takes significantly longer than symptom reduction.

Summary

Sickness absence is a controversial term that is used to encompass both illness and illness behaviour. Reasons for sickness absence may also be hard to distinguish, due to the large overlap between psychological and physical health. What remains clear, however, is the substantial cost of sickness absence to industry and to the NHS, with mental health and musculoskeletal disorders contributing substantially to this. For this reason alone, predictors of sickness absence are important to understand so strategies for absence reduction may be realised. The next section reviews literature on known factors associated with sickness absence.

1.4 Predictors of sickness absence

Gender

Several studies have reported females to be more likely to take absence than males (e.g. Farrell & Stamm, 1988; Marmot et al, 1995; Steel & Rentsch, 1995). In one study that controlled for differences due to working conditions, women remained 1.3 to 1.7 times more likely to take sickness absence than males (Mastekaasa & Olsen, 1998). This difference was greater for long-term sickness, requiring a medical certificate, than for short-term absence.

There are several possible reasons for this. Increased susceptibility to physical ill-health and mental illness, such as depression, has been reported in females as compared with males (Garrison & Eaton, 1992; Selzer, Paluszny & Carroll, 1978). Waddell (1998) summarises a number of studies suggesting slightly higher prevalence of back pain in women than in men, but suggests that this is due to a tendency of women to report slightly higher levels of most symptoms. Alternatively, it has been speculated that the difference may be due to greater familial responsibilities (see Harrison & Martocchio, 1998), or to a greater susceptibility to work-family conflict and its effects on health (Frone, Russell & Cooper, 1992).

Age

Two meta-analyses on the relationship between age and absence from work have suggested small associations between these variables. Martocchio (1989) found a negative association between age and absence frequency for males, but not for females. This association was further attenuated in physically demanding jobs. Hackett (1990) similarly found correlations to decrease when length of employment was controlled.

Socio-economic status

Lower grade of employment is associated with higher rates of sickness absence. In the Whitehall II study, men in the lowest grade of employment had rates of sickness absence that were six fold

higher than those in the highest grade of employment: in women, differences were two to five times higher between highest and lowest grades (Marmot et al, 1995).

This may again be for several reasons. One possible reason may relate to the positive association between socio-economic status and healthy lifestyle habits (Marmot, 1994), with healthy lifestyle habits mediating the relationship between socio-economic status and sickness absence. The effects of health-related behaviours on sickness absence are discussed in a later section.

Related to health-related behaviours, differences in sickness absence rates amongst employment grades may be due to decreased physical and psychological health in manual grade workers. Socio-economic status is inversely related to rates of depression, and to rates of sickness absence for depression (e.g. Brown & Harris, 1978; Murphy, Olivier, Monson, Sobol, Federman & Leighton, 1991; Stansfeld et al, 1995; Stansfeld, et al, 1998). Stansfeld et al (1997a) found that high levels of material problems (difficulties with finances, housing and neighbourhood) were associated with short spells of psychiatric sickness absence for both males and females, and with long spells of psychiatric sickness absence in males. This would suggest either that financial difficulties have a direct effect on the genesis of depression and anxiety, or that they increase illness behaviour. In the latter case, it may be that the combination of coping with financial difficulties, depressed mood and work is too much, causing individuals to take absence from work.

In addition to the link between socio-economic status and mental health, low socio-economic status is related to poorer physical health (e.g. Marmot et al, 1995). So too, an inverse relationship between work loss due to back pain and social class has been reported (Hemmingway, Shipley, Martin, Stansfeld & Marmot, 1997; Mason, 1994; Walsh et al, 1992). In Mason's (1994) study, however, a high proportion of men and women cited work as a cause of their back pain. This implies that the association between socio-economic status and physical health is due to differences in type of work. In line with this, work characteristics have been reported to explain most of the grade of employment differences in well-being and depression (Stansfeld et al, 1998a). Work characteristics are discussed in the following section.

Work characteristics

Low levels of job demand and job control are associated with increased sickness absence (e.g. North, Syme, Feeney, Shipley & Marmot, 1996), as are perceived monotony, work underload and repetitive work (Melamed, Ben-Avi, Luz & Green, 1995). A large meta-analysis of studies on attitudes towards work gives strong evidence for the effects of job satisfaction, involvement and commitment on absenteeism (Hackett, 1989). Flexible work hours have also been associated with lower absenteeism (e.g. Leigh, 1991), as has shift work (see Harrison & Martucchio, 1998).

In terms of physical health, monotonous work, work under time pressure, few opportunities to take breaks and little autonomy have also been associated with more general musculoskeletal complaints (Bongers et al, 1993). Many of these variables are associated with manual grade work. Manual workers are, more likely to report musculoskeletal complaints than non-manual workers (Hodgson et al, 1993) and also take significantly longer spells of absence for back pain than non-manual workers (Mitchell, 1985). Satisfaction with work has also been found to predict likelihood of reporting back pain over 12 months (Papegeorgiou et al, 1997).

Similarly, work characteristics have been reported to explain employment grade differences in depression scores (e.g. Stansfeld, Head & Marmot, 1998a), with a recent study reporting low levels of decision latitude to predict depressive symptoms (Niedhammer, Goldberg, Leclerc, Bugel & David, 1998). High job demands, low decision authority and low skill discretion have also been reported as a risk factor for future psychiatric disorder (Stansfeld, Fuhrer, Head, Ferrie & Shipley, 1997b). Work characteristics as a cause of stress are discussed further when models of sickness absence are reviewed.

Job insecurity and threat of redundancy

Recent recession and technological innovation has made redundancy an increasing problem in the UK (Ferrie, Shipley, Marmot, Stansfeld & Smith, 1998). Of workers who do lose their jobs, many are likely to find new employment that is less secure and less well paid (Hartley, Jacobson, Klandermans, and Van Vuuren, 1991). Threat of redundancy is associated with increased sickness absence (e.g. Owens, 1966). Several studies have also found a link between chronic job insecurity and an increase in self-reported physical symptoms and psychological problems, particularly in

males (e.g. Ferrie, Shipley, Marmot, Stansfeld & Smith, 1995; Ferrie et al, 1998; Heaney, Israel & House, 1994). These findings do not appear to be related to a change in health-related behaviours (e.g. Ferrie et al, 1998).

Health-related behaviours

Smoking

Smoking is associated with increased absenteeism, as is stopping smoking (e.g. Bush & Wooden, 1995; Parkes, 1983; Parkes, 1987). These differences remain when the effect of employment grade is controlled (Marmot et al, 1995). Many studies have linked smoking to physical and psychological health (e.g. Stansfeld et al, 1993). Smoking has also been linked specifically to risk of back pain, although the cause of this effect is unclear, with some suggesting that smoking merely reflects a complex set of lifestyle factors that increase the risk of back pain, and others reporting a direct effect of smoking on degenerative changes in the spine (Battie, Videman, Gill, Moneta, Nyman, Kaprio & Koskenvuo 1991; Waddell, 1998).

Alcohol consumption

Alcohol consumption has also been found to bear a non-linear relationship to absenteeism (e.g. Casswell, Gilmore & Ashton, 1988), with both abstinence (Marmot, North, Feeney & Head, 1993; Vasse, Nijhuis & Kok, 1998) and heavy drinking (Marmot et al, 1993) associated with increased rates of absenteeism. These effects are apparent, even when differences in employment grade are controlled, as employment grade is inversely related to alcohol consumption (Marmot et al, 1993).

One explanation for this pattern is that individuals cope with stress by drinking alcohol, thereby reducing sickness absence due to stress (see Vasse et al, 1998). It could also be that moderate intake has a protective effect against health-related problems (see Vasse et al, 1998). By contrast, the physical health problems produced by alcohol dependence and heavy consumption may increase the likelihood of taking sickness absence (Marmot et al, 1993). Similarly, comorbidity of depression and alcohol misuse has been well recognised within the literature, with alcohol consumption usually seen to predate depression (see Cox & Finch, 1997).

Exercise

Regular exercise is known to predict cardiovascular fitness, which in turn has been associated with work attendance, even when the effects of age, gender, smoking, income and percentage body fat are controlled (Tucker, Aldana & Friedman, 1990).

In addition to the effects of exercise on physical health, exercise has been reported to promote psychological health. A positive correlation between sedentary lifestyle and depressive symptoms was reported in a female sample of 300 (Horsten, Wamala, Vingerhoets & Oth-Gomer, 1997). Similarly, Steptoe, Kimbell & Basford (1998) noted self-reported depression to be lower on exercise days than non-exercise days, in a 12-day study of 73 individuals. Long & Flood (1993) suggest exercise to be a form of emotion-focused coping, acting as a distraction from stressors and increasing levels of relaxation and perceived health. These effects may decrease likelihood of absence due to stress-related illness.

Personality

Correlations between absences for successive years range from .5 to .7 (Steel, 1990). 'Absence-proneness' has been used to describe an enduring personality trait that explains the moderate stability of absence over time (Harrison & Price, 1993). Of all personality dimensions, neuroticism is the only one to receive attention in relation to sickness absence.

Neuroticism describes a relatively stable predisposition to experience distressing emotions, such as anxiety (e.g. Watson & Pennebaker, 1989). As neuroticism is known to correlate with both perceived stress and symptoms of ill-health (Costa & McCrae, 1987; Watson & Pennebaker, 1989), it has been argued that neuroticism may spuriously inflate correlations between stress and ill-health (Costa & McCrae, 1987). Hence, neuroticism may drive illness behaviour. Two studies, however, have noted neuroticism to have little effect on the relationships between measures of occupational stress and outcome (Knussen & Niven, 1999; Schonfeld, 1996). In Knussen & Niven's study, correlations between pressure at work and symptoms of distress, as measured by the GHQ-28, were not significantly attenuated when neuroticism was partialled out.

Social support

Social networks vary in terms of source (i.e. family, friends, co-workers) and perceived supportiveness (Moos, Cronkite & Moos, 1998). Brown & Harris (1978) proposed that the lack of social support, in particular the lack of a confiding relationship, places individuals at a greater risk of developing depression when confronted with an adverse event. By contrast, emotional support may provide a buffering effect against the adverse consequences of stress, because the perception that others are prepared to provide support decreases the perceived threat of the situation (e.g. Cohen & Wills, 1985).

In addition to the effects of social support on psychological health, a relatively recent review of the literature concluded that social support might act to promote physical health, by improving the working of the cardiovascular, endocrine and immune systems (Uchino, Cacioppo & Kiecolt-Glaser, 1996).

Two main types of social support may be important predictors of absenteeism in the workplace: support from friends and family outwith the workplace and support from work colleagues and managers.

Social support outwith the workplace

Marriage is associated with decreased risk of depression, particularly for males (e.g. Bebbington, 1987, 1992). Being married is also associated with lower levels of sickness absence for males (Leigh, 1991). The effect of marriage for female workers is unclear, with some studies finding higher absence rates for women (Leigh, 1991) and others noting no difference (Kristensen, 1991). Conflicting findings for females may be due to differences in parity, with women who are married perhaps more likely to take time off for dependents and attribute it to sickness absence (e.g. Harrison & Martocchio, 1998).

At the other end of the spectrum, an unhappy marriage is associated with vulnerability to depression (Birtchnell, 1988; Boyce, Harris, Silove, Morgan, Wilhelm & Hadzi-Pavlovic, 1998; Hickie, Parker, Wilhelm & Tennant, 1991; Weissman, 1987). Negative aspects of relationships within the

home are also associated risks factors for both physical (Rael, Stansfeld, Shipley, Head, Feeney & Marmot, 1995) and mental ill-health (Coyne & Downey, 1991; Lakey, Tardiff & Drew, 1994; Stansfeld et al, 1997a). Stansfeld et al (1997a) suggest that this association is due to the contribution of stressful relationships to the aetiology of mental health problems. In line with these findings, widowed, divorced and separated employees have higher rates of general sickness absence (Leigh, 1991), have increased rates of depression (Bebbington, 1987) and, as noted by Stansfeld et al (1995), have higher rates of absence due to psychiatric illness.

By contrast, Stansfeld et al (1997a) found high levels of emotional support at home to be associated with increased rates of long periods of sickness absence in women (Stansfeld et al, 1997a). They note that this finding is surprising, given the general literature on social support and depression (e.g. Brown & Harris, 1978), but suggest that high emotional support may encourage illness behaviour, rather than increasing actual illness per se. Similarly, Waddell (1998) points out that high levels of social support may act to reinforce and perpetuate disability in musculoskeletal disorders, whilst another study showed that more empathic responses from spouses resulted in increased display of pain behaviour and disability (Romano, Turner, Jensen, Friedman, Bulcroft, Hops & Wright, 1995). One alternative possibility to that suggested by Stansfeld et al (1997a) is that high social support, or over-protectiveness, undermines self-esteem by making the individual feel less competent and less in control (see Buunk et al, 1998).

The above findings imply a bimodal relationship between emotional support at home, with both high emotional support and extremely low emotional support at home predicting psychiatric sickness absence in certain instances.

Social support within the workplace

Positive interactions with colleagues have been associated with lower rates of absenteeism (Porter & Steers, 1973), as has perceived level of satisfaction with co-workers (Waters & Roach, 1971). This association may be due to the effect of social support on mental health (e.g. Stansfeld et al, 1997b). Niedhammer et al (1998) found lower levels of social support at work to predict depressive symptoms. A time-lagged analysis similarly noted an effect of support from supervisors on depression (Dormann & Zapf, 1999). Further, Stansfeld et al (1997a) noted that medium to high levels of social support at work reduced rates of psychiatric sickness absence for short spells of time

by 25% for males and by 35% for females. The effect of social support on long-term absence was less clear.

Social support from work has also been found to decrease sickness absence for musculoskeletal problems. In a study by Wood (1987), the act of supervisors phoning employees off with back pain to reassure them of their value at work cut long-term sickness absence from 7.1% to 1.7%.

Work support has also been found to be protective against sickness absence for those with negative relationships outwith the workplace. Stansfeld et al (1997a) suggest that support from work may help individuals to cope with the stress of problematic relationships at home and, thereby, encourage attendance at work. These authors also note that work support is more strongly protective than non-work support in this respect.

Group influences

Linked to social support at work, Johns & Nicholson (1982) have highlighted the influence of the workplace environment on absence. They define absence culture as 'the set of shared understandings about absence legitimacy' (p. 136). Gellatly & Luchak (1998) note that beliefs regarding acceptability of absence depend on two factors: personal experience of absence, and absence rates within the group in which individuals work. Perceived norms of absence have been found to predict variance in subsequent absenteeism (Harrison & Shaffer, 1994). Similarly, the effect of past absences on subsequent absence is mediated by individual's perceptions of norms (Gellatly, 1995).

Markham & McKee (1995) reported that, even when controlling for effects of length of employment, gender and family responsibilities, groups with less understanding of management's goals and higher beliefs regarding the legitimacy of absence had more absence over a year period than those with opposite beliefs. It has also been noted that social influences increase both the likelihood of individuals attributing subjective health complaints to their work environment and the likelihood of taking absence due to this (Guerts, Bunk & Schaufeli, 1994a). This again confirms the influence of group culture on absence.

Linking group influences to affect, an inverse relationship between negative affective tone of a group and subsequent absence has been reported (George, 1989, 1990). In this vein, Buunk et al (1998) note that high social support may cause increased feelings of dissatisfaction at work, if sympathetic colleagues with a similar negative view of the problem serve to strengthen an individual's beliefs.

Summary

A number of factors have been associated with both decreased psychological and physical health, and with increased risk of sickness absence. Several of these appear inextricably linked, in particular socio-economic status, work characteristics and health-related behaviours. The following section reviews attempts to combine these factors into models of sickness absence.

1.5 Models of sickness absence

Socio-organisational psychological model

Steers & Rhodes' (1978, 1984) made the first attempt to develop a theoretical framework for predictors of absence from work. They proposed that, in addition to job satisfaction, which had been seen until then to be the major determinant of attendance, other factors contributed significantly to absence. These proposed factors included pressure to attend (work group norms, incentives and rewards), ability to attend (family responsibility, transportation problems), personal characteristics (age, sex, education) and job situation (work group size, leader style, co-worker relations, opportunities for promotion). Brooke (1986; Brooke & Price, 1989) extended this model to include health-related behaviours (e.g. alcohol use) and organisational constraints (e.g. permissiveness) as predictors of absenteeism. Neither model, however, specifies interrelationships amongst factors, or explicitly outlines their relationships to physical and mental health.

Decision theory

Decision theory conceptualises absence from the theory of reasoned action. It proposes that employees base the decision to take absence on personal desire (i.e. work/leisure conflict), expectations of others (e.g. absence norms), and perceived control over absence-taking (e.g. Martocchio & Harrison, 1993). This theory includes the concept of an absence threshold. This is influenced by the opportunity for absence (e.g. absence control strategies, pay for sick leave), and the personal need to make use of the opportunity for absence (Allegro & Veerman, 1998). When absence threshold is high, individuals will find it extremely difficult to report sick when they have health complaints. This does not always lead to low sickness absence because the consequence of working when ill may cause further deterioration in health, thereby causing a longer eventual spell of sickness absence (Allegro & Veerman, 1998).

The yellow flag system

Related to both the socio-environmental model and decision theory model, the Yellow Flag System, introduced in New Zealand (see Waddell, 1998), proposes several risk factors for chronic musculoskeletal problems. In addition to concepts included in the models outlined above, it also includes beliefs and attributions about back pain, inactivity and withdrawal from daily activities, lack of incentive to return to work, treatment issues, emotional health, social support and work characteristics. In its inclusion of emotional health, it is most similar to stress models, outlined below.

Stress models

Most attempts to develop models of sickness absence have focused on stress. Occupational stress has been suggested to have increased in the last few decades, due to increased demands made on employees in terms of increased time pressure, rapidly changing technology and increased market competition (see Buunk et al, 1998). Several stress models have been proposed in an attempt to explain potential outcomes on health and sickness absence. Before outlining these models, a definition of stress is given, along with a review of known effects of stress on physical health.

Definition of stress

Stress can be defined as the negative emotions produced by reactions to demanding situations (Buunk et al, 1998). Negative emotions include anger, disappointment, anxiety, depression, jealousy and embarrassment (Buunk et al, 1998). Demanding situations include those relating to task characteristics (e.g. high work load), role problems (e.g. job demands conflict with employee expectations), interpersonal conflict and status problems (e.g. lack of opportunity for career advancement, lack of influence).

Effect of stress on physical health

Stress, and in particular the emotions of anxiety and anger associated with stress, have been proposed to play a role in the development of several physical diseases. These include cardiovascular disease, high blood pressure, high cholesterol level, asthma, stomach complaints and decreased resistance to infectious diseases (Buunk et al, 1998; Fletcher, 1988; Kubzansky & Kawachi, 2000). A number of pathways by which emotion leads to physical ill-health have been proposed, including excessive activation of the sympathetic nervous system (see Kubzansky & Kawachi, 2000).

Stress has also been proposed to lead to unhealthy behaviours, including smoking and excessive consumption of alcohol (Maes, Vingerhoets & Van Heck, 1987). Stress may, therefore, decrease physical health via the indirect effects of smoking or high fat diets, which may lead to conditions such as atherosclerosis (Kubzansky & Kawachi, 2000).

