

Chapter 3

Understanding the quality of the working environment: Main issues and interpretative models

This chapter considers the relevance for policy development of well-designed data to map and monitor the quality of the working environment. It presents evidence about three issues of importance for designing and implementing adequate policies. First, it examines whether there are significant inequalities in working conditions between different groups of workers. Second, it assesses the implications of the quality of the working environment for workers' psychological and physical health and well-being with the help of the three main theoretical frameworks used in research. Third, it reviews evidence on how the quality of the working environment affects workers' attitudes to work and their performance on the job.

3.1. Introduction

Having reliable data available for monitoring the quality of the working environment is essential for policy. These data enrich our assessment of social progress and provide a guide to potential problems with respect to the well-being, health and motivation of the workforce. To ensure effective policy to improve working conditions, it is necessary to have information about differences in the quality of the working environment across categories of the workforce, the direction and nature of changes over time, and the job characteristics that most affect workers' health and motivation. This chapter provides an overview of some of the more salient conclusions on these issues that have emerged from existing research and points to some questions that require further investigation on the basis of improved data.

In order to target policy initiatives, it is important to know whether there are substantial inequalities between different categories of workers in the quality of their working environments, whether disadvantages tend to be cumulative or counterbalancing, and whether disparities in working conditions are increasing or decreasing over time. It is also important to know how far patterns in various countries are common to, or vary between, societies at a broadly similar level of economic development, as this provides an initial indication of whether the causes of disadvantage relate to general structural factors in advanced economies or reflect the outcomes of specific policy contexts.

To design and implement adequate policies, it is also essential to know how specific aspects of the working environment affect individual workers – in terms of their well-being, motivation and ability to work effectively. This evidence helps to provide a clearer picture of the individual and social costs inherent in existing practices, to establish the priorities for initiatives to improve working conditions, and to clarify whether specific improvements would involve a trade-off between workers' well-being and firms' efficiency in production, or would be advantageous for both.

The chapter first examines the current state of evidence about differences in the quality of the working environment of various groups of workers, with a particular emphasis on occupation, sector of employment, gender, age and contract type. The chapter then turns to the implications of the working environment for workers' well-being, focusing on the most influential theoretical models specifying the job characteristics that are most significant for workers' psychological and physical health. It concludes with a discussion of the growing evidence about the implications of the work environment for workers' attitudes and productivity.

3.2. Inequalities in the working environment

Policy initiatives to improve the quality of the working environment require reliable information on the distribution of disadvantage among specific categories of workers; this is important both to establish priorities and to develop targeted measures. Policy makers also

need evidence about trends over time if they are to prevent growing inequalities in working conditions. Research shows that well-designed surveys can identify distinctive profiles of disadvantage among different types of workers. The current scale of such surveys, however, rarely allows for very extensive disaggregation, and, in most countries, there is still a scarcity of detailed evidence on changes over time. Existing studies have, however, provided evidence of significant inequalities in the quality of the working environment relating to occupation, economic sector, gender, age and type of employment contract.

Occupation

There is a long tradition of theory and research on the implications of occupational class for job quality. Occupational classes represent clusters of occupations ranked in terms of broad skill levels (Handel, 2012; Tahlin, 2013). Direct measures of job skill are relatively scarce, although the situation is improving as a result of the OECD Survey of Adult Skills programme (OECD, 2013). In the absence of such measures, occupational class rankings are usually operationalised in terms of the *major* or *first* digit categories of national or international classifications of occupations. These typically place managers and professionals as the most skilled occupational classes and machine operators and workers in elementary or routine occupations as the least skilled ones. An alternative approach has been to use broad pay categories as proxies of the skill level of occupations, although pay levels are affected by other factors such as unionisation and cultural norms.¹

Occupations with higher skill levels are thought to be associated with better quality working environments for a number of reasons. More skilled work is inherently more complex and offers greater variety in task activities. Also, skilled task activities usually involve longer time horizons than less skilled work and are more difficult to monitor in a detailed way, encouraging policies that give workers greater scope for initiative and autonomy in the work process. Finally, skilled workers have greater power over resources to improve their working environment: they are more likely to possess specialist knowledge that is essential for the functioning of the organisation, implying that the withdrawal of workers' co-operation can lead to substantial costs for firms. These occupations are also more likely to be in high demand on the labour market, giving employers an incentive to provide working conditions that are sufficiently attractive to retain these workers over time.

Empirical research in both the United States and Europe has revealed widely varying types of working environments for workers in different occupations. Higher skilled occupations are typically associated with jobs that require more complex tasks and that offer more opportunities for problem-solving (Smith et al., 2008). They also involve a greater variety of tasks, more frequent learning experiences through the work itself (Handel, 2012) and substantially more access to employer-paid training (Dieckhoff, 2013). There is also strong evidence of a marked "class gradient" in terms of differences in job control (Gallie and Zhou, 2013). The same broad conclusions emerge from the 2015 European Working Conditions Survey. Higher skilled occupations had better jobs in terms of skills and discretion, the physical work environment, career prospects and earnings, while working time was more evenly distributed across classes. In terms of more aggregated job quality profiles, the higher skilled occupations were the most likely to be in the best jobs and the least likely to be in poor quality jobs (Eurofound, 2016).

The level of job security is one of the principal differences in working conditions between occupations. Meta-analysis of the determinants of job insecurity confirms that

blue-collar workers have higher levels of job insecurity (Keim et al., 2014). However, research in the United Kingdom also suggests that skill-related differences in perceived job security may have narrowed over the past two decades, primarily reflecting a growth of insecurity among professionals and managers in the public sector in the wake of public-sector restructuring in the post-recession period (Gallie, 2015).

While there is consistent evidence of a positive association between skill level and the quality of the working environment, the evidence to date about trends is far from consistent. Theoretical predictions have offered sharply contrasting scenarios – from growing divergence in working conditions between more and less skilled occupational categories to growing convergence. Taking a summary index of work quality, which included skill level, skill development and task discretion, Green et al. (2013) examined data for 15 EU countries over the period 1995 to 2010. They reported a widening gap in work quality between professionals, whose jobs were improving, and all other categories, who either showed no substantial change or, in the case of service workers, experienced a deterioration of their working conditions. However, analyses more specifically focused on task discretion found very diverse trends between European countries. In the 1990s, in a study of Britain, France, Germany, Sweden and Spain, only Britain and Spain experienced a significant divergence in task discretion between high and low-skilled occupations (Gallie, 2007). Similarly, over the period 2004 to 2010, there was little change in skill-related differences in task discretion in European countries, with the exceptions of Britain and Ireland (Gallie and Zhou, 2013; Eurofound, 2013b).

