HSE
Health & Safety Executive

Psychosocial risk factors in call centres: An evaluation of work design and well-being

Prepared by the **University of Sheffield, Health and Safety Laboratory and UMIST**
for the Health and Safety Executive 2003

RESEARCH REPORT 169

HSE
Health & Safety Executive

Psychosocial risk factors in call centres: An evaluation of work design and well-being

Christine A. Sprigg, BSc, MSc, C.Psychol, AFBPsS.
University of Sheffield
Firth Court Western Bank
Sheffield
South Yorkshire
S10 2TN

Phoebe R. Smith, BSc, C.Psychol.
Health and Safety Laboratory
Broad Lane
Sheffield
S3 7HQ

Paul. R. Jackson, BA, MSc, PhD, C.Psychol, FBPsS.
UMIST
Sackville St
Manchester
Lancashire
M60 1QD

This Research Report (RR) is the third product from the Health and Safety Laboratory (HSL) Call Centre studies. The first product of the HSL research was HELA Local Authority Circular (LAC 94/1) published in November 1999. The LAC reported the findings of HSL's exploratory and qualitative (interview and discussion-based) research on call centres. The second product of HSL's call centre research was a significantly revised and updated version of the HELA Local Authority Circular (LAC 94/1 (rev)), which was published in December 2001. In this RR, we report findings from the larger scale quantitative (questionnaire-based) study. More specifically, this report addresses four main questions:

1. Is working as a call handler more stressful than working in other jobs?

2. Is working as a call handler equally stressful for everyone who works as one?

3. What is it that makes working as a call handler stressful?

4. What can be done to reduce the psychosocial risks associated with working as a call handler?

Future research papers and articles in practitioner publications will report further results and conclusions from this research.

This report and the work it describes were funded by the Health and Safety Executive (HSE). Its contents, including any opinions and/or conclusions expressed, are those of the authors alone and do not necessarily reflect HSE policy.

HSE BOOKS

First published 2003

ISBN 0 7176 2774 8

ACKNOWLEDGEMENTS

Johanna Beswick, Ceri Phelps, and Kath Travis for fieldwork and administrative support

Nigel Hammond, formerly of the Local Authority Unit (LAU) HSE, for his support during our call centre research.

Trevor Shaw, Human Factors Unit, HSE, for facilitating the completion of this publication.

All of the participating call centre organizations and their employees.

CONTENTS

EXECUTIVE SUMMARY

This report is the third product of the Health and Safety Laboratory (HSL) call centre studies. The first product was HELA Local Authority Circular (LAC 94/1) published in November 1999. The LAC reported the findings of HSL's exploratory and qualitative (interview and discussion-based) research on call centres. The second product was a significantly revised and updated version of that Circular (LAC 94/1 (rev)), published in December 2001.

In this Research Report (RR) we present findings from the larger scale quantitative (questionnaire-based) study we conducted. This includes data from 36 call centres and 1,141 call centre employees. More specifically, this report addresses four main questions:

1. Is working as a call handler more stressful than working in other jobs?
2. Is working as a call handler equally stressful for everyone who works as one?
3. What is it that makes working as a call handler stressful?
4. What can be done to reduce the psychosocial risks associated with working as a call handler?

The answer to question 1 is 'Yes'. Our data show the risk of mental health problems is higher for call handlers and job-related well-being is lower compared to benchmark groups of employees in other occupations.

This seems to be the result of working within a call centre in general, rather than the role of call handler specifically (since call handlers are not markedly different from other call centre staff groups). However, satisfaction with the intrinsic aspects of the job (the nature of the job itself) is much lower for call handlers than for other benchmark occupational groups and for other work roles within the call centre.

The answer to question 2 is 'No'. Call handlers who reported poorer well-being

- worked in the telecommunications and IT business sector;
- worked in the larger call centres (employing 50 and over);
- had permanent contracts;
- followed strict scripts;
- had their performance measured either constantly or rarely; and
- were less interested in staying in the call centre industry.

In conclusion, call handlers' well-being is influenced by many factors. Some of these factors are difficult to change others are more open to manipulation.

In answer to question 3, we found call handling is made stressful for a call handler when they

- have a high workload;
- are unclear about their work role;
- cannot make full use of their skills;
- have conflicting role demands.

In respect to question 4, we suggest that to improve well-being in call centres the following work design improvements are made:

- improve the levels of autonomy for employees in call centres;
- give call handlers more opportunity to manage their own work demands;
- allow call handlers to use the skills they have;
- give call handlers more variety in their tasks.

We suggest that changing to team-based forms of work may increase levels of autonomy. Improving the fundamental design of the call-handling task is not without its difficulties, and this we readily acknowledge.

We conclude that we must now examine and evaluate the work design changes that call centre managers have already implemented. We must understand the potential additive effects of the performance monitoring and telephone technologies, both pervasive features of the call centre work environment, on well-being.

Future research papers and articles in practitioner publications will report further results and conclusions from this research.

This report and the work it describes were funded by the Health and Safety Executive. Its contents, including any opinions and/or conclusions expressed, are those of the authors alone and do not necessarily reflect HSE policy.

1 INTRODUCTION

1.1 BACKGROUND

During the last five years, the call centre industry in the UK has experienced huge growth. Estimates of the overall numbers employed in the industry vary from around 225,000 to over 420,000 (IDS, 2000). By 2005, it is expected that there will be 640,000 people employed in the call centre industry (Datamonitor, 2003).

The total number of call centres is estimated at between 4,000 and 5,000 (IDS, 2000). It is expected that this will rise to 8,000 by 2005 (Datamonitor, 2003). This rapid growth of the industry in recent years has occurred because of the advancement of computer and telephone technologies.

All figures are approximate because of both the rapid growth of industry and the lack of an agreed definition of what constitutes a call centre.

Recently, BT has joined a growing number of Western firms that have opted to transfer call centre operations to India. BT has announced that it is to open two Indian call centres in Bangalore and Delhi – employing 2,200 people by 2004 (BBC News, 2003). We draw attention to this recent trend simply as a point of information.

1.2 DEFINITIONS

As there is no agreed definition of a call centre, during our research for HSE, we developed and adopted the following *working* definitions for *call centres* and *call handlers.*

Call centre

'*a work environment in which the main business is conducted via a telephone whilst simultaneously using display screen equipment (DSE). The term call centre includes parts of companies dedicated to this activity such as internal help lines as well as whole companies.*'

Call handler

'*an employee whose job requires them to spend a significant proportion of their working time responding to calls on the telephone whilst simultaneously using DSE.*'

The call centre industry has attracted much negative comment in the media. Newspaper, radio and television features have all referred to call centres as 'electronic sweatshops', with the term 'battery hens' used to illustrate the suggested intensive and stressful nature of being a call handler. Such terminology has partly emerged from research papers by Garson (1988), Fernie & Metcalf (1998), and Taylor & Bain (1999).

Call centre jobs are considered to be 'low-quality' and heavily routinised forms of work. Batt & Moynihan (2002) state that '*Production line call centres proliferate*' (p.15), whilst many manufacturing enterprises have moved away from this 'mass production model' (maximise volume and minimise costs) and have adopted more high involvement work practices (e.g., Huselid, 1995). All this is somewhat removed from the 'knowledge workers' predicted for this, the new millennium.

Work design and well-being

From an initial discussion with a representative of the Local Authority Unit[2] (LAU), it was evident that work design theory would provide an important guiding framework for examining the psychosocial risk factors in the call centre context. For a thorough review and examination of the work design literature see Parker & Wall (1998).

Work design is concerned with the characteristics of the jobs. Hackman & Oldham (1975, 1976, 1980) identified five 'core job characteristics' that relate to the motivation and satisfaction of employees. These characteristics are:

1. *Skill variety:* the degree to which the job requires different skills
2. *Task identity:* the degree to which the job involves completing a whole, identifiable piece of work rather than simply a part
3. *Task significance:* the extent to which the job has an impact on other people, inside or outside the organization
4. *Autonomy:* the extent to which the job allows jobholders to exercise choice and discretion over work
5. *Feedback from the job:* the extent to which the job itself (as opposed to other people) provides jobholders with information on their performance.

These core job characteristics were suggested to produce 'critical psychological states', for example, skill variety, task identity and task significance affecting the *experienced meaningfulness of work.* Autonomy influences the *experienced responsibility for work*, and feedback relates to *knowledge of results* of work activities. These states were then responsible for four main outcomes, that is, work satisfaction, internal work motivation, work performance, and absenteeism and turnover. For a more detailed description of 'The Job Characteristics Model', see Parker & Wall (1998).

The Job Characteristics Model (JCM) is the most widely used theoretical approach to job design (Parker & Wall, 1998). The model is not without its limitations and these are discussed in Parker & Wall (1998). Nevertheless, Parker & Wall conclude that the specified job characteristics can be important determinants of outcomes, and that this has been supported in both cross-sectional and longitudinal research.

To overcome some of the JCM's weaknesses, we have used an expanded model of work design as recommended by Parker & Wall (1998) in our research. The work design measures we have used are:

- Timing control
- Method control
- Role breadth (a.k.a. 'Boundary Control')
- Participation in decision-making
- Task variety
- Skill utilization
- Workload
- Role conflict
- Role clarity
- Co-worker support

Specific details of the measures, together with example items are given in Appendix 3.

[2] Call centres are deemed to be 'office' work environments, and, as such, are enforced by the Local Authorities, rather than by HSE Health and Safety Inspectors.

These work characteristics are clearly of importance in examining the call centre context. Frequently, call centre jobs are characterised as having limited task variety, that is, call handlers carry out the same tasks over and over again. Sometimes call handlers are expected to say the same sentences repeatedly. This is called scripting. Frequently, call handlers have little control over when they take calls and how long they spend on them, as calls are routed to them automatically via an ACD (Automatic Call Distribution) system, and often there are strict limits on the maximum time a call handler should spend on each call.

Research has demonstrated clear associations between work design characteristics and employee effectiveness, that is, mental health and performance (see Parker & Wall, 1998 and see Parker in Warr, 2002).

Employees with low *task variety* report poorer mental health, i.e., greater stress and employees with higher *job control* report greater job satisfaction (Terry & Jimmieson, 1999). Employees in jobs with 'poor role characteristics' also report poorer mental health. By poor role characteristics, we mean the jobs where employees have high *role conflict,* for example, they experience contradictory demands from managers, and low *role clarity,* for example, where employees are not sure what is expected of them.

These aspects of work and jobs (low/limited task variety, low control, high role conflict and low role clarity) are considered *psychosocial risk factors* or *hazards* (see, for example, Cox & Griffiths, 1996).

Work is rarely designed, as such, but work can be re-designed, successfully, to reduce the impact of these psychosocial risk factors. Indeed, the Health and Safety Executive (HSE) has previously funded several research studies to examine work re-design in manufacturing contexts (see Parker, Jackson, Sprigg & Whybrow, 1998; Jackson & Parker, 2001 and Parker & Williams, 2001).

Parker et al (1998) demonstrated that work redesign was important as *'both a stress prevention strategy and as a way to facilitate organisational effectiveness'* (p.24).

Organisations can intervene to improve the nature of work design. Moreover, such redesign can enhance employee well-being and performance.

1.3 RESEARCH LITERATURE ON CALL CENTRES

When we began our research, in late 1998, there were few published academic papers whose authors had explicitly examined these *psychosocial risks* (e.g., stress) in call centres.

Research publications on call centres have been concerned with, for example, forms of management control (Callaghan & Thompson, 2001), high commitment management (Hutchinson, Purcell & Kinnie, 2000), industrial relations and unionism (Bain & Taylor, 2000), payment systems (Fernie & Metcalf, 1998), and emotion work (Zapf, Vogt, Seifert, Mertini, & Isic, 1999).

Recently, there has been a Special Issue of Human Resource Management Journal (HRMJ) devoted to call centres and human resource implications (see Volume 12, Number 4, 2002). There are a number of informative papers in this journal.

In respect to our own evaluation of call centres, it is the paper by Holman (2002) on 'Employee well-being in call centres' that is the most pertinent. Holman's research was undertaken during a similar time period as our own. It has more of a HR focus than our own, and was funded by the ESRC at the ESRC Centre for Organization & Innovation (COI), at the

Institute of Work Psychology (IWP), University of Sheffield. Our own research had an occupational health psychology focus and was funded by HSE's LAU.

Holman's paper is important to our own research. The paper reports comparative findings for some of the well-being measures that we have used in our research.

1.3.1 Literature on psychological well-being in call centres

In recent years, the media have paraded call centres as prime examples of stressful work environments. Yet, there have been few systematic and rigorous attempts to examine the degree of stress and 'ill-being' experienced by those that work there, that is, to thoroughly 'diagnose' the context (see Parker et al, 1998).

Are call centres really any more stressful than any other workplaces these days?

The strength of our own work, and an important element of the Holman (2002) paper, is the ability to compare well-being data from call centre employees with data from employees in other work contexts.

Holman (2002) described findings for four measures of well-being, namely, anxiety, depression, intrinsic and extrinsic job satisfaction. We have collected data using these same measures. Holman (2002) used a sample of Customer Service Representatives (CSRs; a.k.a. 'call handlers') from three call centres from the same UK bank. Five hundred and fifty-seven CSRs returned questionnaires, representing a response rate of 79%.

Following detailed statistical analyses, Holman concluded that call centre work compared favourably with shopfloor manufacturing and clerical work. Moreover, at two of the call centres the level of well-being was either equivalent to or, in some cases, better than the comparison groups.

Only very recently have a number of academic papers been published about well-being in call centres. These include papers by Deery, Iverson & Walsh (2002), and Holman, Chissick & Totterdell (2002).

Deery et al (2002) conducted research in five call centres of a large Australian telecommunications organisation. The overall response rate for this study was 88%. The study uses data from 480 telephone service operators. The Deery et al (2002) paper is concerned with the identification of the factors that are associated with emotional exhaustion and the frequency of absence amongst call centre employees. We discuss the findings from Deery et al in relation to our own findings later in this report.

Holman, Chissick & Totterdell (2002) use data from 347 Call Center Agents (CSAs) from two call centres of a UK bank. They investigated the relationship between performance monitoring and well-being. Again, we discuss the Holman et al (2002) findings in relation to our own findings in this report.

Next, we describe the background to our, the Health and Safety Laboratory (HSL), two studies of call centres and introduce the research questions we developed for our main study.

1.4 STUDY 1: EXPLORATORY STUDY

The HSE's LAU commissioned the Work Psychology Section (formerly Ergonomics and Work Psychology Section) of the HSL to examine call centre working practices.

During 1998 and 1999, we conducted a small-scale exploratory study of working practices in six call centres. Two applied psychologists from HSL Work Psychology Section interviewed 22 call centre employees who held a variety of roles within call centres.

From initial discussions with LAU staff, it was evident that work design theory (see previous section on work design and well-being) was an appropriate framework for examining (and diagnosing) the psychosocial elements of the call centre context.

We designed a semi-structured interview schedule. Using the schedule, we asked employees about various characteristics of their jobs, including the 'design' of their work. We interviewed call centre staff at their workplaces.

The findings of this exploratory study were presented in the HELA Local Authority Circular (LAC) 94/1 'Initial advice regarding call centre working practices' published in November 1999.

1.5 STUDY 2: MAIN STUDY

The initial advice we wrote for the Local Authority Health and Safety Enforcement Officers was based on 22 semi-structured interviews conducted in six organisations. We spoke with many industry stakeholders, for example, union officials, interest groups, and industry associations, during the course of this initial work.

With this small sample we were unsure that our study findings represented the working practices of the call centre industry as a whole. Thus, we sought the support of LAU to conduct a second, larger-scale study. In this larger study, described in this report, we sought to include employees from call centres that differed in location, size and sector type.

We compiled a questionnaire specifically for the call centre industry. In part, questions were prompted by those work practices that had been raised as 'issues' in the earlier exploratory study. The core of the questions were concerned with work design, whilst others asked specific questions about, for example, access to welfare facilities, and knowledge about display screen equipment (DSE).

This main study builds on from previous research conducted for HSE by Parker, Jackson, Sprigg & Whybrow (1998), as it is concerned with the impact of work design on well-being. However, here the context is the service sector rather than the manufacturing sector, in which the Parker et al (1998) research was conducted.

1.5.1 Research questions

This HSE Research Report (RR) addresses four main research questions:

1. Is working as a call handler more stressful than working in other jobs?

We examine call handlers' general mental health, job-related well-being and job satisfaction and compare these with data from employees in a variety of alternative jobs. Some of these comparative 'benchmarking' data were collected during previous research (for example,

Jackson & Parker, 2001) funded by the HSE; other data come from a Benchmarking Manual (Mullarkey, Wall, Warr, Clegg & Stride, 1999), which draws on a sample of more than 40,000 respondents.

2. Is working as a call handler equally stressful for everyone who works as one?

We compare:

- call handlers in different business sectors
- call handlers who handle inbound versus outbound calls
- call handlers who have permanent contracts or those that do not
- call handlers who are part-time or full-time
- call handlers who are educated to degree level and those who are not
- call handlers who follow strict scripts and those who do not.

3. What is it that makes working as a call handler stressful?

We investigate which work design characteristics are associated with which well-being outcomes for call handlers.

4. What can be done to reduce the psychosocial risks associated with working as a call handler?

The first three questions will be answered using data from our main study. This last question interprets our study finding in relation to the broader literature on work design and occupational stress.

2 METHOD

2.1 SAMPLE

For the main study we used a 'stratified opportunity' sample of call centres. Here, 'stratified' means we approached organisations that reached our criteria in relation to sector type, size and location. The 'opportunity' element means we used organisations that we approached and which then agreed to participate.

To make our sample more representative than our exploratory study, we used this more targeted approach. We tried to mirror in our sample the relative proportions of call centres which existed in each business sector. Thus, we included call centres from each of the nine sectors we had identified from various information sources. Furthermore, we succeeded in getting access to small, medium-sized and large call centres located across the UK.

We gained access to some call centre employees because representatives from organisations attended presentations we gave about exploratory research in call centres. We had made a number of significant contacts in the financial services sector for our exploratory work, but we wanted to examine working practices in other sectors too. Our quest for call centres in other sectors necessitated, in some instances, 'cold calling' organisations to establish access.

This process of access negotiation with multiple organisations took many months. In one instance we had been steadily negotiating access with a major organisation for a period of over 18 months, only to have the access fall through at the 'zero hour'.

We achieved a sample of call centre employees drawn from 36 call centres.

2.2 THE QUESTIONNAIRE

We compiled a 23-page questionnaire specifically for the call centre context. This used, wherever possible, existing scales of known psychometric adequacy.

Various experts from HSE reviewed the questionnaire, and we developed some of their suggestions into further questions (items) and scales. For example, HSE noise experts helped us with the development of items for the auditory health section. We also collaborated with several LA H & S Enforcement Officers. This process of collaboration and questionnaire development took approximately eight months. We piloted the questionnaire in October 2000.

The questionnaire comprised six sections. The detailed content of each section is described in more detail in Appendix 1.

2.3 PROCEDURE

Questionnaires were sent out to the 36 call centre sites operated by 19 organisations. Each questionnaire was accompanied by a detailed covering letter. The letter explained who we were, why we were doing the research and what was required of the employee in completing and returning the questionnaire. We assured employees of confidentiality but explained that we could only guarantee this if they followed the completion and return procedures we had detailed.

We distributed 2,982 questionnaires to nominated representatives within call centres who had agreed to distribute them to their call handling staff. During the data collection phase HSL staff constantly monitored the questionnaire returns, and telephone/ postal reminders were given to organisations at regular intervals to maximise response.

In total, 1,141 completed questionnaires were returned to HSL. Other call centre staff as well as 'front-line' call-handling staff completed questionnaires. This was a deliberate method to obtain comparison data from other employees working within the call centre context. These other staff, as a rule, did not spend the majority of their working time 'on the phones'.

Overall, the number of completed questionnaires represents a 38% response rate, which is good for postal surveys such as ours. Commonly, we worked with a designated, named individual on each call centre site, to improve response rates and 'buy-in' into the research.

3 RESULTS

3.1 SAMPLE CHARACTERISTICS

3.1.1 Size of study call centres

The call centres in the study were a variety of sizes. The smallest employed 17 staff, whilst the largest employed 1,500.

For the study we categorized call centres as being either: 'small', that is, employing fewer than 49 staff; 'medium', that is, employing between 50 and 499 staff; and 'large', that is, employing 500 staff and over. Our sample includes four 'small' call centres, 12 'medium' call centres, and six 'large' call centres.