Chronic stress has also been associated with *burnout*, a phenomenon encompassing emotional exhaustion, negative attitudes about one's own competence, and cynical and impersonal attitudes towards others (e.g. Burke & Greenglass, 1995). Burnout has been associated with lack of autonomy at work, lack of feedback about work, imbalance of demands and rewards and a tendency to self-blame for problems at work (see Buunk et al, 1998).

Stress models, therefore, propose physical health, mental health and health-related behaviour, to be outcomes of stress. Stress may lead to sickness absence via several different pathways: by directly

affecting physical health, by directly affecting psychological health, or by having an indirect effect on health via its impact on health-related behaviours. Another possibility is that sickness absence serves as an adaptive means to alleviate accumulated stress before detrimental effects on physical or psychological health occur (Dwyer & Ganster, 1991). Several models of potential causes and outcomes of stress are described below.

Social environment stress model

The social environment model emphasises the difference between the objective environment (size of the company, job description, structure) and the subjective environment (the organisation as it is perceived by the individual, e.g. French & Kahn, 1962; see also Buunk et al, 1998). This latter concept includes attitudes regarding opportunities to participate, role conflict and satisfaction with the way a person views their position within the organisation. Discontentment with the subjective environment causes stress. The model also incorporates stress reactions (e.g. smoking, absenteeism, high blood pressure), illness arising from chronic stress reactions (e.g. depression, cardiovascular disease), personality characteristics, and social support from work and home. However, it does not examine the effects of stressors outside of work, such as financial or housing difficulties.

Demand-control-support model

The demand-control-support model is particularly relevant when considering the comparatively high sickness absence rates of manual grade workers. Kornhauser (1965), in one of the first studies of its kind, examined the mental health of assembly workers in a car factory and found a high rate of feelings of helplessness, powerlessness and pessimism. It has been proposed that this lack of control is associated with increased work pressure (see Buunk et al, 1998). By contrast, it has been suggested that increasing the scope and variety of a job increase perceived challenge and responsibility, thereby encouraging positive attitudes towards the job and increasing motivation to attend (Steers & Rhodes, 1978).

The demand-control-support model concentrates on decision latitude (control) and job demands (workload) as two major sources of stress (e.g. Karasek, 1979). High workload and little decision latitude cause increased stress. By contrast, high job demands and high job control are predicted to

lead to motivation, learning and personal growth. In addition to these factors, work social support has more recently been added to the model (e.g. Johnson & Hall, 1988). Recent studies have reported direct effects of demand, control and support on health symptoms, organisational commitment, stress and sickness absence (Jones, Hodgson & Osman, 1997; Schaubroeck & Fink, 1998). Again, this model fails to include the effects of social and environmental stress outside of work.

Person-environment fit model

As with the model outlined above, the person-environment fit model is perhaps particularly relevant to employment grade differences in absence rates. It proposes stress to result from the discrepancy between work demands and the capability of individuals to meet these demands, or differences between employee desires and what the job supplies (e.g. French, 1973). These can either be subjective differences (e.g. promotion opportunities that cannot be realised) or objective differences (e.g. inability to assemble goods at the required speed). This is relevant to manual grade work in that this type of work is often rate-driven, with fewer opportunities for promotion (Harrison & Martocchio, 1998).

Criticisms of these models

Stress models have been criticised for focusing on the onset of absence, but failing to look at the perpetuating factors in maintaining absence from work. This has been called the *resumption threshold* (Allegro & Veerman, 1998). These authors suggest that sickness absence can be changed by the experience of sickness itself. Motivation to return may be lessened by disinterest from colleagues and supervisors. It may also be decreased by inflexibility of work tasks on return (e.g. lack of a rehabilitation program).

Related to this, Harrison & Martocchio (1998) differentiate factors into three time frames, suggesting long-term factors (age, gender, depression, smoking, heavy drinking, and exercise), mid-term factors (i.e. work characteristics, absence control procedures and social influences at work) and short-term factors (i.e. decision processes) all to influence sickness absence and return to work.

Summary

Several models have been developed in an attempt to explain sickness absence from work. Stress models offer a framework in which to examine interrelationships amongst variables affecting physical and psychological health. They also focus on characteristics of work that may help to explain high sickness absence rates in manual grade workers. However, most confine their view to the work environment and fail to take into consideration factors outwith work, such as financial stressors and social support from home.

By contrast, empirical findings on predictors of absence highlight important interactions amongst physical and psychological health, social support and the environment in which an individual lives and works. Recent development of a quality of life instrument, by the World Health Organisation, integrates these four domains in the measurement of quality of life (The WHOQOL group, 1998a; The WHOQOL group 1998b). This concept may help in developing stress models of sickness absence further. For example, it may well be that problems in any one of these domains, either caused by stress within or outwith work, impacts on other domains and is reflected in the impaired functioning of an individual and their likelihood to exhibit illness behaviour.

1.6 Absence control policies

In addition to the cost produced by sickness absence, there appear to be additional unseen costs of sickness absence, in terms of the effects on productivity. Absence has an effect not only on the individual but also on co-workers, managers, organisations, families and society (Harrison & Martocchio, 1998; Moscarelli, 1995). Guerts, Buunk & Schaufeli (1994b) note that co-workers are often expected to cover the work of an absent employee, leading to increased fatigue and resentful attitudes, which in turn cause increased absence rates. It has also been suggested that high absence rates decrease productivity further by reducing familiarity amongst groups (Goodman & Leyden, 1991). It may well be that, in jobs where performance is highly dependent on others, group performance inevitably suffers as a result of absenteeism.

Organisations have three main ways in which they may attempt to reduce absence: via the implementation of inhibiting policies, curative policies and preventative policies. These may be used either in isolation or in combination with one another (Allegro & Veerman, 1998). Allegro & Veerman (1998) emphasise the importance of ongoing evaluation of approaches used, and flexibility to change where necessary.

Inhibiting policies

Inhibiting policies are aimed at limiting employees' opportunities to report sick. These policies include requiring medical certificates for sickness absence, disciplinary procedures for absence or rewards for perfect attendance (see Allegro & Veerman, 1998; Harrison & Martucchio, 1998).

In terms of the effects of this type of policy on absence, it has been argued that they ought to be effective since in unionised settings, where sick leave policies are more lenient, absenteeism is higher (see Harrison & Martucchio, 1998). Where positive reinforcement systems are used, they do seem effective. In one study, Durand (1983) found absence to decrease when the incentive of a day's paid leave a month was introduced for perfect attendance. Orpen (1981) found a similar effect for weekly cash rewards for perfect attendance. Other studies have noted comparable results (e.g. Robins & Lloyd, 1983; Schotzhauer & Rosse, 1985).

Allegro & Veerman (1998), however, argue problems with this type of control policy when disciplinary procedures are used. They suggest that although these procedures may decrease the frequency rates of short spells of absence, they have the potential to increase sickness absence rates for several reasons.

Firstly, when workers continue to work whilst they are sick for fear of being disciplined, they may cause more serious illness to occur, resulting in longer-term sickness absence. Secondly, introducing punitive procedures while the underlying causes of absence are not being tackled could have a negative effect on employee attitudes towards the organisation and management, resulting in 'internal absence' (attending work without being productive) or decreased motivation to return to work after sickness absence. Dalton & Mesch (1991), looking at a firm where employees had to accumulate 90 days of unused sick-leave before they were entitled to paid sick leave, showed that absence increased dramatically when this had occurred.

Finally, these policies may be open to bias and complaints of discrimination. Martocchio & Judge (1995) found, in hypothetical circumstances, decisions regarding disciplinary outcomes from supervisors were based on absence history, job performance and perceptions about whether or not workers were physically well enough to attend work.

Curative policies

Waddell (1998) has recently commented that illness behaviour is not fixed, but is a dynamic process influenced by the behaviours and reactions from others (see also Buunk et al, 1998). Curative policies attempt to speed up resumption to work after onset of sickness absence. These include rehabilitation programs, which offer flexibility to the employee in terms of changes in task demands or decreased hours on return to work.

McGill (1968) first noted the inverse relationship between time off work and probability of returning to work. It has been pointed out that the factors that influence recovery may change over time, and include not only physical factors but patients attitudes regarding the injury, the availability and quality of social support, changes in the work situation and the medical care they receive (Frank, Kerr, Brooker, DeMaio, Maetzel, Shannon, Sullivan, Norman & Wells, 1996).

Related to this, beliefs will be important in influencing return to work. In terms of physical pain, it has been reported that individuals who believe their back pain to be a lifelong problem take more bed rest and medication than others (Szpalski, Nordin, Skovron, Merlot & Cukier, 1995). Fear of pain or further damage may also influence involvement in rehabilitation and, consequently, return to work. Patients who believe that physical activity will aggravate their pain will tend to avoid activities (Lethem, Slade, Troup & Bentley, 1983). This is in spite of the fact that management of back pain through rest is now outdated, with early mobilisation recommended (Nachemson, 1983).

By contrast, giving information about back pain may reduce sickness absence. In one study, researchers gave out pamphlets in an industrial setting, informing workers that back pain did not usually signal a serious problem, was not an inevitable, lifelong problem and could often be controlled by the individual (Symonds, Burton, Tillotson & Main, 1995). This information reduced extended sickness absence due to back pain by 60%.

For mental health problems too, the benefits of providing effective treatment in the workplace are clear. In a study reported by Rupp (1995), comprising a cooperative initiative between the NIMH and Washington Business Group on Health, it was noted that adequate treatment for mental illness reduced work loss days by 25% (McDonnell-Douglas Program, 1990). Similarly, greater economic savings are associated with specialist mental health treatment for depression as compared with treatment within the primary care sector, probably as a result of increased functional outcome of those given specialist treatment (Zhang, Rost & Fortney, 1999).

Preventative policies

Preventative policies aim to adjust workload (by improving job content, working conditions or industrial relations) or to increase individuals' capability to cope with stress (through training, education or health promotion packages). In a review of ninety-nine articles on the link between stress and absence, Manning & Osland (1989) found most to advocate the introduction of health promotion and stress management programmes to reduce sickness absence (see Kerr & Vos, 1993; also Long & Flood, 1993).

Health promotion interventions aim to promote healthy lifestyles through behavioural change. As the cost of sickness absence has risen, both for industry and the government, renewed interest has been taken in health promotion programmes (Peersman, Harden & Oliver, 1998). Indeed, the Health of the Nation white paper (Department of Health, 1992) emphasised the government's intent to set up a task force to examine and develop activity on health promotion in the workplace. Similarly, in the USA, the rising cost of health insurance to employers has increased the use of health promotion packages. Health promotion packages have the potential added advantage of having knock-on effects for the families of those involved in the programmes through dissemination of information (Faculty of Public Health Medicine, 1995).

Health promotion includes several components which aim to assess personal health habits and risk factors, increase awareness of health-related issues, advocate change in behaviour and incorporate a workplace environment that supports and encourages healthy choices, such as smoking bans, provision of healthy foods in canteens and exercise facilities (Peersman et al, 1998). Health

promotion activities may include only one of these components or several, and the form they take may range from posters to educational classes and individual health screening.

Effects on health

Due to differences in the components included in different health promotion packages, it is difficult to assess outcome in general terms. Peersman et al (1998) include an extensive review of 15 of these studies. Whilst some programmes note effectiveness in terms of decreasing risk behaviours associated with physical health problems, such as smoking, others found no effect. Similar conflicting findings are reported for decreasing alcohol intake, blood pressure, cholesterol level and for changing dietary habits and exercise behaviour.

Effects on absenteeism

Several studies have examined the effect of health promotion activity on absence rates, although few have included control groups with which to compare outcome (see Peersman et al, 1998). In a recent study from the Netherlands, a health promotion intervention that focused on improving the working environment and targeting health-related behaviours, was found to reduce absenteeism and improve perceptions of work conditions, when compared with a control factory (Maes, Verhoeven, Kittel & Scholten, 1998). However, it is unclear whether the effects of altering work conditions, the health promotion activity, or both, reduced absenteeism.

Similarly, several studies have found an effect of employee exercise programmes on absenteeism (see Kerr & Vos, 1993; also Daley & Parfit, 1996), with one suggesting a particularly beneficial effect on employees involved in physically demanding occupations (see Kerr & Vos, 1993). A number of possible factors could account for this. Kerr & Vos (1993) found exercise programmes to have positive effects on physical health, reported tension and absence. They also proposed an effect on employee motivation, suggesting that participation may improve employee relations, and/or increase an employee's perception of the company as one that is interested in employees' health and welfare.

Stress reduction programmes

Included in health promotion are stress prevention programs. Again, these programmes range from individual employee assistance, to stress management training and more general stress reduction strategies designed to impact on the total work population.

Early studies on the effect of stress management programs on absenteeism produced conflicting results and have been criticised for short-term evaluation periods and failure to include control groups (Murphy, 1988). In a more recent analysis of 10 such programs, the authors concluded that these programs not only reduced absenteeism but the benefits exceeded the costs of the interventions (Kompier, Guerts, Gruendemann, Vink & Smulders, 1998). Another study found that, whilst individual counselling was effective, programmes aimed at organisational level to change work conditions were not (Reynolds, 1997). This latter finding may be due to the limitations of the organisational approach taken.

Related to this is the importance of perceptions of stress by both management and employees. In one study examining what constituted work stress, authors found substantial differences between what managers and workers identified as work stress (Neale, Singer, Schwartz & Schwartz, 1982). Workers responses included lack of control over work content and process, unrealistic task demands, lack of understanding by supervisors and management, and lack of job security. By contrast, managers emphasised personality traits, lifestyle, interpersonal relationships and family problems as a key source of stress. This clearly implies a need for managers to actively listen to employees' perceptions of stress and its causes, if organisational interventions are to be effective.

Summary

The importance of absence control policies for sickness absence has increased linearly with rate of sickness absence, and has inspired interest at governmental level. Three types of absence control policy are advocated, with research showing positive effects of curative and preventative policies. Although inhibiting policies may be effective where positive reinforcement is used, they have the potential to increase absence rates if underlying causes of absence are not tackled. Several researchers have made clear the need for continued evaluation of absence control policies (Allegro & Veerman, 1998; Griffiths, 1998). Before concluding hypotheses to be tested, the history and current environment of Polaroid camera factory is outlined.

1.7 Polaroid camera factory

Development of the factory

The Polaroid camera factory was opened in 1965 and comprised of one division, employing approximately 250 workers in the production of instant film. The lens division was developed in 1974, producing lenses for sunglasses, shortly followed by the camera division. This division now specialises in the production of cameras for short-notice orders. In 1994, the industrial hardware division opened, producing equipment for commercial use.

Currently, the factory employs approximately 900-1000 workers, many of whom are on temporary contracts. Currently, over 75% of the workforce are employed in camera and film divisions. Camera is a predominantly female division, whilst film division employs 80% males. Present volume of output is estimated at 26 million packs of film, 4.5 million pocket film and 1.7 million cameras per year. The factory is strongly export oriented, with over 90% of production being exported to USA, Asia, Africa and Europe.

Change in job security

In 1990, Polaroid employed approximately 1,400 workers. Since this time, the number of employees has reduced. One of the main causes of this has been decline in the workforce of camera division, with a move of some camera production to the Far East. As shown in Table 1, the number of employees in the camera division has decreased substantially in the last three years. Although there also appears to have been a drop in the number of employees working in G&A, this reflects a move from centralised administration to divisional administration.

Table 1 – Number of employees working in Polaroid between 1996 and January 2000

Division	Number of employees				
	1996	1997	1998	1999	Jan 2000
Camera	723	740	593	370	348
Film	249	276	263	279	356
Industrial Hardware	52	65	84	85	86
Lens	46	59	58	58	48
G&A	182	110	79	71	72
Total	1252	1250	1077	863	910

Two phases of redundancy were carried out within the factory between December 1998 and March 1999, in which time 197 employees lost their jobs. Almost one half of these redundancies were from camera division (49.7%), with 28.9% from industrial hardware, 15% from film, 4% from lens and 2% from G&A. In the first phase, voluntary redundancies were sought, whilst in the second phase there was some compulsory redundancy, with poor time-keeping and high rates of sickness absence taken into consideration in this decision process.

History of sickness absence within the factory

Prior to 1980, any day of sickness absence within the factory required a medical certificate to be produced in order that employees were paid. In 1981, the factory introduced a new policy, allowing up to three days self-certification for sickness absence. In 1982, new government policy obliged employers to allow five working days self-certification for sickness absence. At this time, Polaroid studied the effects of this policy on sickness absence.

As shown in Table 2, sickness absence increased with the introduction of self-certification, particularly for absences of three days or less. In addition to this, there was a substantial increase in the number of employees taking frequent absences. This increased from one employee taking sickness absence four times in the six months prior to the introduction of self-certification, to fifty-one employees in the six-month period following its introduction. In this report it was also noted

that 75% of sickness absences were for a period of one week or less, and that 25% of employees who took sickness absence did so on more than three occasions in a six-month period.

Table 2 – Effects of introducing self-certification for sickness absence

		Days lost from 1-3 days absences (per month)	Days lost from 4-5 days absences (per month)
1980	- No self-certification allowed	24.0	129.0
1981	- 3 days self-certification allowed	203.2	101.7
1982	- 5 days self-certification allowed	181.5	131.7

Absence control policy

Inhibitory policy

The report on sickness absence rates concluded that some employees were abusing the system of self-certification, particularly those who took several 'short spells of absence'. This led to a new attempt to control absence. A system was introduced where total number of days multiplied by the number of spells of absence was used to calculate absence. For example, six two day spells of absence would be calculated as total days absent ($6 \times 2 = 12$), multiplied by the number of spells of absence (6), to give a total score ($12 \times 6 = 72$). Similarly, one 30 day spell plus another six day spell would be calculated as total days absent ($30 + 6 = 36$) multiplied by the number of spells (2) gives an identical total score ($36 \times 2 = 72$). Those with scores above a certain cut-off point, defined by arbitrary means, were disciplined. Although the two examples given result in the same score, in the first example an individual would need no medical certificate, whilst in the second they would need certificates in both cases.

Within the last two years, new disciplinary procedures have been based on the number of 'spells of absence' within a 12-month period. Where employees are absent on three occasions within the space of 12-months they are given a disciplinary warning that lasts for a 12-month period. If they have one further absence within this time they are given a second disciplinary warning, again

lasting 12 months. Absence within this period leads to a final warning, which lasts for eighteen months. In this policy, no consideration is taken as to the length of absence, nor to the production of a medical certificate: hence three single day absences are treated in the same way as three month-long absences. If employees are absent within this final time period, they can be dismissed. This can be appealed and, in fact, no employees have ever been dismissed for the reason of absence alone.

Curative policy

A curative policy operates within the factory. If employees are absent for three weeks or more, they are seen by the Occupational Health physician before returning to work. If the employee, their general practitioner or the Occupational Health physician states that the employee is not back to full fitness, a rehabilitation plan is worked out with the employee for a gradual return to work. This may include changes to an existing job, change to a new job or a reduced number of hours working.