Work intensity generally increased in European countries in the period following the 2008 economic crisis, both for higher and lower-skilled occupations (Green et al., 2013). Among the European countries analysed in this study, there was no overall skill gradient with respect to working-time quality (although craft workers and operatives were particularly disadvantaged). Physical working conditions were notably better among those in higher skilled occupations, but the overall gap between high-skilled and low-skilled workers did not change over time. Finally, working-time quality showed a very general improvement across all occupations apart from professionals. In short, it is primarily with respect to skills, skill development and, in some countries, task discretion that there is evidence of growing inequality between the high-skilled and low-skilled in European countries.

Economic sector

The nature of work tasks and the patterns of work organisation are very different depending on the type of goods or services produced by the firm or organisation. A rich literature has focused on the implications for the quality of the working environment of two specific factors: changing technologies associated with particular types of manufacturing production, and the growth and diversification of service industries (Kerr et al., 1960; Blauner, 1964; Bell, 1974; Braverman, 1974; Piore and Sabel, 1984). Different theoretical perspectives provided quite contrasting scenarios of whether structural change led to an improvement or to little overall change in working conditions. There has been less systematic comparative empirical research on differences in work quality across economic sectors.

The interpretation of differences in the quality of the working environment between economic sectors has to take into account that ownership patterns tend to vary across sectors. This implies that it can be difficult to disentangle the effects attributable to the

types of activity and technology, on the one hand, from those due to differences relating to ownership, on the other. One salient point is that major parts of the service sector – such as education, health and public administration – have been predominantly state-owned. In many countries, at least in the early decades following the Second World War, governments viewed the conditions of employment in the public sector as a way of setting an example for other sectors of the economy.

Cross-country comparison of the quality of the working environment between sectors is also complicated by the fact that particular types of activities can be classified into different sectors, depending on the business strategy of the firm. For instance, if research and design functions are internalised by manufacturing corporations, these types of employment will be classified as manufacturing industry and will influence indicators of the quality of the working environment in that industry. Conversely, if research and design functions are sub-contracted to specialist organisations, the same activities may be categorised as business services and be ignored in assessments of the quality of work in manufacturing.

Despite these qualifications, there do appear to be some relatively stable differences in the quality of the working environment between sectors. A major point of difference concerns the prevalence of physical health risks. In 2012 in the EU, around two-thirds of all fatal accidents at work and nearly half (47%) of all non-fatal accidents took place in the sectors of construction, manufacturing, transportation and storage, and agriculture, forestry and fishing (Eurostat, 2016); indeed, one-fifth (21%) of fatal accidents were attributable just to construction. Historically, the contraction of some of the most dangerous industries such as coal mining and shipping led to a major overall decline in the number of people killed in work accidents. Employment in the service sector is associated with notably safer work environments with respect to fatal injuries, although there are important differences by type of service activity with respect to non-fatal accidents. For instance, non-fatal accident rates are relatively high in the wholesale and retail sector, as well as in health care and social work.

Recent evidence based on workers' self-reports of their working environments (Eurofound, 2016) shows that economic sectors have distinctive combinations of advantages and disadvantages across various dimensions of job quality. For example, financial services showed high scores across a wide range of aspects – skills and work discretion, the social and physical environment, job prospects (such as career opportunities and security), working-time quality and earnings. Education was also relatively high on several job-quality dimensions, with the exception of job prospects and earnings where it was intermediate. Other economic sectors combined high or intermediate scores on some dimensions of work with low scores on others. For instance, workers in the health care sector reported a relatively poor social environment and high levels of work pressure, but an intermediate position on most other dimensions of job quality. Conversely, workers in agriculture reported both a relatively good social environment at work and low work intensity, but they had a relatively poor physical work environment and ranked the lowest with respect to future prospects. Workers in the hotel and restaurant sector reported a poor working environment across a wide range of job characteristics.

Gender

The theoretical literature on labour-market segmentation pointed to processes that are likely to create cumulative disadvantage in the quality of women's jobs (Reich, Gordon

and Edwards, 1973; Barron and Norris, 1976). Employers, it was argued, often regard women as secondary earners and, given the risk of career discontinuity, are reluctant to invest in the development of their skills. High levels of gender segregation in the employment structure reduce the visibility of differences in working conditions between men and women and make it difficult to challenge disadvantageous working conditions. Women are also less likely to be organised in trade unions and therefore have less leverage for protecting their working conditions.

The empirical literature, however, has produced a more complex picture. There is certainly much evidence that women tend to be disadvantaged both with respect to their access to high-skilled work and in the pay that they receive for jobs of a similar skill level. But the evidence to date also suggests that gender inequalities are less consistent with respect to the quality of the working environment.

For example, there is less evidence of differences in the level of autonomy or task discretion that men and women exercise in their jobs, when controlling for skills. Smith et al. (2008) conclude that, for the European Union as a whole, such differences were relatively small with respect to key aspects of job autonomy such as working methods, the speed of work and the order in which tasks were done. Moreover, evidence from the European Working Conditions Survey suggests that gender differences in this respect had disappeared by 2015. Men, however, were more likely to have greater control over job breaks and greater autonomy across a wider range of aspects of the work process. Although men had more autonomy in white-collar jobs, women were more autonomous in blue-collar work. Comparison between different regions of Europe also showed significant variations in patterns. Women had similar levels of discretion over their work in Britain and Ireland, but were disadvantaged relative to men in the Nordic, Continental, Southern and Eastern European countries (Gallie and Zhou, 2013).

The current research evidence is inconclusive about whether women experience disadvantage with respect to training and opportunities for skill development. Studies of continuing vocational training have found that, in broad terms, men and women in European countries were about as likely to receive training. But estimates that take account of individual and work characteristics vary in their conclusions, with some studies finding that women are disadvantaged (Dieckhoff and Steiber, 2011) and others that they have better training opportunities than men (Dieckhoff, 2013).

In other respects, the quality of the working environment for women appears to be little different, or even somewhat better, than that for men. Smith et al. (2008) found that, across 27 EU countries in 2005, gender differences with respect to work monotony were not significant. Women have also been shown to enjoy a better physical working environment, with fewer risks to health and safety (Fagan and Burchell, 2002), to hold jobs characterised by lower work intensity and to have higher working-time quality (Green et al., 2013).