3.1.2 Location of study call centres

Questionnaires were distributed to 28 separate geographical locations within the UK. Some organisations operated call centres in more than one location. We cannot list the exact locations of the study call centres, as this may lead to the identification of participant organisations. However, in gross terms, the call centres from the study represented the following regions and countries.

Table 1 Distribution of study call centres by country and region

Country / Region	***Number of call centres sampled***
England: South and South East	7
England: Midlands	5
England: South West	3
England: East	3
England: North, North East and North West	3
Scotland	3
Wales	2
Northern Ireland	2

3.1.3 Business sector of study call centres

Our sample of call handlers was spread across a variety of business sectors. The largest percentage (24%) was drawn from the telecommunications & IT sector. The second largest percentage came from the financial services sector.

Table 2 Distribution of respondents by business sector

Business Sector	*% of call handlers*
Telecommunications & IT	24
Financial services	21
Retail	14
Utilities	14
Hotels & leisure	9
Public/ voluntary sector	8
Transport & travel	7
Emergency services	2
Call centre outsourcing[1]	1

3.1.4 Main roles occupied within the call centre

We collected data from those performing other roles within the call centres and not just from front-line call handlers. Our total sample size was 1,141 and this comprised the following (see Table 3) employee numbers per role. The focus of this report is on our findings about front-line call-handlers.

Table 3 Distribution of respondents by role within the call centre

Role in Call Centre	*n*
Call handler	884
Team leader	38
Call centre support	79
Supervisor	26
Manager	15
'Other'	80
Missing data	19
Total	**1,141**

As can be seen from Table 3 the majority of our respondents were call handlers (n=884).

As the main focus of this report is on call handlers, the bulk of this report uses data from the 884 people employed as call handlers.

[1] 'Outsourcing' : In this context it refers to a call centre carrying out work under sub-contract to another, separate, organisation.

3.1.5 Age distribution in the sample

We asked respondents to indicate which of six age groups they belonged to. As can be seen from Table 4, most call handlers (almost two thirds) were aged between 20 and 39. Only, 7% were under 20 years of age, and just 1% were over 60 years of age.

Table 4 Distribution of respondents by grouped age

Age Groups (in yrs)	*% of call-handlers*
Under 20	7
20-29	32
30-39	32
40-49	19
50-59	9
Over 60	1

3.1.6 Gender composition of the sample

Almost three quarters (74%) of the sample were women. Thus, the sample comprises largely young to middle-aged women.

3.1.7 Nature of calls handled

We asked respondents to indicate the nature of calls that they usually handled. Almost all respondents (91%) usually handled only inbound calls, 3% handled only outbound calls, while 6% reported that they usually handled both types of call. Of those who made outbound calls, only 4% reported that these calls were cold calls.

3.1.8 Tenure within: the industry, the organization and the role

Tenure in the industry In the questionnaire, we asked three questions about tenure and provided eight response categories for each.

Table 5 Tenure in the call centre industry

Length of time	*% of call-handlers*
< 3 months	5
3-6 months	8
7 months to 1 yr	11
1-2 yrs	22
3-5 yrs	31
6-10 yrs	13
11-15 yrs	7
15 + years	3

As can be seen from Table 5 the majority of call handlers (31%) had worked in the call centre industry for between three to five years. Twenty-two percent of the sample had worked in the industry for between one to two years.

Table 6 Tenure at the call centre

Length of time	*% of call-handlers*
< 3 months	9
3-6 months	10
7 months to 1 yr	13
1-2 yrs	24
3-5 yrs	28
6-10 yrs	10
11-15 yrs	5
15 + years	1

Tenure in the call centre As can be seen in Table 6, 28% of study call handlers indicated they had worked in the call centre they were currently in for between three and five years. With 24% indicating that they had been in their present call centre for between one and two years.

Table 7 Tenure in the current role

Length of time	*% of call-handlers*
< 3 months	9
3-6 months	13
7 months to 1 yr	15
1-2 yrs	25
3-5 yrs	26
6-10 yrs	7
11-15 yrs	4
15 + years	1

Results for length of time in current role were very similar to those found in the previous two tables. With 26% of call handlers indicating that they had been in their current role for between three and five years and 25% indicating they had been in their role for between one and two years.

3.1.9 Hours of work

Contracted hours Twenty-two percent of call handlers reported that they were contracted to work 37.5 hours each week. Eighteen percent reported that they were contracted to work 37 hours, and a further 18% reported they were contracted to work 35 hours. The remainder (42%) were contracted to work between three hours and 48 hours per week.

Thirty-two per cent reported that they were contracted to work 34 hours and under. These call handlers reported that they were contracted to work all manner of hours including as few as three hours. Seven per cent reported being contracted to work over 37.5 hours.

Actual hours Nineteen percent of call handlers reported that they actually worked 37.5 hours each week. Fourteen percent reported that they actually worked 37 hours, and a further 15 percent reported that they actually worked 35 hours.

The remainder reported they actually worked between three hours and 60 hours. Twenty-six per cent reported that they actually worked over 37.5 hours a week, and 6% reporting that they actually worked over 45 hours a week.

3.1.10 Work patterns

Call handlers were asked to indicate the type of work pattern they worked (see Table 8). The most common work pattern was rotating shifts (41%), and a further 20% worked fixed shifts. Twenty per cent reported that they worked standard hours (daytime 9-5 or equivalent).

The percentages add up to more than one hundred, because respondents were able to tick as many alternatives as applied to them. For example, a call handler could tick both rotating shifts and variable hours.

Table 8 Call handler work patterns

Work Pattern	*% of call handlers*
Rotating shifts	41
Weekends & weekdays	29
Standard hours (daytime 9-5, or equivalent)	20
Fixed shift	20
Weekdays only	14
Variable hours	12
Other non-standard hours	7
Evenings only	5
Weekends only	2

3.1.11 Nature of employment contract

We asked call handlers to indicate the nature of their employment. As with the work patterns we asked call handlers to accurately represent their circumstances by ticking as many boxes as applied to them, so again, these percentages sum to more than one hundred.

Table 9 Nature of employment contract

Contract	*% of call handlers*
Permanent	92
Full-time	68
Part-time (< 30 hours a week)	29
Through an agency	6
Temporary	4
Fixed term	1
Relief (get called in when busy)	< 1

As can be seen from Table 9, most (92%) call handlers were on permanent contracts and worked full time rather than part time.

3.1.12 Ethnic origin

We asked respondents to indicate their ethnic origin. Our sample included: 94% White, 4% Asian, 1% Black, and 1% Other.

3.1.13 Educational and vocational qualifications

As with work patterns, and employment contracts, call handlers were again asked to 'tick as many boxes as apply to your circumstances'. This leads to a total percentage of over one hundred.

Table 10 Educational attainment

Qualifications	*% of call handlers*
GCSEs/ O level (or equivalent)	88
NVQs	22
A levels (or equivalent)	33
HNC/HND	8
Degree	13
Postgraduate (e.g., MA, Diploma)	3
PhD	< 1

From Table 10, we can see that 88% of study call handlers had GCSEs (or equivalent) qualifications, and 33% had 'A' levels. Thirteen percent had degrees.

3.1.14 Union membership

In our sample, 26% of call handlers were union members, and 74% were not.

3.1.15 Commitment to the call centre industry

At the end of the 'Background' section we asked a simple question about call handlers' intentions. The question was phrased: *'Are you interested in staying in the call centre industry for more than five years?'*

We found that 51% of call handlers answered 'Yes', and 49% answered 'No'.

3.1.16 Summary of sample characteristics

The sample comprises largely young to middle-aged, white women who have at least GCSE level qualifications. The majority of these women have three to five years' experience in the call centre industry and the call centre that they work in. They work rotating shifts and have full-time, permanent employment contracts. The majority are not union members and just over half of them (51%) said that they were interested in staying in the call centre industry for more than five years.

3.2 QUESTION 1: IS WORKING AS A CALL HANDLER MORE STRESSFUL THAN WORKING IN OTHER JOBS?

We address this question by using data from the benchmarking manual (Mullarkey et al, 1999), as well as data from a recently published study of call handlers in call centres from a single financial services organisation (Holman, 2002). In addition, using data collected only in our study, we compare call handlers and other employees within the same call centres.

We answer this question for our two measures of job-related well-being (Question 1a), for job satisfaction (Question 1b), and for the GHQ, a widely used measure of general mental strain (Question 1c):

a) Do call handlers report poorer *job-related well-being*?

b) Do call handlers report lower *job satisfaction*?

c) Do call handlers report more symptoms of *general mental strain*?

3.2.1 Question 1a: Do call handlers report poorer *job-related well-being* than employees in other occupations?

We measured job-related well-being with the two short scales of anxiety and depression developed by Warr (1987, 1990a). For details of these scales see Appendix 3. In this report, a high score indicates greater anxiety or depression (means in Mullarkey et al, 1999 have been reverse scored for consistency with our data).

Differences in job-related well-being according to work roles within call centres First, we compare call handlers with other call centre employees. No difference was found for *job-related anxiety*. Call handlers reported significantly higher *job-related depression* than did employees in other call centre roles. From other research, we know that depression in the workplace is associated with lack of control, while anxiety is associated with work pacing.

Table 11 Comparisons with other call centre roles

Variable	*Call handler (n=881)*	*Team Leader (n=37)*	*Support Role (n=79)*	*Supervisor (n=26)*	*Manager (n=15)*	*p*
Job-related anxiety	2.92 (0.78)	2.82 (0.68)	2.92 (0.68)	2.99 (0.75)	2.80 (1.05)	ns
Job-related depression	2.86 (0.79)	2.61 (0.70)	2.78 (0.79)	2.65 (0.74)	2.20 (0.94)	**

ns not significant; ** $p < .01$.

Comparisons of call handlers with other occupations Table 12 (below) reports means and standard deviations for our sample, together with the equivalent summary indices for nine benchmark groups adapted from Tables 4.4 & 4.9 of Mullarkey et al (1999).

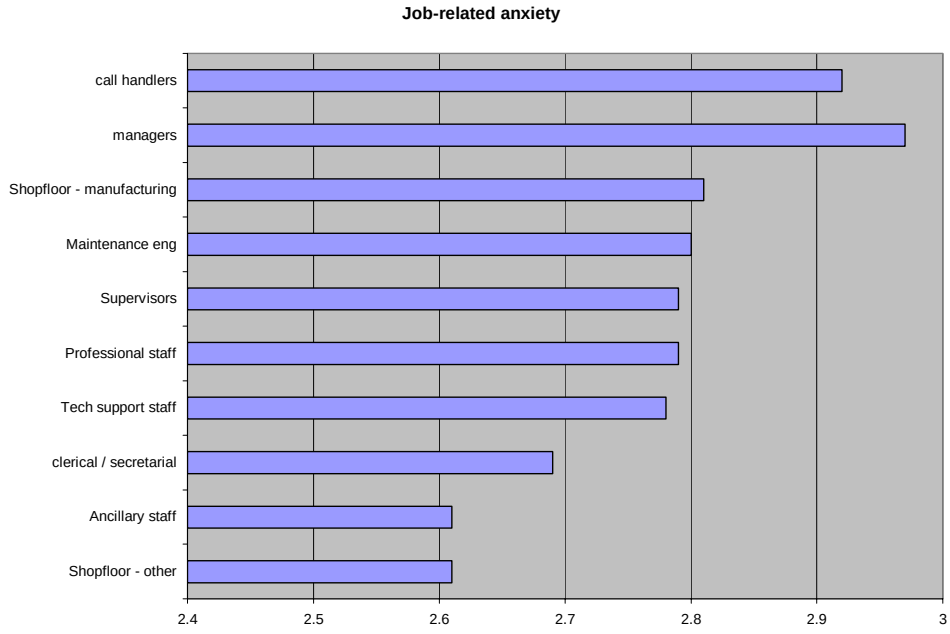
The only group reporting higher levels of *job-related anxiety* are managers, while call handlers report significantly more anxiety than most other groups. The picture for *job-related*

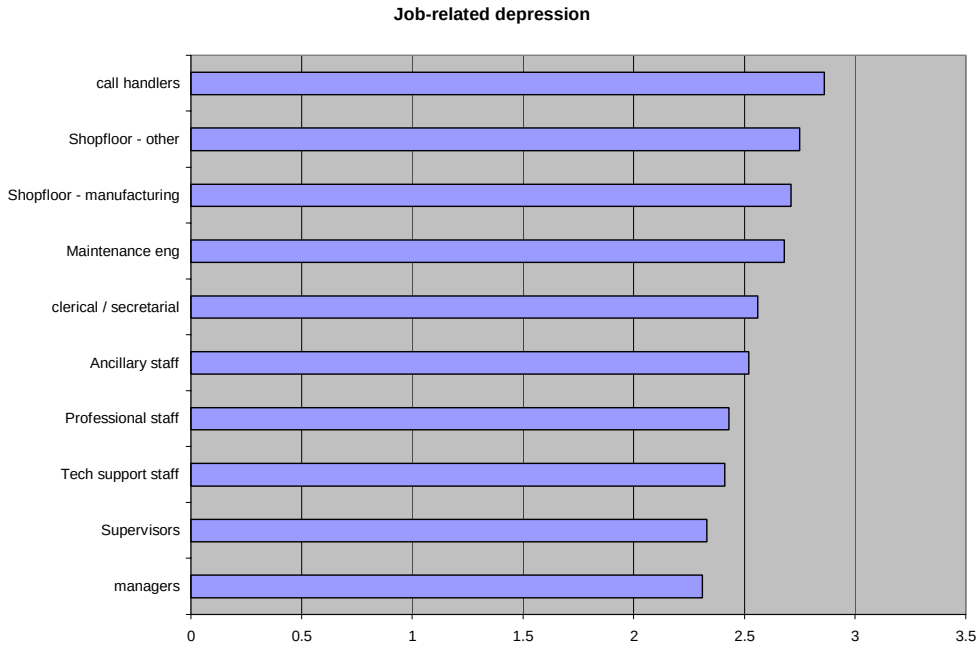
depression is similar: Call handlers report significantly higher levels of depression than almost all benchmark groups.

Table 12 Comparisons of call handlers with other occupations on job-related anxiety & depression

Occupations	***Job-related Anxiety***			***Job-related Depression***		
	n	*Mean / SD*	*t-test*	*n*	*Mean / SD*	*t-test*
Call handlers	**883**	**2.92 (0.78)**	**--**	**883**	**2.86 (0.79)**	**--**
Clerical & Secretarial	146	2.69 (0.76)	3.31**	146	2.56 (0.72)	4.30**
Technical support staff	294	2.78 (0.73)	2.71**	301	2.41 (0.66)	8.88**
Maintenance engineers	296	2.80 (0.70)	2.35**	289	2.68 (0.71)	3.44**
Supervisors	198	2.79 (0.74)	2.14*	200	2.33 (0.70)	8.74**
Shopfloor – manufacturing	2239	2.81 (0.82)	3.42**	2233	2.71 (0.77)	4.86**
Shopfloor – other organisations	224	2.61 (0.72)	5.39**	220	2.75 (0.74)	1.87 ns
Professional staff	142	2.79 (0.69)	1.87 ns	141	2.43 (0.71)	6.08**
Managers	209	2.97 (0.74)	-0.84 ns	200	2.31 (0.71)	9.05**
Ancillary staff	155	2.61 (0.70)	4.63**	156	2.52 (0.75)	4.99**

ns not significant; ** p < .01





Comparisons with call handlers in financial services Holman (2002) reported job-related anxiety and depression scores for samples of call handlers from call centres within a single financial services organisation. Table 13 (below) shows the means and standard deviations together with results of t-test comparisons with the data from the present survey.

Call handlers in our study reported much higher levels of *job-related anxiety* than all three of the groups in Holman's study. Differences for *job-related depression* were much less marked, although the mean scores from our call handlers are still the highest. Only the Loan-call group in Holman's study was significantly different from our sample.

Table 13 Comparison of job-related anxiety & depression for call handlers with data reported by Holman (2002)

Occupations	***Job-related anxiety***			***Job-related depression***		
	n	***Mean / SD***	***t-test***	***n***	***Mean / SD***	***t-test***
Call handlers	**883**	**2.92 (0.78)**	**--**	**883**	**2.86 (0.79)**	**--**
Bank-call CSR	221	2.54 (0.74)	6.54**	221	2.77 (0.86)	1.49 ns
Mortgage-call CSR	157	2.69 (0.74)	3.43**	157	2.76 (0.67)	1.49 ns
Loan-call CSR	179	2.68 (0.73)	3.79**	179	2.38 (0.71)	7.54**

ns not significant; ** $p < .01$

***Answer Q1a*: In our sample, working as a call handler is associated with higher job-related depression than working in other roles within the call centre, though anxiety levels are broadly similar. Call handlers in this study report much higher levels of both job-related anxiety and depression than most other benchmark groups and are also more anxious than the three groups of call handlers in the Holman financial service study.**

3.2.2 Question 1b: Do call handlers report lower *job satisfaction*?

The standard measure of job satisfaction contains two subscales of intrinsic and extrinsic satisfaction, which can be combined to give an overall score. *Extrinsic* satisfaction refers to external aspects of the job, such as working conditions, promotion prospects, industrial relations climate. *Intrinsic* satisfaction refers to 'psychological' aspects of the job, such as recognition for good work, opportunity for development, autonomy. A high score indicates greater satisfaction. See Appendix 4 for further details of the scale.

Differences in job satisfaction according to work roles within call centres
Employees in different work roles report different levels of *overall job satisfaction* (as shown by the first row of Table 14, below), and this is particularly marked for *intrinsic* aspects of the job (row 2). For both measures, call handlers report much lower levels of job satisfaction than other groups.

Table 14 Comparisons of job satisfaction with other call centre employees

Variable	*Call handler (n=883)*	*Team Leader (n=37)*	*Support Role (n=79)*	*Supervisor (n=26)*	*Manager (n=15)*	*p*
Overall job satisfaction	**4.16 (1.00)**	4.59 (0.99)	4.30 (0.94)	4.41 (0.80)	4.68 (1.61)	**
Intrinsic job satisfaction	**3.77 (1.22)**	4.40 (1.12)	4.13 (1.16)	4.08 (1.06)	4.71 (1.75)	**
Extrinsic job satisfaction	**4.22 (0.94)**	4.72 (0.96)	4.42 (0.84)	4.64 (0.78)	4.66 (1.54)	ns

ns not significant; ** p < .01.

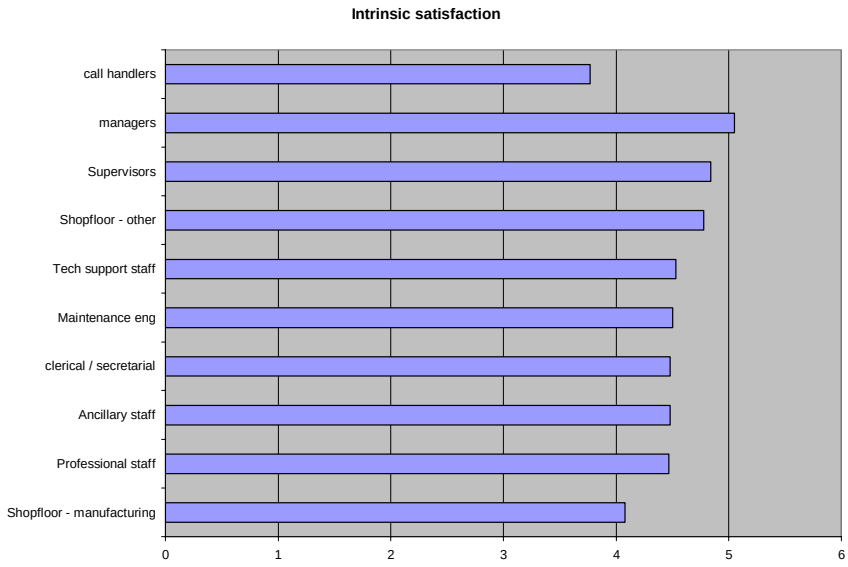
Comparisons of call handlers with other occupations Table 15 (below) reports means and standard deviations for our sample, together with the equivalent summary indices for nine benchmark groups taken from Tables 2.4, 2.9 & 2.14 of Mullarkey et al (1999).

The results for *overall satisfaction* show that call handlers are much less satisfied with their jobs than every other benchmark group except the shopfloor other organisations and manufacturing groups.

Looking at intrinsic and extrinsic aspects separately helps to clarify this pattern. Means for *intrinsic satisfaction* are very much lower for call handlers than for every other group (except

non-manufacturing shopfloor workers). By contrast, call handlers score about average on *extrinsic satisfaction* – significantly better than maintenance engineers and both shopfloor groups but significantly worse than clerical & secretarial staff, managers and supervisors.