Health promotion within the factory

Polaroid health promotion programme was developed in 1983 and was aimed, primarily, at improving employees' lifestyles with a view to reducing coronary heart disease (see Harper, Farrally, Emery, McGlew, Docherty & Russell, 1990; IRS Employment Trends, 1989). Another major aim was to reduce sickness absence. A health screening programme for all employees assessed physical health (e.g. blood pressure, cholesterol, lung function, aerobic fitness and body fat) and lifestyle (e.g. smoking habits, alcohol and dietary intake). It also gave information on changes in lifestyle that would optimise physical health. 87% of employees participated in this programme in 1987-1988.

In addition to this, several changes were made at the organisational level. Dieticians were employed to give advice on nutrition, and healthy food options were introduced to the canteen. A no-smoking policy was introduced to the factory in 1988, following agreement from 86% of employees for limiting permissible smoking areas in the factory. An exercise room was opened within the factory, the sports and social club was developed, and the factory sponsored local 10K races. A psychologist was also employed to assess stress levels within the factory, and stress

awareness and relaxation programmes were introduced. In 1994-95, eight employees were trained in counselling and gained certificates in Counselling Practice from the University of Strathclyde.

Effects of the health promotion campaign

Cholesterol is a known risk factor for coronary heart disease (Harper et al, 1990). Those employees who had high levels of cholesterol (at that time >6.5 mM) were given dietary advice and recalled for testing at one month intervals. There was a reduction in cholesterol in over four fifths of those with high cholesterol levels following re-assessment and follow-up advice (Harper et al, 1990), with 50% reducing to levels of less than 6.5 mM. Similarly, dietary changes in the factory were observed, for example, a 30% reduction in consumption of chips.

Absence rates were also observed to decrease from a 6% average from 1982-1985 to a 4.3% average from 1986-1989 (IRS Employment Trends, 1989). Whether this was due, however, to the health promotion campaign is unclear, as an inhibitory control policy was introduced within this time, which identified the worst 10% of 'time losers' and gave either verbal or written warnings to them.

Recent trends in sickness absence and reasons for absence

Within the last four years, absence data have been collated for employees in each division of the factory, of which data for camera and film divisions are shown in Table 3. As can be seen from the table, absence rates are substantially higher in camera than in film, particularly for 1999, following substantial redundancies in this division.

Two of the largest contributors to the number of days lost to absence sickness in the last four years in camera division have been mental health problems and musculoskeletal problems (see Table 3). These two conditions contribute approximately 44% of sickness absence in the last four years in camera, and 29% in film division. In 1998, it was estimated that in camera division alone, the direct cost of time lost due to absence sickness was £177,888. Of this cost, £44,294 was due to mental health problems, with a further £34,332 due to musculoskeletal problems. In 1999, for the

same rate of pay, the direct cost of sickness absence in camera division was £227,088, of which £53,139 was due to mental health problems and £69,960 due to musculoskeletal disorders.

Table 3 – Number of employees in each division

Division	Year			
	1996	1997	1998	1999
Camera				
Average no. of days absence per employee	8.2	6.5	6.2	12.8
% of days lost due to mental health	23.2	17.2	24.9	23.4
% of days lost due to musculoskeletal	23.6	15.9	19.3	29.5
Film				
Average no. of days absence per employee	3.5	4.7	3.8	4.7
% of days lost due to mental health	10.4	9.4	18.4	24.9
% of days lost due to musculoskeletal	12.0	15.6	10.7	13.8

Summary

The Polaroid factory employed approximately 900 staff at the time of this study. Of divisions within the factory, film and camera account for over 75% of the working population. Large redundancies have occurred in the two years prior to this study, of which the majority were from camera division, a division predominantly employing female assembly line workers. In line with the literature, sickness absence rates are higher in the division most under threat of redundancy. Musculoskeletal conditions and mental health problems have accounted for just under half of all sickness absence over the last four years, again in line with the literature outlined above.

1.8 Conclusion

Sickness absence remains a controversial term that encompasses both illness and illness behaviour. What is evident is that sickness absence bears a substantial cost for individuals, industry and the NHS. Mental health and musculoskeletal disorders appear to be particularly prevalent problems

A number of factors have been associated increased risk of sickness absence. Several of these appear inextricably linked, in particular socio-economic status, work characteristics and health-related behaviours. Although stress models of sickness absence have suggested possible explanations for these relationships, particularly in relation to the relatively high sickness absence rates in manual grade workers, most have focused on stress at work, without assessing the impact of home-related stress on sickness absence. Similarly, few take account of the potentially major effects of absence control policies on sickness absence rates, nor do they include the potential impact of stress at an organisational level, as regards the performance of management and its effect on sickness absence.

1.9 Aims and hypotheses

The aim of this research was to examine predictors of absenteeism in one industrial workplace, the Polaroid camera factory in Dunbartonshire, Scotland. This study also aimed to assess the impact on sickness absence rates of participation in a health screening programme. Finally, employee views as to how to increase enjoyment and motivation at work were sought. From the review of literature outlined above, it was hypothesised that:

1. Physical and psychological well-being will predict sickness absence.
2. Musculoskeletal conditions and mental health problems will constitute a substantial proportion of days lost due to sickness absence.
3. Sickness absence rates will be higher in females as compared with males. Females will be more likely to take sickness absence for mental health problems than will males.
4. Sickness absence rates will be highest in camera division, where there is a threat of redundancy.
5. There will be an inverse correlation between grade of employment and sickness absence.
6. Attitudes towards work will predict sickness absence, with low job control and high job demand being associated with increased rates of sickness absence.
7. Sickness absence rates will be higher in smokers, those drinking either no alcohol or excessive quantities of alcohol, and in those with low levels of aerobic fitness.
8. Sickness absence will be influenced by social support, both within and outwith the workplace.
9. Participation in a health screening programme will be associated with decreased sickness absence.

These hypotheses are explored in relation to stress models of sickness absence.

2 METHOD

Overview

The initial design plan was to assess factors predicting sickness absence by including a self-completion questionnaire within a health screening procedure, which was ongoing as a part of a health promotion programme in the factory. Due to changes within the factory which affected the health screening service, changes in design of the study were made, as outlined below.

2.1 Design

Phase 1

As part of a service provided by the Occupational Health Department within the factory, all workers were offered health screening from April 1998 onwards. 140 employees had health screenings completed before this study started. Permission was sought to include self-completion questionnaires relating to mental health, quality of life, social support and attitudes towards work within time given to the health screening.

Training sessions in how to complete health screenings on employees were given to me by the occupational health nurse. From January-April 1999, I carried out health screenings for 77 subjects. At this time point, the plan was that the Occupational Health nurse complete health screenings for the remaining employees within the factory. Unfortunately, changes within the factory led to a halt in health screenings from April 1999. This halt was caused by the increase in workforce in film division, with a concomitant increase in demand for hearing tests, provided as a mandatory service by the Occupational Health Department for health and safety reasons.

Permission was, therefore, requested to carry out health screenings within the factory in January 2000 without the involvement of occupational health nurse. This was initially given but then declined because, due to high absence rates, workers could not be allowed time off work for health screenings without jeopardising the functioning of assembly lines.

Phase 2

Permission was granted for questionnaires to be given out within the factory to approximately 50% of the workforce, half of whom had completed a health screening and half of whom had not. This sample was chosen in order to assess whether inclusion in health screening had any long-term effects on attitudes towards work, physical and psychological health, or sickness absence rates.

2.2 Participants

Participants recruited to this study were all employees of the Polaroid camera factory, which is based in the Vale of Leven, Dunbartonshire. At the time of this study starting, 910 were employed within the factory. Absence records were available for 810 employees who worked in the factory from August 1999 to June 2000. A total of 280 employees participated in health screenings and 166 completed health at work questionnaires, which asked about quality of life, social support, mental health and attitudes towards work.

2.3 Measures

Demographic data

Information regarding age, gender, marital status, grade of employment, division of employment and length of service was gained from the computerised database in the factory. Start dates and leave dates for employees enabled information to be gained on the number of employees working within the factory over the time period examined.

Sickness absence records

Computerised data were available for absences due to sickness for all employees from August 1999. Days of absence for each week were available for each employee. Absence was categorised into the total number of days for each period of absence. It was then further divided into short spells of absence (5 working days or less), which could be self-certified, and long spells of absence, involving more than 5 working days of absence, for which a medical certificate was required

Reasons for each spell of absence were coded using 15 categories. These were further collapsed into six categories, as outlined in Table 1.

Table 1 – Reasons for sickness absence

Category	Reasons included within category
1. Infection/virus	Infectious disease (e.g. measles, chicken pox) Respiratory infection/virus (e.g. tonsillitis, sinusitis, chest infection) Digestive infection/virus (e.g. stomach bug, diahorrea) Genito-urinary infection
2. Medical condition	Endocrine disorder (e.g. asthma, thyroid, diabetes) Blood disorder (e.g. anaemia) Nervous system disorder (e.g. epilepsy, migraine) Skin disorder (e.g. eczema) Cardiac problem Pregnancy-related illness Medical investigation
3. Accident	Accident within the factory, or at home (e.g. lacerations, orthopaedic injury)
4. Musculoskeletal	Back and neck pain, sciatica, repetitive strain injury
5. Mental health	Depression, nervous disability
6. Cancer¹	Cancer

Health at work questionnaire

Questions relating to psychological well-being, quality of life, social support and attitudes towards work were included in a Health at Work questionnaire, comprising 81 questions (see Appendix 1). All items were taken from validated questionnaires, described below. Two open-ended questions were also included, asking what employees thought would make work more enjoyable and what would increase motivation.

¹ Cancer was not included in the medical condition category due to the unusually prolonged length of sickness absence associated with this illness.

Social support - Significant Other Scale

A short-form of the Significant Others Scale was used to assess social support (Power, Champion & Aris, 1988). It contains 8 questions relating to ideal and actual support from a chosen person and gives two measures of support: practical support and emotional support. Ratings are made on an eight-point scale from 0-7. Scores are derived for actual and ideal levels of support, as well as the discrepancy between these. Analysis of this questionnaire for up to seven chosen individuals has been found to have good reliability and validity (Power et al, 1988).

Psychological Health

The Hospital Anxiety and Depression scale (HADS) was used to assess mood (Zigmond & Snaith, 1983). It contains 14 multiple choice questions rated on a four point scale from 0-3, yielding 2 mood measures, anxiety and depression, both with a score range of 0-21. Scores of <7 indicate no significant levels of anxiety or depression, scores of 8-10 indicate borderline levels and scores of >10 indicate significant levels of anxiety and depression. As items referring to symptoms that may have a physical cause are not included in the scale (i.e. insomnia and weight loss), the HADS is considered to be unbiased by coexisting medical conditions (Snaith, 1987). Scores for anxiety and depression have been found to be highly correlated (Spinhoven et al, 1997).

Attitudes towards work

Work characteristics were measured using a questionnaire designed by Stansfeld et al (e.g. Stansfeld, Bosma, Hemingway & Marmot, 1998b), which is based on the job strain model developed by Karasek & Theorell (1990). 33 questions, measured on a scale from 1-4, are included to measure four work characteristics: job demands, work social support, skill discretion and decision authority, the latter two of which may be combined to produce a measure of decision latitude. Overall work satisfaction is also included in the scale. Job demands assess pace of work and conflicting demands made on employees. Work social support includes support from colleagues and supervisors and consistency and clarity of information from supervisors. Decision authority measures control over work, whilst skill discretion measures job variety and opportunity for use of skills at work. These scales have been found to have good internal reliability (Stansfeld et al, 1998b).

Quality of Life

The World Health Organisation quality of life assessment (WHOQOL-BREF) was used to measure quality of life. This consists of 26 items covering four domains: physical, psychological, social and environmental. It is a subjective measure, reflecting an individual's view of their quality of life in relation to their expectations and values. It is well standardised and validated (The WHOQOL group, 1998a, 1998b). Items covered within each of the domains are shown in Table 2.

Table 2 – Items included in the WHOQOL-BREF domains

Domain	Items incorporated within the domain
Physical	Pain, sleep, energy, mobility, activities of daily living, dependence on medication, work capacity
Psychological	Positive feelings, cognition, self-esteem, body image, negative feelings, personal beliefs
Social relationships	Personal relationships, social support, sexual activity
Environment	Physical safety, home environment, financial resources, access to health care, access to new information and skills, leisure opportunities, physical environment and transport.

Health screening

The health screening programme was developed in 1987 as part of a health promotion project running within Polaroid. It included 38 questions that assessed general health and fitness (see Appendix 2). Within the health screening, cholesterol, blood pressure, fitness level and percentage body fat were measured. Dietary intake, alcohol intake and smoking status were also assessed, and information taken on extent of regular exercise.

Blood cholesterol was measured using serum samples. A dry chemistry analyser (Reflotron), calibrated at regular intervals to ensure accuracy as described by Seftel et al (1988), gave readings at three minutes so subjects could be informed immediately of the result. Cholesterol was measured in micromoles per litre. Accuracy of data was subject to further quality control by an independent laboratory, which proved accuracy to within 0.5 micromoles per litre. Cholesterol

level was split into three categories as follows: <4.7 mmol/litre = low, 4.7-5.4 mmol/litre = medium, ≥ 5.5 mmol/litre = high.

Blood pressure was measured using a Sphygmomanometer. Systolic blood pressure measures maximum pressure in arterial system as the heart pumps, whilst diastolic pressure indicates resting pressure in arterial system.

Aerobic fitness was assessed using a modification of the sub-maximal cycle ergometry procedure (Astrand, 1960). Optimum heart rate for exercising was calculated based on age of the subject. Subjects were then asked to cycle at a constant, predetermined speed for a period of six minutes, during which time weight loads were added to the cycle in order to increase heart rate to optimum exercise level. Aerobic fitness was calculated, taking into account the age, weight and gender of the subject and the weight load required to be added to increase heart rate to optimum level. Fitness was split into four categories: low, average, good and excellent.

Percentage body fat was assessed by measuring skin folds at four different sites: biceps, triceps, sub scapula and suprailiac, as described by Durnin & Womersley (1974).

Dietary intake

Dietary intake was assessed using the National Advisory Committee on Nutrition Education Guidelines (1983). Food categories were weighted by a dietician to produce a measure of health of dietary intake on a scale of 0-110 (see Appendix 1 for weighting system), and were further categorised into four levels: poor, adequate, good and excellent (National Advisory Committee on Nutrition Education Guidelines, 1983).

Alcohol intake

Alcohol intake was assessed in units of alcohol consumed per week. Intake was classified, based on ranges used based on the Whitehall study (Marmot, North, Feeney & Head, 1993), as shown in Table 3.

Table 3 – Categories used for alcohol intake (units per week).

	Males	Females
None	0 units	0 units
Light/social	1-15 units	1-10 units
Moderate	16-29 units	11-20 units
Heavy	30+ units	21+ units

2.4 Procedure

Phase 1

Subjects were requested to come for health screening by the occupational health nurse within the factory. Health screening took approximately 45 minutes to complete. Subjects were asked if they would be willing to complete a questionnaire regarding their attitudes towards work, quality of life, and social support. Subjects completed this questionnaire immediately after health screening and returned it, in a sealed envelope, to the researcher. 73 of 77 subjects who completed health screening returned the questionnaire.

Phase 2

All subjects who had completed health screenings were given out questionnaires within the factory, along with a matched sample of subjects who had not completed the health screening (n=420). For those workers who were employed on assembly lines, questionnaires were given to supervisors to hand out. Subjects were asked to return the questionnaire via the internal mail system to the Occupational Health department, in a sealed envelope provided, which was addressed to the researcher.

2.5 Statistical analysis

Statistical analyses were carried out using SPSS Version 9. Data were screened for normal distribution. All variables were found to have normal distribution with the exception of absence data, which was negatively skewed. Examination of differences between groups for nominal variables (e.g. grade of employment, absence spells, gender, division of work) were assessed using Chi square tests. Differences in age, length of service, total days of absence taken and responses to the Health at Work questionnaire were assessed using one-way analysis of variance. Post-hoc comparisons were carried out using Sheffe tests. Pearson r correlations were calculated to evaluate associations between indices of health and health-related behaviours and between variables included in the health at work questionnaire. Bonferroni corrections were calculated in order to control for multiple comparisons.

Multinomial logistic regression was used to assess which health-related behaviours and physical health indices predicted taking short or long spells of absence. Multiple regression analysis was used to assess factors from the health at work questionnaire predicting sickness absence.

Content analysis

Content analysis was used to analyse open-ended questions regarding what employees thought would increase their motivation and enjoyment of work. An initial coding scheme was proposed, based on 9 categories (increase in pay, greater variety/challenge in job, positive communication from superiors, less pressure to perform, improvement in physical work conditions, resolution of conflict with colleagues, job security, don't know/ other, no response given). Reliability of this coding was tested, using guidelines set by Krippendorff (1980), as follows. An independent coder tested the initial coding scheme, based on 9 categories. For purposes of analysis, where two answers were given, the first answer was taken as the predominant reason given. Inter-rater reliability of 0.94 was found, which is well-above the accepted limit of 0.8 (Coolican, 1995; Krippendorff, 1980). For further analysis, these 9 categories were reduced to 3: the two most commonly endorsed categories, pay and positive communication from superiors were kept as separate categories, collapsing all other categories into a third category of 'other'. An independent coder checked this new coding scheme.

3 RESULTS

Overview

The following results are split into eight sections. The first section outlines the general characteristics of the workforce who were employed in the ten-month period from August 1999 to June 2000. The second section includes analysis of overall absence rates and reasons for absence, whilst the third section examines demographic characteristics predicting absence. Section four looks at physical health and health-related behaviours in terms of predicting sickness absence. Section five includes analysis of the health at work questionnaire: it examines the interrelationships amongst quality of life, social support, mental health and attitudes towards work and looks at which of these factors predict sickness absence. Incidence of mental health problems within the sample population is also examined. The final three sections examine potential effects of both the inhibitory absence policy and the health screening on sickness absence rates, and look at employees' views on how motivation at work might be increased.

3.1 General characteristics of the sample population

The factory employs a substantial number of workers on a temporary basis, offering contracts ranging from 3 days upwards. Of the 1100 workers employed within the factory between August 1999 and June 2000, absence data for the ten-month period were available for 810 employees. Those who were employed after August 1999 ($n=150$), who left before June 2000 ($n=97$), or both ($n=43$), are not included in the analyses.

Of the 810 employees included in the analysis, 439 (54.2%) were male and 371 (45.8%) female. The mean age of employee was 40.6 ± 9.9 years (range=18-64), with average length of service 150.4 ± 106.2 months (range 6-407 months). As can be seen from Table 1, almost two thirds of the sample population were aged between 35-54 years, with approximately three quarters having an employment history of five years or more. 67% of employees were married, 37.4% single and the remaining 5.6% separated, divorced or widowed.

Camera and film divisions employ over three quarters of the working population (see Table 1). 96% ($n=780$) of the workforce worked full-time, with 15.2% working in a professional/managerial capacity, 20.1% as administrator/supervisors and 64.7% as manual workers. There were observable gender differences in grade of employee with significantly

fewer females employed in a professional/managerial capacity ($X^2=63.0$, $df=2$, $p<.0001$, see Table 1).