A comparative analysis of job insecurity, drawing on data for European countries from 2005, found no significant difference between men and women as regards worry about job losses in most countries – the exception being Eastern European countries, where women did feel more insecure (Green, 2009). This study also found no evidence of women's disadvantage in job insecurity in the EU in 2015.

Analyses that have relied upon synthetic indicators also find that the disadvantage experienced by women differs depending on the aspect of the working environment considered. Research by Eurofound concluded that, in 2010, although women were less well

paid, they were more likely than men to be employed in jobs with a higher non-pecuniary job quality (Eurofound, 2013a). A more recent study, using the 2015 European Working Conditions Survey, concluded that women were less likely to be in jobs that were particularly high in terms of skills, earnings and prospects, but more likely to be in jobs that offered good conditions in terms of low work intensity and high working-time quality (Eurofound, 2016). A study by the OECD, which classified job quality into three broad categories – earnings quality, labour-market insecurity and job strain – showed a similar pattern for a wider set of developed countries (OECD, 2014): while women were disadvantaged in terms of earnings quality, there is less evidence of disadvantage with respect to other dimensions of job quality. Using a composite measure of job strain, which takes account of the balance between job demands and job resources, the OECD concluded that women were less likely to suffer from job strain than men. There was also little difference between men and women with respect to labour-market insecurity.

Overall, while in many countries women are disadvantaged relative to men with respect to pay, skills and career prospects, they typically have jobs that are very similar to, or even better than, those of men with respect to the quality of the working environment.

Age

Concerns about variations in the quality of the working environment between different age groups have been driven by two considerations. The first is an increased awareness that early labour-market experiences may leave a long-lasting imprint on workers. For instance, there is evidence that those who enter the labour market for the first time in periods of high unemployment remain disadvantaged in terms of job insecurity much later in their careers (De Vreyer et al., 2000). The second is the recognition that, given current demographic trends, making pension systems sustainable requires extending the working life. This raises the issue of the sustainability of work among older workers.

Research on age differences and the quality of the working environment has been less developed than that on gender. Moreover, the interpretation of empirical patterns is complex due to the heterogeneity of age categories, the importance of selection effects, and the possibly transitional nature of current labour-market statuses. For instance, changes in the work environment of young workers (16-24) have to be seen in the context of a sharp rise in the proportion of that age group that has not yet entered the labour market due to increased access to secondary and tertiary education. At the other end of the age range, the work conditions of workers over the age of 60 are those of a selective group of people who remained in the labour market when many of their colleagues either chose or were constrained to withdraw. Decisions to stay or withdraw from the labour market may be closely related to the quality of work in the years immediately preceding people's entry into this age group.

Analysis of the 2010 European Working Conditions Survey (Eurofound, 2012) indicates that younger workers' jobs were distinctive with regard to the relatively high level of ergonomic risks that these involved, particularly for work that involved carrying or moving heavy loads. The age gradient was particularly sharp for men. Young men also reported a high level of work intensity in terms of the speed at which they had to work. At the same time, younger workers of both sexes had lower levels of control over the way that they could do their work and fewer opportunities to apply their own ideas in work. The other notable feature of the work situation of younger workers is their greater contractual insecurity: they are disproportionately concentrated in temporary jobs. In the OECD as a whole, 25% of

dependent workers aged 16-24 years are in temporary jobs, although there are important differences between countries: more than half of the youngest workers were in temporary employment in Germany, Spain, France, Poland, Portugal, Sweden and Slovenia, whereas this was the case for only 11% in Latvia and in Estonia, and for 15% in the United Kingdom (OECD, 2016). The severity of the disadvantage implied by temporary work depends on the extent to which it provides opportunities for moving into better jobs in the future. But the evidence points to a decline in transition rates into permanent positions, a decline that is especially severe among younger workers (Eurofound, 2015).

In many respects, the quality of the working environment of older workers (aged 55 and over) seems considerably more favourable than that of the young. They are less likely to be in physically harsh working conditions (with respect either to heavy lifting or to working in tiring or painful positions); they are less likely to be working at high speed; they have greater control over their task activities and working time; and they feel more secure in their jobs. But there are two important qualifications to this picture. The first is that older workers, irrespectively of their gender, were in jobs that provided fewer learning opportunities: they had less access to employer training and were less likely to be in jobs in which they could learn through the work. The second qualification is that older workers felt that they had very little chance of future progression in their careers (Eurofound, 2012).

Contract type

In the decades between the Second World War and the 1970s, employment contracts were almost exclusively for full-time work and open-ended in terms of duration. From the 1980s, many countries have witnessed an increase in the prevalence of part-time contracts and, since the 1990s, of temporary work, whether these involve a temporary agency or fixed-term contracts with an employer. Some accounts of changing labour-market structure view these different types of non-standard contract as having broadly equivalent consequences in creating a peripheral workforce who experience entrapment and cumulative disadvantage across the different dimensions of job quality (Hakim, 1987).² Empirical research, however, has tended to show that workers in these non-standard conditions have somewhat different profiles in terms of the scope and types of disadvantage that they experience.

Part-time work. Research on the inequalities associated with part-time work is based mainly on the work conditions of women working part-time: women constitute the greater share of such employment, and the sample size for male part-timers is usually inadequate for rigorous analysis. However, part-time employment for men has been increasing at a broadly similar rate to that for women. In EU countries, between 1999 and 2009, it rose from 28% to 32% for women, and from 6% to 8% for men. Although some of the reasons for the expectation that part-timers might be disadvantaged with respect to job quality are gender-specific – for instance, employers may be reluctant to invest in women who work part-time because they are thought to be more likely to leave employment to take care of children – other factors are relevant to both men and women. Part-time workers are likely to be disadvantaged in terms of the quality of their working environment because they spend less time in the workforce and are less likely to be unionised, and because part-time status may be taken as a signal of low career commitment.

The prevalence and hours of part-time work vary markedly between countries, affecting both its salience and the severity of the disadvantage that it involves. Whereas 50% of those in employment in the Netherlands are on part-time contracts, this is the case for

only 2.5% in Bulgaria (Eurostat, 2015). There are also substantial country differences in the hours worked by part-timers. For instance, part-timers in Sweden are considerably more likely to work between 30 and 35 hours a week than those in the United Kingdom, Germany or the Netherlands, countries where a substantially higher proportion of part-timers work very short hours (1 to 14 hours a week). This is important because the divergence in work conditions between part-timers and full-timers increases for part-timers working fewer hours (Gallie et al., 2016).