We conclude that call handlers are generally as satisfied as other workers. Call centres appear to be more satisfying environments than the shopfloor but worse than other office environments. It is with respect to intrinsic aspects of the job that call handlers are very much less satisfied than other workers.



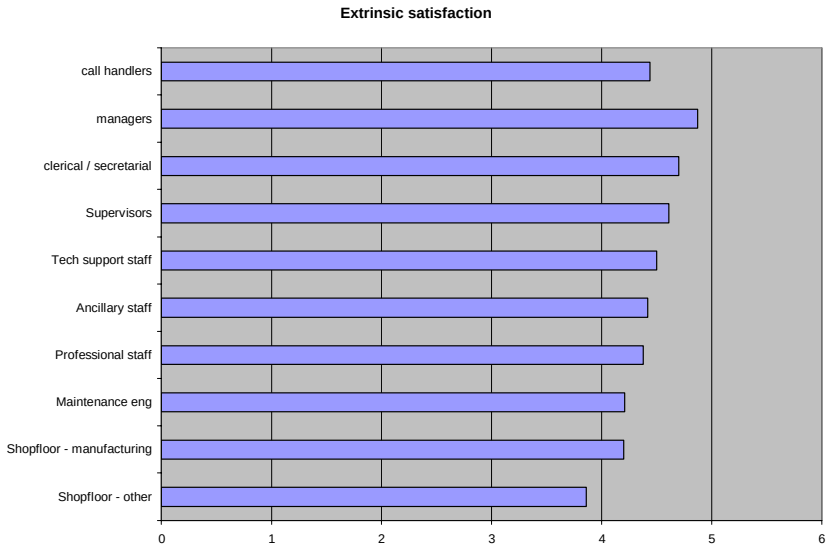


Table 15 Comparisons of call handlers with other occupations on job satisfaction

Occupations	*Overall satisfaction*			*Intrinsic satisfaction*			*Extrinsic satisfaction*		
	n	***Mean / SD***	***t-test***	***n***	***Mean / SD***	***t-test***	***n***	***Mean / SD***	***t-test***
Call handlers	**883**	**4.16 (1.00)**	**--**	**883**	**3.77 (1.23)**	**--**	**883**	**4.44 (0.94)**	**--**
Clerical & Secretarial	941	4.60 (0.95)	9.64**	941	4.48 (1.10)	13.01**	943	4.70 (0.93)	5.94 **
Technical support staff	610	4.52 (0.90)	7.12**	612	4.53 (1.00)	12.64**	612	4.50 (0.94)	1.21 ns
Maintenance engineers	366	4.34 (0.82)	3.05**	367	4.50 (0.93)	10.21**	367	4.21 (0.86)	-4.04**
Supervisors	377	4.72 (0.78)	9.69**	377	4.84 (0.85)	15.39**	377	4.61 (0.83)	3.04**
Shopfloor – manufacturing	5570	4.15 (1.03)	-0.27 ns	5585	4.08 (1.13)	7.48**	5587	4.20 (1.05)	-6.40**
Shopfloor – other organisations	889	3.82 (0.97)	-7.26**	889	3.78 (1.12)	0.18 ns	892	3.86 (0.97)	-12.79**
Professional staff	276	4.42 (0.86)	3.89**	277	4.47 (1.03)	8.56**	276	4.38 (0.85)	-0.95 ns
Managers	1693	4.95 (0.93)	18.42**	1695	5.05 (1.07)	27.35**	1694	4.87 (0.92)	11.18**
Ancillary staff	664	4.45 (1.05)	5.53**	665	4.48 (1.14)	11.59**	663	4.42 (1.08)	-0.39 ns

ns non significant; ** $p < .01$

Comparisons with call handlers in financial services Holman (2002) reported mean scores for the intrinsic and extrinsic satisfaction sub-scales, though not for overall job satisfaction. For *intrinsic satisfaction*, our sample of call handlers are significantly more satisfied than the Bank-call group but significantly less satisfied than the other two groups. For *extrinsic satisfaction*, our sample of call handlers report significantly lower satisfaction than all three of the comparison groups.

Our sample appears to be largely typical of other call handler groups in terms of their satisfaction with intrinsic aspects of the job, while there is much greater variability between samples in satisfaction with extrinsic aspects. The higher levels of extrinsic satisfaction reported by respondents in the Holman study presumably reflect better quality working environments in that organisation.

Table 16 Comparison of job satisfaction for call handlers with data reported by Holman (2002)

Occupations	***Overall job satisfaction***		***Intrinsic satisfaction***			***Extrinsic satisfaction***		
	n	*Mean / SD*	*n*	*Mean / SD*	*t-test*	*n*	*Mean / SD*	*t-test*
Call handlers	**883**	**4.16 (1.00)**	**883**	**3.77 (1.23)**	**--**	**883**	**4.44 (0.94)**	**--**
Bank-call	-	-	221	3.51 (1.14)	-2.85**	221	4.53 (0.86)	8.58**
Mortgage-call	-	-	157	4.27 (1.05)	4.79**	157	4.83 (0.69)	10.51**
Loan-call	-	-	179	4.31 (0.98)	5.53**	179	5.00 (0.70)	5.53**

** $p < .01$

Answer Q1b: **When compared with other call centre employees, call handlers report the lowest levels of overall job satisfaction, and intrinsic job satisfaction is particularly low. When compared to other benchmark groups, call handlers report average levels of extrinsic satisfaction; though their intrinsic satisfaction is much lower than that of almost every other benchmark group. Intrinsic satisfaction is average compared with the call handler groups in the Holman study, though extrinsic satisfaction in our study is consistently lower.**

3.2.3 Question 1c: Do call handlers report more symptoms of *general mental strain?*

We measured general mental strain using the 12-item version of the General Health Questionnaire (Goldberg, 1972). This scale has been widely used in occupational settings (e.g. Banks et al, 1980) as an indicator of general strain. It can be scored in two ways:

- '*Likert method*' simply adds the ratings on the 12 items to give a roughly normally distributed score. In this report, we have averaged the overall score to give a range from 0 to 12.
- '*Caseness method*' treats each item as representing a 'symptom', with scores of either 2 or 3 showing the presence of a symptom. Symptoms are counted, and a cut-off taken to indicate 'caseness'. The conventional cut-off is 2 (3 or more symptoms), though some studies use a more stringent cut off of 3 (4 or more symptoms). We report both below.

This measure is described in more detail in Appendix 3. We have scored the GHQ using both methods and present our findings for both.

Differences in GHQ according to work roles within call centres – Likert method

There are no statistically significant differences. Employees in all of the roles report similar levels of general mental strain.

Table 17 Comparisons of GHQ (Likert method) with other call centre employees

Variable	*Call handler (n = 883)*	*Team leader (n = 37)*	*Support role (n = 79)*	*Supervisor (n = 26)*	*Manager (n = 15)*	*p*
GHQ-12	**1.10 (0.51)**	1.03 (0.51)	1.10 (0.51)	1.14 (0.52)	1.09 (0.65)	ns

ns not significant

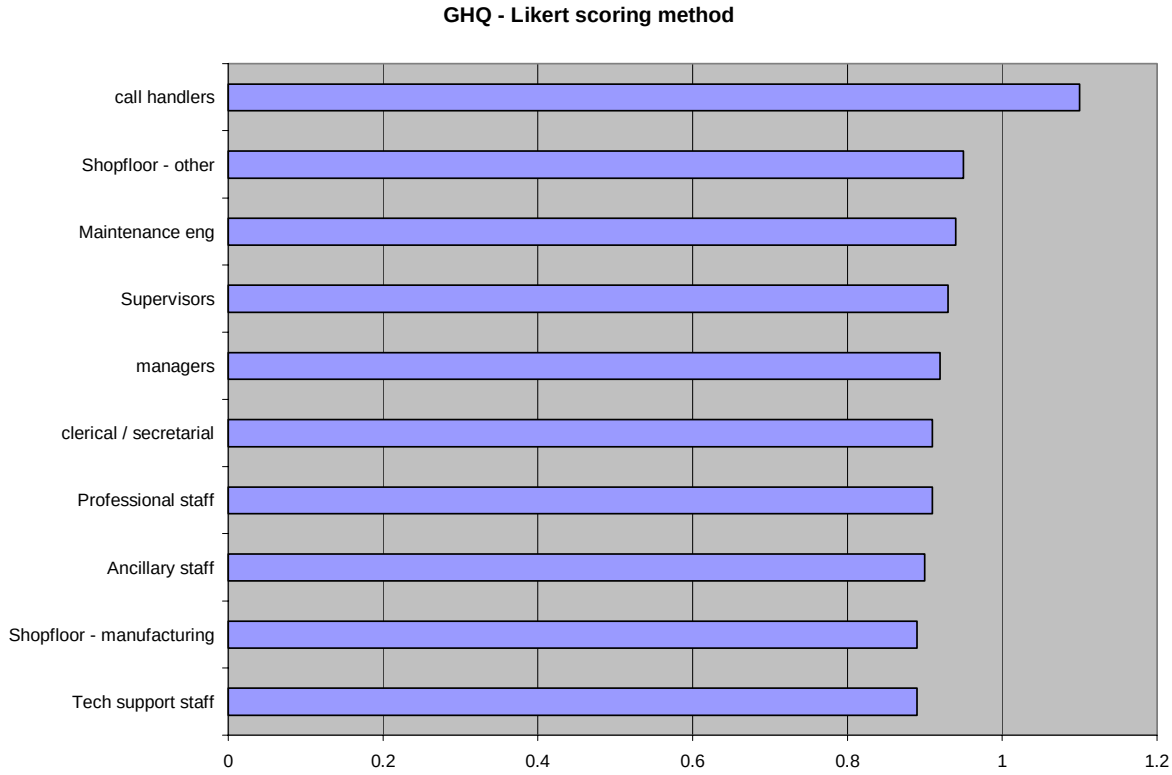
Comparisons of call handlers with other occupations – Likert method

Table 18 (below) reports means and standard deviations for our sample, together with the equivalent summary indices for nine benchmark groups taken from Table 3.12 of Mullarkey et al (1999). The mean score of call handlers in this study is higher than that of any of the comparison groups available.

Table 18 Comparisons of call handlers with other occupations on GHQ (Likert)

Occupations	***Mental strain***		
	n	***Mean / SD***	***t-test***
Call handlers	**883**	**1.10 (0.51)**	**--**
Clerical & Secretarial	971	0.91 (0.44)	8.61**
Technical support staff	614	0.89 (0.40)	8.54**
Maintenance engineers	363	0.94 (0.44)	5.23**
Supervisors	365	0.93 (0.48)	5.45**
Shopfloor – manufacturing	5725	0.89 (0.43)	13.16**
Shopfloor – other organisations	520	0.95 (0.45)	5.55**
Professional staff	289	0.91 (0.41)	5.75**
Managers	1752	0.92 (0.44)	9.39**
Ancillary staff	679	0.90 (0.41)	8.35**

** $p < .01$



Differences in GHQ according to work roles within call centres – Caseness method

Using the conventional definition (3 or more symptoms) of caseness, 39% of call handlers score above the threshold, similar to the levels reported by other groups within the call centres.

Table 19 Comparisons of GHQ (Caseness) with other call centre employees

Variable	*Call handler (n = 880)*	*Team leader (n = 37)*	*Support role (n = 78)*	*Supervisor (n = 25)*	*Manager (n = 15)*
Threshold 3 & above	39%	41%	40%	28%	40%
Threshold 4 & above	31%	30%	33%	28%	40%

Comparisons of call handlers with other occupations – Caseness method

Table 20 (below) reports means and standard deviations for our sample, together with the equivalent summary indices for nine benchmark groups taken from Table 3.5 of Mullarkey et al (1999). Results are similar to those for the Likert scoring method, as caseness levels for our call handler sample are higher than for all of the other benchmarked occupations. The percentage reporting above the caseness threshold varies from 24% to 32% in the benchmark data compared with 39% of call handlers.

Table 20 Comparisons of call handlers with other occupations on GHQ (Caseness)

Occupations	*Caseness (>= 3)*		*Caseness (>= 4)*	
	n	***%***	***N***	***%***
Call handlers	**883**	**39**	**883**	**31**
Clerical & Secretarial	971	27	971	20
Technical support staff	614	24	614	19
Maintenance engineers	363	25	363	18
Supervisors	365	26	365	21
Shopfloor – manufacturing	5725	24	5725	18
Shopfloor – other organisations	520	28	520	21
Professional staff	289	26	289	20
Managers	1752	32	1752	24
Ancillary staff	679	24	679	19

Answer Q1c: **Differences across call centre staff groups in general mental strain are small, with call handlers no more at risk than other call centre groups. However, the proportion of call handlers at risk of mental health problems is much higher than for all other benchmark occupations.**

Conclusion to Question 1: Is working as a call handler more stressful than working in other jobs?

Overall, based on the current data, the answer to this question is yes. The risk of mental health problems is higher for call handlers and job-related well-being is lower, compared to benchmark groups in other occupations.

This seems to be the result of working within a call centre in general, rather than the role of call handler specifically (since call handlers are not markedly different from other staff groups).

However, satisfaction with the intrinsic aspects of the job is much lower for call handlers than for other benchmark occupational groups and for other work roles within the call centre.

3.3 QUESTION 2: IS WORKING AS A CALL HANDLER EQUALLY STRESSFUL FOR EVERYONE?

3.3.1 Question 2a: Does business sector make a difference to well-being?

As our exploratory study was mostly confined to call centres in the financial services sector, it was important to examine a wider range of business sectors in our main study. Also, the Holman (2002) study, which we have used earlier as benchmarking data, is confined to the financial services sector.

In all, we sampled from 34 call centre locations. The distribution of sampling across sectors is not uniform. For example, outsourcing and emergency services were represented by only one location, while telecommunications & IT were represented by 13 locations. In addition, sampled call centres are not distributed uniformly across regions. Consequently, it is difficult to be precise about the interpretation of differences between individual call centres.

In this report, we have chosen to compare business sectors taking into account call centre locations nested within them. Here, we report mean scores for each sector and results of nested analysis of variance in order to show the extent of variability between sectors and within them. Interpretation of group means needs to take into account both the number of locations within a sector and the number of call handlers in a sector. In particular, the outsourcing and emergency services sectors are small in size.

Job-related well-being There were large differences between call centre locations in both job-related anxiety and depression, but business sector differences were only significant for job-related depression. The highest level of depression was shown by call handlers working in the telecommunications & IT sector, while differences elsewhere were small.

Table 21 Comparisons between business sectors & call centres on job-related anxiety & depression

Business Sector (no. call centres)	***Job-related Anxiety***	***Job-related Depression***
	n	*Mean / SD*	*Mean / SD*
Outsourcing (1)	12	2.64 (0.67)	2.39 (0.57)
Financial services (5)	182	2.79 (0.69)	2.68 (0.70)
Hotels and leisure (3)	80	2.86 (0.74)	2.83 (0.78)
Public/ voluntary (3)	72	3.00 (0.79)	2.91 (0.79)
Retail (3)	120	2.90 (0.78)	2.85 (0.81)
Telecommunications & IT (13)	212	3.12 (0.85)	3.13 (0.85)
Transport & travel (2)	65	2.90 (0.79)	2.78 (0.76)
Utilities (3)	119	2.85 (0.72)	2.79 (0.73)
Emergency services (1)	18	2.52 (0.68)	2.46 (0.58)
Group differences (F ratio)			
Sector		**1.19 ns**	**3.57 ****
Centres within sector		**1.91****	**3.39 ****

ns not significant; ** p < .01

Job satisfaction Once again, large differences between call centre locations were found, suggesting that local conditions within a call centre are important determinants of call handler job satisfaction. Furthermore, business sector was significant for both intrinsic and extrinsic satisfaction. This suggests that there are features common to working within a specific business sector which influence job satisfaction. Once again, the poorest job satisfaction was in the telecommunications & IT sector.

Table 22 Comparisons between business sectors & call centres on job satisfaction

Business Sector (no. call centres)	***Overall satisfaction***		***Intrinsic satisfaction***	***Extrinsic satisfaction***
	n	***Mean / SD***	***Mean / SD***	***Mean / SD***
Outsourcing (1)	12	4.86 (0.74)	4.47 (0.86)	5.08 (0.80)
Financial services (5)	182	4.49 (0.97)	4.07 (1.19)	4.86 (0.86)
Hotels and leisure (3)	80	4.02 (1.10)	3.70 (1.28)	4.30 (1.01)
Public voluntary (3)	72	4.17 (0.94)	3.85 (1.27)	4.46 (0.86)
Retail (3)	120	4.06 (0.98)	3.68 (1.16)	4.38 (0.94)
Telecommunications & IT (13)	212	3.88 (0.93)	3.41 (1.17)	4.21 (0.89)
Transport & travel (2)	65	4.09 (1.05)	3.65 (1.19)	4.49 (1.00)
Utilities (3)	119	4.32 (0.99)	3.97 (1.26)	4.60 (0.87)
Emergency services (1)	18	4.33 (1.01)	4.19 (1.20)	4.46 (0.88)
Group differences				
Sector		**3.20 ****	**3.08 ****	**3.57 ****
Centres within sector		**3.16 ****	**2.69 ****	**3.39 ****

** $p < .01$

General mental strain The previous section of this report showed that call handlers report much poorer general mental health than other occupational groups (and that job roles within call centres are quite similar). Table 23 (below) shows that these findings can be generalised across business sectors: There are no significant differences in general mental health between business sectors, and neither are there significant differences between locations within sectors.

Table 23 Comparisons between business sectors & call centres on mental strain

Business Sector (no. call centres)	*Mental strain*	
	n	***Mean / SD***
Outsourcing (1)	12	0.90 (0.33)
Financial services (5)	182	1.08 (0.48)
Hotels and leisure (3)	80	1.01 (0.41)
Public voluntary (3)	72	1.16 (0.49)
Retail (3)	120	1.15 (0.53)
Telecommunications & IT (13)	212	1.18 (0.55)
Transport & travel (2)	65	1.05 (0.51)
Utilities (3)	119	1.04 (0.51)
Emergency services (1)	18	0.93 (0.40)
Group differences		
Sector		**1.35 ns**
Centres within sector		**1.32 ns**

Answer to Q2a: **Our analyses show that there are business sector differences in some aspects of call handler well-being (notably job-related depression, and both intrinsic and extrinsic job satisfaction). In our sample, call handlers in the telecommunications and IT sector reported the poorest well-being. There is also evidence for variability in some aspects of well-being from one call centre location to another.**

3.3.2 Question 2b: Does the size of call centre a call handler works in make a difference to well-being?

During our research we have been asked whether the size of call centre a call handler works in 'makes a difference'. For our main study we categorized call centres as being either: 'small' (employing fewer than 49 staff), 'medium' (employing between 50 and 499 staff), and 'large' (employing 500 staff and over).

Here we have only included call handlers from those call centres where we are more certain of the size of the call centres. We had difficulty in obtaining exact details of the size of some of the study call centres. Hence, a total of 651 call handlers in this analysis.

Table 24 Call handler well-being as a function of size of call centre

Call centre size	*n*	*Job-related anxiety*	*Job-related depression*	*Job satisfaction*	*Intrinsic satisfaction*	*GHQ (Likert)*
Small	44	2.64 (0.69)	2.54 (0.68)	4.44 (0.95)	4.23 (1.16)	0.92 (0.36)
Medium	464	2.91 (0.78)	2.89 (0.80)	4.18 (1.00)	3.75 (1.25)	1.09 (0.52)
Large	143	2.89 (0.77)	2.81 (0.77)	4.26 (0.95)	3.87 (1.17)	1.14 (0.50)
p		ns	*	ns	*	*

*p<.05; ns = non-significant

Call handlers in small call centres, of fewer than 50 employees, reported better well-being in some respects: lower job-related depression, higher intrinsic satisfaction, and better general mental health (as measured by the GHQ).

Answer to Q2b: **Yes, there are statistically significant differences on several of the well-being measures. The call handlers we categorised as working in small call centres, reported less anxiety, depression and general mental strain than those working in either medium-sized or large call centres. Call handlers from small call centres reported greater overall job satisfaction and the highest (out of the three groups) levels of intrinsic satisfaction.**

3.3.3 Question 2c: Does the nature of the call handling make a difference to call handler well-being?

During our exploratory study, several Local Authority Health and Safety Enforcement Officers raised the question as to whether call centre work was a more stressful experience for employees who made outbound calls, especially cold calls. In the questionnaire, we asked respondents to indicate the nature of their call handling.