Table 1 – General characteristics of the sample population

Age	%	Length serv.	%	Division	%	Grade	%	% female in each grade
18-24	3.8	< 1 year	9.1	Camera	41.5	Prof./man.	15.2	13.8
25-34	28.0	1 –5 years	16.5	Film	36.7	Admin/sup.	20.1	45.4
35-44	30.9	5-10 years	26.4	Ind. H.	8.8	Manual	67.4	53.4
45-54	30.5	> 10 years	47.9	G&A	7.8			
55-64	6.8			Lens	5.3			

Differences in employee characteristics for different divisions

There were significant differences in gender ratios within departments ($X^2=134.0$, $df=4$, $p<.0001$, see Table 2). Females were less likely to be employed in the film department and more likely to be employed in camera and lens divisions. Similarly, there were differences in grade of employee, with G&A employing a significantly smaller proportion of manual workers than other divisions ($X^2=115.8$, $df=8$, $p<.0001$, see Table 2). Difference in age of workers between divisions was observed, with camera and G&A workers slightly older than other divisions ($F=4.5$, $df=4,805$, $p<.0001$, see Table 2).

Differences in terms of average length of service were also apparent, with camera workers having significantly longer service than all divisions with the exception of G&A ($F=11.8$, $df=4,805$, $p<.0001$, see Table 2). 22.2% of the film workforce had been employed within the previous 12 months, as compared with no new employees in the camera and lens divisions and only 4.8% and 4.2% in G&A and industrial hardware divisions, respectively. Hence, over 90% of new intake in the previous year was to the film division. This reflects a change in the structure of the factory, with a decline in investment in the camera division as some production moves to East Asia and an increase in investment in the film division, with development of a new 'pocket film'.

Table 2 - Characteristics of workers within different divisions of the factory

	Camera (n=336)	Film (n=297)	Ind. H. (n=71)	Lens (n=43)	G&A (n=63)
% Female	64.6	19.1	53.5	60.5	50.2
% Male	35.4	80.9	46.5	39.5	49.8
% Prof	11.0	12.5	33.8	14.0	30.2
% Admin/Sup.	12.5	22.2	14.1	23.3	55.6
% Manual	76.5	65.3	52.1	62.8	14.3
Age	41.8 ± 8.1	39.4 ± 11.2	38.4 ± 8.7	38.9 ± 10.0	42.6 ± 9.6
Length serv.	172.0 ± 85.4	143.4 ± 125.1	94.3 ± 88.3	102.6 ± 82.7	163.6 ± 106.7

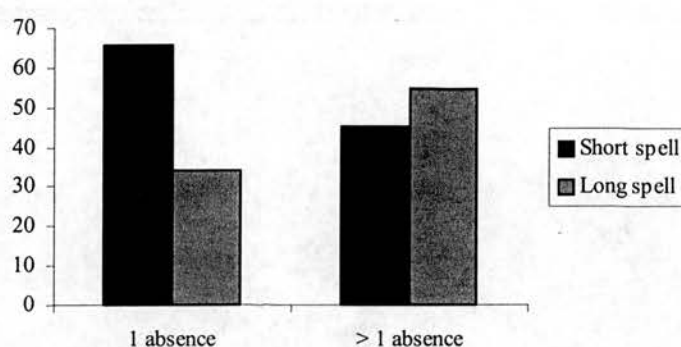
Summary

The sample population comprises a largely middle-aged cohort with a relatively long employment history. Camera and film divisions employ around three quarters of the total workforce. Film division is predominantly male, with a large new workforce. By contrast, camera division employs a greater proportion of female staff, with no new intake of employees in the last year.

3.2 Incidence of sickness absence and reasons for absence

Absence rates were examined for all workers who had been employed within the factory for the ten-month period between August 1999 and June 2000 (n=810). Seven employees were absent due to maternity leave within this period and are not therefore included in this analysis.

Just less than one half of the factory (45.7%, n=363) took sickness absence within the ten month period examined. There were a total of 453 spells of sickness absence, with 5313 days lost due to this (see Table 3). Of those workers who took absence, 61.2% were absent for short spells (\leq 5 working days) and the remaining 38.8% for long spells, requiring a medical certificate. 76.9% of those taking sickness absence were absent on one occasion in the last six months, 21.5% on two occasions and only 1.7% (n=6) on three occasions. Long spells of absence were more likely to be taken by those who were absent on more than one occasion ($X^2=11.7$, $df=2$, $p<.001$, see Figure 1).

Figure 1 – Percentage of employees taking short and long spells of absence*Reasons for absence*

Reasons for absence were split into six categories: infection/virus (e.g. chest infection, tonsillitis, stomach upset, sinusitis), medical condition (e.g. asthma, diabetes, thyroid, epilepsy, anaemia, migraine, eczema, cardiac), accident, musculoskeletal disorders (e.g. back pain, sciatica, repetitive strain injury, neck pain), mental health problems (e.g. anxiety, depression) and cancer. As shown in Table 3, infection/virus accounted for approximately two thirds of the number of absence spells, with medical conditions accounting for 13%, mental health problems and musculoskeletal disorders accounting for around 9% each, accidents for 6% and cancer contributing less than one percent.

Table 3 – Reasons for all spells of sickness absence

Reason	No. of absences	% of total absences	Days lost to absence	Days lost as a % of total	% females absent	Mean no. days \pm s.d.
Infection/virus	278	61.4	1255	23.6	48.6	4.5 \pm 7.6
Medical cond.	59	13.0	887	16.7	61.0	15.0 \pm 19.3
Accident	28	6.2	378	7.1	57.0	13.5 \pm 16.6
Musculoskeletal	43	9.5	1149	21.6	62.8	26.7 \pm 41.9
Mental health	42	9.3	1364	25.7	83.3	32.5 \pm 38.9
Cancer	3	0.6	280	5.3	33.3	93.3 \pm 39.5
Total	453		5313			11.7 \pm 23.4

Although infection/virus accounted for around two thirds of the number absence spells, it contributed only one quarter of days lost due to absence. This is due to it being associated with significantly shorter absences than all categories other than accident ($F=26.3$, $df=4,445$, $p<.0001$)¹, with only 15% of cases requiring long spells of absence. By contrast, mental health problems required an average of 32.5 days absence, with musculoskeletal disorders having average length of absence of 26.5 days. Although mental health problems accounted for less than 10% absence, they contributed to over one quarter of total number of days lost through sickness (see Table 3). So too, musculoskeletal disorders accounted for approximately 22% of days lost due to sickness absence, although they accounted for less than 10% of spells of absence. This highlights the high cost of mental health problems and musculoskeletal disorders, despite the relatively small number of employees who take absence for these reasons.

Gender differences in reasons for absence

There were significant gender differences in terms of reasons for absence, with 83% of those absent due to mental health problems being female ($X^2=20.3$, $df=4$, $p<.002$ for all absences, see Table 3). By contrast, musculoskeletal disorders and medical conditions were only slightly more prevalent in females than in males, with infection/virus showing no gender difference.

Summary

Just less than one half of the factory workforce took sickness absence within the ten-month period examined. Two thirds of absence was for short spells of absence. Although mental health and musculoskeletal disorders accounted for less than 20% of all absence spells, they contributed almost half of days lost due to sickness, highlighting the significant cost to industry of absence due to mental health and musculoskeletal problems.

¹ Cancer was not included in the statistical analysis due to small n.

3.3 Demographic predictors of sickness absence

Nominal logistic regression analysis was carried out to determine demographic factors predicting absenteeism: age, length of service², grade of employee, division of work and gender were included as variables. Of these, gender and grade were found to be significant predictors of absenteeism ($X^2=27.3$, $df=2$, $p<.0001$ ³ and $X^2=28.3$, $df=4$, $p<.0001$, respectively), with division of work just failing to reach significance ($X^2=14.9$, $df=8$, $p=.06$). These three variables are examined in further detail in the following section. Marital status is also examined separately, as previous findings note a gender difference in effect of marital status on absence.

Grade of employee

Absence rates showed a linear association with grade of employee ($X^2=39.4$, $df=4$, $p<.0001$, see Table 4). Manual workers were more likely to take absence than supervisor/administrators, who in turn were more likely to take absence than professionals/managers. The difference in likelihood of taking long spells of absence is particularly striking, with manual workers more than four times as likely to take long spells of absence than professional/managerial workers. These differences held when male and female employees were examined separately ($X^2=14.2$, $df=4$, $p<.01$ and $X^2=13.4$, $df=4$, $p<.01$, respectively, see Table 4).

Gender differences

Absence rates between males and females were found to differ ($X^2=54.2$, $df=2$, $p<.0001$). As can be seen from Table 4, 54.1% of females took sickness absence within the period examined, as compared with 37.8% of males. Although females were no more likely than males to take short spells of absence, they were more than three times as likely to take long spells of absence.

As females worked predominantly in manual grade level, each grade of employment was examined separately, to control for possible confounding effects of grade of employment. Gender differences were observable for manual grade workers ($X^2=35.0$, $df=2$, $p<.0001$, see Table 4), with females almost three times more likely to take long spells of absence than males.

² For this analysis categories for age and length of service were included as shown in Table 1.

These differences failed to reach significance for administrator/supervisor grade ($X^2=5.2$, $df=2$, $p<.08$), although a similar trend is observable. No effect of gender on absence was evident in professional/managerial grade workers, although small cell numbers here preclude any conclusions. Hence, gender differences in sickness absence do not simply reflect gender differences in employment grade.

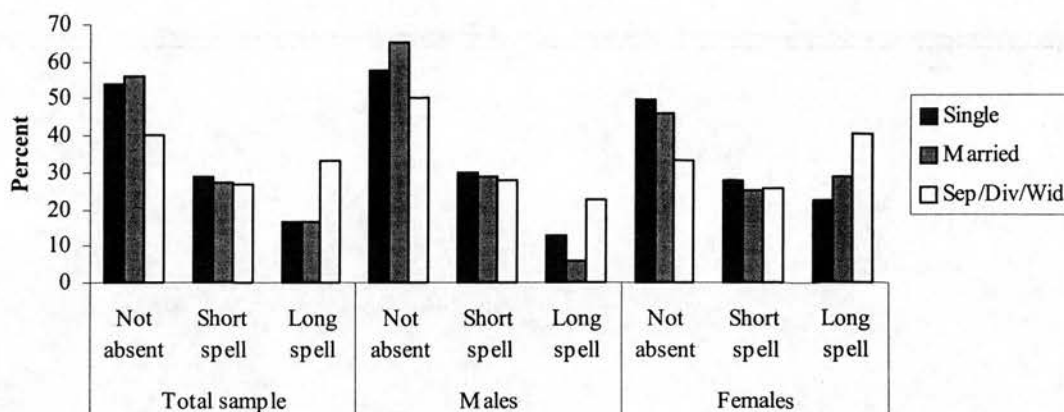
Table 4 – Absence rates for each grade of employee given as percentage of population

	Total sample (n=803)			Males (n=439)			Females (n=364)		
	Not absent	Short spell	Long spell	Not absent	Short spell	Long spell	Not absent	Short spell	Long spell
Prof/man (n=123)	74.8	19.5	5.7	75.5	18.9	5.7	70.6	23.5	5.9
Admin/sup. (n=162)	60.5	29.0	10.5	65.2	29.2	5.6	54.8	28.8	16.4
Manual (n=518)	48.3	29.2	22.6	55.3	33.6	11.1	42.0	25.2	32.8
Total	54.8	27.6	17.6	62.2	29.1	8.7	45.9	25.8	28.3

Marital status

Overall differences in absence based on marital status just failed to reach significance ($X^2=9.0$, $df=4$, $p=.06$), with a tendency for separated/divorced or widowed individuals to be more likely than others to take long spells of absence (see Figure 2). Significant differences were, however, found for males. As predicted from previous literature, married males were found to have lower rates of long term absence than either single, or separated/divorced/widowed males ($X^2=9.6$, $df=4$, $p<.05$), being half as likely as single males to take long spells of absence and less than one third as likely as separated/divorced or widowed males (see Figure 2). By contrast, no significant differences were noted in females, based on marital status ($X^2=4.0$, $df=4$, ns).

³ The chi-square statistic is the difference in log-likelihood between the model specified and a reduced model (i.e. removing a variable) and is the best criterion for deciding which variables are to be removed from the equation.

Figure 2 - Differences in absence rates based on marital status, given as percentages*Division of work*

Significant differences in absence rates were found amongst divisions ($X^2=29.7$, $df=8$, $p<.0001$, see Table 5). Lens division had a high incidence of short spell absences whilst camera had a high rate of long spells of absence in comparison to other divisions. Differences in lens division apply to both males and females. The latter finding regarding long spells of absence in camera division, however, appears valid only for female workers. Differences in absence rates amongst divisions reached statistical significance for females when analysed alone ($X^2=16.0$, $df=8$, $p<.05$). This can be explained both by the high incidence of short spells of absence in lens division workers and by the high incidence of long spells of absence in camera workers. Indeed, over one third of the female workforce in camera division took long spells of absence in the ten month period examined.

Table 5 - Absence rates in each division of the factory given as percentages

	Total sample (n=803)			Males (n=439)			Females (n=364)		
	Not absent (n=440)	Short spell (n=222)	Long spell (n=141)	Not absent (n=273)	Short spell (n=128)	Long spell (n=38)	Not absent (n=167)	Short spell (n=94)	Long spell (n=103)
Camera (n=331)	49.5	26.3	24.2	61.3	32.8	5.9	42.9	22.6	34.4
Film (n=296)	63.2	25.3	11.5	63.9	25.6	10.5	60.3	24.1	15.5
IH (n=70)	47.1	32.9	20.0	48.5	39.4	12.1	45.9	27.0	27.0
Lens (n=43)	41.9	41.9	16.3	47.1	41.2	11.8	38.5	42.3	19.2
G&A (n=63)	60.3	30.2	9.5	75.0	25.0	0	45.2	35.5	19.4
Total	54.8	27.6	17.6	62.2	29.2	8.7	45.9	25.8	28.3

Summary

For demographic characteristics, gender and grade of employment predicted rates of absence, with division of employment just failing to reach significance. Females were more likely to take absence and were more likely to take long spells of absence than were males. Marital status was protective for males, with married males less likely to take long spells of absence than either single, or separated/divorced or widowed males. A linear association was observed between grade of employment and absence, with manual workers most likely to take absence and over four times as likely to take long spells of absence than professional/managerial grade employees. In terms of division, almost one third of female camera workers, whose jobs are most at threat of redundancy, took long-term sickness absence within the ten month period examined.

3.4 Physical health and health-related behaviours

General characteristics

280 employees participated in health screening between March 1998 and May 1999, of which 213 employees have absence data available for the ten-month period examined. General findings in terms of overall health and health-related behaviours are shown in Table 6. As can be seen, 87% of the sample consumed alcohol, 28% were current smokers, and 22% had below average levels of fitness, with 26% taking regular exercise less than once a week. Only one half of respondents described good or excellent dietary intake, with half measured as having excess body fat, and just over one third as having cholesterol levels above the recommended level of 5.5 Mmol/L (see Table 6). Of this sample, 43.2% took sickness absence within the ten month period examined, which is comparable with the total sample population examined (see Tables 4 and 6 for comparisons of absence data).

Table 6 - Percentage of subjects falling into each category for physical fitness indices and health-related behaviours as measured during health screening

Fitness rating (n=202)		Frequency of exercise (n=213)	
Low	21.8	Less than weekly	26.3
Average	38.1	Once a week	10.3
Good	26.7	2-3 times a week	63.4
Excellent	13.4		
Alcohol intake (n=213)		Diet (n=212)	
None	12.7	Poor	15.1
Light/social	53.5	Fair	33.0
Moderate	27.2	Good	35.8
Heavy	6.6	Excellent	16.0
Diastolic BP (n=212)		Systolic BP (n=212)	
≥ 85	15.6	≥ 135	14.2
70-84	67.5	> 100 -134	76.9
<70	17.0	≤ 100	9.0
Cholesterol (n=208)		Smoking (n=212)	
< 4.7 Mmol/l	27.9	Yes	28.3
4.7-5.4 Mmol/l	36.1	No	71.7
≥ 5.5	36.1		
% body fat (n=210)		Absence (n=213)	
High	58.6	Not absent	56.8
Medium	30.0	Short spell of absence	26.8
Low	11.4	Long spell of absence	16.4

Relationship between health indices and health-related behaviours

Relationships between physical indices of health and health-related behaviours are shown in Table 7 (n=186)⁴. High levels of fitness were associated with lower levels of body fat and increased frequency of physical activity, which in turn was associated with healthier dietary intake. Percentage body fat showed a positive correlation with systolic blood pressure. No significant association was observed between cholesterol levels and dietary intake, or between healthy eating and percentage body fat, although this may reflect bias in recall.

⁴ Actual measures, rather than categories, were used to compute correlations.

Table 7 - Relationships between indices of physical health and health-related behaviours (* $p < .05$, ** $p < .01$, *** $p < .001$. Significance level of $p < .001$ was used to control for multiple comparisons. Partial correlations were used to control for the effects of age and sex).

	Systolic BP	Diastolic BP	% body fat	Cholest.	Fitness rating	Alcohol intake	Diet	Exercise
Diastolic	.62***							
% body fat	.24***	.23**						
Cholest.	.11	.08	.11					
Fitness	-.11	-.22**	-.35***	-.01				
Alcohol	.06	.07	-.01	.05	.01			
Diet	0	-.15*	-.03	-.10	.23**	-.16		
Exercise	-.18*	-.20**	-.13	-.02	.29***	.05	.24***	
Cigarettes	.20**	.11	-.14	-.03	.06	.18**	-.11	-.13

Factors predicting sickness absence

Multinomial logistic regression analysis was carried out to determine which physical health indices and health-related behaviours determined likelihood of taking long or short spells of absence. Grade of employment and gender were also included as variables.