There has been extensive documentation of the concentration of part-timers in low-paid work, in particular with low hourly pay (Bardasi and Gornick, 2008; O'Dorchai, Plasman and Rycx, 2007), although some research indicates that most of this wage gap is accounted for by differences in human capital. With respect to the working environment, however, although part-timers experience disadvantage, the differences are generally small. Overall in the EU, part-time workers were found to have somewhat lower levels of autonomy and task discretion in their jobs (Esser and Olsen, 2012) but a higher control over their working time (OECD, 2010). They reported lower levels of complexity in their jobs than full-timers, but they were only a little more likely than full-timers to find their jobs repetitive or monotonous, and only a little less likely to feel that they are doing “useful work”, while they were just as likely to consider that they had “the opportunity to do what they do best” (Sandor, 2011).

Moreover, there are compensatory advantages to part-time work. Part-timers were less likely than full-timers to be in jobs with high work intensity, reflecting the generally strong association between work hours and work pressure. They were also less likely than full-time workers to report that their jobs are stressful or present a risk to their health (OECD, 2014). Their shorter working hours imply relatively high working-time quality, leading to a better balance between work and family life – advantages that largely account for their somewhat higher levels of job satisfaction compared to full-timers (Gallie et al., 2016).

Part-timers, particularly men, have lower levels of job security than full-time workers. This lower job security, however, largely reflects the fact that a higher proportion of part-timers have temporary contracts: once contract duration is controlled for, the job-security penalty of part-time workers falls to 5% for men and disappears altogether for women (OECD, 2010; Petrongolo, 2004).

The most important disadvantage in the quality of the working environment experienced by part-timers is with respect to training and learning opportunities in the job. The degree of disadvantage is strongly related to the hours worked. While part-timers in the EU working between 21 and 30 hours a week had similar opportunities for training as full-time workers (31% compared with 28% in 2005), the proportion fell to 19% among those working 11-20 hours and to 10% among those working less than 10 hours. The pattern of disadvantage for part-timers was very similar with respect to whether they were in jobs where they had an opportunity to learn something new at work. Part-time workers are also the least likely to feel that their jobs offered good prospects for career advancement (Sandor, 2011). While the conditions associated with part-time work may be less uniformly bleak than suggested by some early studies (Beechey and Perkins, 1987), the lack of learning opportunities clearly constitutes an important source of entrapment in the longer term.

Temporary work. The growth of temporary work has been viewed as particularly problematic from the point of view of the quality of the working environment. Arguably,

employers have less interest in investing in or listening to the concerns of workers who will stay with the organisation for a relatively short period than they would have for workers with whom they have a long-term relationship. Such workers are also much less likely to be organised collectively to defend their interests, and their high job insecurity may undermine their willingness to take action to improve their working conditions.

Although some temporary workers establish careers within the firm that they join, the nature of their contracts makes them much more vulnerable than regular workers to the loss of employment, and this is reflected in higher perceived job insecurity. This is particularly the case for those employed through temporary work agencies (OECD, 2014). There is also considerable evidence of a significant pay gap between permanent and temporary workers, even after controlling for occupation.

The disadvantages associated with temporary work extend to the quality of the working environment. In a study covering five countries, drawing on data from the 1990s, Dieckhoff, Jungblut and O'Connell (2007) found that temporary workers generally had fewer training opportunities. Similarly, research drawing on data for all EU countries in 2012 found that temporary workers were disadvantaged with respect to learning activities outside the school system, particularly activities carried out during working hours (Eurofound, 2015). On average, across OECD countries, being on a temporary contract reduced the odds of receiving employer-sponsored training by 14% (OECD, 2014).

There is also consistent evidence that temporary workers have lower levels of discretion over how to carry out their job tasks. A comparative study, based on data from 2010, showed that this was the case in all regions of Europe (Gallie and Zhou, 2013). Green et al. (2013) concluded that temporary agency workers in the EU experienced higher levels of work intensity than workers with a permanent contract.

An overview of temporary work carried out by the OECD (2014) concluded that temporary work was associated with poorer job quality in each of its three key job quality dimensions, with such workers facing lower earnings, higher labour-market insecurity and higher job strain. The disadvantage with respect to job strain was due to the combination of higher exposure to physical health risk factors at work, workplace intimidation, lower autonomy, poorer learning opportunities and weaker social support.

Summing up


Overall, in contrast to simpler accounts of labour-market segmentation, there are differences between disadvantaged groups in key characteristics of the working environment. These differences are summarised in Table 3.1 for the countries of the European Union in 2015. While women experience much lower levels of pay and career opportunities, there are no statistically significant differences between men and women in the quality of the working environment. While part-timers have poorer training opportunities, job control and security, their jobs are better than those of full-time workers in terms of work pressure and the physical work environment. Young workers experience disadvantage with regard to job control, work pressure, the physical work environment and job insecurity, but they are as likely as other workers to have training opportunities. The three groups of workers that do experience cumulative disadvantages across a wide range of dimensions of the work environment are the low-skilled, those employed in the hotel and restaurant sector, and temporary workers.

Table 3.1. Quality of the working environment for different employee categories
Relative differences, average of EU countries, 2015

	Share of workers who received employer training in previous 12 months Percentages	Task discretion index	Work pressure index	Poor physical environment index	Share of workers at risk of losing jobs Percentages
EU average	40.2	0.69	2.51	2.06	17.0%
Professional and managers	56.2	0.80	2.50	1.62	14.0%
Low skilled	23.2	0.55	2.52	2.54	21.0%
Financial services	54.9	0.78	2.50	1.41	10.7
Hotels and Restaurants	21.7	0.60	2.93	2.15	21.0
Men	40.4	0.69	2.57	2.33	16.8
Women	39.9	0.70	2.46	1.77	17.2
Prime-age workers (35-49)	42.3	0.70	2.56	2.09	16.1
Young workers (under 35)	40.5	0.65	2.60	2.09	20.4
Full-timers	43.4	0.70	2.58	2.14	15.1
Part-timers	33.4	0.68	2.35	1.84	21.5
Permanent workers	44.3	0.68	2.55	2.02	11.1
Temporary workers	30.0	0.59	2.59	2.17	45.0

Note: The task discretion index is measured as simple average score on three items: whether workers choose or change the order of their work tasks, their methods of work, and the speed or rate of their work. The work pressure index is measured as the average score of three items: whether workers work at very high speed or are subject to tight deadlines and whether they think they do not have enough time to get the job done. The poor physical environment index is measured as the average score of various items: whether workers experience vibrations from machinery, loud noise, high temperatures, low temperatures, breathing in smoke or fumes, tiring or painful positions and carrying or moving heavy loads. Workers at risk of losing jobs are those who agree with the statement that they might lose their job in the next six months.