Table 25 Call handler well-being as a function of type of calls dealt with

Nature of call	*n*	*Job-related anxiety*	*Job-related depression*	*Job satisfaction*	*GHQ (Likert)*
Inbound	795	2.93 (0.77)	2.87 (0.79)	4.15 (1.00)	1.11 (0.52)
Outbound	27	2.70 (0.77)	2.61 (0.77)	4.56 (0.75)	0.89 (0.38)
Both	52	2.86 (0.87)	2.74 (0.69)	4.19 (1.19)	1.06 (0.41)
p		ns	ns	ns	ns

Although there is no statistically significant difference, it is worth noting that the means for outbound are less for anxiety and depression and more for satisfaction. Perhaps this suggests that making outbound calls is somewhat better than receiving inbound calls.

Answer to Q2c: **No, we found no statistically significant differences in relation to well-being between those call handlers that dealt with inbound calls as opposed to outbound calls.**

We asked a further question '*Are the outbound calls you make cold calls?'* Twenty-nine call handlers reported that they made cold calls. There were no statistically significant differences in relation to well-being between those that did and those that did not make cold calls.

3.3.4 Question 2d: Does the nature of employment contract make a difference to call handler well-being?

The majority of the call handlers in our study were on permanent contracts.

Table 26 Call handler well-being as a function of type of contract of employment

Permanent contract?	***n***	***Job-related anxiety***	***Job-related depression***	***Job satisfaction***	***GHQ (Likert)***
yes	809	2.94 (0.78)	2.88 (0.79)	4.14 (1.00)	1.11 (0.51)
no	69	2.67 (0.72)	2.63 (0.69)	4.51 (1.00)	0.96 (0.45)
p		**	*	**	*

*p<.05 **p<.01 ***p<.001

Table 26 (above) shows that those call handlers on non-permanent (e.g., fixed term, temporary etc) contracts were less anxious, less depressed, and more satisfied with their jobs. Those on non-permanent contracts reported less general mental strain.

These results seem counter-intuitive, as we would expect that having a permanent contract is the most desirable status for employees. However, it could be that the job characteristics for employees on permanent contracts are very different from those of employees on the non-permanent contracts. For example, the non-permanent jobs may be less demanding. Alternatively, it might be that permanent employees feel 'stuck' in their call centre jobs while temporary employees know they will move on, with the prospect of finding more satisfying work. This may in part explain these findings. See Parker, Griffin, Sprigg & Wall (2002) for an examination of the relationship between temporary contracts, job characteristics and job strain.

Answer to Q2d: **Yes, call handlers on non-permanent contracts reported better well-being, than those on permanent contracts.**

3.3.5 Question 2e: Does working part-time make a difference to call handler well-being?

Many call centre workers are part time. Thus, we asked our study participants to indicate the nature of their employment.

Table 27 Call handler well-being as a function of working hours

Part-time (< 30 hrs)	***n***	***Job-related anxiety***	***Job-related depression***	***Job satisfaction***	***GHQ (Likert)***
yes	256	2.96 (0.80)	2.87 (0.76)	4.26 (0.96)	1.14 (0.56)
no	622	2.90 (0.77)	2.85 (0.80)	4.12 (1.02)	1.09 (0.49)
p		ns	ns	ns	ns

ns non significant

Table 27 shows that there are no statistically significant differences in relation to well-being between call handlers who work part-time and those that do not.

Answer to Q2e: **No, in relation to well-being, we found no statistically significant differences between part-time call handlers and those that do not work part time.**

3.3.6 Question 2f: Does having a degree make a difference to call handler well-being?

We asked call handlers to indicate which academic and vocational qualifications they held. Here, we compared those with degrees, to those who did not have degrees.

Table 28 Call handler well-being as a function of degree status

Degree?	***n***	***Job-related anxiety***	***Job-related depression***	***Job satisfaction***	***GHQ (Likert)***
yes	107	2.84 (0.67)	2.81 (0.75)	3.98 (1.00)	1.07 (0.45)
no	726	2.92 (0.79)	2.89 (0.79)	4.18 (1.00)	1.10 (0.51)
p		ns	ns	ns	ns

The table shows that there are no statistically significant differences in relation to well-being between those that have a degree and those that do not.

Answer to Q2f: **There are no significant differences in relation to well-being.**

3.3.7 Question 2g: Does following a strict script make a difference to call handler well-being?

One of the features of some call centres is the script that call handlers follow when talking on the phones. Anecdotally, the use of a script is considered to be a negative and stressful work feature.

Table 29 Call handler well-being as a function of following a set script

Do you follow a strict script?	*n*	*Job-related anxiety*	*Job-related depression*	*Job satisfaction*	*GHQ (Likert)*
yes	310	3.09 (0.75)	2.99 (0.77)	4.04 (1.04)	1.21 (0.56)
no	544	2.82 (0.77)	2.80 (0.79)	4.22 (0.98)	1.04 (0.47)
p		***	**	*	***

*p<.05 **p<.01 ***p<.001

Table 29 (above) shows that the call handlers who follow a strict script reported significantly more anxiety, more depression, more general mental strain and less job satisfaction than those who do not do so. This finding is in line with Deery et al (2002) who found increased emotional exhaustion was associated with facing abusive customers and having to adhere to a predefined script.

In our questionnaire, we did not ask specific questions about the incidence and magnitude of verbal abuse faced by call handlers. However, in the comments section at the end of the questionnaire, many call handlers wrote about their unpleasant experiences of facing verbal abuse day after day. This is why we included a specific section on dealing with verbal abuse in HELA LAC94/1(rev).

Answer Q2g: **Yes, those call handlers who reported they follow a strict script also reported poorer well-being than those that did not.**

3.3.8 Question 2h: Does performance monitoring (electronic or eavesdropping) make a difference to call handler well-being?

In the questionnaire, we made a number of statements about performance monitoring. Call handlers were asked to give an indication of the degree to which these aspects of their jobs where occurring. (For a recent description and evaluation of performance monitoring in call centres see Holman, 2003.)

Electronic performance measurement Table 30 (below) shows an interesting curvilinear relationship. Those call handlers who reported that their performance was measured electronically, either *'very often'* or *'constantly'* and *'rarely or never'* reported higher levels of anxiety, depression, and general mental strain. These same call handlers reported lower levels of job satisfaction.

It seems that *moderate* (somewhere between *often* and *occasionally*) levels of monitoring are best for call handler well-being.

Table 30 Call handler well-being as a function of frequency of electronic performance measurement

Performance measured electronically	*n*	*Job-related anxiety*	*Job-related depression*	*Job satisfaction*	*GHQ (Likert)*
Rarely or never	112	2.96 (0.76)	2.89 (0.81)	4.20 (0.82)	1.09 (0.54)
Occasionally	65	2.74 (0.75)	2.66 (0.74)	4.36 (0.93)	0.94 (0.42)
Often	124	2.63 (0.77)	2.57 (0.75)	4.49 (0.92)	0.96 (0.50)
Very often	128	3.00 (0.77)	2.95 (0.75)	4.15 (0.98)	1.13 (0.52)
Constantly	424	2.99 (0.78)	2.93 (0.80)	4.01 (1.07)	1.17 (0.50)
p		***	***	***	***

*p<.05 **p<.01 ***p<.001

Answer to Q2h: **Yes, those call handlers who reported they were electronically monitored the most and the least reported the poorer well-being.**

Line eavesdropping We also asked call handlers, specifically, about the practice of 'line eavesdropping'. This is where team leaders and supervisors listen in on calls to monitor the accuracy and general performance of call handlers.

Table 31 Call handler well-being as a function of line eavesdropping

Measured by line eavesdropping	*n*	*Job-related anxiety*	*Job-related depression*	*Job satisfaction*	*GHQ (Likert)*
Rarely or never	114	2.63 (0.73)	2.58 (0.70)	4.58 (0.99)	0.90 (0.40)
Occasionally	223	2.82 (0.71)	2.76 (0.75)	4.28 (0.87)	1.06 (0.48)
Often	215	2.84 (0.81)	2.81 (0.82)	4.30 (0.92)	1.03 (0.51)
Very often	178	3.09 (0.76)	3.02 (0.77)	3.89 (1.02)	1.23 (0.52)
Constantly	133	3.30 (0.70)	3.17 (0.76)	3.69 (1.06)	1.32 (0.54)
p		***	***	***	***

*p<.05 **p<.01 ***p<.001

Those call handlers who reported that they experienced 'line eavesdropping' most (that is, *'very often'* and *'constantly'*) reported the higher levels of anxiety, depression and general mental strain, than those who reported this practice was occurring less often. These same call handlers also reported the lowest levels of job satisfaction.

Answer to Q2h: **Yes, those call handlers who reported that they were eavesdropped on the most also reported the poorer well-being.**

Comments on issues related to monitoring Table 32 shows that those call handlers who wrote comments, prompted by the question *'Do you have any particular issues with performance monitoring?'*, reported more anxiety, depression, general mental strain and less job satisfaction, than those who did not write comments.

Table 32 Call handler well-being as a function of reported comments on performance monitoring

Issues with performance monitoring?	***n***	***Job-related anxiety***	***Job-related depression***	***Job satisfaction***	***GHQ (Likert)***
Comment made	283	3.17 (0.78)	3.08 (0.79)	3.79 (0.99)	1.25 (0.53)
Comment not made	596	2.80 (0.74)	2.75 (0.77)	4.35 (0.96)	1.03 (0.48)
p		***	***	***	***

*p<.05 **p<.01 ***p<.001

Many of the comments made about performance monitoring, both the collection of electronic performance data ('stats') and eavesdropping, were negative. Some of these comments are reported next to illustrate the nature of them. These are exactly as our study participants wrote them.

Many of those that chose to comment made comments that were of a **negative** nature.

'Sometimes while I am monitored I feel uncomfortable, feel like I am not trusted, feel as though they are doing this because I can't do my job properly' (financial services)

'I find it very stressful knowing that at some point my calls will be listened into, in addition a supervisor sits next to me on a monthly basis listening to calls and making performance notes which are rarely encouraging and seem to be based on a personal opinion of the person under review, feel that you are made to conform to a set role which is not my personality' (financial services)

'Being monitored adds to the pressure of an already demanding job' (telecoms)

'Work is hard enough, coping with customers demands and abuse without the added pressure of monitoring (telecoms)

'Hate people listening to me at anytime offensive and stressful' (utilities)

'Increases stress, while I don't mind someone listening I find it constantly at the back of my mind' (telecoms)

'It is stressful to think a manager is listening while an abusive customer is on the line' (telecoms)

'I understand how it helps the company but I feel it is an intrusion knowing your call is being recorded each time you speak to a customer' (utilities)

'Often chased up about being on a call longer than usual despite the fact you have a difficult call and you are trying to resolve' (telecoms)

'Big brother, very stressful' (public sector)

'When we are aware of someone listening in, it makes us incredibly nervous' (retail)

'Do not agree with eavesdropping doing job well as possible without any extra stress needed' (utilities)

'It is not a fair way. It puts pressure on you, you feel like they are constantly monitoring' (utilities)

'Performance monitoring puts unnecessary stress on an already stressful job and definitely hasn't improved my customer care skills' (telecoms)

'I find monitoring, although occasionally necessary, extremely stressful, too much can have a detrimental effect (financial services)

A few **positive** comments were made about performance monitoring:

'Recording is very helpful and helps prompt you' (financial services)

'Lets you know if you are on target' (utilities)

'Performance monitoring can be very useful to help in our job as long as managers do not use it as a tool to sack people' (telecoms)

'Recording is essential as it can assist you in dealing with a particular problem or it can highlight a training requirement' (public sector)

'The system used to monitor calls is helpful to me especially in improving my customer service skills' (retail)

'At first, I found it unnerving but now I am not at all bothered about it' (telecoms)

'I appreciate having information, I tend to use it positively and do not find it stressful' (Public)

'I am happy with the way my call centre and team leaders monitor us' (financial services)

3.3.9 Question 2i: Does interest in staying in the call centre industry make a difference to call handler well-being?

Table 33 (below) shows that those call handlers who are interested in staying in the call centre industry reported less anxiety, less depression, less general mental strain, and more job satisfaction, than those who were *not* interested in staying.

Table 33 Call handler well-being as a function whether respondent interested in staying in the industry

Interest in staying?	***n***	***Job-related anxiety***	***Job-related depression***	***Job satisfaction***	***GHQ (Likert)***
yes	421	2.76 (0.78)	2.63 (0.74)	4.43 (0.98)	1.02 (0.50)
no	402	3.10 (0.72)	3.14 (0.76)	3.85 (0.94)	1.20 (0.51)
p		***	***	***	***

*p<.05 **p<.01 ***p<.001

Answer to Q2i: **Yes, those who reported poorer well-being also reported they were less interested in staying in the call centre industry.**

Conclusion to Question 2: Is working as a call handler equally stressful for everyone who works as one?

Overall, the answer to this question is no. We found statistically significant differences between call handlers who

- **worked in different business sectors and individual call centres within business sectors;**
- **worked in different sizes of call centres;**
- **had either permanent contracts or not;**
- **followed strict scripts or did not;**
- **had their performance measured moderately or constantly;**
- **were interested in staying in the call centre industry or who were not.**

In conclusion, call handler well-being is influenced by many factors. Some of these factors are difficult to change others are more open to manipulation.

3.4 QUESTION 3: WHAT IS IT THAT MAKES WORKING AS A CALL HANDLER STRESSFUL?

To address this question, we use measures of the work design characteristics that we included within our questionnaire. In our research, we have used an expanded model of work design as recommended by Parker & Wall (1998).

The work design measures we have used are:

- Timing control
- Method control
- Role breadth
- Participation in decision-making
- Task variety
- Skill utilization
- Workload
- Role conflict
- Role clarity
- Co-worker support

Specific details of the measures, together with example items are given in Appendix 4. First, we examine the work design of the job of call handler using comparative data from other jobs where possible. Second, we use those work design characteristics to predict each of our measures of psychological health. This allows us to say what it is about the design of call handling work that makes it stressful.

3.4.1 Comparisons of the work designs of call handlers with employees working in other industries (mostly manufacturing)

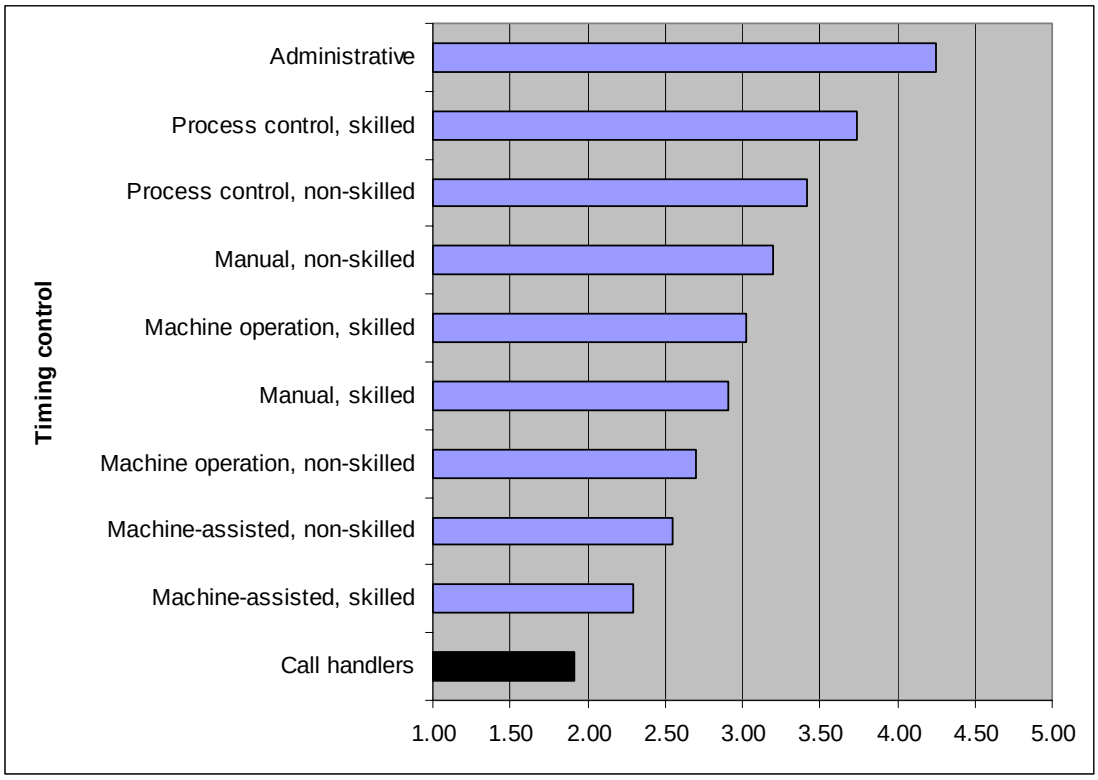
There is no benchmarking manual similar to Mullarkey et al (1999) available for these work design characteristics. However, partial benchmarks can be obtained from two sources. Jackson et al (1993) reported measures of timing and method control, and comparison data for a number of groups (mainly from manufacturing) are reported in Wall et al (1995). The second source of comparisons is with information on a wider variety of work design characteristics in a recent HSE-funded publication by Jackson & Parker (2001).

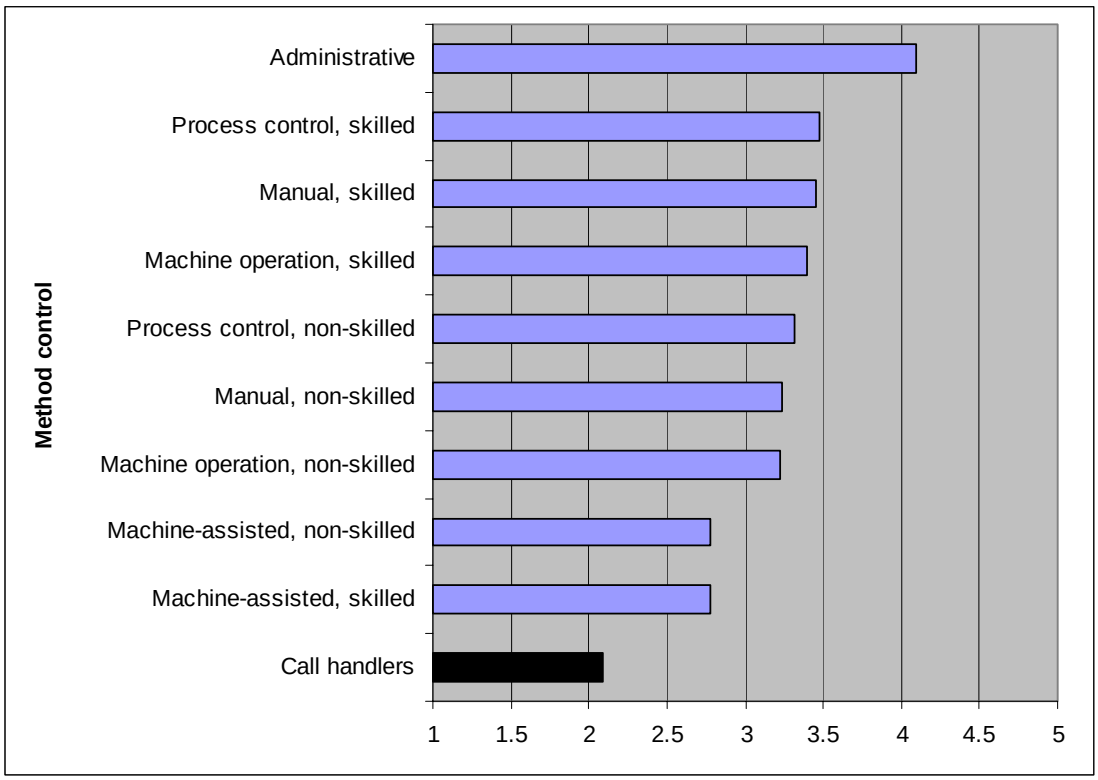
Task control comparisons Call handlers report far lower levels of control over work tasks than any of the other groups reported. Even the most repetitive of non-skilled manual work involves higher levels of discretion over when and how to perform work tasks. All of the statistical test comparisons reported (below) are highly significant, and the figures below demonstrate just how little control call handlers have over the key tasks of their job.

Table 34 Mean scores for call handlers on timing and method control, compared with means for a range of skilled and unskilled jobs.