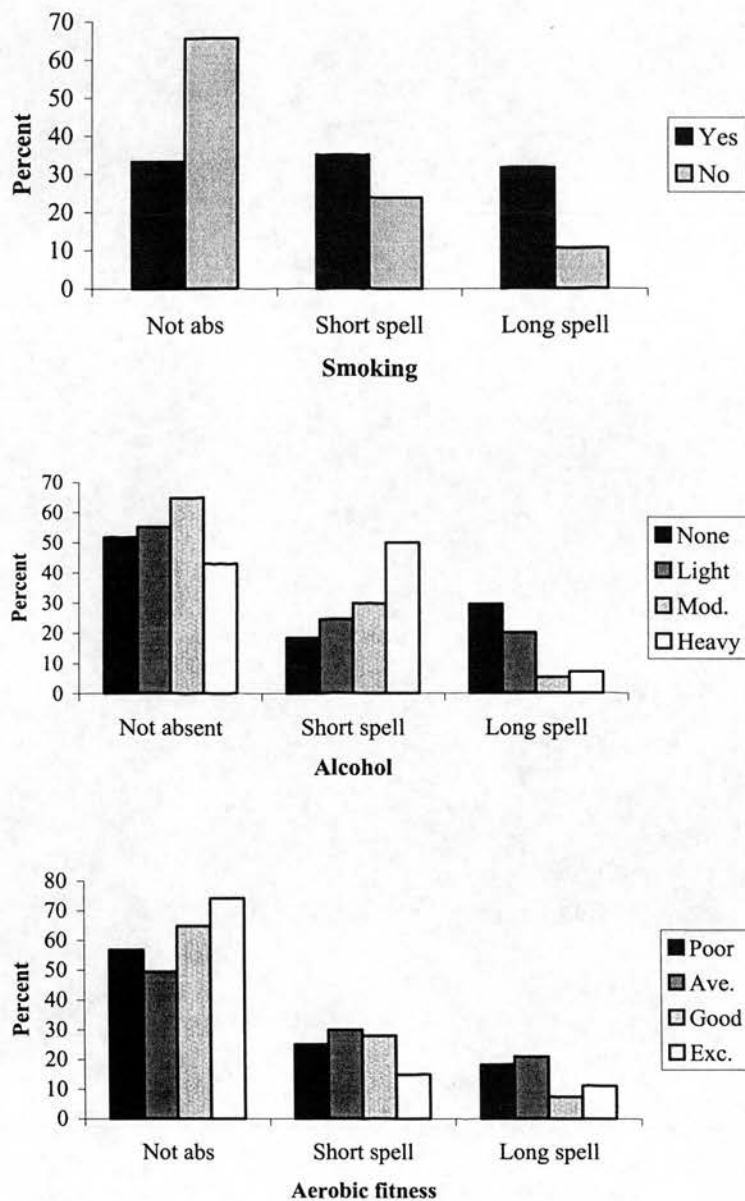
Smoking and alcohol consumption had clear effects on predicting absenteeism ($X^2=15.8$, $df=2$, $p < .0001$ and $X^2=12.9$, $df=6$, $p < .05$, respectively). Fitness rating also significantly predicted absence, but interestingly it only remained a significant predictor of absence whilst diastolic blood pressure and cholesterol level were included in the model ($X^2=12.7$, $df=6$, $p < .05$). This implies a complex relationship between fitness level and sickness absence, which is dependent on taking both diastolic blood pressure and cholesterol levels into consideration.

When smoking was examined in further detail, significant differences were found between groups, with smokers almost twice as likely to take absence as non-smokers and three times more likely to be absent for long spells than were non-smokers ($X^2=21.4$, $df=2$, $p < .0001$, see Figure 3).

Alcohol consumption appears to have a non-linear relationship with absence. Whilst heavy alcohol consumption was associated with increased incidence of short spells of absence, non-

drinkers were almost twice as likely as expected to be absent. Fitness rating displayed a pattern of decreased likelihood of absence with increasing fitness level⁵.

Figure 3 - Smoking, alcohol intake and physical fitness as predictors of sickness absence



⁵ No statistics were calculated for either alcohol consumption or fitness levels due to small n.

Grade of employment and gender – differences in health indices and health-related behaviours

Absence has been reported to be affected by grade of employment and by gender. Differences in health-related behaviours between genders and grades of employment were examined, to assess for possible confounding factors in the observed relationships with sickness absence.

As can be seen from Figure 4, there were gender differences in terms of alcohol intake and fitness rating, with females more likely to consume light levels of alcohol ($X^2=27.1$, $df=3$, $p<.0001$) and more likely to fall into average/good fitness categories than were males ($X^2=16.5$, $df=3$, $p<.0001$). Neither of these behaviours is associated with increased risk of sickness absence. Although smoking failed to reach significance, a trend was seen for females to be more likely to smoke than males ($X^2=3.5$, $df=1$, $p=.06$). When non-smokers were examined separately, females remained almost twice as likely to take sickness absence as males (13.9% of females as compared with 7.5% of males). Gender differences in sickness absence are unlikely, therefore, to be entirely explained by differences in smoking.

In terms of grade of employment, manual workers were more likely to smoke than either middle grade or professional grade workers ($X^2=7.7$, $df=2$, $p<.02$, see Figure 4). They were also more likely to drink either no alcohol or light levels of alcohol than others ($X^2=30.1$, $df=6$, $p<.0001$), and were also less likely to achieve excellent levels of fitness ($X^2=14.0$, $df=6$, $p<.03$). Hence, manual grade workers display more health-related behaviours associated with sickness absence, which may in part explain higher rates of sickness absence.

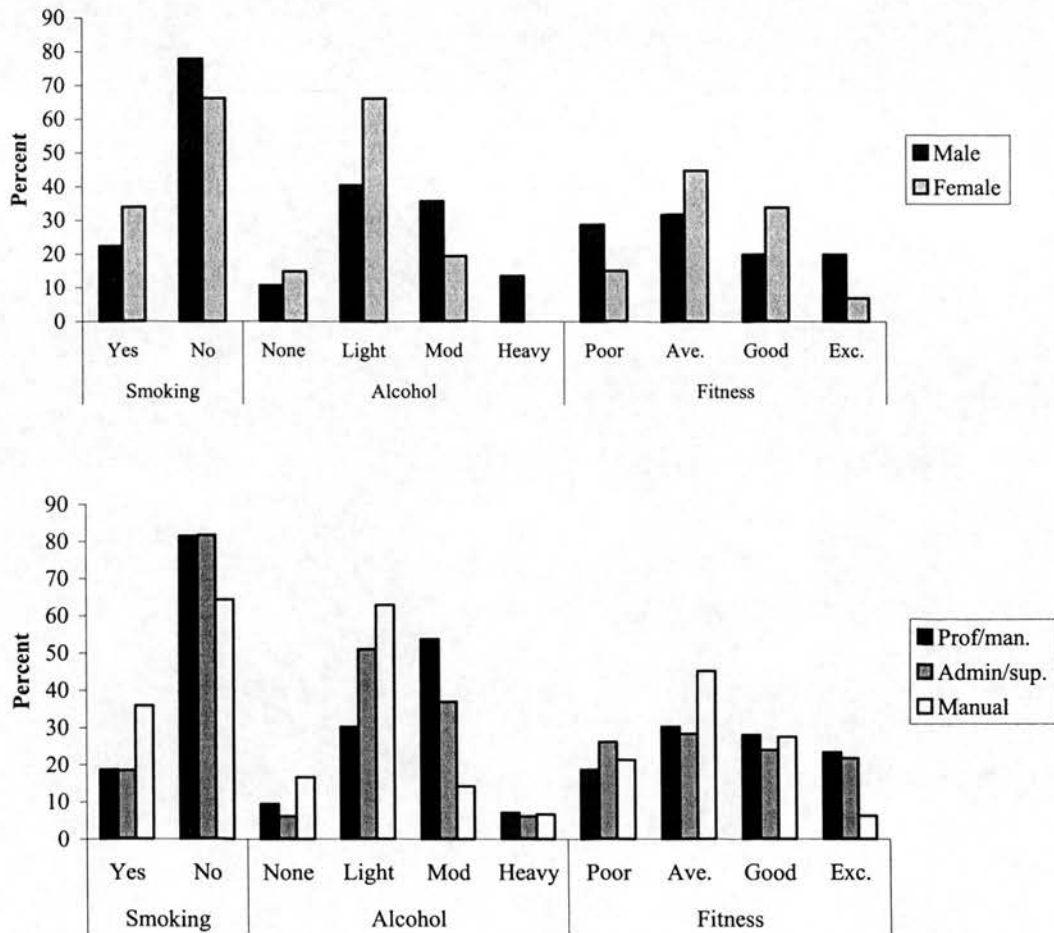
Given the large differences in health-related behaviours between employment grades, the possibility that this might explain the relationship between health-related behaviours and sickness absence was examined. When the effect of smoking on absence was analysed for manual grade workers⁶, significant differences were found ($X^2=19.2$, $df=2$, $p<.0001$), with 37.2% of smokers taking long spells of absence as compared with 15.6% of non-smokers. Hence, the effect of smoking on sickness absence is not simply due to differences in smoking behaviour amongst employment grades.

Again, when the effect of alcohol intake on absence was analysed for manual grade workers, a trend was observable for heavy drinkers to be more likely to take short spells of absence and non-drinkers more likely to take long spells of absence, although small cells sizes preclude

⁶ No other grades could be analysed due to small cell numbers.

statistical examination. Similar patterns for the effect of exercise on sickness absence were observed when looking at manual workers alone. This makes it improbable that differences in drinking patterns, or in physical fitness between grades, explain the effect of alcohol intake on sickness absence.

Figure 4 - Differences in smoking, alcohol intake and physical fitness, based on gender and grade of employment.



Summary

Smoking status was the strongest predictor of absence, with smokers three times more likely to take long spells of absence than were non-smokers. This was not due to the effect of grade of employment on smoking, although manual workers were twice as likely to smoke as other

grades. Alcohol consumption was also found to affect sickness absence. Heavy consumption was associated with increased risk of short spells of absence, with no alcohol intake increasing the likelihood of taking long spells of absence. Although fitness rating also predicted sickness absence, this was a complex relationship that depended on taking diastolic blood pressure and cholesterol level into account. Whilst health-related behaviours are unlikely to make a substantial impact on gender differences in absence rates, it is possible that they may partly account for differences in absence rates amongst employment grades.

3.5 Work characteristics, quality of life, mental health and social support

Response rates

In phase 1 of the study, employees were asked to complete a Health at Work questionnaire directly after their health screening. In phase 2 of the study design, Health at Work questionnaires were sent out to all those who had completed health screenings and who were still working within the factory (n=218). This included all employees who had already completed a questionnaire in phase 1 of the study. A sample matched for age, gender, length of service, grade of employee and division of employment were also sent questionnaires. Of the 436 subjects sent questionnaires, 11 were absent due to sickness and a further 5 were absent on business. 211 health-screened and 209 match subjects therefore received a questionnaire (n=420).

Of the 76 employees who participated in phase 1 of the study, 73 completed and returned their questionnaires, giving a response rate of 94.8%. 68 of these employees still worked in the factory at phase 2 of the study, of whom 31 (45.6%) returned a completed questionnaire at phase 2.

In phase 2 of the study, a total of 122 subjects returned a completed questionnaire, giving an overall response rate of 29%. This contrasts greatly with the 95% who responded in phase 1 of the study. There was a significant difference in likelihood of responding in terms of grade of employment ($X^2=19.6$, $df=2$, $p<.0001$), with 44.3% of professional/managerial grade responding, as compared with 34.8% of administrator/supervisor grade and 19.9% of manual grade workers. No differences were observable in terms of absence rates between those who did respond and those who did not ($X^2=2.6$, $df=2$, ns).

General Characteristics

Due to the time difference between phase 1 and phase 2 of the study, the changes to the factory that occurred within this time period, and the substantial number of subjects who completed the health questionnaire at both phases, only those responses for phase 2 of the study are included in the following section⁷.

Of subjects who completed the health at work questionnaire at phase 2, 112 have absence data available for the ten month period examined. General results of subjects who completed the health at work questionnaire at phase 2 of the study are shown in Table 8. Means are corrected for gender, grade of employment and division of employment, age and length of service.

Mental health

Previous literature has highlighted the significant number of individuals with mental health problems who remain undiagnosed. The numbers of employees with significant scores on either the HADS- anxiety scale or the HADS-depression scale were examined. In this population of employees at work, 21.4% (n=24) of employees scored within the borderline range for anxiety and 9.8% (n=11) for depression, whilst a further 11.6% (n=13) and 1.8% (n=2) scored within the 'morbid' range for anxiety and depression, respectively.

Association between mental health, physical health, social support and environment

Significant associations were found amongst all domains of quality of life. So too, all quality of life domains were associated with both HADS-anxiety and HADS-depression (see Table 9). They were also correlated with practical and emotional support, as measured by the Significant Others Scale (with the exception of physical quality of life), as were HADS scores. These results highlight the strong interrelationships between physical, psychological and social functioning, and their link to satisfaction with environmental quality of life.

⁷ Analysis carried out including this sample made no differences to overall results, but are excluded for clarity in examination of absence data.

Table 8 - Health at work questionnaire responses (Bonferroni corrections were calculated to control for multiple comparisons).

	Total (N=112)	Health- screened (n=70)	Matched sample (n=38)	P	Prof/man. (n=31)	Middle (n=31)	Manual (n=50)	p	Post-hoc Scheffé
QOL									
Physical	77.3 ± 13.1	77.8 ± 5.4	76.8 ± 5.2	ns	80.2 ± 9.9	77.2 ± 14.7	75.1 ± 14.3	ns	
Psychological	66.9 ± 13.6	67.1 ± 6.0	66.6 ± 6.4	ns	69.6 ± 13.1	66.0 ± 13	65.0 ± 15.6	ns	
Social	72.3 ± 16.8	72.5 ± 8.0	73.1 ± 8.3	ns	75.5 ± 15.8	73.3 ± 16.3	69.5 ± 18.2	ns	
Environmental	65.9 ± 11.8	65.8 ± 5.1	64.7 ± 4.7	ns	69.3 ± 10.5	66.9 ± 9.9	61.9 ± 12.6	4.4, p=.01	Prof/man. v Manual
HADS - anxiety	6.5 ± 3.2	6.6 ± 1.5	6.6 ± 1.7	ns	5.7 ± 2.9	6.7 ± 3.6	7.1 ± 3.3	ns	
HADS - dep.	3.9 ± 2.8	4.0 ± 1.3	4.0 ± 1.2	ns	4.3 ± 2.4	3.7 ± 2.8	4.2 ± 3.2	ns	
Work attitudes									
Authority	45.3 ± 23.9	48.3 ± 20.4	42.1 ± 21.8	ns	68.5 ± 14.3	51.5 ± 14.3	27.0 ± 18.8	63.6, p<.0001	All contrasts
Skill	62.9 ± 10.2	62.8 ± 6.9	61.9 ± 6.4	ns	68.1 ± 8.6	62.5 ± 7.2	58.1 ± 11.5	10.3, p<.0001	Prof/man. v Manual
Demand	70.1 ± 11.4	70.4 ± 4.1	69.6 ± 5.5	ns	69.9 ± 8.5	70.7 ± 10.9	70.2 ± 14.1	ns	
Support	68.3 ± 19.6	69.1 ± 8.7	67.5 ± 9.9	ns	69.5 ± 19.1	75.1 ± 18.5	62.1 ± 19.8	4.5, p=.01	Admin/sup. v Manual
Satisfaction	55.3 ± 15.1	54.5 ± 8.6	52.6 ± 10.1	ns	61.0 ± 11.6	53.3 ± 15.6	48.5 ± 15.1	7.2, p<.001	Prof/man. v Manual
SOS									
DES	.5 ± .9	.5 ± .5	.4 ± .3	ns	.5 ± .9	.3 ± .3	.5 ± .9	ns	
DPS	.7 ± .9	.6 ± .5	.6 ± .5	ns	.6 ± .9	.7 ± 1.1	.6 ± .9	ns	
ES	6.2 ± 1.1	6.2 ± .5	6.4 ± .4	ns	6.0 ± 1.1	6.6 ± .6	6.2 ± 1.1	ns	
PS	5.8 ± 1.1	5.8 ± .6	5.9 ± .5	ns	5.6 ± 1.2	6.0 ± 1.1	6.0 ± 1.1	ns	

Table 9 - Relationships between quality of life, mental health and social support. (*p<.05, **p<.01, *p<.001. Partial correlations were used to control for the effects of age and sex).**

	Phys.	Psych	Social	Envir	HADS-A	HADS-D	SOS-ES
QOL-Psych	.60***						
QOL -Social	.33***	.44***					
QOL -Envir	.60***	.59***	.30***				
HADS-A	-.46***	-.60***	-.31***	-.42***			
HADS-D	-.55***	-.58***	-.21**	-.58***	.52***		
SOS-DES	-.13	-.19*	-.36***	-.19*	.19*	.23**	
SOS-DPS	-.28**	-.23**	-.22**	-.24**	.19*	.18*	.54***

Relationship between attitudes towards work, quality of life, social support and mental health

As shown in Table 10, job skills and job demands were not significantly correlated with any measure of quality of life, social support, or mental health. By contrast, work authority and work satisfaction were positively correlated with environmental quality of life. Work authority was also inversely correlated with anxiety, as measured by the HADS, suggesting that anxiety levels decrease as work authority increases.

Work support was correlated with physical, psychological and environmental quality of life and with mental health, but interestingly not with any measure of social support, which largely reflect social support outwith work⁸. Although causality cannot be implied from correlations, this suggests that it may be of interest to examine further the relationship between work support and perceptions of physical, psychological and environmental quality of life.

⁸ For the Significant Others Scale, 82% of respondents answered with regard to their partner, 7.2 % with regard to parents, 8% to friends and 1% to siblings. Only two respondents did not name a particular person.

Table 10 - Relationships between attitudes towards work and quality of life, social support and mental health (*p<.05, **p<.01, *p<.001. Significance level of p<.001 was used to control for multiple comparisons. Partial correlations were used to control for the effects of age and sex).**

	Work Characteristics				
	Authority	Skill	Demand	Support	Satisfaction
QOL - Phys	.25**	.19*	-.15	.32***	.27**
QOL-Psych	.25**	.10	-.09	.35***	.28**
QOL -Social	.23**	-.02	-.06	.22**	.18*
QOL -Envir	.38***	.18*	-.21*	.48***	.37***
HADS-A	-.38***	-.12	.15	-.30***	-.24**
HADS-D	-.22**	-.27**	-.04	-.33***	-.20*
SOS -ES	-.15	-.04	-.03	-.18*	-.07
SOS-PS	-.11	-.05	.12	-.25**	-.21*

Grade of employment

Much literature has reflected socio-economic differences, as determined by employment grade, in self-reported physical, psychological, social and environmental quality of life and in work characteristics. As shown in Table 8, no differences were detected for social support at home or for physical or psychological quality of life, although a non-significant trend was observed for HADS-anxiety, with higher levels of anxiety at lower grades ($p<.15$). Differences were, however, found for environmental quality of life, with manual workers reporting poorer environmental quality of life than professional/ managerial workers.

So too, differences were found in attitudes towards work. Manual workers reported lower levels of job skill and job satisfaction as compared with professional/managerial grades, and reported lower work authority than other grades of employees. There was also a tendency for manual grade workers to report less work support than either professional/managerial or administration/supervisor grade, although this difference was only significant in the latter case.

Factors predicting sickness absence

Sickness absence data are shown for the six months prior to questionnaire, the four months following questionnaire completion and the ten month period comprising both time periods (see Table 11). Of 48 spells of absence over the ten-month period, 37 (77.1%) were for

infection/virus, 8 (16.7%) for medical conditions, 6 (12.5%) for accidents, 2 (4.2%) for depression, 2 (4.2%) for musculoskeletal problems, and 1 (2.1%) for cancer. Due to the cell sizes, reasons for absence could not be analysed further.

Table 11 - Absence data for those completing the health at work questionnaire during phase 2 of the study design (data given as numbers of subjects)

	Not absent	Short spells	Long spells
Six months pre.	78	22	12
Four months post	93	15	4
Ten months	63	33	16

Multiple regression analysis was carried out to determine which factors included in the Health at Work questionnaire might determine absenteeism. When the ten month period was examined a whole, five factors were found to have a significant effect on absenteeism, predicting 17% of the variance (see Table 12 below). Results indicate higher levels of anxiety, decreased physical quality of life, decreased work authority and increased satisfaction with emotional support from home to predict increased likelihood of absence.

