

# Making the right call

Redesigning call centres from the bottom up



#### contents

Introduction	1
Call centre management and employee well-being	1
Standardization and monitoring effects on strain	4
Turnover, absenteeism and employee performance	5
Professional model for call centre management	6
Conclusions	

#### Introduction

The call center industry has exploded worldwide over the past two decades, as advances in information and communication technologies have reduced the costs of providing service and sales from remote locations. Over the same period, call centers have acquired a bad reputation - both as a channel for customer contact and as places to work. Most people have had the experience of calling a call center, only to become frustrated or angry when the call center agent was unable to solve their problem. Poor service quality seems to plague these workplaces, which are often described as the factories of the information economy. In the typical call center, work is repetitive and highly pressurized. Employees are required to follow a scripted dialog and have little control over their schedules or break times. Managers monitor individual employees remotely, and feed employees continuous information on how their call handling times and sales compare to their co-workers. If employees fail to meet targets, they are often threatened with dismissal or a pay cut.

These conditions have contributed to high levels of employee stress, anxiety, and burnout in call centers. The work of a call center agent is seen as one of the ten most stressful jobs in the global economy (Holdsworth and Cartwright 2003). Employee stress also creates serious problems for companies and their customers. Managers struggle to staff workplaces overwhelmed with high turnover and absenteeism rates. Customers lose valuable time and energy being routed between employees who have been narrowly trained to answer specialized questions.

In this report, we review academic research that has examined empirically how this tightly controlled approach to call center management affects employee well-being and performance. Findings from a wide range of survey- and case-based studies demonstrate that these practices take a heavy toll on employee health. Narrow job design, high use of scripts, intense monitoring, and targets linked to punishment and dismissal are associated with increased levels of repetitive strain injuries, stress, anxiety, and burnout. Researchers have also analyzed the reasons for these health risks. They find that practices

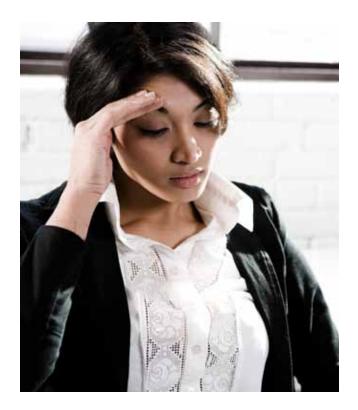
The work of a call centre agent is seen as one of the ten most stressful jobs in the global economy.

like monitoring and scripts reduce employees' control over their work, their ability to develop and use skills, and their ability to deal with the emotional work required to interact with customers – which, in turn, lower their capacity to cope with the high demands they face in their jobs. These stress-inducing management practices have been found to create costs not only for employees but also for their employers, through increasing quit and absentee-ism rates and reducing customer service quality.

Supportive human resource management policies, such as promotion opportunities, can help to reduce work-related strain. However, an alternative call center management model that increases employee control over their work and ability to use and develop skills holds the greatest promise for maximizing employee well-being and performance. We conclude this report with a series of recommendations for practices associated with this more professional model of call center management. These include training employees to answer a broad range of call types, increasing discretion over how employees handle and resolve calls, allowing more choice over schedules and break times, limiting monitoring intensity, using performance information to develop rather than discipline employees, and involving employees in the design and review of performance targets. A case study of a telecommunications call center adopting this model illustrates how these practices can be applied to create a strong performance culture through fostering trust and professionalism.

## Call center management and employee well-being

In this section, we ask how call center management practices affect employee health and well-being. Studies have focused on the relationship between different



practices and measures of strain – defined as excessive physical or mental tension, often resulting in injury.

- Physical strains include repetitive strain injuries and musculoskeletal disorders affecting the neck, shoulders, arms, eyes, or ears
- Psychological strains include job-related stress, anxiety, depression, and burnout

Call center employees are a high risk group for both physical and psychological strain. Musculoskeletal disorders are common in call centers, which is typically attributed to long periods of repetitive and routinized work at computers with short and infrequent breaks (Calentano 1994). Customer service representatives have also been found to suffer from high rates of stress, anxiety, and burnout associated with performance pressure and low job control (Holdsworth and Cartwright 2003; Singh et al. 1994).

Management practices can both exacerbate and help to alleviate these risks. One set of practices concern work organization. In the call center context, these include the breadth of skills or tasks performed by employees, and the extent of discretion they have in organizing their working time or deciding how to respond to customer requests. Studies have focused on the relationship between work standardization and strain. Measures indicating a high level of work standardization include high use of dialogue scripting, low discre-

#### Call centre employees are a high risk group for both physical and psychological strain.

tion over when and how tasks are performed, and low task variety – or frequent repetition of the same task.