Source: Authors' analysis of data from the 6th wave of the European Working Conditions Survey, 2015.

StatLink  <http://dx.doi.org/10.1787/888933606338>

3.3. Quality of the working environment and workers' well-being: The main models

A long history of policy interventions has aimed to improve the quality of the physical working environment – in particular to reduce the risk of death or disability as a result of accidents at work. As discussed above, such risks are heavily concentrated in the extractive, construction, shipping and manufacturing industries. Technological developments in manufacturing, the shift to services and improved regulation of health and safety were widely expected to reduce these work risks in advanced economies, and indeed there is evidence that this has been the case: the incidence of fatal injuries has declined in the EU (HSE, 2016), and there has been some reduction in the prevalence of physical risks, although some hazards such as heavy lifting, repetitive movements and exposure to biological and chemical risks have remained remarkably persistent over the period 2005 to 2015 (Eurofound, 2016).

There is, however, increasing evidence that changes in the nature of work may be increasing other types of risks, namely psychosocial risks, which also have severe longer-term consequences for workers' health and well-being. While there is not unanimity about the definition of psychosocial risks, a report for the French government, based upon a systematic review of the research literature from many disciplines, defined them as “risks for mental, physical and social health, created by employment conditions and the organisational and relational factors that can interact with mental functioning” (Gollac, 2011). The quality of the working environment is clearly a major, if not the most important, determinant of psychosocial risks at work.

Over the last three decades, extensive research has been carried out into the relationship between the organisation of work and workers' health status, highlighting specific aspects of working conditions that may increase the risks of depressive symptoms and cardiovascular disease. Three theoretical models have been particularly influential in explaining the rise of psychosocial risks for workers' health: the Demand-Control model; the Effort-Reward imbalance model; and the Job Demands-Resources model.

The demand-control model

The earliest of these models was the "demand-control" (or "job strain") model of work stress formulated by Karasek (1979) and subsequently developed by Karasek and Theorell (1990) and Theorell and Karasek (1996). This model departed from the earlier theoretical tradition of "person-environment fit" (see Chapter 4) by giving priority to factors relating to the work environment as against the characteristics of individuals, and by emphasising the need to take into account the joint effects of work environment factors – in particular, the interaction of job demands and job control. In this model, work that is demanding (within limits) is not in itself the major source of psychosocial risks. The primary source of risk is rather the combination of high work demands with low control over how one meets these job demands (Karasek and Theorell, 1990). This has the important policy implication that attention to job design is essential if high levels of job demand are to be sustainable.

Job control (sometimes termed "job decision latitude" or "discretion") is defined as "the range of decision-making freedom (discretion) available to the worker" (Karasek, 1979). This is conceived as having two inter-related dimensions: "skill (i.e. intellectual) discretion", as reflected in skill utilisation and opportunities for skill development; and "decision authority" (i.e. freedom and influence over work decisions). Job demands refer to the workload, primarily with respect to the intensity and time pressures in work. Strictly speaking, the emphasis in this model is on psychological job demands, since the measures used exclude physical work demands. This reflected the view that psychosocial risks are increasing while traditional physical risks are decreasing as a result of the changing structure of economic activity in advanced economies (Theorell and Karasek, 1996).

As research developed, the model has been extended to include an additional aspect of the work environment – i.e. social support – in what has been termed the "iso-strain model" (Johnson and Hall, 1988; Johnson, Hall and Theorell, 1989; Johnson and Johannsen, 1991; Theorell and Karasek, 1996). As could be expected given the extensive evidence of the importance of social support for workers' well-being (House, 1981), this extension brings benefits in terms of the model's power to predict the prevalence of psychosocial risks among different groups of workers (Johnson and Hall, 1988; Karasek and Theorell, 1990). Social support, however, is multidimensional: there can be differences in both the sources and types of support: it can include support from supervisors and support from co-workers, and the nature of support may be either emotional or instrumental (LaRocco, House and French, 1980). At least with respect to emotional support from co-workers, its inclusion in the model involves the risk that an explanation is less securely rooted in the characteristics of the working environment. Social support may also be more strongly affected by individual characteristics than job demands or job control, perhaps accounting for the fact that social support measures are more heterogeneous in their effects, particularly between men and women (Stansfeld and Candy, 2006). Both the demand-control model and the iso-strain model have been used in research, although most applications have relied on the original demand-control version.

There is now an impressive body of research evidence with respect to the health predictions of the demand-control model. These have focused particularly on the risks of psychological strain and cardiovascular disease. With respect to mental health, a review of research in the 1980s and 1990s found considerable support for both the job strain and iso-strain hypotheses, but less consistent support for the view that job control or social support moderates the effects of job demands (Van der Doef and Maes, 1999). A systematic review of studies published between 1990 and 2013 (Theorell et al., 2015) found moderately strong evidence for an effect of job strain on mental health, with a 74% increase in the odds of depressive symptoms. Although gender differences have been found in decision latitude, with women having lower levels of decision latitude than men, recent Swedish evidence for the period 2008 to 2010 found no difference between men and women in the strength of the relationship between job strain and depressive symptoms (Theorell et al., 2014).

The most comprehensive review (Theorell et al., 2016) of the effects of the work environment on heart disease, using standardised data from different studies covering 200 000 people who were followed for a period of seven years, found moderate evidence for an effect of both job strain and decision latitude, with an odds ratio of 1.3 for job strain and somewhat lower for decision latitude. Given the assessment of the strength of effects used, *moderate* represented the highest level obtainable in the absence of random control trials. Moreover, according to the Theorell review, the association between job strain and ischaemic heart disease has become stronger in recent years. The same study concluded that evidence in favour of the iso-strain hypothesis was more limited, in part because of a lower number of eligible studies. Kivimäki et al. (2012) assessed evidence from 13 European cohort studies carried out between 1985 and 2006, which unusually drew both on published and unpublished analyses and took account of potential reverse causation. The inclusion of unpublished studies in this review is important, as one reason why these studies were not published may have been that they found few significant results. The review by Kivimäki et al. shows that, although these unpublished studies did indeed show weaker effects, they nonetheless generally confirmed the existence of a significant relationship. Overall, Kivimäki et al. (2012) estimated a hazard rate for incident coronary heart disease of 1.23 for job strain versus no job strain. Research has also shown that such effects are as important for women as for men. In the United States, a study following 22 086 women over a 10-year period found that women with high job strain were 38% more likely to experience incident cardiovascular disease than their counterparts with low job strain (Slopen et al., 2012).