When the six months prior to questionnaire completion were examined separately, only work authority made a significant contribution to the model, explaining 2.8% of the variance. Similarly, when the four months after questionnaire completed was examined, physical QOL was found to be a significant factor to predicting absenteeism, but only explained 3.6% of the variance.

Table 12 – Factors from the health at work questionnaire predicting absence

	10-month		6-month		4-month	
	beta	p	beta	p	beta	p
Physical QOL	-.31	.004			-.21	.03
Psychological QOL	-.27	.03				
HADS – anxiety	.23	.05				
Work authority	-.19	.05	-.19	.05		
Discrepancy in emotional support	-.22	.02				

Association between mental health, physical health indices and health-related behaviours

Multinomial logistic regression analysis was carried out to determine whether physical health indices (diastolic blood pressure, systolic blood pressure, fitness rating and cholesterol level) or health-related behaviours (alcohol intake, smoking, exercise or dietary health) predicted mental health scores as measured by the HADS. This was examined both in individuals who completed the health at work questionnaire directly after health screening (n=68) and in individuals who completed the questionnaire in the 1-2 years following health screening (n=72). No indices were found to predict mental health ratings.

Summary

Response rates were low for phase 2 of the study and were biased in terms of grade of employee, with professional/managerial grades more than twice as likely to respond than manual grade workers. Approximately one third of the sample reported borderline or significant scores for anxiety, highlighting the significant number of employees experiencing psychological distress. Strong interrelationships were observed between physical, psychological, social and environmental domains of life.

In terms of work characteristics, low work authority was associated with high levels of anxiety, whilst work support was noted to be strongly associated with physical, psychological and environmental quality of life. Manual grade workers noted lower levels of job skill and job satisfaction, lower work authority and lower levels of work support than other employees. No differences were reported in terms of job demands or social support. Although no difference was found for physical health, a non-significant trend towards higher levels of anxiety was observed as employment grade decreased. Manual workers also reported less satisfaction with environmental quality of life.

In terms of predicting sickness absence rates, high levels of anxiety, decreased physical quality of life, increased contentment with social support at home and decreased work authority predicted increased likelihood of absence.

3.6 Inhibitory absence policy

Within the ten-month period examined, 49 employees (6%) were subject to disciplinary warnings relating to sickness absence. No employee within the G&A division was subject to a warning over this period, as compared with 1.4% of industrial hardware, 2.4% of film, 10.9% of camera and 16.3% of lens division. The high percentage in lens and camera divisions is clearly explained by the higher rate of absence.

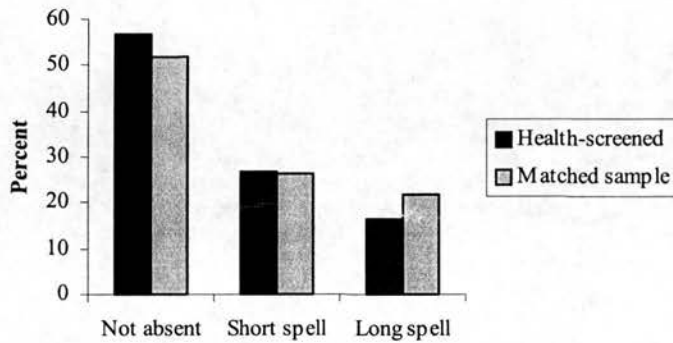
Of those currently on disciplinary warnings, 33 took sickness absence within the ten-month time-period examined and were, therefore, subject to a further disciplinary warning on return to work. 10 employees took short spells of absence and 23 were absent for long spells, requiring a medical certificate. Around one third of those absent for long spells ($n=8$) had medical certificates for mental health reasons, another third for infection/virus ($n=8$), 3 for accidents, 2 for medical conditions and 2 for musculoskeletal problems. These data highlight the significant proportion of employees who would be further disciplined for absence despite medical certificates being produced.

3.7 Health screening

It was hypothesised that participation in health screening would decrease rates of sickness absence. When the sample population who had completed health screening was compared with the remaining workforce, differences were found in terms of grade of employee, with professional/managerial workers more likely to have completed health screenings ($X^2=8.7$, $df=2$, $p<.02$). There were also differences in terms of division, with film division less likely to have participated in health screening ($X^2=23.8$, $df=4$, $p<.0001$). No differences were found in gender ratio, length of service, or age. Due to these differences, a matched sample was selected to compare with those who had completed the health screening questionnaire: this sample was matched for age, length of service, gender, grade of employee and division of work.

As can be seen from Figure 6, no differences were found in absence rates between those having undergone health screening and a matched sample ($X^2=2.1$, $df=2$, ns). Similarly, for those subjects who completed the health at work questionnaire, no differences in quality of life, mental health or work characteristics between those who had participated in health-screening as compared with those who had not (see Table 8).

Figure 6 - Absence rates for individuals who had participated in health-screening as compared with a matched sample.



3.6 Motivation at work

In the Health at Work questionnaire, subjects were asked open-ended questions relating to what they thought would increase enjoyment and motivation at work. Responses are shown in Table 13. As can be seen, increase in positive communication from seniors was the most commonly rated response as regards what would increase enjoyment of work, with almost one quarter of employees suggesting this. Similarly, almost 30% of employees proposed this as the means by which motivation might be increased, with the next most frequent response given being increased pay.

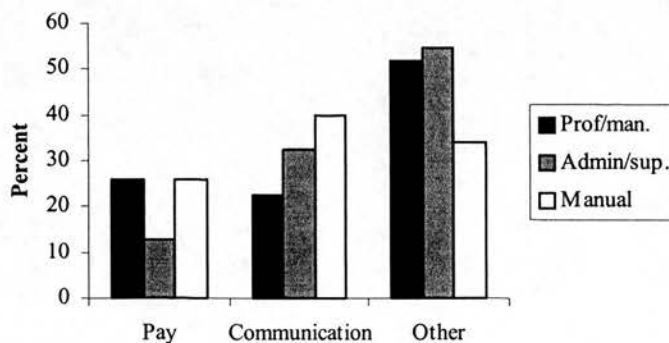
Table 13 - Responses to questions asking ‘what would increase your enjoyment of work?’ and ‘what would increase your motivation at work’.

	Enjoyment (n=112)	Motivation (n=112)
Increase in pay	15.2	22.3
More variety/challenge in job	12.5	12.5
Positive communication	23.2	30.4
Less pressure	16.1	6.3
Physical work conditions	11.6	7.1
Resolving conflict with colleagues	5.4	3.6
Job security	4.5	8.0
Don't know/ other	6.3	4.5
No response given	5.4	5.4

Differences in response based on employment grade

In order to examine differences in response between grade of employees, categories were collapsed together to form 3 new categories: pay, positive communication from seniors and ‘other’. As shown in Figure 5, no differences were found between grades, although positive communication as a reason, showed a tendency to increase in importance as grade of employment decreased ($X^2=5.8$, $df=2$, ns).

Figure 5 - Differences in responses to questions asking ‘what would increase your enjoyment of work?’ and ‘what would increase your motivation at work’ based on grade of employment



3.9 Summary of findings in relation to hypotheses

Hypotheses made prior to the study were largely supported. Physical and psychological ill-health were found to predict sickness absence. In terms of reasons for absence, musculoskeletal disorders and mental health problems contributed substantially to the number of days lost to sickness absence, with approximately one third of employees reporting borderline or significant levels of anxiety or depression.

The effect of health-related behaviours on sickness absence was as predicted, with smoking and either consumption of no alcohol, or excessive quantities of alcohol, predicting increased rates of sickness absence. Level of aerobic fitness also predicted sickness absence rates when cholesterol levels and blood pressure were taken into account. Participation in health screening was not found to have any effect on sickness absence.

Higher rates of long-term sickness absence were found for females, with long-term absence also noted to be highest for those working in jobs under threat of redundancy. Grade of employment and work authority was inversely related to rate of sickness absence. Similarly, satisfaction with social support from home predicted increased risk of sickness absence, although social support at work was not found to have an effect on sickness absence.

4 DISCUSSION

This aim of this research was to examine factors predicting sickness absence from work. Findings are discussed in relation to previous literature, with methodological flaws evaluated. The relevance of these findings in terms of future research, and the role of clinical psychology in this area of research, is also considered.

4.1 Discussion of main findings in relation to hypotheses

Reasons for absence

As predicted by the literature, mental health problems and musculoskeletal disorders accounted for just less than one half of all days lost due to sickness, and were two of the most common reasons for absence from work. Of interest was the relatively small number of individuals who took absence for these reasons, compared with the substantial proportion of time lost. This highlights the high cost to organisations of individuals experiencing these problems, in line with previous findings (e.g. Salvador-Carulla et al, 1995; Waddell, 1998). Possible reasons for the prevalence of these conditions have been outlined in the introduction, with several authors suggesting both to be stress-related (Griffiths, 1998; Waddell, 1998; Marmot et al, 1995; Stansfeld et al, 1997b). This will be further discussed in a later section, after predictors of absence have been examined.

More importantly, perhaps, was the substantial proportion of employees, almost one third of the sample population, who reported borderline or significant levels of anxiety or depression, but who were not absent from work. Marmot et al (1995) have noted that respondents to questionnaires are likely to be healthier than those who do not respond: hence, the figures given are likely to underestimate the size of the problem. The significance of this finding implies that a substantial proportion of employees may be working below capacity due to mental health problems. This would accord with findings from studies reporting an inverse relationship between self-reported mental health and performance (Mintz et al, 1992; Motowidlo et al, 1986).

Physical and psychological health

Sickness absence was predicted by both self-reported physical and psychological quality of life. As self-reported physical health is linked to morbidity, it is likely that this reflects 'real' ill-health and is a major contributor to sickness absence (e.g. Marmot et al, 1995; Idler & Angel, 1990). Similarly, psychological health and in particular anxiety, as measured by the HADS, was also found to predict sickness absence, replicating findings from several studies (e.g. Jenkins, 1985; Kouzis & Eaton, 1994; Skodol et al, 1994; Kopp et al, 1995). Given the obvious link between illness and absence, this tells us little in terms of what interventions might reduce sickness absence. It is, therefore, variables that may impact on physical and psychological health, or on illness behaviour, that are of interest in trying to explain sickness absence.

Health-related behaviours

Health-related behaviours were noted to predict absence. Smoking was associated with increased sickness absence, as noted by Parkes (1983, 1987). This relationship is likely to be explained by the link between smoking and physical health, with smoking known to have major effects on physical health (e.g. Stansfeld et al, 1993; Waddell, 1998).

Similarly, abstinence from alcohol predicted increased incidence of long spells of absence, as previously reported (e.g. Marmot et al, 1993; Vasse et al, 1998). It may be, as noted by Vasse et al (1998), that alcohol consumption acts as a coping mechanism for dealing with stress, hence, decreasing the risk of sickness absence when consumed in moderate quantities. The increased risk of short-term sickness absence in heavy drinkers may well be caused by the effects of binge drinking on physical functioning (Vasse et al, 1998).

Physical fitness also predicted sickness absence as has been reported previously (e.g. Tucker et al, 1990), although this relationship was dependent on levels of cholesterol and blood pressure. Hence, the relationship with sickness absence may depend on the overall physical fitness of the body, rather than simply an individual's aerobic fitness levels. No correlation was found between physical fitness and psychological well-being, in contrast to findings reported by Horsten et al, (1997), although this may have been due to the relatively small sample size (n=68; see Cohen, 1992).

Gender

In terms of demographic variables, females had higher rates of sickness absence, as previously reported (e.g. Marmot et al, 1995; Mastekaasa & Olsen, 1998). This was not due to gender differences in grade of employment, with female manual workers almost three times more likely to take sickness absence than male manual workers. In terms of health-related behaviours, although a trend was seen for females to be more likely to smoke than males, females remained almost twice as likely to take long spells of absence as males when only non-smokers were examined. Nor were differences in alcohol intake or aerobic fitness between females and males suggestive of an increased risk of sickness absence in females.

One alternative explanation for differences in sickness absence rates between genders is the increased prevalence of mental health problems in females as compared with males (e.g. Selzer et al, 1978). Eighty three percent of those taking absences for mental health problems were female. Reasons for gender differences in rates of depression and anxiety remain unclear, although one possibility is that cyclical hormonal variations in females increase risk of neurotic disorders (e.g. Bancroft, Rennie & Warner, 1994; Weissman, Markovitz & Klerman, 2000).

Unfortunately, other possible contributory factors could not be assessed. For example, the possibility that females are more likely to take sickness absence due to family responsibilities, for example taking sickness absence to look after a dependent, as suggested by Harrison & Martucchio (1998), remains unclear, as no data was collected on parity.

Social support

Social support was found to be strongly associated with self-reported physical and psychological health, as noted previously (e.g. Uchino et al, 1996), and with environmental quality of life (e.g. the WHOQOL group, 1998a, 1998b). Similarly, marital status was associated with decreased likelihood of taking absence long spells of absence for males. This may be because marital status offers additional emotional support and protects against the effect of stress (e.g. Brown & Harris, 1978). Alternatively, it could simply be that married males are more likely to have dependents, and may feel a greater responsibility in terms of ensuring income. They would, therefore, be more likely to resist behaviours that might jeopardise their employment, such as illness behaviour.

Given the positive associations between physical, psychological and social domains of quality of life, one might expect high levels of social support to be associated with lower rates of sickness absence. In fact, the opposite of this was found: satisfaction with emotional support from home was associated with an increased likelihood of taking sickness absence. One reason for this might be that empathic relationships at home lead to individuals feeling more supported in their decision to take time off work, particularly if they perceive work to be the cause of their ill-health (e.g. Stansfeld et al, 1997a). In this way, supportive relationships at home may lead to increased illness behaviour, rather than to increased illness.

In contrast to the available literature (e.g. Stansfeld et al, 1997a; Wood, 1987), social support at work was not shown to predict sickness absence, although it was positively correlated with self-reported physical and psychological health. Possible reasons for a lack of association between social support from work and sickness absence remain unclear, but may relate to differences between support from colleagues, supervisors and management. For example, high social support from colleagues, with low social support from supervisors or management may increase sickness absence by increasing the impact of group influence on illness behaviour. As noted by Buunk et al (1998), this may occur if sympathetic colleagues agree with an individual's concept regarding the validity of taking sickness absence. To examine this possibility further, support from colleagues, supervisors and management should be assessed separately in future studies.

Grade and work characteristics

Grade of employment was found to be inversely related to sickness absence, as previously noted by Marmot et al (1995). In particular, long spells of sickness absence were four fold higher in manual workers as compared with those employed in a professional/managerial capacity. Marmot et al (1995) suggest that long spells of absence are likely to be health-related and may be due to the effects of work characteristics on health, whereas short-term absence may be linked to job characteristics and motivation to attend work.

The increased risk of long-term absence in manual grade workers may be partly explained by lifestyle habits, as suggested by Marmot (1994). Manual workers were almost twice as likely to smoke as other grades of workers. They were also more likely to abstain from alcohol, as noted by Marmot et al (1993), and were less likely to have excellent physical fitness. This latter

finding is surprising, given the association between manual work and physical demands (e.g. Waddell, 1998), and may well be specific to this population, which consisted mainly of assembly line workers. All of these health-related behaviours are associated with increased risk of sickness absence, due perhaps to their detrimental effects on physical and psychological health (Parkes, 1983, 1987; Marmot et al, 1993; Tucker et al, 1990; Vasse et al, 1998). One possibility, outlined by Maes et al (1987), is that stress causes this pattern of behaviours.

As health-related behaviours differed amongst employment grades, one might expect differences in physical and psychological health, as has been previously reported (e.g. Marmot et al, 1995). No differences in self-reported physical or psychological health between employment grades were, however, apparent. This could reflect biases in self-report between different grades of employees, based on different expectations, values or concerns about their health (e.g. The WHOQOL group, 1998a, 1998b). Alternatively, lack of any difference may have been due to the relatively small numbers included in this sample, with a general, but non-significant trend observable for HADS anxiety to increase linearly with employment grade (see Table 13 of results).

Another possible reason for grade of employment differences in sickness absence is the theory that 'overload' of stressors affects mental health, leading to higher rates of sickness absence. There are several indicators that this could have been the case. Manual grade workers noted less satisfaction with environmental quality of life than other grades (i.e. home environment, financial resources, opportunity for leisure activity, transport). They also reported work characteristics known to relate to increased stress levels, including lower job skill, work authority, lower levels of satisfaction with work, and less social support from work than other grades (e.g. Karasek, 1979; Johnson & Hall, 1988). This combination of decreased satisfaction with home and work environment suggests increased stress, which could either result in decreased psychological or physical health, or in increased illness behaviour.

As with previous research findings, the factory division most under threat in terms of job security was also found to have the highest rate of long-term absence (Ferrie et al, 1995; Ferrie et al, 1998). This was particularly striking in female assembly line workers, whose jobs are most under threat. Again, this would tie in with the effects of long-term stress on both motivation to attend work and on physical and psychological well-being.

Group influences

Johns & Nicholson (1992) highlighted the influence of the social environment on work absence. Decreased understanding of management's goals is associated with increased absence (Markham & McKee, 1995), as is affective negativity within groups (George, 1989, 1990). The relationship between employees and management is, therefore, of vital importance in terms of its potential to exacerbate risk of sickness absence.

Results from the open-ended questionnaire imply poor communication between management and employees, with the need for positive communication being the most common reason given as to how to increase motivation and enjoyment of work. Decreased satisfaction with communication was especially prevalent in manual grade workers, suggesting internal problems in the factory, with management more content with dissemination of information and feedback than were lower grade workers. This finding would predict increased sickness absence, based on models of sickness absence. In terms of gaining positive feedback from superiors, Steers & Rhodes (1978, 1984) emphasise incentives and rewards as motivators to attend work. Similarly, the social environment stress model focuses on the way in which individuals view themselves in the company as a possible cause of stress (French & Kahn, 1962). Lack of feedback may well cause employees to feel under-valued as regards their work and may lead to feelings of decreased control and support with regard to their position (e.g. Karasek, 1979).

More important, perhaps, is that little change seems to have occurred since a previous project on job satisfaction was carried out between 1983 and 1984 (McGlew, unpublished). For assembly line workers at this time, 90% of the full-time female workers in the camera division rated pay as good, though many described their work as being monotonous. Three-quarters reported regular frustration due to changes in speed in the line, unreliable equipment or defective materials, which made it difficult for them to do their jobs effectively. A further 40% noted that the pressures associated with work rates affected their home lives.

In McGlew's report, morale was noted as poor, with problems in communication reported as a major source of dissatisfaction. In particular, employees felt they were ill-informed by management, did not feel management listened to them, and felt that the policy of sickness absence procedures was unfair. This is important, in that, when stress at work is further exacerbated by communication problems between employees and management, group influences may begin to play a powerful role in legitimising sickness absence, as suggested by Buunk et al (1998). Communication problems may also contribute to the resumption threshold

following sickness absence, with workers less motivated to return if they feel under-valued by management (Allegro & Veerman, 1998; Waddell, 1998).