Occupations	*Timing control*			*Method control*		
	n	***Mean / SD***	***t-test***	***n***	***Mean / SD***	***t-test***
Call handlers	**883**	**1.91 (0.87)**	**--**	**883**	**2.09 (0.94)**	**--**
Manual, skilled	105	2.91 (1.02)	10.92**	105	3.45 (0.86)	14.14**
Manual, non-skilled	143	3.20 (1.26)	15.32**	143	3.23 (0.93)	13.47**
Machine-assisted, skilled	292	2.29 (1.09)	6.06**	292	2.78 (0.77)	11.35**
Machine-assisted, non-skilled	302	2.55 (1.02)	10.54**	302	2.78 (0.80)	11.42**
Machine operation, skilled	59	3.02 (1.06)	9.35**	59	3.39 (0.69)	10.43**
Machine operation, non-skilled	59	2.70 (0.98)	6.70**	59	3.22 (0.79)	9.02**
Process control, skilled	54	3.74 (1.06)	14.80**	54	3.47 (0.75)	10.58**
Process control, non-skilled	37	3.42 (1.02)	10.27**	37	3.31 (0.76)	7.79**
Administrative	52	4.25 (0.72)	19.01**	52	4.09 (0.66)	15.12**

ns non significant; ** p < .01 (See Appendix 5 for explanation of ***t-test***)





Comparisons of work design characteristics with other jobs Jackson & Parker (2001) present their information in frequency form. This form of data indicates the number of people reporting a high score (for example, a high degree of agreement with a particular questionnaire item) on a question. The information is for, mainly, blue-collar employees working in a variety of manufacturing organisations. The organisations included, for example, garment manufacture, vehicle manufacturing, steel and wire making, and chemical processing. (See Jackson & Parker (2001) for further details of these organisations). The names used here, for example 'Trad-Steel', are those from Jackson & Parker (2001) and were designed to protect the identity of the organisations that participated in their research.

Table 35 Comparisons of the work design of call handlers with that of other jobs reported by Jackson & Parker (2001)

Variable/Item	*Call handlers*	*Trad-Steel*	*ChemiCo*	*LadySew-Lean*	*Brite-Rope*	*Brite-Wire*	*Trucker*
Timing control *Do you decide the order in which you do things?(answer calls)*	**4%**	58%	86%	16%	37%	24%	58%
Method control *Can you choose the methods you use in carrying out your work?*	**9%**	62%	68%	18%	69%	49%	42%
Role conflict *Do you have to do things that are against your better judgement?*	**13%**	10%	_	_	6%	11%	8%
Role clarity I *How clear are you about how your work performance is assessed?*	**45%**	33%	_	_	38%	26%	27%
Role clarity II *How clear are you about your duties and responsibilities?*	**62%**	79%	_	_	73%	64%	73%
Workload I *Do you find work piles up faster than you can complete it?*	**16%**	_	_	21%	14%	24%	_
Workload II *Do you find yourself working faster than you would like in order to complete your work?*	**29%**	_	_	48%	21%	28%	4%

Explanation of Table 35: Comparisons of the work designs of call handlers

Timing control: Do you decide the order in which you do things?

The range for timing control was 16% to 86% for the 15 companies described in Jackson & Parker (2001). Only 4% of call handlers reported that they could decide the order in which they answer calls *'quite a lot'* or *'a great deal'*.

The wording of the item has been changed to fit with the call centre context, and, as such, we are not strictly comparing like with like. It seems likely that respondents will have interpreted the question to mean do they decide the order in which they take calls, which they clearly do not. However, given this caveat, the figure for call handlers of 4% selecting these response categories is very low. Indeed, this is a lower number of employees than for any of the Jackson & Parker (2001) companies.

We conclude that call handler timing control is remarkably low in comparison to other employees (for which there is information available) working in other contexts.

Method control: Can you choose the methods you use in carrying out your work?

The range for method control was 9% to 79% for the 15 companies described in Jackson & Parker (2001). Only 9% of call handlers reported that they could choose their methods *'quite a lot'* or *'a great deal'*. This value equals the lowest number reported by Jackson & Parker (2001).

We conclude that call handlers have less method control than other employees.

Role conflict: Do you have to do things that are against your better judgement?

The range for role conflict was 2% to 15% for seven companies in Jackson & Parker (2001). Thirteen per cent of call handlers responded *'very often'* or *'constantly'* to the role conflict item (see above). This figure is within the range of the companies for which comparative information is available.

Call handlers are not experiencing more role conflict than these other employees.

Role clarity I: How clear are you about how your work performance is assessed?

The range for this role clarity item was 26% to 50% for seven companies in Jackson & Parker (2001). Forty-five per cent of call handlers responded *'very clear'* to this item (see above). Again, this percentage is within the range of the companies for which comparative information is available.

Call handlers are as clear as these other employees about how their performance is assessed. Indeed, as call handlers are towards the top of the range, this suggests they may even be clearer. Such clarity about the assessment of work performance could be related to EPM and frequent performance feedback in call centres.

Role clarity II: How clear are you about your duties and responsibilities?

The range for this role clarity item was 64% to 79% for seven companies in Jackson & Parker (2001). Sixty-two per cent of call handlers responded *'very clear'* to this item (see above). This percentage is just slightly out of the range, but still reasonably high.

Again, call handlers are reporting role clarity at a similar level to other employees.

Workload I: Do you find work piles up faster than you can complete it?

The range for this workload item was 12% to 44% for ten companies in Jackson & Parker (2001). Sixteen per cent of call handlers responded *'very often'* or *'constantly'* to this item.

Call handlers reported workloads (in relation to this item) at the lower end of the range when compared to data from other companies

Workload II: Do you find yourself working faster than you would like in order to complete your work?

The range for this workload item was 4% to 57% for 12 companies in Jackson & Parker (2001). Twenty-nine per cent of call handlers responded *'very often'* or *'constantly'* to this item.

Call handlers reported workloads in the middle of this range. There are five companies from the Jackson & Parker (2001) research that have employees reporting higher workloads (i.e. more employees ticking *'very often'* or *'constantly'*) than the call handlers.

Summary of comparisons of work design characteristics with other jobs In terms of what might be called a lean working environment, LadySew–Lean is probably the closest comparison to the job of call handler (see Jackson & Parker, 2001). The results for timing and method control above reinforce the pattern seen in the previous section. Call handlers report much less control than other groups, even less than the LadySew-Lean group (working within a lean production environment). Differences are rather smaller when workload demands are considered. The amount of role conflict is low and in line with that in other jobs, and call handlers are mostly clear about what is expected of them. Similarly, workload demands are in the middle range of the jobs examined.

From this partial comparison, it would appear that the major potential stressors of being a call handler lie in the amount of control over work tasks that the job offers rather than the workload demands.

3.4.2 Comparisons of the work design of call handler with other roles within call centres

We asked other call centre employees, as well as front-line call handlers, to complete our questionnaire. These groups of employees serve as useful comparison groups, as they are working within the same call centre context. We would expect that there are differences in the work designs of employees performing different roles within the call centres.

Table 36 (below) shows the differences between the work design characteristics of call centre employees in different roles. Call handlers report much lower levels of autonomy (control over work timing & methods, and participation in decision-making), narrow work roles with low task variety & skill utilization. Call handlers are very clear about what their work role is; and report lower role conflict than do other workers. Overall levels of workload do not vary between roles within call centres, and the levels of support between people who work together are about the same across jobs.

Table 36 Comparisons of work design characteristics for different roles within call centres

Work Design	*Call handler (n = 879)*	*Team Leader (n = 38)*	*Support Role (n = 79)*	*Supervisor (n = 26)*	*Manager (n = 15)*	*p*
Timing control	1.91 (0.87)	2.85 (1.33)	2.86 (1.07)	2.44 (1.10)	3.28 (1.19)	***
Method control	2.09 (0.94)	2.82 (1.33)	2.89 (1.10)	2.72 (0.97)	3.83 (1.12)	***
Role breadth	1.53 (0.47)	3.05 (0.85)	1.89 (0.68)	2.66 (0.67)	3.73 (0.70)	***
Participation	1.42 (0.56)	2.45 (1.09)	1.70 (0.70)	1.86 (1.01)	3.17 (1.16)	***
Task variety	1.66 (0.66)	2.99 (0.86)	2.44 (0.90)	2.77 (0.92)	3.44 (0.77)	***
Skill utilization	2.50 (1.00)	3.33 (1.10)	2.68 (1.13)	3.11 (0.93)	3.81 (0.73)	***
Workload	2.52 (0.85)	2.38 (0.71)	2.37 (0.78)	2.71 (0.89)	2.70 (0.88)	ns
Role conflict	2.18 (0.93)	2.28 (0.84)	2.22 (0.97)	2.60 (0.84)	2.76 (1.40)	*
Role clarity	5.14 (0.85)	5.09 (0.81)	4.92 (0.91)	5.11 (0.84)	5.10 (1.05)	ns
Coworker support	3.65 (0.93)	3.42 (1.06)	3.82 (0.95)	3.48 (0.84)	3.76 (0.92)	ns

ns not significant; * p <.05; *** p <.001

3.4.3 Psychosocial risk factors for call handlers – correlations

Statistical analysis of the questionnaire data revealed relationships between the work design characteristics (e.g. timing control) and the measures of well-being (e.g. job-related anxiety) for call handlers. The direction of these relationships are summarised in the table below.

The full correlation table can be found in Appendix 3.

Table 37 Correlations between call handler work design characteristics and well-being

	Measure of employee well-being				
Work design characteristic	***Job-related anxiety***	***Job-related depression***	***Intrinsic satisfaction***	***Extrinsic satisfaction***	***GHQ***
Timing control	-ve	-ve	+ve	+ve	-ve
Method control	-ve	-ve	+ve	+ve	-ve
Role breadth	-ve	-ve	+ve	+ve	-ve
Participation	-ve	-ve	+ve	+ve	-ve
Task variety	-ve	-ve	+ve	+ve	-ve
Skill utilization	-ve	**--ve**	**++ve**	**++ve**	-ve
Workload	**++ve**	**++ve**	-ve	**--ve**	**++ve**
Role conflict	**++ve**	**++ve**	**--ve**	**--ve**	**++ve**
Role clarity	-ve	-ve	**++ve**	**++ve**	-ve

-ve = negative correlation; +ve = positive correlation. Correlations above +/- 0.40 are shown in **bold**.

All the correlations in the table are statistically significant and in the expected direction based on prior research. For example, call handlers who report greater *timing control* (row 1) also report better well-being (lower job-related anxiety, depression, higher job satisfaction, and better GHQ scores). Conversely, call handlers reporting higher *workload* (row 7) also report poorer well-being (higher job-related anxiety & depression, lower job satisfaction, and worse GHQ scores).

In Table 37, we can see that the work design characteristics which correlate consistently highly with the well-being variables are skill utilisation, workload and role conflict. However, these findings cannot be interpreted at face value since the work design characteristics are strongly inter-related (as shown in Appendix 3). For example, workload and role conflict are positively correlated ($r = 0.56$, $p < .01$), such that call handlers reporting higher workload also report that they are often asked to do things whose requirements conflict with each other. Similarly, role conflict and role clarity are strongly negatively correlated: People with very clear work roles report low levels of conflict between aspects of those roles.

With these relationships among work design characteristics, it is necessary to carry out further statistical analyses that take them into account. Only then can we draw conclusions about which aspects of work design are important psychosocial risk factors in the role of call handler.

3.4.4 Psychosocial risk factors for call handlers – multiple regression analysis

Using the statistical procedure of multiple regression we examined the relationships between the work design characteristics of call handlers jobs and their well-being. Table 38 (below) summarises the findings of multiple regression performed for five separate well-being variables. On each occasion the effects of gender, age and tenure were controlled for.

Table 38 Standardised regression weights for predicting each measure of well-being using work design characteristics as predictors

	Dependent variables				
Predictors	***Job-related anxiety***	***Job-related depression***	***Intrinsic satisfaction***	***Extrinsic satisfaction***	***GHQ***
Timing control	-.07 *	-.04	.04	-.02	-.05
Method control	-.04	-.10 *	.05	.05	-.03
Role breadth	.03	-.01	-.02	.03	-.01
Participation	-.08 *	-.04	.09 **	.08 **	.01
Task variety	-.04	-.11 **	.07 **	.08 **	-.09 *
Skill utilization	-.11	-.21 **	.43 **	.22 **	-.10 **
Workload	.37 **	.21 **	-.11 **	-.14 **	.30 **
Role conflict	.19 **	.20 **	-.31 **	-.30 **	.21 **
Role clarity	-.11 **	-.07 *	.12 **	.21 **	-.10 **

* p <.05; ** p <.01

High levels of *job-related anxiety* are associated with: high workload, high role conflict, low role clarity, low participation in decision-making, and low timing control. **The strongest (work design) predictor of job-related anxiety is high workload.**

High levels of *job-related depression* are associated with: low skill utilization, high workload, high role conflict, low task variety, low method control, and low role clarity. **The strongest (work design) predictors of depression are workload, skill utilization and role conflict.**

High levels of *intrinsic job satisfaction* are associated with: high skill utilization, low role conflict, high role clarity, low workload, high participation in decision-making and high task variety. **The strongest (work design) predictor of intrinsic satisfaction is high skill utilization**.

High levels of *extrinsic job satisfaction* are associated with: low role conflict, high skill utilization, high role clarity, low workload, high participation in decision-making, and high task variety. **The strongest (work design) predictor of extrinsic satisfaction is low role conflict.**

High levels of *general mental strain* are associated with: high workload, high role conflict, low skill utilization, low role clarity, and low task variety. **The strongest (work design) predictor of general mental strain is high workload.**

Across the measures of well-being, the most consistent predictors of well-being are skill utilisation, workload, role clarity and role conflict. Poor well-being is associated with jobs where call handlers do not make full use of their skills, have a level of workload which does not allow them to do what they feel is a good job, where they are unclear about what their work role is, and where they are expected to meet contradictory role requirements. These results 'ring true' with the findings of our exploratory work and supplementary interviews conducted for the main study. A prime example of a contradictory role requirement is for a call handler to provide a quality response to a call query, yet only have a limited time to do so. Call handlers wrote and spoke of their frustrations over this scenario. Moreover, others we interviewed spoke of the conflict they felt about whether they were in a service role or a sales role, as they were being asked increasingly to do the latter.

The level of control (autonomy) in the job is not a strong predictor of any of the measures of well-being, though this is because of restriction of range (discussed in more detail in the next section). That is, the levels of job control are consistently much lower in call handling than in any of the jobs with which we can compare. Control (autonomy) still might be an important determinant of well-being in call centres.

Conclusion to Question 3: **Call handling is made stressful for a call handler when they have a high workload, are unclear about their work role, cannot make full use of their skills and have conflicting role demands.**

4 DISCUSSION

Question 4: What can be done to reduce the psychosocial risks associated with working as a call handler?

Our research represents the largest systematic examination of psychosocial risk factors in UK call centres. A major strength of our research lies in the comparison of data from front-line call handlers with benchmarks of well-being from employees in other occupations and other work contexts. Moreover, we have collected data from call handlers in 36 call centres operated by 19 organisations.

In this discussion section we use the findings from our three main research questions to answer the fourth question *'What can be done to reduce the psychosocial risks associated with working as a call handler?*

First, we summarize our key findings relating to the first three research questions.

4.1 SUMMARY OF KEY FINDINGS TO FIRST THREE RESEARCH QUESTIONS

4.1.1 The sample

Our sample comprises largely young to middle-aged white women who have gained at least GCSE level qualifications. Research suggests that women tend to report more readily emotional and psychological symptoms and are more likely to visit their GPs. The large proportion of women in our sample (74%) may have inflated some of the scores on some of the well-being measures.

Recent studies have estimated that female employees make up around 70% of the call centre workforce. Our sample reflects this proportion. For further information about women in call centres see Belt (2002).

We did not examine the profile of the 62% non-responders. A recent study by Rogelberg, Luong, Sederburg, & Cristol (2000) suggests that obtained survey data will generally appear more positive toward jobs, management and organizations. Rogelberg et al (2000) believe that dissatisfaction and discontent lead to an individual withholding his or her participation in a survey effort. If this is the case with our data, we could extrapolate that those who did not complete our survey are less positive about call centre working practices than those who did.

4.1.2 Question 1: Is working as a call handler more stressful than working in other jobs?

Working as a call handler is associated with higher job-related depression than working in other roles within the call centre. In contrast, job-related anxiety levels across the call centre job roles are broadly similar.

Call handlers in our study report much higher levels of both job-related anxiety and depression than other benchmark groups (see Mullarkey et al, 1999). They are also more anxious than the three groups of call handlers in the Holman (2002) financial services study.

Call handlers report the lowest levels of overall job satisfaction, with *intrinsic* job satisfaction being particularly low, when we compare them with other call centre employees (from this same study).

When compared to the other benchmark groups, call handlers report average levels of extrinsic satisfaction, though their intrinsic satisfaction is much lower than that of almost every other benchmark group. Intrinsic satisfaction is average compared with the call handler groups in the Holman (2002) study, though extrinsic satisfaction in our study is consistently lower.

Differences in general mental strain (as measured by the GHQ) across different roles within call centres are small. Thus, call handlers are no more at risk than other call centre groups. However, the proportion of call handlers at risk of mental health problems (more formally stated as *psychiatric vulnerability*) is much higher than for all other benchmark (Mullarkey et al, 1999) occupations.

Conclusion to Question 1:

Overall, the answer to this question is yes. The risk of mental health problems is higher for call handlers, and job-related well-being is lower, compared to benchmark groups in other occupations.

This seems to be the result of working in a call centre rather than the role of call handler specifically (since call handlers are not markedly different from other staff groups).

However, satisfaction with the *intrinsic* aspects of the job, such as opportunities to use skills, is lower for call handlers than for other benchmark occupational groups and for other work roles within the call centre.

4.1.3 Question 2: Is working as a call handler equally stressful for everyone who works as one?

Business sector differences

We found business sector differences in call handler well-being (notably job-related depression, and both intrinsic and extrinsic job satisfaction). Call handlers in the telecommunications and IT sector reported the poorest well-being. There is evidence for variability in some aspects of well-being from one call centre location to another.

Size of call centre

The call handlers we categorised as working in small call centres, reported less job-related anxiety, job-related depression and general mental strain than those working in either medium-sized or large call centres. Call handlers, from small call centres, reported greater overall job satisfaction and the highest (out of the three groups) levels of intrinsic satisfaction.

Nature of call handling

We did not find any significant differences in well-being between those call handlers who dealt with inbound calls, as opposed to outbound calls.

Nature of employment contract and hours of work

Call handlers on non-permanent contracts reported better well-being than those on permanent contracts. We found no significant differences in well-being, between part-time and full-time call handlers, so this is unlikely to be an exposure effect.

Educational attainment

We found no significant differences in well-being between those call handlers who had degrees and those who did not.

Scripting

Those call handlers who followed a strict script reported poorer well-being than those that did not.

Performance monitoring (electronic and line eavesdropping)

Those call handlers who reported that they were electronically monitored the most and least report poorer well-being. Call handlers who reported they were eavesdropped on the most report poorer well-being.

Many negative comments were written about the practices of performance monitoring used in call centres.

Interest in staying in the call centre industry

Those call handlers who reported poorer well-being reported they were less interested in staying in the call centre industry.

Conclusion to Question 2:
Overall, the answer to this question 2 is no.
We found statistically significant differences between call handlers who:

- worked in different business sectors and individual call centres within business sectors;
- worked in different sizes of call centres;
- had either permanent contracts or not;
- followed strict scripts or did not;
- had their performance measured moderately or constantly;
- were interested in staying in the call centre industry or who were not.

In conclusion, call handler well-being is influenced by many factors. Some of these factors are difficult to change, that is, employees may have limited choice over the type of call centre they work in. Other factors are more open to manipulation, for example, call centre employers may be able to reduce the number of elements that are strictly scripted.

4.1.4 Question 3. What is it that makes working as a call handler stressful?

We examined the work design of call handlers.

We compared call handler work design with the benchmarking data for the work design of employees working in other industries. We found that call handlers reported far lower levels of control over work tasks than any of the other groups of employees.

Call handlers reported even less control (autonomy) than the 'LadySew-Lean' group. This latter group comprised employees working in a lean production environment in garment manufacture and reported the lowest levels of control in the studies by Jackson & Parker (2001). (See case study in Jackson & Parker (2001) for more details.) At this stage of the analysis, it seemed that potential major stressors of being a call handler were linked to the limited amount of control that the call handling task afforded.