Researchers have found higher rates of physical strain, including musculoskeletal disorders affecting the neck and back, in call centers with more monotonous or routine work (Hales et al., 1994); intensified workloads (Sprigg et al. 2007); and lower variability of workloads (Hoekstra et al., 1996; Baker et al., 2000). Work standardization has also been found to contribute to psychological strain. Studies have shown that greater use of scripts is associated with higher levels of anxiety and depression (Sprigg and Jackson 2006), as well as overall lower mental health and job satisfaction (Holman and Fernie 2000; Holman 2002). In a simulation experiment, Wegge et al. (2007) found an increased presence of immunoglobulin A (an immunological protein present in saliva that indicates chronic strain) where employees were required to serve customers quickly while keeping to a script.

Deery et al. (2002) studied the effects of work standardization on emotional exhaustion, or the extent to which employees feel emotionally drained from their work. They found that call center employees reported higher levels of emotional exhaustion when management required them to speak in a scripted manner; focused on the quantity of calls taken, rather than the quality of service; and pressurized them to minimize their wrap-up time. Emotional exhaustion was also higher when employees viewed their job as repetitive and the workload as excessive.

A second set of practices in call centers concern performance monitoring. This includes the methods used for observing and recording performance data, as well as the system of incentives and consequences attached to performance results. Research has shown that two aspects of the performance monitoring system can contribute to increased physical and psychological strain. These include: a) monitoring intensity, including how frequently employees are monitored across different metrics and how often performance data is fed back to employees; and b) how monitoring is conducted and used, including the clarity of rating criteria and feed-

back, as well as the extent to which performance data is used either to develop or to discipline employees.

A number of studies have found that more intensive performance monitoring in call centers can contribute to higher levels of strain, increasing rates of emotional exhaustion (Deery et al. 2002), depression and anxiety (Holman 2002; Sprigg and Jackson 2006), and musculoskeletal disorders (Sprigg et al. 2007). However, the effects of monitoring on strain depend in part on how monitoring is conducted. Chalykoff and Kochan (1989) showed that clear rating criteria and constructive performance feedback resulting from the monitoring system increased both satisfaction with the system and job satisfaction in a call center setting. Further studies have shown higher stress levels where task monitoring is viewed as inappropriate or badly designed (Holman et al. 2002) and where employees feel they cannot meet performance targets because of lack of train-

Intensive performance monitoring in call centres can contribute to higher levels of strain, increasing rates of emotional exhaustion, depression and anxiety, and musculoskeletal disorders.

ing or excessive workload (Nebeker and Tatum 1993; Deery et al. 2002).

Outcomes are also affected by how information gathered through performance monitoring is used. Research has shown that if the consequences of poor performance ratings lead to discipline, stress levels will be higher than if a poor rating leads to development or training (Nebeker and Tatum 1993). There appear to be stronger effects on stress if poor performance on a monitored task leads to the prospect of dismissal. For example, Hales et al. (1994) found an increased risk of musculoskeletal disorders where call center employees expressed uncertainty about job security, including fear of being replaced by a computer.

Holman, Chissick, and Totterdell (2002) studied the effects of all three aspects of performance monitoring described above: the intensity of monitoring; the performance- related content of monitoring (including the clarity of performance criteria, the immediacy of feedback, and whether the feedback is positive); and

the purpose of monitoring. They found that higher performance- related content was associated with lower levels of depression; while depression, anxiety, and emotional exhaustion were all lower when monitoring was used to develop rather than to discipline employees. They also found that the level of monitoring intensity had the strongest effects on strain. These results show that performance monitoring can reduce psychological strain if it is conducted in a developmental manner and if it is based on regular feedback and clear criteria. However, these positive effects can be wiped out if employees view monitoring as too intense.

A third set of practices concern supportive human resource policies, including investments in training and skill development, promotion opportunities, and the extent to which supervisors support their employees. Supervisor support (Deery et al. 2002; Holman 2002), opportunities for promotion (Callaghan and Thompson 2001; Deery et al. 2002), and opportunities for skill development (Holman and Wall 2002; De Cia et al. 2012) have all been found lead to lower emotional exhaustion, anxiety, and depression in call centers. Holman (2002) also found reduced levels of psychological strain where employees viewed the payment system as fair, felt training and coaching were adequate, and found performance appraisals to be useful. The absence of these human resource supports, in turn, can lead to higher rates of strain. Lack of social support from managers and coworkers has been found to increase reported musculoskeletal symptoms (Hales et al. 1994; Baker et al. 2000; Halford and Cohen 2003); while lack of career opportunities can increase emotional exhaustion (Visser and Rothman 2008).