Organisational factors affecting sickness absence

Effects of health promotion on sickness absence

Health-related behaviours, as discussed above, were noted to be significant predictors of sickness absence, and as such, optimising health behaviour would seem to be advantageous to reducing rates of sickness absence. No effects on sickness absence were observed in those who had participated in the health-screening programme, as compared with those who had not, which may imply that health screening is of no benefit in changing health-related behaviours. This contrasts with previous findings (e.g. Maes et al, 1998; Kerr & Vos, 1993), and with findings from the initial health promotion programme run in the factory. At this time, the health promotion project suggested possible effects on health-related behaviours, such as dietary change in reducing cholesterol, and possible effects on sickness absence (Harper et al, 1990; IRS trends, 1989). There could be a variety of factors that might explain the lack of effect observed on absence rates in this study.

Firstly, it may be that a one-off health screening is not sufficient to change health-related behaviours that might then improve physical and psychological quality of life. Davison (1994) suggests that this is because an individual's lifestyle is an intrinsic part of the social world in which they live and is, therefore, resistant to change, heavily defended with stories of 'Uncle Norman...who has indulged in just about every risk behaviour known to medical science, yet has survived into a healthy old age'.

An alternative reason is that sickness absence was measured over one year following health screening. It could be that effects of the health screening on sickness absence, or on attitudes towards work, are short-term and had worn off by the time this study was carried out. This possibility would imply an importance of ongoing involvement and encouragement of health promotion campaigns in motivating employees to maintain lifestyle changes made.

Another possibility for lack of impact of the health-screening programme might be that organisational dissatisfaction masked any effects of the health promotion programme. Literature has noted the importance of management involvement and backing in health promotion, with a view that this contributes to a feeling that employees are valued (e.g. Kerr &

Vos, 1993; Maes et al, 1998). There are several indicators that lack of involvement from management may explain the ineffectiveness of health screening in this case.

The first phase of health promotion in the factory, in 1987-1988, involved employee-led decisions regarding non-smoking policies, changes to the canteen, and the development and advertising of an exercise room. 87% of the workforce completed health screenings within an eight-month period. The health screening programme evaluated in this thesis differed in that there were no new changes made at organisational level with regard to attempting to alter health-related behaviours (i.e. changes to the canteen, re-advertising of the exercise facilities). Moreover, only 140 employees had been screened within the nine month period before this study started, which is far less than the 87% of workforce completed within a similar time-period during the initial health promotion campaign. Professional/managerial workers were also more likely to have completed health screenings, with fewer manual grade workers participated. Further, health screenings were halted due to the demand for hearing tests and were subsequently prevented from re-starting due to high rates of sickness absence.

This might imply less managerial support or prioritisation for health screenings at this time and may affect an important by-product of health-screening: that individuals perceive the company as one that is interested in employee health and welfare (e.g. Kerr & Vos, 1993). The lack of differences in quality of life measures or attitudes towards work of those who had completed health-screening further suggests this to be a possible explanation.

Effect of inhibitory policy on sickness absence

The inhibitory policy used in Polaroid seems to have several potential risks for increasing sickness absence rates, as suggested by Allegro & Veerman (1998). Firstly, it was noted that no single employee has been dismissed on the grounds of absence alone since the policy was introduced, though there were cases that would have fitted criteria. As punishment systems decrease behaviour by means of consistent negative consequences for it (see Bernstein et al, 1988), behaviour is unlikely to be reduced when there are no negative consequences for it.

Secondly, in the second phase of redundancies, a high rate of sickness absence was used as one means by which to determine who ought to be made compulsorily redundant. From conversations with assembly line workers, this method of determining redundancy was unpopular. Redundancy packages were viewed as extremely lucrative. Hence, compulsory

redundancy was seen to reward employees who had high rates of sickness absence, whilst employees with exemplary sickness absence records were given no financial compensation.

Further, it is possible that the inhibitory policy will delay return to work after sickness absence, as noted by Allegro & Veerman (1998). Around one third of those taking long spells of sickness whilst subject to disciplinary warnings, took absence due to mental health problems. Therefore, they would have been given a further disciplinary warning on return to work. Given that symptoms of depression include self-blame, feelings of being punished, and guilt, it is conceivable that being given a disciplinary warning would exacerbate such feelings, making vulnerability to depression more likely. Further, if disciplinary procedures followed as a matter of course on return, employees might wish to ensure they were back to full fitness before returning to minimise the likelihood of having to take a further leave of absence, hence prolonging sickness absence. The longer length of absence associated with second absences, as compared with first absences, indicates support for this view.

4.2 Incorporating findings into models of sickness absence

From the above discussion, it is clear that several factors influence sickness absence. Many of these are included in the socio-organisational model of sickness absence: absence policies, group influences, personal characteristics such as gender, job characteristics, and health-related behaviours (Brooke, 1986; Brooke & Price, 1989; Steers & Rhodes, 1978, 1984). This model, fails however to predict possible ways in which absence control policies may exacerbate, rather than decrease, sickness absence. It also fails to consider stressors and supports outside of work, in terms of their impact on sickness absence.

Similarly, stress models also lack some core variables of interest. For example, the social environment stress model includes work characteristics, such as role conflict and lack of participation, and proposes these to cause stress, thereby affecting mental and physical health, and health-related behaviours (e.g. French & Kahn, 1962). It fails, however, to account for the effect of social support at home on sickness absence. So too, the demand-control support model and person-environment fit model also fail to take into account the wider environment of an individual, including their home life and relationships (e.g. Karasek, 1979; Johnson & Hall, 1988). They also fail to examine the ways in which organisational policy may exacerbate absence.

Marmot et al (1995) suggest sickness absence to be predicted by three factors: personal characteristics (health-related behaviours, gender), social support outside of work, and aspects of the way in which work is organised. What seems clearest from the results is that several of these risk factors for sickness absence seem inextricably linked, and related to increased stress.

A low grade of employment is associated with increased stress at work, as shown by lower job authority, social support, and communication opportunities with management. It is also associated with decreased satisfaction with environmental quality of life, in terms of finances, leisure and housing. Further to this, manual grade workers were more likely to have health-related behaviours known to increase the risk of sickness absence, which might be explained as a coping mechanism for dealing with stress.

Individuals may attempt to optimise personal health by decreasing stress, particularly stress from work. Marmot et al (1995) comment on the World Health Organisation's definition of health, which describes health as a combination of physical, psychological and social functioning. They propose that sickness absence reflects health, under this definition.

Developing this idea further, empirical findings on predictors of absence highlight important interactions amongst physical and psychological well-being, social support, and the environment in which an individual lives and works. In this vein, sickness absence could reflect the effect of physical, psychological, social and environmental stressors on functioning (the WHOQOL group, 1998a, 1998b). Decreased functioning in any one of these areas, either due to problems within or outwith work, would produce stress and could impact on other domains, compromising both health and the ability or motivation to attend for work. Before suggestions for future research are proposed, and the role of Clinical Psychology in this is evaluated, methodological short-comings of the study are outlined.

4.3 Methodological problems

Response rate

Almost three quarters of the population sent Health at Work questionnaires did not return them within the time given. This compares with a response rate of 95% when questionnaires were given out after health screenings. Manual workers were significantly less likely to return the questionnaire than other grades of employees. There are several possibilities as to why the response rate may have been low.

Firstly, employees who were seen individually for health screening were given the opportunity to ask questions about the purposes of the questionnaire and to have fears regarding confidentiality allayed. Secondly, these employees were given time within work to complete the questionnaire, which may have increased motivation for doing so. Thirdly, personal contact with the researcher is likely to increase response rate, as shown by the substantially higher response rate in phase 1 of the study.

For employees working in manual grades, there are two possible reasons why response rates may have been lower. Firstly, it is possible that manual grade workers are less familiar with pen and paper tasks and are, therefore, less likely to complete and return questionnaires. Secondly they may have had less opportunity to complete the questionnaire within work time, unless using a tea-break or lunch break to do so, as work rates for manual grade workers are tightly controlled. By contrast, higher grade employees are not 'rate-driven', leaving them the possibility of completing questionnaires within work time.

In order to determine further reasons for low response rates, particularly amongst manual workers, employees were approached in the cafeteria, to ask if they would explain potential problems in completing the questionnaires. Reasons given related to confidentiality issues and feelings of futility with regard to offering information, in the fifteen women approached. In terms of confidentiality, employees worried that, in spite of information on the front cover of the questionnaire, information would be given to management and this would be used to their detriment. The other common reason given was that previous research studies carried out within the factory had changed little in the way in which employees were perceived or treated by management. This seems to hold true, given the similarity of responses between the findings reported here and the findings concluded in the report by McGlew (unpublished). Again, it also highlights how communication problems between employees and management can cause decreased motivation to participate.

The low response rates, discussed above, give a potential to produce a biased view of employee attitudes, with either those satisfied or dissatisfied with work being less likely to return the questionnaire. There is reason to think that the latter may be the case. Overall, employees in managerial and professional grade were more likely to respond: they were also more likely to report satisfaction with work than other grades. Even within grades, those satisfied with work may have been more likely to respond, as those individuals feeling that management had failed to listen to their views in the past might be less likely to complete the questionnaire.

One way in which response rates might have been increased would have been to speak to workers in the coffee rooms, prior to giving out questionnaires. Worries regarding confidentiality might then have been allayed, and reasons for carrying out the study could have been clarified. It would also have made clear that the research was unrelated to management, or indeed to the Occupational Health Department. In this vein, it may have been advisable not to have been based in the Occupational Health Department, which was viewed as having close relations with management. The increased response rate from phase 1 of the study design, and the comparably high response rate at phase 2 from those individuals who had completed the questionnaire at phase 1, suggests that having met the researcher and having the chance to discuss the study are both more likely to increase response rate.

Inability to test stress models

Unfortunately, due to changes in the study design, it was not possible to collect health-screening data, health at work Questionnaire data, and sickness absence records, for all employees. Given this, it was not possible to test models taking all of these variables into account, for example, by using structural equation models to look at putative causal predictors of sickness absence, in relation to factors associated with stress and its effects on health, behaviour and social functioning.

Design of the study

A further criticism of this study is that it does not constitute a prospective design, in that some of the absence data were collected prior to the health at work questionnaire being completed. Hence, causality cannot be implied with certainty.

Individual differences

Another potential criticism of this study is that personality was not examined. Hence, it is not known to what extent factors such as conscientiousness and neuroticism might influence sickness absence. To date, much of the literature has concentrated on the effect of neuroticism. It is unclear though, how knowing about this factor would help. Neuroticism describes a predisposition to experience distressing emotions, in particular, anxiety. General anxiety

disorder has trait-like features, with temporal stability and lack of specific focus for the anxiety (see Rapee, 1991). Hence, neuroticism could be argued merely to be a measure of anxiety, which was assessed in this study. Related to this, the reason for examining sickness absence is in order that it may be decreased, for the benefit of both the individual employees and the company. Whilst distressing emotions are known to increase risk of sickness absence, it is the examination of factors that produce or exacerbate distressing emotions that is of interest, rather than the tendency to experience distressing emotions per se.

4.4 Implications for future research

A recent article proposed that stress at work has progressed from something about which employees complain but see as an inevitable part of their job, to something that has become a focus of research by the Health and Safety Executive (Earnshaw & Cooper, 1994). These authors suggest that personal injury claims will become increasingly more common following guidelines produced by the Health and Safety Executive, which will alert employees to failings on the part of their employer to minimise stress-related illness. Although they emphasise that factors other than the behaviour of employers contribute to stress at work, they also warn that 'employers who do nothing about the issue of stress at work thus do so at their own peril' (Earnshaw & Cooper, 1994, p. 295).

Stansfeld et al (1997b) have suggested that, rather than simply supplying stress management as a reactive strategy by which to control the effects of stress, 'managers and occupational health services could tackle these problems at source, by considering the effects of job design and management on mental health'. They note support from supervisors and management to be particularly important. Certainly, it seems that lack of communication, and the inhibitory policies used to control sickness absence, may be exacerbating stress levels of employees. Before looking at how these problems might be tackled, it is vital to understand the effect of stress on functioning at an organisational and managerial level.

Effects of stress on management at an organisational level

Increased competition may increase stress at an organisational level, by threatening the profit margins of a company (Stansfeld et al, 1997b). To date, there has been a paucity of research on the impact of emotion on managerial performance, with a view that 'good organisations are

places where feelings are managed, designed out or removed' (Fineman, 1996). Two theories from Clinical Psychology may explain organisational and managerial reactions to stress.

The effects of stress on effective communication

Results from the open-ended questionnaire imply dissatisfaction with communication from management. Taking the view of interpersonal therapy, negative affect is associated with impairment in ability to handle social roles, which results in strained relationships with others (see Weissman et al, 2000). One possibility is that the ability to support others and to communicate effectively decreases under situations of chronic stress, where negative affect is present (Weissman et al, 2000).

Conceivably, stress, and the negative emotions produced by this, may lead to a change in management from an attitude of support and encouragement with regard to sickness absence, to irritation and frustration with those taking sickness absence, as this becomes a focus for loss of productivity and competitiveness. This outcome may lead to a cycle of negative interactions, which impact further on the stressful environment, and potentially on sickness absence.

By contrast, change to a more positive cycle of interactions between management and employees may decrease stress and, consequently, decrease sickness absence. Indeed, in one study that looked at assembly line workers reporting musculoskeletal problems, allowing each worker the opportunity to talk about the situation at work whilst the interviewer listened and then fed back to the company management was found to result in more empathic responses towards employees from management, and a consequent reduction in sickness absence (Lindberg & Lindberg, 1996). Similarly, West (1996) has suggested that communication within organisations will lead to a cycle of reflection and adaptation amongst team members, thereby increasing productivity.

The effects of stress on cognition

In addition to the effects of stress on communication, it is also known to have an adverse effect on attention, memory and performance (e.g. Barlow, 1988). Linked to this, Jamal (1984) reported a negative correlation between increased job-related tension and ratings of supervisory abilities.

Wachtel (1967) likened attention to a spotlight. Unable to illuminate the entire environment, an individual will selectively attend to personally salient aspects of their environment. Stress is known to narrow attention and decrease ability to divide attention between competing stimuli (e.g. Hockey, 1984). In relation to this, Daniels (1999) reported negative affect to bias managers' thinking towards negative factors, such as dips in performance, hence making this a focus for attention.

Barlow's (1988) theory of worry links negative affect to a narrowing of attention towards a self-evaluative focus, causing dysfunctional performance (see also Power & Dalgleish, 1997). It could be that organisational responses to increased stress result in manager's focusing more on their own opinions of problems, with less regard to employees' views on the problem. It could also be that stress exacerbates the actor-observer effect (e.g. Fiske & Taylor, 1991). This is described as a natural tendency to attribute personal behaviour to situational factors (i.e. doing badly because of the workforce taking sickness absence), and to attribute the behaviours of others as being due to personal characteristics, such as a willingness to take absence when not really sick (see Fiske & Taylor, 1991).

This observation ties in with Neale et al (1982), who highlight differences between managers and employees' views of stress, with managers focusing on home-related stress and personality as a major component of stress, whilst employees emphasise stress at work. The effect of this would be to decrease empathy towards employees and, perhaps, focus on one absence control policy at the expense of others. There is some evidence that this may be the case, as seen by the inhibitory policy that disciplines those taking sickness absence even where medical certificates have been produced.

4.5 Role of Clinical Psychology

Griffiths (1998) has suggested the largest cause of self-reported ill health to be strongly associated with psychosocial and organisational factors at work, and quotes from Hernberg (1994) 'the fact that classical occupational diseases still occur does not automatically mean that more research is needed...What it really means is that we have failed to implement already existing knowledge' (Hernberg, 1994, p.7). To this end, Griffiths suggests that 'more implementation research is also urgently needed: how to translate existing knowledge into practice for the non-specialist. Managers need to be educated and assisted, at grass roots level, to organise work and to manage people in ways which protect and promote both individual and organizational health'.

That communication remains a source of dissatisfaction in Polaroid over 15 years after a research project defined it as a particular problem would fit with Griffiths (1998) proposal that work is needed in terms of implementation research, suggesting solutions to problems and ensuring their execution. Undoubtedly, occupational psychology has a role to play in this, but so too, may clinical psychology, for several reasons.

Theoretical background

Clinical Psychology is equipped in looking at the likely effects of stress on functioning, in terms of having the theoretical knowledge base to hand. It has been suggested above, that the effects of stress on cognition and communication can be explained using theoretical models. Good communication skills, including active listening, are a vital tool for the Clinical Psychologist, making good a possible role for Clinical Psychologists as independent mediators in work situations. The Clinical Psychologist also has tools for negotiating conflict, drawing from interpersonal theory of role conflict and communication analysis (e.g. Weissman et al 2000). So too, the ability to teach core communication skills is integral to clinical practice (e.g. Litvinoff, 1991), thereby suggesting a possible role in management training.

In terms of absence control policies, there is a large literature base on the effects of positive reinforcement, for example, as used in child psychology. These theories promote management through monitoring behaviour and positively reinforcing good behaviour (e.g. Green, 1992). Positive reinforcement is seen in this literature to be an effective tool over disciplinary measures, via the development of positive, rather than the negative cycles of interaction, which would parallel the preference of curative and preventative policies over inhibitory policies.

The unique value of the Clinical Psychologist over other disciplines is in our experience to draw on a range of theories to formulate, and consequently understand, the causes of problems, and the factors maintaining them. It also lies our ability to use a range of therapeutic techniques to break-down factors maintaining problems, thereby offering solutions. If these skills are interpreted at an organisational level, rather than an individual level, then our unique skill may lie in 'implementation research...translating existing knowledge into practice' (Griffiths, 1998).

In line with this, Bevington (1999) examined the effect of using cognitive behavioural techniques to promote effectiveness at an organisational level. This included individual and group sessions, the latter of which included techniques aimed at facilitating role negotiation,

resolving inter-group conflict and increasing cohesiveness. Although small sample sizes preclude definitive conclusions, results suggested positive outcome on effectiveness and well-being.

Evidence-based practice

If Clinical Psychology has the necessary skills for this area of research, the next question to consider is whether this area merits attention in the new era of Clinical Governance. The MAS review (1989) described the role of clinical psychology as improving quality of life and alleviating disability in people using health services, through application of psychological theories. Growth of other professions as providers of psychological therapies caused the later MPAG (1990) report to advocate skill sharing with other professions by means of a consultancy role. In the new era of evidence-based practice, Milne (1999) has emphasised the need for research to focus more on areas of direct relevance to local and national practice. Further, he suggests the need for research to be communicated more effectively to other professionals.

Participation in implementation research may be of benefit, in that preventative management of mental health problems would reduce the demand for reactive interventions for individuals experiencing mental health problems. The effect of stress on attention might well relate to current Clinical Psychology practices, in that the profession may be dealing with stress, posed by increasing demands, by focusing on reactive strategies rather than preventative ones. Whatever the role for Clinical Psychology as consultant to industry, knowledge of the literature on sickness absence and the effects of work on physical and psychological well-being, will inevitably benefit in the management of individual cases.