One methodological limitation of much research on the job strain model has been the paucity of information about how long people have been exposed to adverse work conditions. It would seem likely that the effects would become more severe the longer workers are exposed to these conditions. There is, however, some relevant evidence. Chandola et al. (2008), drawing on a longitudinal study of British civil servants (the Whitehall Study), found a dose-response relation between psychological stress at work (iso-strain) and coronary heart disease over a 12-year follow-up: workers who were exposed for longer durations had substantially higher scores with respect to metabolic syndrome, heart rate variability and cortisol levels. Drawing on the same study, Stansfeld et al. (2012) found that repeated job strain (taken as a proxy of duration) increased the risk of a major depressive disorder.

The effects of job strain have proved to be remarkably robust to tests of methodological variation and confounding factors. These effects emerge from studies that rely on both workers' self-reports of job control and psychological well-being and on expert assessments.

Moreover, self-reported levels of decision latitude correlate highly with expert ratings (Theorell and Hasselhorn, 2005), and controls for lifestyle factors make little difference to the strength of effects: even when accounting for selection into particular types of work, the effects are reduced but remain significant. An analysis of 8 243 participants in the British 1958 Birth Cohort (Stansfeld and Candy, 2006) has shown that, while distress in childhood and early adulthood could partly account for whether or not people were exposed to job strain in mid-life (age 45), an effect of job strain on psychological distress remains even when disadvantageous earlier background factors have been taken into account.

There are a number of respects in which future research may make measures of job strain more robust. One unresolved issue is whether the joint effects of decision latitude and psychological job demands are additive or interactive. The initial model implied an interactive effect: higher levels of job control should reduce the severity of the effects of high job demands. In their overview of research in the 1980s and 1990s, however, Van der Doef and Maes (1999) found inconsistent support for the view that job control or social support moderates the effects of job demands. A later overview by Stansfeld and Candy (2006) concluded that the effects on mental health were predominantly additive, and that the interaction hypothesis was incorrect. In an overview of studies on the risk of heart disease, however, Theorell et al. (2016) found evidence of an interaction between high psychological demands and low decision latitude: the combination of the two effects had a stronger effect on the risk of heart disease than the mere addition of the two separate effects. Wall et al. (1996) have argued that the failure to find evidence of interaction effects may be due to the fact that the Karasek measure of decision latitude combines indicators of both skill and control, despite a primary emphasis on control; when comparing the conventional decision latitude measure with a purer measure of control, they found that the latter produced an interaction effect that was not evident with the former.

There is also a case for improving the measure of job demands. The job demands dimension of the model shows somewhat lower correlations between individual self-reports and expert ratings than in the case of decision latitude, and greater heterogeneity in effects between sub-groups of workers (Stansfeld and Candy, 2006; Theorell et al., 2016). But perhaps the most evident need is to take into account emotional demands in work, which have been increasingly recognised as important in research on the topic, but which are not captured by indicators of the intensity of task activities or time scarcity (Bakker and Demerouti, 2007; Hochshchild, 1983; Morris and Feldman, 1996).

The notion of control that informs the demand-control model is that of control over the immediate work task. But, as recognised by Karasek and Theorell (1990), control over broader organisational decision-making is also important for workers' well-being and psychosocial risks. Eller et al. (2009) found some evidence in more recent studies that the relative importance of job demands has increased relative to decision latitude in accounting for the risk of heart disease. If this were confirmed by further research, it may reflect two possible developments: first, that the level of work intensity may have crossed a certain threshold, whereby it is no longer readily containable by relatively high task control; second, that control within firms may have become increasingly centralised, taking the form of *post facto* accountability and more frequent alterations of task activities through organisational restructuring. Such developments would imply that control in the form of representation and voice at the firm level may have become increasingly important for workers' well-being relative to control at the level of work tasks. This would also suggest that measures of job control should be extended to include influence at the firm level.

The effort-reward imbalance model

The effort-reward imbalance model (Siegrist, 1996, 2016) takes as its point of departure the importance of norms of reciprocity for workers' well-being (Gouldner, 1960). It posits that an imbalance between work efforts and the rewards from work violates this norm, with negative consequences for the workers' physical and psychological health. The key implication of the model is the importance of ensuring fairness in rewards in a context of rising demands for major efforts.

In this model, effort is conceptualised primarily in terms of time pressure (i.e. the length of working time and the difficulty of completing work within the available time). These can be considered as extrinsic constraints from the working environment. The model also underlines the importance of a personal disposition or motivational pattern – over-commitment – whereby people may have a strong tendency to strive for achievement, leading to a very high work effort that may either directly reduce health conditions or accentuate the effects of externally imposed levels of work effort (Siegrist, 2016). From a work environment perspective, it is the extent of externally imposed effort that is the primary focus of interest.

The conceptualisation of rewards in the model is multidimensional, involving earnings, self-esteem, promotion prospects and job security. In contrast to the demand-control model, the effort-reward model explicitly integrates issues relating to the nature of the employment contract: it can take account, for instance, of the implications for workers' health and well-being of the relationship between the effort required and being employed on a fixed-term or other type of insecure contract. This emphasis on job insecurity fits well with the growing evidence that this has serious negative implications for workers' well-being, with effects that are close to those of unemployment (Burchell, 2011; Keim et al., 2014). However, the model may implicitly introduce the effects of macro-structural factors in addition to the terms of the contract with a specific employer, as perceived job insecurity is strongly affected by the economic cycle and the national level of unemployment.

One tenet of the model is that the severity of the effects of an effort-reward imbalance will be greater in situations where it is difficult for workers to find alternative jobs. When workers have skills that are in high demand in a tight labour market, they may escape from the frustrations of their current employment conditions by simply leaving the firm. But where this is not the case, they are likely to feel a sense of long-term entrapment, which will accentuate the health effects of a lack of reciprocity. Since high labour-market demand is generally associated with higher levels of skills, an effort-reward imbalance should have particularly severe consequences for those in less skilled occupations.