These supportive human resource policies not only directly reduce strain, but can reduce the effects of scripts, high workloads, and intense monitoring on emotional exhaustion and stress (Callaghan and Thompson 2001; Deery et al. 2002). Holman (2002) showed that where supervisory support was higher, monitoring intensity had a weaker relationship with measures of strain. Lewig and Dollard (2003) found that emotional dissonance in call center work associated with low control was alleviated through social support from supervisors and co-workers.

Work standardization and monitoring effects on strain

Researchers have tested different explanations for why work standardization and intensive, discipline-oriented performance monitoring lead to higher rates of strain. First, a number of studies have focused on job control, or the extent to which employees have control over work pace and over planning and organizing their work. Job control is believed to reduce strain because it helps employees to better cope with job demands, such as problem solving, managing work loads, and dealing with customer interactions (Frese and Zapf 1994; O'Driscoll and Cooper 1996; Parker and Wall 1999). In a series of studies, Holman (2002; 2003) found lower levels of anxiety and depression in call centers where employees reported having more control over work methods and procedures and what is said to a customer. Other studies found higher levels of strain where employees had low control over the timing and handling of calls (Holman and Fernie 2000) and low overall discretion in their work (Rose and Wright 2005).

Research findings show that work standardization and intensive monitoring in call centers can decrease job control, and that it is this loss of control that causes employees to suffer strain. High monitoring intensity has been shown in several studies to reduce employees' feelings of job control (Carayon-Sainfort 1992; Smith et al. 1992; Carayon 1994; Stanton and Barnes-Farrell 1996), and this perceived loss of control then explains higher stress levels (Varca 2006). Monitoring can also reduce employees' actual control over work timing and methods; for example, by increasing the pressure to minimize call duration and time between calls (Carayon 1993). Sprigg and Jackons (2006) found that call handlers in such working environments reported higher workloads, which then predicted jobrelated strain. Psychological strains may also increase Management practices that decrease employee control over their work, such as work standardization, script use, and intensive monitoring, are associated with increased quit rates, increased intensions to quit and increased absenteeism.

the risk of physical strain. Sprigg et al. (2007) found that low employee autonomy over how many calls to take and how to handle them was associated with increased anxiety and depression; which, in turn, led to an increase in musculoskeletal disorders.

Second, work standardization and monitoring can lead to higher rates of strain by reducing employees' ability to develop and use skills. Research in call centers has found higher rates of emotional exhaustion when employees felt that they lacked the necessary skills to deal with job requirements (Deery et al. 2002); and less anxiety and depression while where they had more opportunities to use their skills (Sprigg and Jackson 2006). A study by Holman and Wall (2002) suggests that control and skill use are closely related: they show that greater control over the job itself and how it is done enabled call center employees to develop and use a wider range of skills; that such skill use in turn helped them to cope with job demands more effectively; and that this coping ability reduced rates of job-related anxiety and depression. Higher rates of depression also led to further reductions in skill development and use - suggesting that individuals are less likely to invest in learning new skills where job control is low.

A third explanation for why work standardization and intensive monitoring can increase strain is that these practices have a negative impact on employees' ability to manage the emotional aspects of interacting with customers. Call center employees perform 'emotional labor', in which they are expected to display certain emotions as part of their job in representing the organisation to customers (Hochschild 2003). This can create 'emotional dissonance' when an employee has to display emotions to the customer (such as friendliness or cheerfulness) that may differ from emotions he or she might actually feel (such as anger or boredom) (cf. Zapf 2002). Studies in call centers have found that

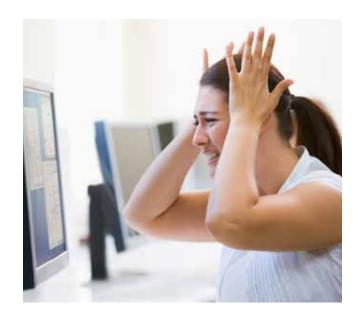
emotional dissonance leads to higher levels of anxiety and depression (Holman et al. 2002), as well as irritation, psychosomatic complaints (Grebner et al. 2002), emotional exhaustion, and depersonalization (Dormann et al. 2002). Work standardization through dialogue scripting, high workloads with a strong focus on call volumes, and intensive monitoring have been found to reduce call center employees' flexibility and control in negotiating their interactions with customers, increasing emotional dissonance and thus leading them to suffer more negative consequences from performing emotional labor (Wharton 1996; Dormann et al. 2002; Lewig and Dollard 2003).