We also compared call handler work design with the work designs of those working in other roles in the call centre. We found that call handlers reported having less control, narrower work roles, less task variety and less skill utilization than those in the other call centre roles. On the positive side, call handlers were the most clear of all call centre employees about what their role was. Call handlers also reported the lowest levels of role conflict. Their job appears to be straightforward but can be monotonous.

Psychosocial risk factors for call handlers

We found that the work design characteristics of skill utilisation, workload and role conflict correlated consistently highly with well-being variables. However, many of the work design characteristics are strongly inter-related so further analyses were required to 'tease out' which elements of work design were important psychosocial risk factors for call handlers.

Across all our well-being measures (job-related anxiety, job-related depression, intrinsic satisfaction, extrinsic satisfaction and GHQ) we found that the most consistent predictors of well-being were skill utilisation, workload, role clarity and role conflict. Thus, call handler poor well-being/stress is associated with those work designs where call handlers do not make full use of their skills, have a higher workload, are unclear about their work role, and where they are expected to meet conflicting work requirements.

The level of control (autonomy) is not a strong predictor of any of our well-being measures. This is probably because of the low levels of control in general (restriction of range). Thus, control remains an important factor for call handler well-being in call centres.

Conclusion to Question 3:

We found that the job of call handling is more stressful when call handlers do not make full use of their skills, have a higher workload, are unclear about their role and have conflicting role demands placed upon them.

4.2 QUESTION 4: WHAT CAN BE DONE TO REDUCE THE PSYCHOSOCIAL RISKS ASSOCIATED WITH WORKING AS A CALL HANDLER?

There are a number of characteristics of the call handler role that are *intrinsic* to the job and difficult to change. These are:

- *Dealing with people over the phone rather than face to face* – This form of communication is much less rich, and it is harder to judge individual reactions without seeing someone.
- *Short-term interactions with strangers* – There is little opportunity for repeated contact with people (unlike, for instance, front-desk staff in a bank) and for building up relationships.
- *Dealing with a wide variety of people and issues* – It is impossible to predict the precise nature of a query before responding to a call. This depends on the nature of the call handler's job, for example, some order lines have only a limited range of options.
- *Little opportunity for a call handler to see a problem through from beginning to end over repeated customer contacts* – Commonly, a different call handler will deal with the next contact from a particular customer.

These are intrinsic job characteristics of the role of call handler, and the challenge is how to redesign these jobs within the constraints they impose. The logic of the work design framework outlined in our introduction is that the intrinsic features of the role do not have to determine the work design we have found in call centres. Rather, it reflects management choices about how they design their call centres and how they design the jobs within them.

Being a call handler need not be a highly pressured, repetitive and rigidly controlled job. In the rest of this discussion, we examine the ways in which managers can design call handler roles differently.

4.2.1 Control (Autonomy)

Autonomy is about the authority to make decisions within prescribed boundaries, ownership over the range of areas relevant to a customer's queries, and the ability to manage time so as to deal effectively with a query. Uniform temporal targets do not allow for the uniquely different profiles of each query. Put more simply, it is extremely difficult in some cases to give a 'quality' response to a customer within a pre-defined time period, for example, two minutes thirty seconds.

The level of call handler control/autonomy over timing and work methods is lower than in every other job for which norms are available (this includes a sample from a lean production environment of garment sewing such as the case study in Jackson & Parker, 2001). Given the importance of low job control as a major stressor in the research literature, it is initially surprising that regression analyses did not show control as a significant predictor of any of our psychological well-being measures. However, this is explained by the uniformly low scores for control reported by call handlers in our sample. Control shows so little variability *between* call handlers that it does not explain why some are reporting more stress than others. What it *does* do is to explain why call handlers are reporting more stress than other occupational groups.

How can worker autonomy be increased? A wide variety of options are available for reducing the psychosocial risk factor of low autonomy, either at the individual or the group level:

- *Individual autonomy*

  The imposition of strict scripts for conversations with customers minimises call handler control and should be avoided wherever possible. Training employees so they are equipped with the knowledge and experience to deal with the range of queries likely to be encountered has many benefits. Such training removes the need for scripting, it gives greater opportunity for workers to use more of their skills, and it allows the company to recruit and even retain higher quality staff. Furthermore, tailoring responses to the needs of clients can improve customer satisfaction.

- *Group autonomy*

  Computer systems automatically route calls to the next handler who is free, so call handlers are no more than *passive* in relation to work scheduling. Research evidence shows that *active* employees report less stress than passive ones and also work more effectively. If call handlers could be more *actively* involved in work scheduling, this would be preferable. One way of achieving this is by giving teams responsibility for planning job/task allocations for a shift, including time spent on the phones and in other 'back-room' tasks, training etc.

4.2.2 Work demands

The major predictor of poor call handler well-being is high *workload*. Pressure to complete tasks quickly is common within call centres, along with active efforts by managers to increase utilisation by reducing time spent between calls. It is this effort to minimise slack time that has led to the charge that call centres are 'sweat shops'.

Research by Karasek and others (see Karasek 1979; Karasek & Theorell, 1990) has shown that high work demands can be beneficial provided that they are associated with high levels of worker control over how they manage those demands. This is why we regard employee autonomy as so important. Call centre managers need to explore ways in which they can allow call handlers the autonomy to manage their own work demands.

Opportunity for skill utilisation is a particular area of concern highlighted by our research and was a significant predictor of almost all of the measures of psychological well-being. Comments written in the questionnaire and in the interviews conducted during both studies indicated considerable frustration among call handlers that they were not allowed to use their skills to the full or to use the knowledge they had. The heavy utilisation of the communication technologies through strict targets on call length and scripting reduces the utilisation of the expertise of the employees.

Call centre managers need to examine their strategic goals. Which gives most effective customer service? Is it answering calls quickly and finishing the call as soon as possible, or is it allowing call handlers the discretion to target customers' needs precisely using their knowledge and experience?

We acknowledge that debates about quality versus quantity have been ongoing in the call centre industry for some time now.

Task variety is also low compared with other jobs within call centres and is a significant predictor of job-related depression, job satisfaction and general well-being. Highly repetitive work can be damaging in a number of ways:

- It creates boredom and *'role underload'*: Employees do not need to give their active attention to their work, and this, in turn, can increase the risk of poor quality work. For example, not asking the appropriate questions of a customer and thus giving incorrect information.
- It may increase the risk of exposure to upper limb disorders such as repetitive strain injury (RSI) which can damage the individual and can lead to sickness absence, and even turnover.
- It devalues the work of call handler and makes it much harder to recruit and retain high quality staff.

Work within call centres can be made more varied by, for example, involving call handlers in other tasks and reducing the proportion of time they spend on the phones or by rotating employees between different kinds of query so that they are dealing with more diverse problems.

Role conflict is a major stressor, reflecting the tension (or contradiction) between good customer service (which may require spending time with customers in order to identify and deal with their specific problem) and high utilisation (which requires short calls and minimal intervals between calls). Call centre managers espouse that customer service quality is their highest priority. However, it is easier to monitor indicators of utilisation than it is indicators of service quality. The prominence in many call centres of statistics related to such things as mean call length, number of rings before answering, call abandonment rates, percentage of handler time spent on calls, give a powerful message to employees about what the real values of the organisation are.

Role ambiguity was also found to be a strong predictor of job satisfaction and job-related anxiety. Call handlers were more satisfied in their jobs and less anxious when they were clear about what was required of them and how their work would be judged. In practice, role ambiguity and role conflict tend to occur together. Managers and supervisors need to be clear about what they want from call handlers and apply consistent criteria in judging work standards. Care must be taken in the manner in which performance information is fed back to employees.

If steps such as these are not taken, employee morale can be damaged and trust in management destroyed.

Clarity in work goals and in the standards applied to judge work quality are vitally important. Indeed, it would be beneficial for call handlers themselves to be involved in defining and monitoring work goals and standards. Employee involvement in decision making has been shown to increase their commitment to achieving work goals as well as their commitment to the company as a whole.

4.3 OVERALL CONCLUSIONS

Not all call centres are 'electronic sweatshops', and it is wrong to label them as such. Here, we concur with the conclusion in a recent chapter on call centres by Holman (2003). The statistical variability within our own sample reveals that there is good practice and *'not so good'* practice within our sample of call centres.

We acknowledge that there are *intrinsic* job characteristics inherent in the role of call handler that are difficult to change, that is, being a call handler will always involve the repeated handling of phone calls. However, there are elements of these jobs that can be *redesigned* to make them less stressful and more satisfying.

We do not *prescribe* a particular work design solution. Rather, our research has prioritised those elements of the job that require immediate attention in all call centres. One organisational intervention that could ameliorate the potential impact of call handlers' relatively impoverished work design is that of *teamworking*.

Many call centres already operate in team structures, but these teams in are not interdependent teams. Rather, the term 'team' is more of a label for a group of call handlers working completely independently for the bulk of their time.

Teamworking An organizational team can be defined as a:

'… collection of individuals who are interdependent in their tasks, who share responsibility for outcomes, who see themselves and who are seen by others as an intact social entity embedded in one or more larger social systems (e.g. business unit or the corporation), and who manage their relationships across organizational boundaries' (Cohen & Bailey, 1997, p.242) cited in Cordery (2003).

Research by Batt (1999) in the customer service context found that groups with more self-regulation, coaching support, level of education, training and better work group relations had higher scores on an employee-related measure of service quality. Moreover, the same study found that group self-regulation, coaching support and level of education were also positively related to sales volume. Thus, there is some evidence for performance-related benefits from team or group-based structures in call centres.

But is there evidence of well-being benefits from teamworking in call centres?

Changing to teamworking may increase the levels of control/autonomy for call handlers. However, the relationship between the teamworking, autonomy and individual well-being is not a straightforward one. Research by Sprigg, Jackson & Parker (2000) found that when teamworking was introduced into a manufacturing context where *interdependence* (that is, the degree to which team members are reliant on each others actions to get work done) was low, then the well-being benefits were 'hijacked' by individuals within teams, and it was only these individuals who derived the well-being benefits of enhanced control.

If call centres are adopting teamworking (and various forms of *self-managed teams* (SMTs), and *autonomous work-groups* (AWGs)) as possible antidotes to alleviate the effects of poor work design (Houlihan, 2001), then we need evidence that *redesigning* call centre work in this way is having the intended performance and well-being consequences.

(For a recent text see '*Teamworking'* edited by Procter & Muller (2000), and chapter by Cordery (2003) in Holman et al, 2003.)

In our last publication, HELA Local Authority Circular 94/1 (rev) 'Advice regarding call centre working practices', we provided many practical suggestions on how call centre work can be improved.

4.4 FUTURE RESEARCH

Our research is *cross-sectional* in nature. That is, it is an evaluation of call handler work design and well-being at a single point in time.

Research that is *longitudinal* in nature would allow us to be more certain of *causality*, that is, the direction of relationships within the data. Such research would be helpful in providing a better understanding of the issues raised in this report. In turn, this allows us to be more certain of the advice we give to industry.

Longitudinal research in call centres may represent a significant research challenge as employee turnover in call centres is typically high. Thus, collecting data from the same employee, in the same organisation at six month intervals over a three year time period could be difficult.

Our exploratory research showed that call handlers in call centre 'hot-spots' do not leave the call centre industry, rather they move to another call centre in the same locality for greater salary. Thus, it may be more fruitful to 'track' individual call centre employees and monitor their well-being over time, rather than focusing on employees within a particular organisation.

A strength of our research and a key requirement of future research is the use of multiple methodologies of data collection in order to disentangle the complexity of the call centre work experience. We conducted 37 semi-structured interviews, and we would encourage using interviews, focus groups and diary methodologies in conjunction with questionnaires.

Now we must begin to evaluate those work design interventions, for example, the introduction of teams, which call centre managers have already implemented and are implementing. This would be a fruitful area for longitudinal research.

There is unlikely to be a *'one size fits all'* work design solution for call centres, and, as with our previous research for HSE (see Parker et al, 1998), we would advise that call centre managers *diagnose* the work design, mental health and contextual factors before embarking on major work redesign initiatives (see Parker *et al*, 1998).

Given our findings, it is evident that researchers need to examine in more detail those features of call centres that are common characteristics of these work environments. That is, they must assess the *interactive* and potentially *additive* impact of electronic performance monitoring, DSE and telephone technologies on employee psychological and physical well-being.

Indeed, a further research avenue that may be especially relevant to call centre employees is the relationship between the physical work environment features (e.g., temperature, humidity, work space) and their well-being. As call handlers are, in general, a particularly static group of employees ('tied to phones') then these work environment features, and their perception of them may be especially critical to their well-being. This study did not look at these factors in depth, but our findings are reported in Appendix 2.

5 REFERENCES

Bain, P. & Taylor, P. (2000). Entrapped by the 'electronic panoptican'? Worker resistance in the call centre. *New Technology, Work and Employment,* 15, 2-18.

Banks, M.H., Clegg, C.W., Jackson, P.R., Kemp, N.J., Stafford, E.M., & Wall, T.D. (1980). The use of the General Health Questionnaire as an indicator of mental health in occupational settings. *Journal of Occupational Psychology,* 53, 187-194.

Batt, R. & Moynihan, L. (2002). The viability of alternative call centre production models, *Human Resource Management Journal,* 12, 4, 14-34

BBC News (2003). BT opens Indian call centres (7 March, 2003). Extracted from Internet (10/04/03) at http://news.bbc.co.uk/1/hi/business/2828391.stm

Belt, V. (2002). A female ghetto? Women's careers in call centres. *Human Resource Management Journal,* 12, 4, 51-66

Callaghan, G. & Thompson, P. (2001). Edwards revisited: technical control and call centres. *Economic and Industrial Democracy,* 22, 13-37

Caplan, R.D., Cobb, S., French, J.R.P., Harrison, R.V., & Pinneau, S.R. (1980). Job demands and worker health (NIOSH publication no.74-160). Ann Arbor: Institute for Social Research, The University of Michigan.

Carayon, P, (1994). Effects of electronic performance monitoring on job design and worker stress: Results on two studies. *International Journal of Human-Computer Interaction,* 6, 177-190.

Clegg, C. & Wall, T.D. (1990). The relationship between simplified jobs and mental health: A replication study. *Journal of Occupational Psychology,* 63, 289-296.

Cohen, S.G. & Bailey, D.E. (1997). What makes teams work: Group effectiveness research from the shopfloor to the executive suite. *Journal of Management,* 23, 239-290

Cordery, J. (2003). Team Work. In D.Holman, T.D.Wall, C.W.Clegg, P.Sparrow and A.Howard. *The New Workplace:* Chichester: John Wiley.

Cox, T. & Griffiths, A. (1996). Assessment of psychosocial hazards at work. In M.J.Schabracq, J.A.M. Winnubst & C.L.Cooper (Eds.), *Handbook of work and health psychology*. New York: John Wiley.

Datamonitor (2003). New Statistics from Datamonitor. Extracted from CCA website on 10/04/03 at http://www.cca.org.uk/indnews.html.

Deery, S., Iverson, R. & Walsh, J. (2002). Work relationships in telephone call centres: understanding emotional exhaustion and employee withdrawal. *Journal of Management Studies*, 39, 471-496.

Deery, S & Kinnie, N. (2002). Call centres and beyond: A thematic evaluation. *Human Resource Management Journal*, 12, 4, 3-13

Fernie, S. & Metcalf, D. (1998). (Not) hanging on the telephone: payment systems in the new sweatshops. *Centrepiece*, 3, 7-11.

Garson, B. (1988). *The electronic sweatshop: How computers are transforming the office of the future into the factory of the past.* New York: Simon & Schuster.

Goldberg, D.P. (1972). The detection of psychiatric illness by questionnaire. *Maudsley Mongraph*, 21. Oxford: Oxford University Press.

Goldberg, D., & Williams, P. (1991). A users guide to the General Health Questionnaire – GHQ. Windsor: NFER-NELSON.

Hackman, J.R., & Oldham, G. (1975). Development of the Job Diagnostic Survey. *Journal of Applied Psychology*, 60, 159-170.

Hackman, J.R., & Oldham, G. (1976). Motivation through the design of work: Test of a theory. *Organizational Behaviour and Human Performance*, 16, 250-279.

Hackman, J.R., & Oldham, G.R. (1980). *Work Redesign.* Reading, MA: Addison-Wesley.

HELA. Initial advice regarding call centre working practices. Local Authority Circular. 94/1. Issued 1999.

HELA. Advice regarding call centre working practices. Local Authority Circular. 94/1 (Rev.). Issued December 2001. Available from: http://www.hse.gov.uk/lau/lacs/94-1.HTM

Holman, D. (2003). Call centres. In D.Holman, T.D.Wall, C.W.Clegg, P.Sparrow and A.Howard. *The New Workplace: A guide to the human impact of modern working practices.* Chichester: John Wiley.

Holman, D. (2002). Employee wellbeing in call centres. *Human Resource Management Journal*, 12, 4, 35-50.

Holman, D., Chissick, C. & Totterdell, P. (2002). The effects of performance monitoring on emotional labour on well-being in call centres, Motivation and Emotion, 26,57-81.

Houlihan, M. (2002). Tensions and variations in call centre management strategies. *Human Resource Management Journal*, 12, 4, 67-87.

Hutchinson, S., Purcell, J. & Kinnie, N. (2000). Evolving high commitment management and the experience of the RAC call centre. *Human Resource Management Journal*, 10, 1, 63-78

Huselid, M. (1995). The impact of human resources management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal*, 38,3, 635-672

IDS (Incomes Data Services) (2000). *Pay and conditions in call centres 2000.* London:IDS.

Jackson, P.R. & Martin, R. (1996). Impact of just-in-time on job content, employee attitudes, and well-being: A longitudinal analysis. *Ergonomics*, 39, 1-16

Jackson, P.R.& Parker, S.K. (2001). Change in manufacturing: How to manage stress-related risks. Case studies in practitioner format. Norwich, England: HSE Books, HMSO.

Jackson, P. R., Wall, T.D., Martin, R. & Davids, K. (1993). New measures of job control, cognitive demand, and production responsibility. *Journal of Applied Psychology,* 78, 753-762.

Karasek, R.A. (1979). Job demands, decision latitude and mental strain: Implications for job redesign. *Administrative Science Quarterly,* 24, 285-308.

Karasek, R.A & Theorell, T. (1990). *Healthy Work.* New York: Basic Books.

Mullarkey, S., Wall, T.D., Warr, P.B., Clegg, C.W., & Stride, C.B.(Eds) (1999). *Measures of job satisfaction, mental health, and job-related well-being. A bench-marking manual.* Sheffield: Institute of Work Psychology.

O'Hara, R. (1999). Occupational health and musculoskeletal pain at work: An investigation of individual and and organisational factors. Unpublished PhD Thesis. University of Sheffield.

Parker, S.K., Griffin, M.A, Sprigg, C.A. and Wall, T.D. (2002). Effect of temporary contracts on perceived work characteristics and job strain. *Personnel Psychology*, 55, 689-719.

Parker, S.K., Jackson, P.R., Sprigg, C.A., & Whybrow, A.C. (1998*). Organisational interventions to reduce the impact of poor work design.* Contract Research Report 196/1998. Norwich, England: HSE Books, HMSO.

Parker, S.K., & Wall, T.D. (1998). Job and work design. Organizing work to promote well-being and effectiveness. London: Sage.

Parker, S.K., & Williams, H.M. (2001). Effective teamworking: Reducing the psychosocial risks. Case studies in practitioner format. Contract Research Report 393/2001. Norwich, England: HSE Books, HMSO.

Procter, S & Mueller, F. (eds.) (2000). *Teamworking.* London: Macmillan Press Ltd.

Rizzo, J., House, R.J., & Lirtzman, S.I. (1970). Role conflict and ambiguity in complex organisations. *Administrative Science Quarterly,* 15, 150-163.

Rogelberg, S.G., Luong, A., Sederburg, M.E., & Cristol, D. (2000). Employee attitude surveys: Examining the attitudes of noncompliant employees. *Journal of Applied Psychology,* 85, 284-293.

Sawyer, J.E. (1992). Goal and process clarity: Specification of multiple constructs of role ambiguity and a structural equation model of their antecedents and consequences. *Journal of Applied Psychology*, 77, 130-142.

Smith, P.R., & Sprigg, C.A. (1999). Initial advice regarding call centre working practices. Local Authority Circular. 94/1. Issued 1999.

Smith, P.R., & Sprigg, C.A. (2001). Advice regarding call centre working practices. Local Authority Circular. 94/1 (Rev.). Issued December 2001. Available from: http://www.hse.gov.uk/lau/lacs/94-1.HTM.