Considerable work has been put into developing a standardised set of measures of effort-reward imbalance that meet acceptable criteria on reliability and validity (Siegrist et al., 2013). Significant changes in the structure of the question formats between earlier and later applications of this model have simplified the survey instrument and increased its comprehensibility for workers with less education. The longer 23-item version of the effort-reward questionnaire has also been supplemented with a short 10-item version for inclusion in surveys that may have a wider set of objectives. The association between effort-reward imbalance and mental health problems holds consistently across the different questionnaire versions (Montano, Li and Siegrist, 2016).

Prospective studies have produced significant evidence in support of the model's predictions with respect to both cardiovascular disease and affective disorders. For instance, a study based on the Whitehall Study of British Civil Servants concluded that the

risk of fatal or non-fatal coronary heart disease (CHD) was 26% higher among workers with high effort-reward imbalance scores compared to those without this imbalance (Kuper et al., 2002). A Finnish longitudinal study found that an effort-reward imbalance was associated with a doubling of the risk of cardiovascular mortality, with hazard ratios of 2.36 to 2.56, depending on the controls included (Kivimaki et al., 2002; Brunner et al., 2004). There is also evidence linking an effort-reward imbalance to depressive symptoms. A review by Rugulies, Aust and Madsen (2016) located nine high-quality studies with relevant evidence; seven studies found a statistically significant association between an effort-reward imbalance and the risk of depressive disorders, with effect estimates generally falling in the range of odds of 1.49 to 2.32 in the high exposure group. The association was robust to the introduction of controls for individual characteristics (including personality measures), occupation and socio-economic status. There is also some, but still limited, evidence in support of the view that the severity of the effects is greater among workers in lower occupational groups (Kuper et al., 2002; Dragano and Wahrendorf, 2016).

It is recognised that there may be ways to extend and refine the theoretical model. Rewards may be differentially important to different sub-groups of the population, leading to variations by age or occupation in the strength of the effects of an effort-reward imbalance (Wahrendorf and Chandola, 2016; Rugulies et al., 2012). It has been suggested that a focus on specific rewards, and the way their effects vary between different types of employees, might enhance the power of the model (van Vegchel et al., 2002). The model focuses on one type of experience of injustice (violated reciprocity in a contractual exchange). An interesting corpus of research has highlighted the importance for worker health of other sources of perceived injustice, i.e. procedural and relational injustice (Kivimaki et al., 2006; Ndjaboue, Brisson and Vezina, 2012). An effort-reward imbalance and organisational justice measures have been shown to make independent contributions to workers' health (Kivimaki et al., 2007). Similarly, a study of public sector workers in Finland has shown that the combination of a large effort-reward imbalance and high organisational injustice led to a greater health risk than a high effort-reward imbalance or organisational injustice alone (Kivimaki et al., 2007; Bourbonnais, 2007). The relative strength of the effects of an effort-reward imbalance, on one side, and of organisational injustice, on the other, may however vary by the type of employee. A longitudinal study of civil servants in the United Kingdom found that an effort-reward imbalance was the stronger predictor of long spells of sickness for men, while relational injustice was the stronger driver for women (Head et al., 2007). The implications of an effort-reward imbalance at the workplace level may also be partly contingent on the broader social context. For instance, the effects of an imbalance due to lower job security may be mitigated by the extent to which broader institutional structures provide financial and job search support to workers in the event of job loss; there is tentative evidence, for example, that an effort-reward imbalance may have less severe consequences for depressive symptoms in Nordic countries and in countries with strong welfare systems (Dragano, Siegrist and Wahrendorf, 2011; Lunau et al., 2013).

Direct comparisons of the strength of the effects of demand-control and effort-reward imbalances are rare. Stansfeld and Candy (2006) concluded that they have broadly similar strengths in explaining the prevalence of various psychosocial risks among workers. Importantly, it has been found that, when included in the same analysis, both remain significant predictors and lead to a higher level of risk than when considering only one set of factors. This indicates that the overall effects of a poor working environment may be greater than appears from research that relies on one model or the other.

The job demands-resources model

The job demands-resources model (JD-C) is rather different in nature from either the demand-control or the effort-reward imbalance models. Its ambition is to provide a *general conceptual framework*, rather than to highlight specific mechanisms that explain workers' well-being and health status. Its proponents have also differed in their views on its status in relation to the earlier models. For Bakker and Demerouti (2007) and Bakker, Van Wedhoven and Xanthopoulou (2010), its greater generality is a clear advantage over the more specific and restricted models. Conversely, for Schaufeli and Taris (2014), the model has different objectives compared to more specific models and is complementary to them. The job demands-resources model has been used by the OECD for describing the quality of the working environment (i.e. the non-economic aspects of employment) in the context of its work on job quality (Cazes, Hijzen and Saint-Martin, 2015).

The core proposition of the job demands-resources model with respect to workers' well-being is that high job demands in a context of low job resources will lead to excessive costs, particularly in terms of physical and psychological effort, with a draining of energy that leads to mental and physical health problems for the workers. Job demands refer to those physical, psychological and organisational aspects of the job that require sustained physical and/or psychological effort (i.e. cognitive and emotional). Job resources refer to the physical, psychological, social and organisational aspects of the job that are important for achieving work goals, reducing job demands and stimulating personal growth (Bakker and Demerouti, 2008).

The model has changed substantially since its initial formulation (Demerouti et al., 2001). The range of ill-health outcomes of relevance to the model has been broadened, the range of work characteristics included within the concepts of job demands and job resources has been extended, and personal factors have been integrated more comprehensively.

The earliest studies using the job demands-resources model focused on the explanation of *burnout*, conceived (more broadly than in earlier usage) as exhaustion and disengagement (Demerouti et al., 2001). These studies argued that job demands were most predictive of feelings of exhaustion, and that a lack of job resources was most predictive of disengagement. In more recent versions of the model, burnout is seen as mediating the relationship between job demands and ill health (depression, cardiovascular disease and psychosomatic complaints). Moreover, the outcomes of interest have been expanded to include *inter alia* absenteeism, accidents and injuries, and interference with the work-family life (Schaufeli and Taris, 2014).