## Turnover, absenteeism and employee performance

The overwhelming conclusion of the research reviewed above is that measures of employee health and wellbeing are highest in call centers with lower levels of work standardization; with less intense monitoring; and where performance data is used to develop rather than to discipline employees. Human resource policies can alleviate work-related strain, but these supportive policies are most effective when implemented together with work organization and performance management practices that give employees control over their work and place limits on the use and intensity of monitoring.

A further concern is whether these practices that have been shown to improve employee well-being are viable and competitive alternatives for employers. In this section, we ask how different approaches to call center management affect two kinds of outcomes: a) employee behaviors that create costs for organizations, including quit rates and absenteeism; and b) employee performance, including productivity, sales, and service quality.

A large number of studies in call centers have demonstrated that management practices that decrease employee control over their work, such as work standardization, script use, and intensive monitoring, are associated with increased quit rates (Batt 2002; Batt et al. 2002; Batt et al. 2006; Wood et al. 2006; Doellgast 2008; Holman et al. 2009) increased intensions to quit (Callaghan and Thompson 2001) and increased absenteeism (Deery et al. 2002). This is often attributed to the effects of these practices on strain: reducing employee control can increase anxiety, emotional exhaustion, and burnout – which, in turn, reduce employee commitment to their employer (e.g., Sonnentag



& Frese 2003). Visser and Rothman (2008) found that burnout had a direct effect on turnover intentions, while Deery et al. (2002) show that absenteeism was higher among employees suffering from emotional exhaustion. In a qualitative study, Callaghan and Thompson (2001) found that call center employees often coped with stress through quitting, which they describe as a form of 'externalising' dissatisfaction.

Research findings on the impact of these practices on employee performance are more mixed. On the one hand, work standardization and intensive monitoring can reduce short-term costs and improve some measures of productivity and sales. On the other hand, work standardization and intensive monitoring have also been found to reduce long-term productivity and service quality. Designing work narrowly with heavy targets can prevent employees from learning from each other. High turnover can increase recruitment and training costs. Musculoskeletal disorders associated with psychological strain contribute to long term sick leave and reduced productivity (Crawford et al. 2008). Employees experiencing different forms of strain have been found to become disengaged with their work, and are less responsive to or engaged with their customers as a result – which, in turn, reduces customer satisfaction (Maslach et al. 2001; Singh 2000; Singh et al. 1994).

Studies in call centers show that these practices can have costs across the different measures of employee performance discussed above. Some research has shown mixed or no productivity effect of practices that increase employee discretion (Batt and Moynihan 2006; Wood 2006; Holman et al. 2009). Other studies have found higher sales growth in call centers adopting prac-



tices that relied on high employee skills, employee participation and control, and limits on monitoring intensity (Batt 2002); and lower levels of customer satisfaction where dismissal rates were high (Batt and Colvin 2011). An analysis of variation in employee performance across the call centers of one large company showed that average call handling time was lower where supervisors emphasized group assignments and group incentives (Liu and Batt 2010); and that service quality and revenues per call were higher where human resource practices emphasized employee training, discretion, and rewards (Batt and Moynihan 2006).

An interesting study by Batt (1999) analyzed the performance effects of a union-management partnership over work redesign at a large telecommunications firm. Union representatives helped to implement self-managed teams in the call centers, which gave employees increased control over supervisory tasks like setting assignments and covering breaks and schedules. Employees who participated in these self-managed teams had higher sales and customer service quality ratings. However, despite these positive results, the company decided to return to a more traditional model of organizing work, as part of a push to centralize and rationalize performance monitoring.

This study gives some indication of why call center management practices that involve intensive scripting and monitoring are so popular, despite evidence that alternative practices can deliver similar or better performance results. Work standardization and performance monitoring give managers more direct control over what is said to the customer, as well as over the measurement of employee work effort and outcomes. Implementing practices that return some control to employees re-

Implementing practices that return some control to employees... hold the promise of large gains, both in terms of employee well-being and organizational performance.

quires management to take a longer-term perspective, through investing in skills and establishing a climate of trust in the workplace. However, these investments hold the promise of large gains, both in terms of employee well-being and organizational performance.

## A professional model for call centre management

In this section, we present recommendations for practices associated with an alternative, professional model of call center management. We illustrate each recommendation with a description of how these practices were implemented by a large, unionized telecommunications firm in their network of call centers. In this case study, these work organization and performance management policies created a work climate in which employees were treated as professionals and given considerably more discretion over how and when they worked. Employers also benefited from a high degree of scheduling flexibility, high customer service ratings, and high levels of employee skills and experience associated with very low quit rates.