Sprigg, C. A., & Smith, P.R. (2002). Call centre employees using Display Screen Equipment (DSE): What do we know, about what they know, about it? In Paul.T.McCabe (Ed.). *Contemporary Ergonomics 2002.*, pp.149-153. London: Taylor & Francis.

Sprigg, C.A., Jackson, P.R. and Parker, S.K. (2000) Production teamworking: The importance of interdependence and autonomy for employee strain and satisfaction. Human Relations, 53, 11, 1591-1543

Taylor, P. & Bain, P. (1999). An assembly line in the head: work and employee relations in the call centre. *Industrial Relations Journal*, 30, 101-117.

Terry, D. & Jimmieson, N. (1999). Work control and well-being: a decade review. In C.Cooper and I. Robertson (eds). *International Review of Industrial and Organizational Psychology. London*: John Wiley.

Wall, T.D., Jackson, P.R., & Mullarkey, S. (1995). Further evidence on some new measures of job control, cognitive demand and production responsibility. *Journal of Organizational Behaviour*, 16, 431-455.

Wall, T.D., Jackson, P.R., Mullarkey, S., & Parker, S.K. (1996). The demands-control model of job strain: A more specific test. *Journal of Occupational and Organizational Psychology*, 69, 153-166.

Warr, P.B.(1987). *Work, Unemployment and Mental Health*. Oxford: Oxford University Press.

Warr, P.B. (1990a). The measurement of well-being and other aspects of mental health. *Journal of Occupational Psychology*, 63, 193-210.

Warr, P.B.(2002). Psychology at Work. London: Penguin.

Warr, P.B., Cook, J.D., & Wall, T.D. (1979). Scales for the measurement of some work attitudes and aspects of psychological well-being. *Journal of Occupational Psychology*, 52, 129-148.

Zapf, D., Vogt, C., Seifert, C., Mertini, H. & Isic, A. (1999). Emotion work as a source of stress: the concept and development of an instrument. European Journal of Work and Organisational Psychology, 8, 371-400.

6 APPENDICES

6.1 APPENDIX 1: THE QUESTIONNAIRE

SECTION A: BACKGROUND DETAILS

The first section of the questionnaire asked respondents a range of background and biographical questions. These included:

- Name of employer
- Business sector & location of call centre
- Demographic characteristics – age, gender, job tenure, organisational tenure, ethnic origin, educational & other qualifications
- Work role (call handler, team leader, manager etc)
- Type of calls usually handled (outbound or inbound)
- Length of time in call centre industry
- Number of contracted & actual hours
- Work pattern (rotating shifts, weekends only etc)
- Employment contract type (permanent, full-time etc)
- Membership of a union
- Intentions of staying in the call centre industry for more than 5 years

SECTION B: YOU AND YOUR JOB

The second section of the questionnaire included items about a variety of work design characteristics (see Introduction for brief explanation of work design theory). More specifically, we asked participants about:

- the degree of autonomy
- the degree of influence they had
- the amount of variety
- how much opportunity there was to use their skills
- workload & pace of work
- the degree of role conflict & clarity
- the extent of help and support available from work colleagues

SECTION C: YOUR VIEWS ABOUT OTHER ASPECTS OF YOUR WORK

This section had a range of questions about:

- leadership and management
- job training

- training on aspects of display screen equipment (DSE) good practice
- opportunities for career development
- usage of DSE and knowledge of HSE regulation and guidance about DSE
- 'hot-desking'
- overhead information displays
- performance monitoring

SECTION D: YOUR WORK ENVIRONMENT

In this section, participants were asked to indicate their satisfaction or dissatisfaction with various aspects of their physical work environment, e.g., temperature, lighting background noise levels. Further questions were asked about workplace welfare facilities, that is, access to drinking water and the availability of food etc.

SECTION E: YOUR FEELINGS ABOUT YOUR WORK

In this section, participants were asked to indicate their relative satisfaction and dissatisfaction with various aspects of their job, for example, rate of pay, chance of promotion, job security etc. Participants were asked to indicate how they had been feeling in general over the past few weeks, and, more specifically, how their job had made them feel over the past weeks.

SECTION F: YOUR PHYSICAL HEALTH

The final section asked participants about the self-report vocal, optical, auditory and musculo-skeletal health. A number of questions were asked about scripts and call handler knowledge of voice health good practice.

SECTION G: COMMENTS ABOUT WORKING IN A CALL CENTRE

At the end of the questionnaire, there was blank space where participants were invited to make any comments about their experiences as a call centre employee.

6.2 APPENDIX 2: ADDITIONAL RISK FACTORS

As stated in the Introduction, work design theory has been an important guiding framework for examining the psychosocial hazards of call centre working practices throughout our studies. This research report has focused on these psychosocial aspects of call centre working practices, and we have been able to compare our data with benchmark data.

Our initial exploratory study also highlighted a range of other hazards that could also risk both the psychological and the physical well-being of call centre employees. These included display screen equipment, call volume, call waiting information displays and the physical call centre environment. Potential hazards specific to vocal, optical, auditory and musculoskeletal health were also highlighted. To be able to assess the level of risk of these hazards, we collected some quantitative data as we did for the psychosocial hazards.

We have been unable to identify suitable benchmarking data for display screen equipment (DSE), physical environment and physical health against which we can directly compare our data. Consequently, we are much less confident about asserting the level of risk, which may or may not be present, from our data. This should be borne in mind when considering any of the frequencies we present in this appendix or any of our comments about the frequencies.

6.2.1 Display Screen Equipment

The DSE Regulations[1] are one of the most pertinent sets of health and safety regulations for call centres. They lay down various requirements for DSE, the need for risk assessment, provision of eye tests, training and information. From our exploratory study, we found that the understanding of good practice in relation to DSE, not only amongst frontline call handlers but also by managers and health and safety advisors, was sometimes very limited. In an attempt to gain a clearer understanding of the issues, we included a number of questions and statements about DSE in our questionnaire.

The results presented below are for call handlers only (N=884).

DSE training

Tables 1a and 1b Frequencies for various aspects of training relevant to DSE

Table 1a

	Strongly disagree/ disagree	***Neither agree nor disagree***	***Agree/ Strongly agree***
I have had sufficient training to know how to set up my workstation eg chair, desk, and computer	17%	14%	69%
I have had sufficient training to know how to adjust my workstation eg chair desk and computer	18%	14%	68%
I have had sufficient training to know how to adjust my VDU screen contrast	29%	15%	56%
I have had sufficient training to know how to adjust my VDU screen brightness	29%	14%	57%
I have been trained to set up my workstation in such a way as to minimise the risks to my health and safety	35%	21%	44%

Table 1b

	Yes	***No***
Are you aware of the Health and Safety Executive (HSE) regulations and guidance for DSE users?	44%	56%
Has your employer trained you to set up your workstation?	51%	49%

Table 1a may indicate that some of the more subtle aspects of DSE set up are not being covered adequately in training sessions. Closer scrutiny of companies' training would clarify this. The timing of training may also play a part in this result. Many companies include DSE in induction training. These courses are often very intensive and some new recruits may become overwhelmed by all the information and not be able to remember all that they are taught. Although it is essential that DSE risks are covered at induction, the results of Table 1a may suggest that regular refresher training is also very important to ensure employees consider all aspects of DSE when adjusting their workstations.

The responses to the questions *'Are you aware of the Health and Safety Executive (HSE) regulations and guidance for DSE users?'* could give cause for concern. However, it is possible HSE's DSE Regulations[1] may not have been explicitly mentioned during training, even if all the essential areas were covered to an acceptable level. The responses to *'I have been trained to set up my workstation in such a way as to minimise the risks to my health and safety'* and *'Has your employer trained you to set up your workstation?'* could also be explained in a similar way: Organisations may have shown employees how to set up their workstations yet not explicitly called it DSE training. Consequently, employees may know how to set up their workstations yet not label how they acquired this knowledge as training so

respond negatively. Employees may also respond negatively to these questions if they have been given new equipment or furniture but have not been told how to adjust it.

These responses emphasise the importance of refresher training and provision of information as mechanisms for reminding employees about all aspects of the DSE Regulations[1], correcting any bad habits that have developed and informing them of any changes the organisation has made to the controls for the various risks. Organisations may also benefit from making their DSE training more explicit.

DSE usage

Table 2: Percentage of shift DSE used

Less than 25%	*26% - 50%*	*51% - 75%*	*More than 75%*
3%	0%	3%	94%

Table 2 clearly indicates that most call handlers use DSE for the majority of their work shift. This means the DSE Regulations apply to them, so their employers are legally obliged to conduct DSE assessments on their workstations and to ensure the minimum requirements are met.

Rest breaks and changes of activity

Table 3: Maximum length of time worked between rest breaks

Shortest interval	*Longest interval*	*Most frequent interval*
30 minutes	8 hours	2 hours 30 minutes

Table 4: Maximum length of time worked between changes of activity

Shortest interval	*Longest interval*	*Most frequent interval*
3 minutes	13 hours	2 hours 30 minutes

Tables 3 and 4 strongly suggest that call handlers do not take rest breaks or change activity as frequently as recommended in the guidance on the DSE Regulations[1]. This guidance states that breaks, either rest breaks or changes in activity, should be taken before the onset of fatigue rather than to recuperate and that short frequent breaks are more satisfactory than occasional, longer breaks. As an example, the guidance suggests that a break of 5-10 minutes after 50-60 minutes work is better than 20 minutes after two hours work.

The length of the most frequent interval call handlers reported using DSE between rest breaks or changes of activity (2½ hours) increases the importance of their workstation being set up correctly.

DSE assessments

Table 5: Frequency of DSE assessments

	Yes	*No*
Never had a DSE assessment	65%	35%
When I started work at this call centre	23%	77%
Whenever I move desks	8%	92%
Whenever an aspect of my workstation changes eg new screen, new chair etc	10%	90%

At the time of this study, organisations were legally obliged to conduct a DSE assessment on all DSE workstations used by users or operators. Since call handlers are DSE users, the percentage of call handlers stating that they have never had a DSE assessment could be cause for concern that employers are not meeting their legal duties. However, as with training, organisations may have conducted a DSE assessment without explicitly labelling it a DSE assessment, or generic assessments may have been done. Again, organisations may benefit from being more explicit about their assessments. The same explanation could be applicable to the high percentage of call handlers who do not think they have had a DSE assessment when an aspect of their workstation changes. It is essential that assessments are conducted when new equipment is introduced to ensure that it is not going to have an adverse impact on any individuals and also to highlight any training needs. This is particularly the case for new software, but call handlers may not gain full advantage of even a well designed chair, for example, unless they are trained how to adjust it.

Table 6: DSE assessors

	Yes	*No*
Do you usually conduct a DSE assessment on yourself?	18%	82%
Does someone else usually conduct a DSE assessment on you?	25%	75%

The results in Table 6 could confirm that DSE assessments are not being conducted. It is acceptable for call handlers to conduct an assessment on their own workstation if they have been trained to do so. However, just as training should be refreshed, so individuals' DSE assessments conducted by a trained assessor should be renewed periodically, especially if any part of their workstation or job has changed. It is also advisable that assessments done by individuals are checked by someone with overall responsibility for DSE health and safety.

Hot-desking

Table 7: Occurrence of hot-desking

	Yes	*No*
Do you hot-desk?	53%	47%
Do you hot-desk just within your team area?	48%	52%
Do you hot-desk across the whole call handling area?	51%	49%
Do you sit at the same desk every working shift, but someone else uses it when you are not at work?	42%	58%
Do you have any particular issues with hot-desking that you would like to tell us about?	34%	64%

Hot-desking is the practice of employees not having an allocated desk but sitting at any desk that is available. Hot-desking occurs more frequently in call centres than the 'normal' office environments that the local authority inspectors are familiar with so they raised it as a practice requiring investigation. Call centre managers and safety representatives also asked for the DSE Regulations[1] to be explained with reference to hot-desking. If organisations operate hot-desking, it is essential that they allow call handlers sufficient time to make any necessary adjustments to their workstations at the start of their shift, before they take any calls. On-screen prompts at log-in are one way of reminding staff to do this.

From the comments made about hot-desking by 34% of call handlers, there are a number of issues that require further investigation to ensure that the practice is properly managed and does not become stressful. Some feel isolated as the rest of the team are not physically near by. The inability to personalise space and the lack of storage space for work-related and personal items can also be sources of stress as can poor DSE maintenance and cleanliness. The reported benefits, such as contact with members of other teams, should also be explored so they can be used more effectively.

6.2.2 Number of calls waiting displays

Table 8: Views about the displays showing the number of calls waiting

	Strongly disagree/ disagree	***Neither agree nor disagree***	***Agree/ Strongly agree***
I think the information about call waiting times is useful	16%	31%	53%
I think there is too much displayed information about call waiting times	34%	46%	20%
I am comfortable with the amount of information I have available to me at any one time	15%	32%	53%
I think the information displays and the computer messages help me to do my job	16%	33%	51%
I usually ignore the information displays	61%	25%	14%
Having too much information is stressful	35%	37%	28%

The responses to the statements summarised in Table 8 suggest that, contrary to popular belief, calls waiting displays provide useful information which help call handlers do their job. It is possible that call handlers need to be taught how to take full advantage of the displayed information in order to reduce the risk of them becoming overloaded with information and stressed.

6.2.3 Physical work environment

Table 9: Ratings for the workspace most commonly used or the whole call centre if hot-desking is a routine working practice

	I'm very/moderately dissatisfied	*I'm not sure*	*I'm moderately/very satisfied*
The general temperature	55%	4%	41%
The quality of the air eg humidity	60%	9%	31%
The draught levels	44%	11%	45%
The ventilation	57%	13%	30%
The lighting	33%	8%	59%
Amount of workspace	25%	5%	70%
Reflections and glare on computer screen	42%	10%	48%
Background noise levels	49%	12%	39%
Noises coming through headsets	32%	14%	54%
General cleanliness of workstations	40%	8%	52%
Condition of keyboards	38%	8%	54%
Condition of computer mice	25%	12%	63%
General suitability of work surfaces	16%	10%	74%
Height of work surface	11%	7%	82%
Adjustability of chairs	23%	3%	74%
Adjustability of screens	20%	8%	72%
Condition of chairs	26%	5%	69%
Maintenance standards of chairs	30%	13%	57%
Storage space for the information needed to do your work	35%	9%	56%
Storage space for personal items	42%	7%	51%
Space on desks so that the computer screen can be correctly positioned	28%	9%	63%
Space between you and your nearest colleagues	19%	6%	75%
The overall layout of call handling areas	24%	11%	65%

For the majority of physical work environment aspects, over half the respondents were moderately or very satisfied. The media have likened call handlers to battery hens, yet 75% of the respondents were moderately or very satisfied with the space between them and their colleagues, and 70% were moderately or very satisfied with the amount of workspace they had. Nearly three quarters of the respondents were moderately or very satisfied with the adjustability of their chairs (74%) and their screens (72%). Given the length of exposure to these aspects of DSE, call centre organisations should aim to maintain, if not increase, this level of satisfaction.

The percentage of the call handlers expressing dissatisfaction with the general cleanliness of workstations, condition of computer mice, condition of keyboards, maintenance of chairs, and storage space for both work-related items and personal items suggests more attention needs to be paid to these areas. Some of these can have a direct impact on health & safety, for example poorly maintained computer mice and chairs, by increasing the risk of musculoskeletal problems.

The highest levels of dissatisfaction with the physical working environment were concerning the quality of the air eg humidity (60%), the ventilation (57%) and the general temperature (55%). It is important that there are maintenance programmes for air conditioning/circulation systems and cleaning programmes for office furnishings and equipment, and there is guidance[2] for this. However, even if the advice in this guidance is followed, physical comfort is such a subjective issue that it is very difficult to reach a state in which all the call handlers working in a centre feel the physical environment suits them. This is due to the wide variation in individual preferences and the wide range of factors which affect them. In addition, the physical environments of call centres are usually controlled centrally by facilities management (FM) teams, and this lack of immediate control over physical comfort may exacerbate any feelings of discomfort call handlers may have. Some of the dissatisfaction expressed could be countered by having a direct channel of communication with the FM teams such as by internal electronic mail or telephone hotline for reporting any problems with the physical environment. The FM teams should preferably then respond within a given period such as 24 or 48 hours either with action to rectify or investigate an uncomfortable situation or an explanation of why action cannot be taken. Feedback on FM teams' actions could be posted on an electronic bulletin board so all staff can see that complaints and suggestions about their physical environment are taken seriously. Actively encouraging call handlers to monitor their environment encourages call handlers to feel they do have some control over their environment and also acts as a quality control for the work of FM teams.

Regular breaks either as a change of activity or a rest reduce the exposure of call handlers to any uncomfortable environmental conditions. Breaks can thereby reduce the risk of any adverse outcomes such as dehydration, headaches, sore eyes and voice loss that exposure to these conditions may have.

Workplace welfare facilities

Table 10: Workplace welfare facilities

	Yes	***No***
Are you able to drink at your workstation?	98%	2%
Is drinking water readily available?	98%	2%
Are you able to get a drink when you want one?	93%	7%
Are hot meals available 24 hours a day/ 7 days a week or whenever the call centre is open?	15%	85%
Is there a rest room (not an eating place) available for you to use?	73%	27%
Are you able to go to the toilet without seeking permission from a supervisor/team leader?	97%	3%

The responses to the first three questions in Table 10 are very encouraging, as staying hydrated and keeping the throat lubricated is essential for maintaining good vocal health.

Although there is no legal requirement to provide hot meals throughout the working period, organisations aiming for best practice should give particular consideration to the provision of meals during night shifts. Working night shifts often disrupts eating habits; meals are missed or snacks are consumed rather than proper balanced meals. Poor eating habits may also arise because the shops and cafes where day shift workers purchase food are unlikely to be open at night or the area in which the call centre is located may be too unsafe to walk around in the dark. These factors can result not only in an unhealthy diet but also in gastrointestinal disorders. To reduce the risk of these disorders developing, organisations should be

encouraging call handlers who work outside regular office hours to eat balanced meals by providing the facilities to achieve this. This may mean keeping at least part of the staff restaurant open or providing a kitchen so employees can cook something for themselves.

The responses to the last question in Table 10 are also encouraging, because it contradicts anecdotal evidence that call handlers were not allowed to go to the toilet when they needed to. The TUC have been campaigning for employees, not just in call centres, to have this right.

6.2.4 Physical health

Vocal health

Table 11: Vocal health problems experienced over the previous few weeks

	Never/occasionally	***Some of the time***	***Most/all of the time***
Hoarse voice	61%	25%	14%
Change in pitch	68%	22%	10%
Discomfort in the throat	57%	27%	16%
Loss of voice	87%	10%	3%

Table 12: Scripts

	Yes	No	Don't know
Do you follow a strict script?	35%	63%	2%
Is your script changed frequently?	15%	77%	8%
Are the scripts you use about the right length ie can you complete the script without either breathing difficulties or having to strain your voice?	54%	33%	13%

Table 13: Other vocal health issues

	Yes	***No***	***Don't know***
Does your employer allow you time off the phone if you have a sore throat as a symptom of colds or flu?	42%	38%	20%
Has your employer informed you of the steps you can take to minimise potential risks to your vocal health, eg drinking water rather than tea and coffee?	11%	85%	4%

The frequencies summarised in Table 11 suggest that the risk of vocal health problems for call handlers is not high. However, the risk which exists can be controlled through good work design and the provision of information and training. Call handlers should be encouraged to drink plenty of water but tea and coffee only occasionally, and they should be shown how to exercise their necks, throats and shoulders to help relax the muscles. Regular breaks either as a change of activity or a rest will also help to control the risk of vocal health problems.

Those organisations requiring their call handlers to follow strict scripts should re-consider whether this practice is necessary or whether call handlers could be guided for at least part, if

not all, of the call by bullet points of information that must be included at some stage. This may also encourage call handlers to feel they have more control over how they carry out their job as discussed earlier in this report.