Conclusions

To summarise, this thesis set out to examine factors predicting sickness absence from work, with an aim to suggest ways in which this might be reduced for the benefit of individual employees, co-workers, managers and organisations. Sickness absence is clearly multi-causal, but there is much evidence to suggest that the effects of stress may have a substantial role to play in sickness absence, both at an individual and an organisational level. It would seem that Clinical Psychology has a role to play in examining ways of reducing sickness absence at work, through its skill in using theory to formulate problems and implement solutions.

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HEALTH AT WORK QUESTIONNAIRE

Researchers at the University of Edinburgh are interested in looking at how work affects your physical health and quality of life. This questionnaire will be used with information being collected during the health screening assessment. It asks how you feel about work and how you feel about your quality of life. It also asks some questions about the amount of support that you feel you get, both at home and at work.

ALL YOUR ANSWERS WILL REMAIN ENTIRELY CONFIDENTIAL TO THE RESEARCHERS AND BE USED FOR THE PURPOSES OF RESEARCH ONLY.

Please answer all the questions by circling the answer that best reflects how you feel, as shown in the example below. If you are unsure about which response to give to a question, please choose the ONE answer that appears most appropriate. This can often be your first response.

How satisfied are you with your physical working conditions?

- 1 Very satisfied
- 2 Satisfied
- 3 Dissatisfied
- 4 Very dissatisfied

When you have completed this questionnaire, please put it in the sealed envelope provided and return in to Dr Alison Harper, Occupational Health Department.

Please write your name: _____

Please give your date of birth: _____

ALL YOUR ANSWERS WILL REMAIN ENTIRELY CONFIDENTIAL AND BE USED FOR THE PURPOSES OF RESEARCH ONLY.

PART 1 - THE FOLLOWING QUESTIONS ASK ABOUT YOUR WORK:

Do you have to work very fast?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never/ Almost never

Do you have to work very intensively?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never/ Almost never

Do you have enough time to do everything?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never/ Almost never

Does your job require you to take the initiative?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never/ Almost never

Does your work demand a high level of skill or expertise?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never/ Almost never

Do you have the possibility of learning new things through your work?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never/ Almost never

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

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never/ Almost never

Do you have a choice in deciding how to do your work?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never/ Almost never

Do you have a choice in deciding what you do at work?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never/ Almost never

Do others take decisions concerning your work?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never/ Almost never

Do you have a say in choosing with whom you work?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never/ Almost never

Do you have a say in your own work speed?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never/ Almost never

Can your working time be flexible?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never/ Almost never

Can you decide when to take a break?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never/ Almost never

Do you have a good deal of say in decisions about work?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never/ Almost never

Do you have a great deal of say in planning your work environment?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never/ Almost never

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

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never

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

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never

Do you get consistent information from your superiors?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never

Does your job provide a variety of interesting things?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never

Is your job boring?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never

How often do you get help and support from your colleagues?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never

How often are your colleagues willing to listen to your work related problems?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never

How often do you get help and support from your immediate superior?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never

How often is your superior willing to listen to your problems?

- 1 Often
- 2 Sometimes
- 3 Seldom
- 4 Never

How satisfied are you with your usual take home pay?

- 1 Very satisfied
- 2 Satisfied
- 3 Dissatisfied
- 4 Very dissatisfied

How satisfied are you with your work prospects?

- 1 Very satisfied
- 2 Satisfied
- 3 Dissatisfied
- 4 Very dissatisfied

How satisfied are you with the people you work with?

- 1 Very satisfied
- 2 Satisfied
- 3 Dissatisfied
- 4 Very dissatisfied

How satisfied are you with the way your abilities are used?

- 1 Very satisfied
- 2 Satisfied
- 3 Dissatisfied
- 4 Very dissatisfied

How satisfied are you with the interest and skill involved in your job?

- 1 Very satisfied
- 2 Satisfied
- 3 Dissatisfied
- 4 Very dissatisfied

How satisfied are you with your job as a whole?

- 1 Very satisfied
- 2 Satisfied
- 3 Dissatisfied
- 4 Very dissatisfied

**PART 2 - THE FOLLOWING QUESTIONS ASK ABOUT YOUR QUALITY OF LIFE.
WE ASK THAT YOU THINK ABOUT YOUR LIFE IN THE LAST TWO WEEKS.**

How would you rate your quality of life?

- 1 Very poor
- 2 Poor
- 3 Neither poor nor good
- 4 Good
- 5 Very good

How satisfied are you with your health?

- 1 Very dissatisfied
- 2 Dissatisfied
- 3 Neither satisfied nor dissatisfied
- 4 Satisfied
- 5 Very satisfied

How much do you feel that pain prevents you from doing what you need to do?

- 1 Not at all
- 2 A little
- 3 A moderate amount
- 4 Very much
- 5 An extreme amount

How much do you need medical treatment to function in your daily life?

- 1 Not at all
- 2 A little
- 3 A moderate amount
- 4 Very much
- 5 An extreme amount

How much do you enjoy life?

- 1 Not at all
- 2 A little
- 3 A moderate amount
- 4 Very much
- 5 An extreme amount

To what extent do you feel your life to be meaningful?

- 1 Not at all
- 2 A little
- 3 A moderate amount
- 4 Very much
- 5 Extremely

How well are you able to concentrate?

- 1 Not at all
- 2 A little
- 3 A moderate amount
- 4 Very much
- 5 Extremely

How safe do you feel in your daily life?

- 1 Not at all
- 2 A little
- 3 A moderate amount
- 4 Very much
- 5 Extremely

How healthy is your physical environment?

- 1 Not at all
- 2 A little
- 3 A moderate amount
- 4 Very much
- 5 Extremely

Do you have enough energy for everyday life?

- 1 Not at all
- 2 A little
- 3 Moderately
- 4 Mostly
- 5 Completely

Are you able to accept your bodily appearance?

- 1 Not a all
- 2 A little
- 3 Moderately
- 4 Mostly
- 5 Completely

To what extent do you have enough money to meet your needs?

- 1 Not a all
- 2 A little
- 3 Moderately
- 4 Mostly
- 5 Completely

How available to you is the information that you need in your day-to-day life?

- 1 Not a all
- 2 A little
- 3 Moderately
- 4 Mostly
- 5 Completely

To what extent do you have the opportunity for leisure activities?

- 1 Not a all
- 2 A little
- 3 Moderately
- 4 Mostly
- 5 Completely

How well are you able to get around?

- 1 Very poor
- 2 Poor
- 3 Neither poor nor good
- 4 Good
- 5 Very good

How satisfied are you with your sleep?

- 1 Very dissatisfied
- 2 Dissatisfied
- 3 Neither satisfied nor dissatisfied
- 4 Satisfied
- 5 Very satisfied

How satisfied are you with your ability to perform your daily living activities?

- 1 Very dissatisfied
- 2 Dissatisfied
- 3 Neither satisfied nor dissatisfied
- 4 Satisfied
- 5 Very satisfied

How satisfied are you with your capacity for work?

- 1 Very dissatisfied
- 2 Dissatisfied
- 3 Neither satisfied nor dissatisfied
- 4 Satisfied
- 5 Very satisfied

How satisfied are you with yourself?

- 1 Very dissatisfied
- 2 Dissatisfied
- 3 Neither satisfied nor dissatisfied
- 4 Satisfied
- 5 Very satisfied

How satisfied are you with your personal relationships?

- 1 Very dissatisfied
- 2 Dissatisfied
- 3 Neither satisfied nor dissatisfied
- 4 Satisfied
- 5 Very satisfied

How satisfied are you with your sex life?

- 1 Very dissatisfied
- 2 Dissatisfied
- 3 Neither satisfied nor dissatisfied
- 4 Satisfied
- 5 Very satisfied

How satisfied are you with the support you get from your friends?

- 1 Very dissatisfied
- 2 Dissatisfied
- 3 Neither satisfied nor dissatisfied
- 4 Satisfied
- 5 Very satisfied

How satisfied are you with the conditions of your living place?

- 1 Very dissatisfied
- 2 Dissatisfied
- 3 Neither satisfied nor dissatisfied
- 4 Satisfied
- 5 Very satisfied

How satisfied are you with your access to health services?

- 1 Very dissatisfied
- 2 Dissatisfied
- 3 Neither satisfied nor dissatisfied
- 4 Satisfied
- 5 Very satisfied

How satisfied are you with your transport?

- 1 Very dissatisfied
- 2 Dissatisfied
- 3 Neither satisfied nor dissatisfied
- 4 Satisfied
- 5 Very satisfied

How often do you have negative feelings such as blue mood, despair, anxiety, depression?

- 1 Never
- 2 Seldom
- 3 Quite often
- 4 Very often
- 5 Always

PART 3 - THE FOLLOWING QUESTIONS ASK ABOUT HOW YOU FEEL IN GENERAL. WE ASK THAT YOU THINK ABOUT YOUR LIFE IN THE LAST TWO WEEKS.**I feel tense and wound up**

- 1 Most of the time
- 2 A lot of the time
- 3 From time to time, occasionally
- 4 Not at all

I feel as if I am slowed down

- 1 Nearly all of the time
- 2 Very often
- 3 Sometimes
- 4 Not at all

I still enjoy the things I used to enjoy

- 1 Definitely as much
- 2 Not quite as much
- 3 Only a little
- 4 Hardly at all

I have lost interest in my appearance

- 1 Definitely
- 2 I don't take as much care as I should
- 3 I may not take quite as much care
- 4 I take just as much care as ever

I get a sort of frightened feeling as if something awful is about to happen

- 1 Very definitely and quite badly
- 2 Yes, but not too badly
- 3 A little, but it doesn't worry me
- 4 Not at all

I get a sort of frightened feeling like butterflies in the stomach

- 1 Not at all
- 2 Occasionally
- 3 Quite often
- 4 Very often

I can laugh and see the funny side of things

- 1 As much as I always could
- 2 Not quite so much now
- 3 Definitely not so much now
- 4 Not at all

I feel restless as if I have to be on the move

- 1 Very much indeed
- 2 Quite a lot
- 3 Not very much
- 4 Not at all

Worrying thoughts go through my mind

- 1 A great deal of the time
- 2 A lot of the time
- 3 Not too often
- 4 Very little

I look forward with enjoyment to things

- 1 As much as I ever did
- 2 Rather less than I used to
- 3 Definitely less than I used to
- 4 Hardly at all

I feel cheerful

- 1 Never
- 2 Not often
- 3 Sometimes
- 4 Most of the time

I get sudden feelings of panic

- 1 Very often indeed
- 2 Quite often
- 3 Not very often
- 4 Not at all

I can sit at ease and feel relaxed

- 1 Definitely
- 2 Usually
- 3 Not often
- 4 Not at all

I can enjoy a good book or radio or TV programme

- 1 Often
- 2 Sometime
- 3 Not often
- 4 Seldom

PART 4 - THE FOLLOWING QUESTIONS ASK YOU TO THINK ABOUT THE PERSON IN YOUR LIFE WHO IS MOST IMPORTANT IN TERMS OF SUPPORTING YOU

Who are they? (i.e. friend, partner, brother, mother).....

	Never		Sometimes			Always	
Can you trust, talk frankly and share your feelings with this person?	1	2	3	4	5	6	7
What rating would be your ideal?	1	2	3	4	5	6	7
Can you lean on this person in times of difficulty?	1	2	3	4	5	6	7
What rating would be your ideal?	1	2	3	4	5	6	7
Does he/she give you practical help?	1	2	3	4	5	6	7
What rating would be your ideal?	1	2	3	4	5	6	7
Can you spend time with him/her socially?	1	2	3	4	5	6	7
What rating would be your ideal?	1	2	3	4	5	6	7

PART 5 - FINALLY, PLEASE ANSWER THE FOLLOWING TWO QUESTIONS:

What would make work more enjoyable for you?

What changes at work do you think would increase motivation?

THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE

HEALTH SCREENING QUESTIONNAIRE

Date: _____

Screeener: _____

BIOGRAPHY:

I'd like to start off by asking you a few questions about yourself. Firstly...

What is your....

1. Surname: _____

First name: _____

2. Home address: _____

3. Sex: Male / Female

4. When were you born? _____ Day _____ Month _____ Year

5. What division do you work in? _____ (Film, Camera, G&A. IH, Lens)

6. What is your employee number? _____

7. Do you work shifts? Yes / No

8. Which of the statements best describe your own current marital status?

Single
Married
Separated
Divorced
Widowed

9. And can you tell me who your GP is? _____

Now just a few questions about your medical history:

10. Do you have any history of...
- | | | |
|-----------------------|-----|--------------------|
| High blood pressure | ___ | 0=none |
| Angina | ___ | 1=diagnosis before |
| Previous heart attack | ___ | assessment |
| High cholesterol | ___ | 2=diagnosis after |
| Diabetes | ___ | assessment |
| Stroke | ___ | 3=uncertainty |

11. Is there any history of coronary heart disease in your immediate family? By that I mean either your mother or father or any brothers or sisters had any heart trouble before 55 years of age

_____ (Count up and write in the number of close relatives who have had heart trouble before the age of 55)

12. And what about diabetes? Is there any history of diabetes in your immediate family? By that I mean have your mother or father or brothers or sisters had any diabetes?

_____ (Count up and write in the number of close relatives with diabetes)

13. Take blood pressure:

_____ Systolic
_____ Diastolic

14. Take height and weight:

_____ Height (cms)
_____ Weight (kgs)

15. Can you tell me, do you take any of the following drugs regularly?

Lipid lowering agents ___
Betablockers ___
Hypoglycaemic agents ___
Diuretics ___
Thyroid hormones ___
Steroids ___
Contraceptive pill ___

Exercise

Now go to exercise station - State: **as I said at the beginning, exercise protects against heart disease, so we need to know a bit more about the activities you are involved in. So first of all, let me ask:**

16. Do you currently take part in any activity or exercise which leave you short of breath and perspiring at the end of 20 minutes?

IF YES ASK: **Which activities?** (Take first three only and write in activity, then for each activity ask: **how often, and how many minutes each time? How long have you been doing this?**

IF NO ASK: **Are you sure. What about walking or at home?**

Activity	Frequency (how often per week)			Duration (How many minutes per session)			Since when have you done this?	
	3+	1-2	Less than	Less than 20	20-40	40+	Less than 6 months	More than 6 months
1.	3	2	1	A	B	C	X	Y
2.	3	2	1	A	B	C	X	Y
3.	3	2	1	A	B	C	X	Y

Count up the duration and frequency of exercise in the grid and put in...

_____ 0 = 2-3 times a week

_____ 1 = Once a week

_____ 2 = Less than once a week

17. Take skinfold measures

_____ Biceps

_____ Triceps

_____ Subscapula

_____ Suprailiac

_____ Percentage body fat

Do bike test and enter results:

_____ Bicycle ergometer

_____ MVO₂ (MM/S/Litre)

_____ Fitness rating

GO TO SMOKING STATION

Do you know, smoking among other things, increases your chances of developing heart disease. So I would like to ask you a few questions about smoking. Can you tell me first of all...

- 18. Do you smoke at all these days?** YES - If yes, go to question 19
NO - If no, go to question 26
- 19. How much do you smoke each day?** 2 = Cigar or pipe
3 = 1-10 cigarettes (ring one choice)
4 = 11-20 cigarettes
5 = 21-40 cigarettes
6 = +40 cigarettes
- 20. And how old were you when you started to smoke regularly?** _____ Years
- 21. What brand do you usually smoke?** _____ (write in brand name)
- 22. Have you ever tried to give up smoking altogether?** Yes / No
- 23. How many times have you given up smoking for more than three days? Is it...**
- ___ Once
___ Twice
___ Three+
___ Never
- 24. Why did you go back to smoking cigarettes?**
- ___ Put on weight
___ Affected relationships
___ Stress
___ Some other reason (Please specify).....

25. How important is it to you to stop smoking now? Would you say it was...

- Very important
- Important
- Not all that important
- Not at all important

26. Have you ever smoked cigarettes regularly? Yes / No

- How long ago did you quit? Is it
- Less than six months ago
 - 6 months - 1 year
 - 1-2 years
 - 2-5 years
 - More than 5 years

27. How old were you when you started to smoke regularly? ___ Years

28. How many did you smoke a day when you smoked regularly? ___ (Write no. smoked per day)

29. What were your most important reasons for giving up?

30. Do ecolyser and enter result _____ Coppm

TAKE BLOOD SAMPLE AND ENTER INTO REFLOTRON

DIET

31. Everyone has their own tastes and preferences in food and we need to have some idea of what yours are, so we have some idea of what might be affecting your cholesterol level. I am going to read out a list of foods and I want you to think about each one and tell me how often you eat it. (Pass over Card). You can see from the card that the choices for each food are: every day, at least three times a week, a few times a month, less than once a month, or never. The first food is:

	Every day	At least 3 times a week	Once or twice a week	A few times a month	Less than once a month or never
White bread	5	4	3	2	1
Wholemeal bread	5	4	3	2	1
High fibre cereals, like bran, muesli, weetabix, shredded wheat	5	4	3	2	1
Ordinary whole milk	5	4	3	2	1
Semi-skimmed or skimmed milk	5	4	3	2	1
Chips	5	4	3	2	1
White meat or fish	5	4	3	2	1
Red meat, including mince, sausages, pies etc.	5	4	3	2	1
A variety of fresh vegetables	5	4	3	2	1
Fresh fruit	5	4	3	2	1
Butter	5	4	3	2	1
Margarine, low in saturated fat	5	4	3	2	1
Fizzy drinks	5	4	3	2	1
Eggs	5	4	3	2	1

32. Here are some statements people might make about food. Tell me how they apply to you, by answering yes or no to each question.

I usually grill foods not fry	Yes	No
I usually read food labels	Yes	No
I have a sweet tooth	Yes	No
I usually add salt to my food at the table	Yes	No
I eat sugary snacks between meals	Yes	No

33. Are you worried at all about your present weight? Yes too high
 No
 Yes too low
34. Have you made any change to your eating habits in the past year? Yes
 No
36. If YES: Why have you changed? To lose weight
 To gain weight
 Health
 More fibre
 Less fat
 Other reason (Please specify.....)
37. Write down cholesterol measure from Reflotron _____
38. In a week, how many of the following do you drink: _____ Pints of beer
_____ Single measures of spirit
_____ Glasses of wine
_____ Standard units of alcohol

Weighted scoring system for dietary intake

	Every day	At least 3 times a week	Once or twice a week	A few times a month	Less than once a month or never
White bread	5	4	3	2	1
Wholemeal bread	10	9	8	7	6
High fibre cereals, like bran, muesli, weetabix, shredded wheat	10	9	8	7	6
Ordinary whole milk	1	2	3	4	5
Semi-skimmed or skimmed milk	10	9	8	7	6
Chips	1	2	3	4	5
White meat or fish	10	9	8	7	6
Red meat, including mince, sausages, pies etc.	1	2	3	4	5
A variety of fresh vegetables	20	10	5	1	0
Fresh fruit	20	10	5	1	0
Butter	1	2	3	4	5
Margarine, low in saturated fat	5	4	3	2	1
Fizzy drinks	1	2	3	4	5
Eggs	5	4	3	2	1