### 1 Improve skill content and task variation

Cross-train employees to handle different call types

Call center jobs often involve repetitive work with little variety, in which employees handle the same calls throughout the day. Monotonous and routine work has been found to lead to higher rates of musculoskeletal disorders, as well as psychological strain such as anxiety and depression. Research findings suggest that this work-related strain can be reduced by increasing work complexity and variety, giving employees the opportunity to develop and use a broader range of skills.

In the case study call center, management cross-trained employees so that they could handle all customer re-

quests, including billing, sales, and customer service on a range of products. Employees had 'primary skills', but could answer all call types. This was done in response to customer feedback that they preferred dealing with one 'universal representative' rather than multiple specialists. This increased work complexity and variability, while giving the company additional flexibility to route different call types across locations, depending on demand.

Giving employees more control over the content and pace of their work can reduce strain through helping them to more effectively deal with demands in their jobs.

### 2 Increase employee control over working methods and working time

- · Reduce use of scripts
- Give employees more control over their schedules and break times

Call center employees often are required to follow tightly scripted texts when interacting with customers. They also typically have little control over their working hours or when they take breaks. These aspects of call center management are associated with high levels of work-related stress. Research has shown that giving employees more control over the content and pace of their work can reduce strain through helping them to more effectively deal with demands in their jobs.

In the case study call center, employees were given guidance on how to respond to different call types, but were not required to adhere to scripted texts in dealing with customer questions or recommending products and services. Schedules were requested six weeks ahead of time, and requests were matched as closely as possible to staffing needs. Daily or seasonal changes in call volume were managed through a system of annualized hours: when call volume was high, employees were asked to come in earlier or leave later. Then when volume dropped off, especially in the summer months, they could take additional time off. Employees had a great deal of control over whether they stayed late or left early, requiring supervisors to negotiate scheduling changes with employees. Every employee was given a 20 minute computer screen break, in addition to regular break times, and employees were free to choose when to take their breaks within some limits.

### 3 3. Adopt a developmental approach to monitoring

- · Limit monitoring frequency and intensity
- Use monitoring information to develop skills rather than to discipline employees

Call center managers are able to remotely monitor and measure employee performance across a range of metrics. This data is often constantly fed back to employees, and failure to meet performance targets can result in discipline or dismissal. Research has shown that intense, discipline-focused monitoring is associated with increased stress and anxiety. These problems can be alleviated by adopting a more developmental approach to monitoring, in which performance information is used to help identify skill needs and provide employees with the resources necessary to develop those skills.

In the case study call center, there was no remote electronic monitoring and limits were placed on who had access to individual performance data and how that data was used. Sales numbers, talk times, and customer service scores were only reported at the team level. Team leaders gave employees regular feedback on their selling techniques and how they dealt with customers, while identifying areas where they needed additional training. Once a year each employee met formally with her team leader to discuss the training and resources she needed to help her to improve her performance. The team leader and employee had broad discretion over how many evaluations were performed and what kinds of training and development measures were adopted. The results of performance evaluations could not be used to discipline or dismiss employees, who enjoyed strong job security.

### 4 Increase employee involvement in decision-making

 Involve employees in the design and review of performance targets

Call center employees often have little influence over work design and performance monitoring. This can exacerbate health problems associated with having low control over working methods and tasks. Research findings suggest that involving employees in decisions concerning, for example, the design of performance targets can improve acceptance of the targets, encourage perceptions that performance objectives are fair and consistent, and thus reduce stress associated with monitoring.

In the case study call center, the system of incentives attached to monitoring was team-based and gave employees a voice in the design and review of performance goals. A percentage of what employees earned in sales was put into a pooled budget for performance pay at the center level, and management then distributed this money across the teams. Each team received a portion of the total based on their performance. An oversight committee at each workplace, with an equal number of employee and employer representatives, was responsible for deciding how performance-based pay was distributed. Managers also made a recommendation for team-based goals, which were then discussed with the team leaders. If the employees disagreed with the goals, the joint committee made a final decision. These goals were then incorporated into a collective agreement that regulated what goals could be measured, based on whether they were 'plausible.'

#### **Conclusions**

Call centers employ a growing number of service and sales employees across industries, serving as the main point of contact between firms and their customers. However, the many jobs that this booming industry has created are not widely prized as 'good jobs'. Call centers have an increasingly bad reputation as employers, associated with their often poor working conditions and high turnover rates. This report has reviewed research on the health and performance consequences of the tightly controlled approach to call center management that has become so typical in the industry world-wide. It also puts forward recommendations for alternative practices that hold the promise of improving employee well-being and customer service quality.