Optical health

Table 14: Optical health problems experienced over the previous few weeks

	Never/occasionally	*Some of the time*	*Most/all of the time*
Headaches	52%	27%	21%
Irritated, sore or red eyes	56%	26%	18%
Difficulties focusing eg blurred vision	66%	20%	14%
Visual fatigue/tired eyes	47%	28%	25%
Dizziness	84%	13%	3%
Overall eye discomfort	66%	20%	14%
Dry	72%	16%	12%

Table 15: Other optical health issues

	Yes	No
Do you wear contact lenses?	10%	90%
Are you aware that blink rates slow when concentrating on a computer screen, and this can lead to dry and tired eyes?	18%	82%
Are you aware that, as a DSE user, you can ask your employer to arrange an eye test for you?	80%	20%

The frequencies of the various optical health problems reported in Table 14 suggest that there is no greater risk to optical health working in a call centre than using DSE in a 'normal' office environment. Some of the symptoms may be related to the lack of knowledge about how to adjust screen contrast and brightness as indicated in Table 1a and these adjustments should be covered in DSE training. Focusing at the same distance for long periods and slower blink rates caused by concentrating on a VDU can both provoke visual fatigue, so training should also cover these issues. Regular breaks away from the VDU either as a change of activity or a rest break and maintaining a reasonable relative humidity within the call centre are additional ways of controlling the risk of visual symptoms.

Although 80% of the respondents knew that as DSE users they can ask their employer to arrange an eye test for them (Table 15), many of the 74% who commented stated that they had learnt about this right from friends, colleagues, union representatives and previous employers rather than during training or information given to them by their current employer. If companies are not informing their staff of their right to an eye test, this should be rectified in order for them to meet their legal duty. However, this response might also be explained by information overload during induction DSE training so staff not realising that they had been notified of their rights by their employer. To help overcome the possibility of information overload, the material covered during induction training could be summarised as a booklet or folder that new recruits can keep and refer to in future or it could be included on an organisation's intranet.

Auditory health

Headsets

Table 16: Headsets

	Yes	***No***
Have you been issued with your own personal headset?	91%	9%
Do you use a monaural (one earpiece) headset?	92%	8%
Do you use a binaural (two earpiece) headset?	9%	91%
Are you given a choice of using monaural headset or a binaural headset?	13%	87%
Can you control the level of sound you listen to through your headset?	89%	11%

Table 17: Headset training

Areas covered in training	Yes	No
How to adjust your headset	65%	35%
Adjustment of volume control features	75%	25%
Purpose of volume control features	42%	58%
How to position headset mouthpiece	53%	47%
How to clean headsets	18%	82%
How to clean the voice tube	10%	90%
How to replace earpiece cushions	34%	66%
How to identify faulty headsets	16%	84%
What to do if your headset is faulty	57%	43%

To reduce the risk of damage to hearing, it is essential that call handlers are able to adjust the sound level they listen to through their headsets, but 11% (Table 16) stated that they could not. However, this might be explained by a lack of training rather than the equipment not having the facility to control sound levels, as 58% (Table 17) stated training did not cover the purpose of the volume control features.

Issuing headsets to individuals and giving a choice between monaural and binaural headsets is best practice. Although 91% (Table 16) stated they are issued with their own headset, only 13% (Table 16) said they were given a choice between monaural and binaural headsets. Sharing headsets increases the risk of ear infections, so if call handlers do have to share headsets, it is important not only to issue them with their own earpiece cushions but also to train them how to change the earpiece cushions, and 66% of the respondents said that they were not receiving this training. Organisations are also failing to train call handlers in how to clean their headsets (82% [Table 17]) or voice tubes (90% [Table 17]) and relatively few call handlers are being taught how to identify faulty headsets (16% [Table 17]).

Organisations should be aware that unclean equipment increases the risk of infection and poorly maintained headsets increases the risk of hearing damage and could contribute to the stress call handlers feel. Employers/organisations have a legal obligation to reduce these risks to as low as is reasonably practicable: Reviewing their maintenance procedures to include headset hygiene and training to include such routine maintenance would help them meet these legal obligations. Organisations may also benefit as regular cleaning and maintenance may also prolong the life of the equipment.

Noise levels

Table 18: Background noise levels

	Yes	No
Do you have to raise your voice to talk to your colleagues?	39%	61%
Do you have any difficulties hearing customers above background noise levels?	66%	34%

The source of troublesome background noise was not only from within the call centres such as colleagues talking but also from the callers' environments such as televisions and children shouting. If background noise is making it difficult for a call handler to hear a caller and the source of the noise is at the caller's end of the line, call handlers may be able to provide a better service if they are allowed to ask the caller to reduce the background noise so they can hear what the caller is saying more clearly.

Table 19a: Headset noise levels

	Never/ rarely	***Occasionally***	***Often/ Very often***	***Constantly***
Do you increase your headset volume in order to hear a customer?	18%	39%	30%	13%
Do you experience unacceptably loud noises through your headset?	33%	44%	20%	3%
Do you experience dulled hearing or reduced hearing after wearing your headset?	48%	30%	18%	4%

Table 19b: Duration of dulled/reduced hearing after wearing a headset (N = 404)

2 hours	***4 hours***	***6 hours***	***8 hours***	***16 hours***	***24 hours***
79%	11%	3%	3%	1%	3%

Call handlers must be reminded to turn their headset volume down again after a quiet call, so they do not listen to louder customers at an unnecessarily high volume and increase the risk of experiencing dulled hearing.

Unacceptably loud headset noises may also cause dulled hearing, but organisations can reduce this risk by installing equipment made by reputable companies and maintaining it. Another study of headset noise[3] demonstrated that levels are below the threshold known to cause permanent hearing damage.

Regular breaks from the headset either by a change of activity or a rest help to control call handlers' daily noise exposure and the risk of dulled hearing.

For a more detailed report about the risks of hearing damage in call centres refer to Patel, 2002.

Musculoskeletal health

Table 20a: Frequency of musculoskeletal disorders (MSDs)

	Yes	***No***
In the last 7 days, have you experienced musculoskeletal trouble caused by your work in any part of your body?	62%	38%

Table 20b: Location of MSDs

	Yes	***N***
Neck	57%	545
Shoulders	42%	544
Upper back	21%	544
Elbows	7%	545
Low back	53%	547
Wrists/hands	24%	547
Hips/thighs/buttocks	16%	546
Knees	20%	546
Ankle/feet	12%	544

Table 20c: Time off work due to these MSDs

	Yes	***No***
Have you taken time off work in the past 12 months because of the musculoskeletal trouble described above?	10%	90%
Have you taken time off work in the past 12 months because of any other musculoskeletal trouble not already described?	4%	96%

Although 62% of respondents said that they had experienced MSDs in the previous 7 days, only 10% of respondents reported having to take time off work in the previous 12 months as a result of MSDs. It is most likely, therefore, that the 7-day levels relate to transient aches and pains. As expected for office workers, complaints of the lower limbs were less frequent. It is generally believed that the risk of MSDs is comparatively low in office workers, with females reporting more problems than males. Accurate figures do not exist for DSE users as a separate group, but the risks are still considered to be fairly low compared with occupations which involve heavy physical work, for example. However, where a large population exists, there can still be a significant number of reports of MSD problems. It is difficult to make an informed judgement about the levels reported in Table 20 since the questions asked are not directly comparable with those used in published studies. The levels appear to be quite high if they relate to the past seven days, but, given the difficulty people have in accurately recalling time periods for events, it is possible that at least some respondents answered for a longer period during the previous 12 months, in which case the levels are not unusual. The pattern of reporting by body area is as might be expected for this type of work, with highest levels reported for the neck, low back and shoulders. This is consistent with other seated work.

The data in Table 1b suggest that many organisations are controlling the risk of MSDs in call handlers by training them how to set up their workstations correctly. If the low percentages for DSE assessments in Table 2a are valid, the risk of MSDs may be reduced further by

conducting more DSE assessments. Training call handlers to exercise during their shift and scheduling regular changes in activity or rest breaks are additional controls.

References

1. Display screen equipment work Guidance on Regulations L26 (ISBN 07176 2582 6) incorporates the text of the Health and Safety (Display Screen Equipment) Regulations 1992 (as amended in 2002) and discusses the associated issues
2. How to deal with sick building syndrome Guidance for employers, building owners and building managers. HSG132 ISBN 0-7176-0861-1*
3. Patel J. Assessment of the noise exposure of call centre operators - Summary report. HSL Internal Report NV/01/23

6.3 APPENDIX 3: TABLE OF MEANS, STANDARD DEVIATIONS AND INTERCORRELATIONS OF JOB DESIGN MEASURES AND WELL-BEING MEASURES FOR CALL HANDLERS (N=825)

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
1.Gender	-													
2. Timing control	-.03	-												
3. Method control	-.07*	.66**	-											
4. Role breadth	-.08*	.31**	.42**	-										
5. Particip.	-.11**	.32**	.44**	.51**	-									
6. Task variety	-.13**	.30**	.37**	.37**	.28**	-								
7. Skill utilization	.01	.27**	.31**	.31**	.34**	.33**	-							
8. Workload	.06	-.20**	-.28**	-.15**	-.22**	-.23**	-.05	-						
9. Role conflict	-.01	-.19**	-.23**	-.11**	-.23**	-.18**	-.28**	.56**	-					
10. Role clarity	.05	.11**	.15**	.19**	.18**	.08*	.33**	-.27**	-.41**	-				
11. Intrinsic satisfaction	.01	.32**	.37**	.26**	.38**	.35**	.64**	-.39**	-.59**	.43**	-			
12.Extrinsic satisfaction	.03	.24**	.32**	.26**	.34**	.30**	.46**	-.43**	-.58**	.47**	.79**	-		
13.GHQ	.04	-.22**	-.26**	-.18**	-.21**	-.25**	-.25**	.48**	.47**	-.32**	-.49**	-.47**	-	
14.Job-related anxiety	.06	-.28**	-.32**	-.18**	-.29**	-.25**	-.28**	.55**	.51**	-.33**	-.54**	-.53**	.68**	-
15.Job-related depression	.03	-.30**	-.37**	-.22**	-.30**	-.33**	-.41**	.43**	.48**	-.31**	-.65**	-.60**	.68**	.79**
Mean	1.74	1.92	2.10	1.53	1.43	1.66	2.50	2.53	2.18	5.14	3.76	4.43	1.11	2.93
SD	0.44	0.86	0.95	0.47	0.57	0.65	1.00	0.85	0.92	0.84	1.21	0.93	0.51	0.77

*p<.05 **p<.01 ***p<.001. Gender: (Male=1) (Female=2)

6.4 APPENDIX 4: MEASURES OF WELL-BEING AND WORK DESIGN

Job satisfaction. We measured respondents' satisfaction with various elements of their work. We used the job satisfaction measure developed by Warr, Cook and Wall (1979). This psychometrically sound instrument can be scored to provide a single index of overall job satisfaction or separate indices of intrinsic and extrinsic job satisfaction. We used an additional two items, giving a 17-item scale. Cronbach's alpha was 0.92. (See note at end of Appendix 3 on Cronbach's alpha).

Intrinsic job satisfaction. We measured respondents' affective reactions to job features that are integral to the work itself, for example, opportunity to use skills. The intrinsic satisfaction sub-scale comprises seven items, all of which we used. An example item is '*How satisfied or dissatisfied are you with the freedom to choose your own method of working?*' Respondents were given a seven-point response scale ranging from 1 ('*I'm extremely dissatisfied*') to 7 ('*I extremely satisfied*'). Cronbach's alpha was 0.89.

Extrinsic job satisfaction. We measured satisfaction with features external to the work itself, for example, pay, opportunities for promotion. The extrinsic satisfaction sub-scale comprises eight items, all of which we used. An example item is '*How satisfied or dissatisfied are you with the way the organisation is managed?*'. Respondents were given a seven-point response scale ranging from 1 ('*I'm extremely dissatisfied*') to 7 ('*I'm extremely satisfied*'). Cronbach's alpha was 0.77.

Mental health. (Also referred to as *psychological strain/stress/distress*). We measured general mental health by using the 12-item version of the General Health Questionnaire (GHQ) developed by Goldberg (1972). The GHQ is a screening test for detecting minor psychiatric disorder in the general population. The GHQ-12 has been used many times in occupational research to assess 'strain' (see Mullarkey, Wall, Warr, Clegg & Stride (1999) for list of studies).

The GHQ-12 covers feelings of strain, depression, inability to cope etc. An example item is '*Have you recently lost much sleep over worry?*' Respondents are asked to indicate the extent to which they have experienced change in the particular symptom or feeling in question. For example, response labels include '*Better than usual*', '*Same as usual*', '*Less than usual*' and '*Much less than usual*'. Cronbach's alpha was 0.89.

Note: The GHQ can be scored in two ways. The Likert scoring method gives a mean item score and the 'caseness' method is a count of symptoms. The latter threshold method normally uses a cut-off of a score equal to, or greater than 3. For more details see GHQ manual (Goldberg & Williams, 1991) and Mullarkey et al (1999).

Caseness A cut-off point used in measures of psychological health (GHQ) which is often used to give an indication that an individual has a potential for psychological health problems.

Job-related anxiety & depression. We measured job-related well-being by using the short scales developed by Warr (1987, 1990a). The Job-Related Anxiety-Contentment scale includes six-items, as does the Job-Related Depression-Enthusiasm. The version of the scale we used here had a five-point response scale ranging from 1 ('*Never'*) to 5 ('*All of the time'*). Cronbach's alpha for the Job-Related Anxiety-Contentment was 0.83, and the alpha for the Job-Related Depression-Enthusiasm was 0.85.

Note: Higher scores represent greater anxiety and greater depression. Further details of the short scales can be found in the original papers by Warr and in the benchmarking manual by Mullarkey et al (1999).

Measures of work design

Timing control. We measured respondents' degree of timing control with a five-item scale based on that developed by Jackson, Wall, Martin, and Davids (1993) and Wall, Jackson & Mullarkey (1995). We adapted the items so that they were more meaningful for call centre employees, as the original items had been developed especially for production environments. Each item asks respondents to indicate the extent to which they have control over various aspects of their job, for example *'Do you decide on the order in which*

you answer calls?'. Respondents were given a 5-point response scale ranging from 1 ('*Not at all*') to 5 ('*A great deal*'). Cronbach's alpha was 0.80.

Method control. We measured respondents' degree of method control with a four-item scale also based on that developed by Jackson et al (1993). Again, we adapted the items so that they were more meaningful to call centre employees. As before, each item asks respondents to indicate the extent to which they have control and choice over how they carry out work tasks, for example, *'Can you control how many calls you answer?'*. Respondents were given a 5-point response scale ranging from 1 ('Not at all') to 5 ('A great deal'). Cronbach's alpha was 0.79.

Role Breadth (also referred to as *Boundary Control*). We measured the degree to which respondents were involved in activities beyond their immediate job tasks, for example, developing new products. We developed a nine-item scale based on that used by Parker, Jackson, Sprigg & Whybrow (1998) which included items constructed as a result of the interviews we conducted for our exploratory study, for example *'To what extent do you respond to Internet enquiries?*'. Respondents were given a 5-point response scale ranging from 1 ('*Not at all*') to 5 ('*A great deal*'). Cronbach's alpha was 0.71.

Participation in decision-making. We measured the extent to which respondents perceive they are involved in broader decisions that affect them. We used a four-item scale derived from a measure used by Parker, Jackson, Sprigg & Whybrow (1998). An example item is *'To what extent do you influence decisions about the changes that might affect your work?* Respondents were given a five-point response scale ranging from 1 ('*Not at all*') to 5 ('*A great deal*'). Cronbach's alpha was .81.

Task variety. We measured the extent to which respondents were involved in a variety of tasks by using a three-item scale. This scale was derived from Jackson & Martin (1996). An example item is *'To what extent do you carry out the same tasks over and over again?'*. Respondents were given a five-point response scale ranging from 1 ('*Not at all*') to 5 ('*A great deal*'). Cronbach's' alpha was 0.66.

Skill utilization. We measured the extent to which respondents were able to able to use and develop their skills. This four-item scale was derived from Clegg & Wall (1990). An example item is '*To what extent do you make full use of your skills?*'. Respondents were given a five-point response scale ranging from 1 ('*Not at all*') to 5 ('*A great deal*'). Cronbach's alpha was 0.84.

Workload. *(*also referred to as *Role Overload).* We measured the self-reported workload of respondents. Items in this scale were based on Caplan, Cobb, French, Harrison and Pinneau (1980). We used a seven-item scale. An example item is '*Do you find yourself working faster than you would like in order to complete your work?*'. Respondents were given a five-point response scale ranging from 1 ('*Rarely or never*') to 5 ('*Constantly*'). Cronbach's alpha was 0.80.

Role conflict. We measured the extent to which respondents' role demands were consistent or inconsistent. Items in this scale were based on Rizzo, House and Lirtzman (1970). We used a six-item scale. An example item is '*I have to do things that I believe should be done in a different way*'. Respondents were given a five-point response scale ranging from 1 ('*Rarely or never*') to 5 ('*Constantly*'). Cronbach's alpha was 0.88.

Role clarity. (also referred to as *Role Ambiguity* when the items are reverse scored). We measured the extent to which work goals, work processes, and performance requirements are clearly specified. Items were based on Rizzo *et al* (1970) and Sawyer (1992). We used a seven-item scale. An example item is '*How clear are you about the goals and objectives for your team?'*. Respondents were given a six-point response scale ranging from 1 ('*Very unclear*') to 6 ('*Very clear*'). Cronbach's alpha was 0.87.

Co-worker support. We measured the degree to which work-related and personal support was available. These items are from O'Hara (1999) and based on Caplan et al (1980). We used a five-item scale. An example item is '*To what extent do you feel you can talk to your colleagues about a personal problem?'*. Respondents were given a five-point response scale ranging from 1 ('*Not at all*') to 5 ('*A great deal*'). Cronbach's alpha was 0.85.

Note: Many of these measures were used in Parker et al (1998).

Measures of other organisational characteristics

Training about display screen equipment (DSE). We measured the amount of training on DSE. We developed these items based on DSE best practice as described in the DSE Guidance on the Regulations. An example item is *'I have sufficient training to know how to adjust my VDU screen brightness'*. Respondents were given a five-point response scale ranging from 1 ('*Strongly disagree*') to 5 ('*Strongly agree*'). Cronbach's alpha was 0.93.

Performance monitoring. We measured respondents' views about both electronic performance monitoring (EPM) and line eavesdropping by managers. We used a six-item scale. The scale was based on items suggested by Carayon (1994). An example item is *'My performance is monitored by recording the duration of calls and time lags between calls'*. Respondents were given a five-point response scale ranging from 1 ('*Rarely or never*') to 5 ('*Constantly*'). Cronbach's alpha was 0.65. This is a low alpha and more development work is needed on this scale.

Note on Cronbach's Alpha

This is a statistical measure of the internal consistency of a measurement scale, ie, whether the items are all measuring the same underlying psychological construct. This is a way of estimating the reliability of a measure.

We form measures for important concepts by combining together answers to a number of items in the questionnaire in order to get a more reliable indication of someone's opinion. The alpha coefficient is used to assess the level of consistency in answering questions related to the same concept.

A high score (close to 1.0) means that answers are virtually identical, while scores between 0.60 and 0.95 are taken as showing an acceptable level of consistency in answering. Normally, 0.70 is considered to be the lowest value acceptable as an indication of internal consistency.

6.5 APPENDIX 5: EXPLANATION OF STATISTICAL TERMS

T-test

The t-test is used here to decide whether two groups are different in their mean scores on a measure of something (for example job control or level of psychological strain).
A statistically significant result suggests that the groups are different; while a non-significant result suggests that the two groups may be samples from a single population.
A bigger difference in group means (ie stronger evidence) is needed to decide that groups really are different if: a) samples are small or b) there is a lot of variation in answers between people in a group.

Cronbach's alpha

We form measures for important concepts by combining together answers to a number of items in the questionaire in order to get a more reliable indication of someone's opinion. The alpha coefficient is used to assess the level of consistency in answering questions related to the same concept.
A high score (close to 1.0) means that answers are virtually identical, while scores between 0.60 and 0.95 are taken as showing an acceptable level of consistency in answering.

Multiple Regression

This statistical method utilises the notion of partitioning of variance to find an optimal prediction of one variable (for example, anxiety) given a number of predictors (for example, task variety, skill utilisation etc). In other words which work design factors best predict someone's degree of anxiety, depression, job satisfaction etc.

Printed and published by the Health and Safety Executive
C1.10 11/03

MAIL ORDER
HSE priced and free
publications are
available from:
HSE Books
PO Box 1999
Sudbury
Suffolk CO10 2WA
Tel: 01787 881165
Fax: 01787 313995
Website: www.hsebooks.co.uk

RETAIL
HSE priced publications
are available from booksellers

HEALTH AND SAFETY INFORMATION
HSE Infoline
Tel: 08701 545500
Fax: 02920 859260
e-mail: hseinformationservices@natbrit.com
or write to:
HSE Information Services
Caerphilly Business Park
Caerphilly CF83 3GG

HSE website: www.hse.gov.uk

RR 169
£15.00

ISBN 0-7176-2774-8