Findings demonstrate that employees suffer high rates of physical and psychological strain where management standardizes work through narrow job design and use of scripts; adopts intense performance monitoring; and uses monitoring information to discipline employees. These practices make it difficult for employees to cope with the high demands in their jobs because they reduce their control over their work, their ability to use and develop skills, and their capacity to deal with the emotional work required to interact with customers.

Supportive human resource policies such as promotion opportunities can help to lessen the negative effects of these practices. However, research findings suggest that the most effective approach to improving employee health and well-being involves implementing an alternative professional model of call center management. This model seeks to enhance employee skills and discretion, through cross-training employees to handle different call types, reducing the use of scripts, giving employees more control over their working time, adopting a developmental approach to monitoring, and involving employees in decisions such as the design and review of performance targets. This professional model can also benefit employers, through reducing quit and absenteeism rates and improving sales and customer satisfaction scores. Adopting this model requires a broader change in management culture, as it involves giving employees a stronger voice in how they do their jobs, as well as the methods used to improve skills and performance. However, the potential payoffs are large, with the promise of giving call centers a new reputation as healthy and productive workplaces that place a high value on both employee satisfaction and customer service quality.

#### **Bibliography**

Baker, N. A., Jacobs, K., & Carifio, J. (2000). The ability of background factors, work practices, and psychosocial variables to predict the severity of musculoskeletal discomfort. *Occupational ergonomics*, 2(1), 27-41.

Baker, N. A., Jacobs, K., & Tickle-Degnen, L. (2003). The association between the meaning of working and musculoskeletal discomfort. *International Journal of Industrial Ergonomics*, 31(4), 235-247.

Batt, R. (1999). 'Work organization, technology and performance in customer service and sales'. *Industrial Relations and Labour Review*, 5: 4, 539-562.

Batt, R. (2002). Managing customer services: Human resource practices, quit rates, and sales growth. *Academy of Management Journal*, 45: 587–597.

Batt, R. & Colvin, A.J.S. (2011). An employment systems approach to turnover: Human resources practices, quits, dismissals, and performance. *Academy of Management Journal*, 54: 695–717.

Batt, R., Colvin, A. J. S., & Keefe, J. (2002). Employee voice, human resource practices, and quit rates: Evidence from the telecommunications industry. *Industrial and Labor Relations Review*, 55: 573–594.

Batt, R., Doellgast, V., & Kwon, H. (2006). Service management and employment systems in US and Indian call centers. In: Collins, Susan Margaret and Brainard, Lael, (eds.) *Brookings trade forum 2005: Offshoring white-collar work*. Brookings Institution Press, Washington, D.C., pp. 335-372.

Batt, R. & Moynihan, L.M. (2006) Human Resource Management, Service Quality, and Economic Performance in Call Centers. *Center for Advanced Human Resource Studies (CAHRS) Working Paper #06-01*.

Bergqvist, U., Wolgast, E., Nilsson, B., Voss, M., (1995). The influence of VDT work on musculoskeletal disorders. *Ergonomics* 38, 754–762.

Calentano, D. (1994). Health Issues in Office Work. In G. M. Green & F. Baker (Eds.), Work, health, and productivity (pp. 127–141). New York: Oxford U.P.

Callaghan, G., & Thompson, P. (2001). Edwards revisited: technical control and call centres. *Economic and Industrial Democracy*, 22(1), 13-37.

Carayon-Sainfort, P. (1992). The use of computers in offices: Impact on task characteristics and worker stress. *International Journal of Human-Computer Interaction*, 4(3), 245-261.

Carayon, P. (1993). Effect of electronic performance monitoring on job design and worker stress: Review of the literature and conceptual model. *Human* 

- Factors: The Journal of the Human Factors and Ergonomics Society, 35(3), 385-395
- Carayon, P. (1994). Effects of electronic performance monitoring on job design and worker stress: Results of two studies. *International Journal of Human-Computer Interaction*, 6(2), 177-190.
- Chalykoff, J., & Kochan, T. A. (1989). Computer-aided monitoring: Its influence on employee job satisfaction and turnover. *Personnel Psychology*, 42(4), 807-834.
- Chung, M. K., & Choi, K. (1997). Ergonomic analysis of musculoskeletal discomforts among conversational VDT operators. *Computers & industrial engineering*, 33(3-4), 521-524.
- Cook, C., & Burgess-Limerick, R. (2004). The effect of forearm support on musculoskeletal discomfort during call centre work. *Applied Ergonomics*, 35(4), 337-342.
- Cook, C., Burgess-Limerick, R., & Chang, S. (2000). The prevalence of neck and upper extremity musculoskeletal symptoms in computer mouse users. *International Journal of Industrial Ergonomics*, 26(3), 347-356.
- Crawford, J. O., Laiou, E., Spurgeon, A., & McMillan, G. (2008). Musculoskeletal disorders within the telecommunications sector-A systematic review. *International Journal of Industrial Ergonomics*, 38(1), 56-72.
- De Cia, J., Hansez, I. Moreau, C., Naedenoen, F., Pichault, F., Pepermans, R., Van Den Bossche, V. (2012) Recherche sur le bien-être au travail dans les centres de contacts (call centers): Rapport final. Projet HUT/DI-RACT/2010/AP/2. Service public fédéral Emploi, Travail et Concertation sociale
- Deery, S., Iverson, R., & Walsh, J. (2002). Work relationships in telephone call centres: understanding emotional exhaustion and employee withdrawal. *Journal of Management Studies*, 39(4), 471-496.
- Doellgast, V. (2008). Collective Bargaining and High-Involvement Management in Comparative Perspective: Evidence from US and German Call Centers. *Industrial relations: a journal of economy and society*, 47 (2). pp. 284-319.
- Doellgast, V. (2010). Collective voice under decentralized bargaining: a comparative study of work reorganization in US and German call centres. *British Journal of Industrial Relations*, 48 (2). pp. 375-399.
- Dormann, C., Zapf, D., & Isic, A. (2002). Emotionale Arbeitsanforderungen und ihre Konsequenzen bei Call Center-Arbeitsplätzen. *Zeitschrift für Arbeits- und Organisationspsychologie* A&O, 46(4), 201-215.
- Ferreira, M., & Saldiva, P. H. N. (2002). Computer-telephone interactive tasks: predictors of musculoskeletal disorders according to work analysis and workers' perception. *Applied Ergonomics*, 33(2), 147-153.
- Frese, M., & Zapf, D. (1994). Action as the core of work psychology: A German approach. *Handbook of industrial and organizational psychology*, 4, 271-340.
- Grebner, S., Semmer, N., Faso, L. L., Gut, S., Kälin, W., & Elfering, A. (2003). Working conditions, well-being, and job-related attitudes among call centre agents. *European Journal of Work and Organizational Psychology*, 12(4), 341-365.
- Hales, T. R., Sauter, S. L., Peterson, M. R., Fine, L. J., Putzanderson, V., Schleifer, L. R., et al. (1994). Musculoskeletal disorders among visual-display terminal users in a telecommunications company. *Ergonomics*, 37(10), 1603-1621
- Halford, V., & Cohen, H. H. (2003). Technology use and psychosocial factors in the self-reporting of musculoskeletal disorder symptoms in call center workers. *Journal of Safety Research*, 34(2), 167-173.
- Hochschild, A. R. (2003). The managed heart: Commercialization of human feeling. Berkeley: University of California Press.
- Hoekstra, E. J., Hurrell, J., Swanson, N. G., & Tepper, A. (1996). Ergonomic, job task, and psychosocial risk factors for work-related musculoskeletal disorders among teleservice center representatives. *International Journal of Human-Computer Interaction*, 8(4), 421-431.
- Holdsworth, L., & Cartwright, S. (2003). Empowerment, stress and satisfaction: an exploratory study of a call centre. *Leadership & Organization Development Journal*, 24(3), 131-140.
- Holman, D. (2002). Employee wellbeing in call centres. *Human Resource Management Journal*, 12(4), 35-50.
- Holman, D. (2003). Phoning in sick? An overview of employee stress in call centres. *Leadership & Organization Development Journal*, 24(3), 123-130.
- Holman, D., & Fernie, S. (2000). Can I help you? Call centres and job satisfaction. Centrepiece. *The Magazine of Economic Performance*, 5(1), 2-5.
- Holman, D., Frenkel, S., Sørensen, O. and Wood, S. (2009) Work Design

- Variation and Outcomes in Call Centers: Strategic Choice and Institutional Explanations. *Industrial and Labor Relations Review*, 62(4), 510-532.
- Holman, D. J., & Wall, T. D. (2002). Work characteristics, learning-related outcomes, and strain: A test of competing direct effects, mediated, and moderated models. *Journal of Occupational Health Psychology*, 7(4), 283.
- Holman, D., Chissick, C., & Totterdell, P. (2002). The effects of performance monitoring on emotional labor and well-being in call centers. *Motivation and Emotion*, 26(1), 57-81.
- Jensen, C., Finsen, L., Søgaard, K., & Christensen, H. (2002). Musculoskeletal symptoms and duration of computer and mouse use. *International Journal of Industrial Ergonomics*, 30(4), 265-275.
- Jensen, C., Ryholt, C., Burr, H., Villadsen, E., & Christensen, H. (2002). Work-related psychosocial, physical and individual factors associated with musculoskeletal symptoms in computer users. *Work & Stress*, 16(2), 107-120.
- Lewig, K.A., Dollard, M.F. (2003). 'Emotional dissonance, emotional exhaustion and job satisfaction in call centre workers'. *European Journal of Work and Organizational Psychology*, Vol. 12 pp. 366-92.
- Liu, X. & Batt, R. (2010). How Supervisors Influence Performance: A Multilevel Study of Coaching and Group Management in Technology-Mediated Services. *Personnel Psychology*. 63: 265-298.
- Nebeker, D. M., & Tatum, B. C. (1993). The Effects of Computer Monitoring, Standards, and Rewards on Work Performance, Job Satisfaction, and Stress. *Journal of Applied Social Psychology*, 23(7), 508-536.
- Norman, K., Nilsson, T., Hagberg, M., Tornqvist, E. W., & Toomingas, A. (2004). Working conditions and health among female and male employees at a call center in Sweden. *American journal of industrial medicine*, 46(1), 55-62.
- O'Driscoll, M. P., & Cooper, C. L. (1996). Sources and management of excessive job stress and burnout. In P. B. Warr (Ed.), *Psychology at work* (4th ed.). Harmondsworth, England: Penguin. pp. 188–223.
- Rose, E., & Wright, G. (2005). Satisfaction and dimensions of control among call centre customer service representatives. *The International Journal of Human Resource Management*, 16(1), 136-160.
- Singh, J. (2000). Performance productivity and quality of frontline employees in service organizations. *The Journal of Marketing*, 15-34.
- Singh, J., Goolsby, J. R., & Rhoads, G. K. (1994). Behavioral and psychological consequences of boundary spanning burnout for customer service representatives. *Journal of Marketing Research*, 558-569.
- Smith, M. J., Carayon, P., Sanders, K. J., Lim, S. Y., & LeGrande, D. (1992). Employee stress and health complaints in jobs with and without electronic performance monitoring. *Applied Ergonomics*, 23(1), 17-27.
- Sonnentag, S., & Frese, M. (2003). *Stress in organizations*: Wiley Online Library.
- Sprigg, C. A., & Jackson, P. R. (2006). Call centers as lean service environments: Job-related strain and the mediating role of work design. *Journal of Occupational Health Psychology*, 11(2), 197.
- Sprigg, C. A., Stride, C. B., Wall, T. D., Holman, D. J., & Smith, P. R. (2007). Work characteristics, musculoskeletal disorders, and the mediating role of psychological strain: A study of call center employees. *Journal of Applied Psychology*, 92(5), 1456.
- Stanton, J. M., & Barnes-Farrell, J. L. (1996). Effects of electronic performance monitoring on personal control, task satisfaction, and task performance. Journal of Applied Psychology, 81(6), 738.
- Varca, P. E. (2006). Telephone surveillance in call centers: prescriptions for reducing strain. *Managing Service Quality*, 16(3), 290-305.
- Visser, W. A., & Rothmann, S. (2008). Exploring antecedents and consequences of burnout in a call centre. *SA Journal of Industrial Psychology*, 34(2), 79-87.
- Wegge, J., Vogt, J., & Wecking, C. (2007). Customer-induced stress in call centre work: A comparison of audio- and videoconference. *Journal of occupational and organizational psychology*, 80(4), 693-712.
- Wharton, A. S. (1996). Service with a smile: understanding the consequences of emotional labor. In C. L. Macdonald & C. Sirianni (Eds.), *Working in the service society*. Philadelphia: Temple University Press.
- Wood, S., Holman, D., & Stride, C. (2006). Human resource management and performance in UK call centres. *British Journal of Industrial Relations*, 44: 99–124.
- Zapf, D. (2002). Emotion work and psychological well-being: A review of the literature and some conceptual considerations. *Human Resource Management Review*, 12(2), 237-268.

Virginia Doellgast is a lecturer in comparative employment relations at the London School of Economics. She holds a PhD in Industrial Relations from Cornell University, and focuses her research on comparative employment relations and human resource management in Europe and the US. Her recent projects include a study of the restructuring of service jobs in the US and German telecommunications industries and an international study of human resource management in the global call centre industry.

**Lisa Sezer** is a PhD student in Employment Relations and Organisational Behaviour at the London School of Economics.

**UNI GLOBAL UNION** is the Global Union for skills and services. We represent 900 trade unions and 20 million workers worldwide.