In the initial version of the model, job demands were already specified in a way that was broader than in the demand-control model, and included the physical environment, interpersonal contacts and time pressure. Similarly, the notion of job resources covered factors that were emphasised by both the demand-control model (e.g. job control) and by the effort-reward imbalance model (e.g. rewards, job security). The model could then be seen as primarily concerned with integrating the key tenets of demand-control and effort-reward imbalance models into a single, overarching framework. In its most recent form, however, the range of potentially relevant job demands and resources has expanded well beyond this. Schaufeli and Taris (2014) list 30 different types of job demands and 31 types of job resources that may need to be taken into account, depending upon the specific organisational setting.

Models of psychosocial risks differ in the extent to which they seek to include personal factors among the explanatory factors. The demand-control model focuses exclusively on

the nature of the working environment; the effort-reward imbalance model introduced an individual disposition by incorporating the concept of over-commitment as a personal source of excessive work effort; finally, the job demands-resources model seeks to give an explanatory role to a wide range of individual characteristics, including competencies, personality traits and value orientations (Schaufeli and Taris, 2014). The job demands-resources model is, however, still indeterminate about the role of personal factors, i.e. whether they are mediators, moderators or independent variables.

Given that this model is the most recent, research on the job demands-resources model is understandably more limited than for the demand-control and effort-reward imbalance models, particularly with respect to prospective studies. There is, however, growing evidence supporting some of the model's key insights. It has been tested primarily with small cross-sectional European samples, ranging across quite varied occupations (Brough et al., 2013). Some supportive evidence has also been produced based on longitudinal samples. Hakenen, Schaufeli and Ahola (2008), in a three-year study of Finnish dentists, found that job demands predicted burnout, which in turn predicted future depression. A longitudinal survey of Dutch managers (Schaufeli, Bakker and Van Rhenen, 2009) found that higher job demands (overload, emotional demands and work-home interference) and lower job resources (social support, autonomy, opportunities to learn and feedback) predicted burnout, which in turn contributed to explain the duration of registered sickness. As with the demand-control model, however, interaction effects have not found consistent support; the generalisability of findings to non-European countries also remains unconfirmed (Brough et al., 2013).

The approach to the collection of evidence recommended by proponents of the job demands-resources model differs in some respects from that adopted for the other models. The latter have tended to emphasise consistency in the way that concepts are operationalised, and have produced *standard* questionnaires to encourage the cumulative nature of research. Given its emphasis on the diversity of potentially relevant variables, and the need to adapt the conceptualisation of job demands and resources to specific organisational environments, the job demands-resources model encourages flexibility in the nature of the research instrument and provides a *monitor* of diverse scales that researchers and practitioners can draw upon and combine according to specific circumstances (Schaufeli and Taris, 2014). While statements can still be made about the general consistency of the findings within the framework of the job demands-resources model, the findings may be more relevant to specific organisational settings than in the case of the more general models; also, the use of context-specific research instruments may reduce the comparability of the results, making it more difficult to develop cumulative evidence to confirm specific hypotheses.

Summing up

Over recent decades, an impressive body of research has demonstrated the relevance of the quality of the working environment for workers' well-being and health conditions. Studies have become more refined in their use of high-quality longitudinal data, both in testing for the robustness of findings to changes in the types of measure and in assessing the sensitivity of the results to cultural contexts. This research has shown that the quality of the working environment has a significant impact on the risk to workers of both depressive symptoms and cardiovascular disease. The three most influential models in this field have, however, emphasised different drivers of workers' well-being and of their exposure to psychosocial risks:

- The *demand-control* model has underlined the importance of job control in reducing the risk of ill health resulting from high levels of job demands.
- The *effort-reward imbalance* model has emphasised the importance of norms of reciprocity and perceived fairness between the effort required of workers and the rewards that they receive in terms of pay, status recognition and security.
- The *job demands-resources* model has pointed to the importance of balancing the demands of the job and the resources that are available to workers to meet those demands.

While the first two models have identified distinct sets of risk factors and provide complementary explanations of the ways in which the working environment affects workers' psychological and physical health, the third model seeks to bring together the mechanisms highlighted by the other two into a broader conceptual framework, emphasising the importance of a broader range of factors in the working environment for the worker's well-being.

As the job demands-resources model includes a broader range of factors, it has been used as the main workhorse to measure the quality of the working environment in the OECD Job Quality framework. It will be used in the *Guidelines* when proposing a measurement framework in Chapters 4 and 5 to identify whether a given characteristic of the working environment can be understood as either a job demand or a job resource.

3.4. The quality of the working environment, work attitudes and productivity

A central issue for employers and policy makers is whether or not there is a trade-off between the benefits to workers of improvements in the quality of the working environment and the performance of firms and organisations. While there is a substantial literature relevant to this issue, it consists primarily of studies of workers that examine the implications of a higher quality of the working environment for work attitudes that are important for job performance – in particular, workers' satisfaction with their jobs, their engagement with their work and their commitment to their current organisation – rather than matched workers-firm micro-data that would allow a direct assessment of this link.

Work performance has been viewed typically in terms of two main components, i.e. workers' in-role behaviour and extra-role behaviour. In-role behaviour relates to how well people accomplish the behaviours formally required by their job (e.g. time-keeping, fulfilment of responsibilities in the job description, compliance with rules and regulations), while extra-role behaviour refers to discretionary behaviours that have benefits either for the firm as a whole or for others in the organisation (e.g. helping out others who have a particularly high work load, helping new employees and sharing information with colleagues). Extra-role behaviour has been explored particularly in the literature on "organisational citizenship behaviour" (Organ, 1988, 1997). More recently, a growing literature has explored the links between the working environment and workers' innovative behaviour and creativity.

While there are reasonable grounds for thinking that workers' motivation and creativity are important for productivity, there are still relatively few studies that have sought to establish direct linkages between the quality of the working environment and organisational performance, and those that do exist have relied on different approaches and research strategies.

Job satisfaction

The earliest tradition of research into the effects of the working environment on workers' attitudes focused on job satisfaction, defined as "the pleasurable emotional state resulting from the appraisal of one's job as achieving or facilitating the achievement of one's job values" (Locke, 1969). An alternative view of job satisfaction is that it is an evaluation by workers of their job in relation to their expectations rather than their values (Clark, 1997). To the extent that job satisfaction is an evaluation in terms of expectations, it may be affected by a downward adaptation of expectations in the light of limited opportunities. Job satisfaction can be measured through either a single-item question about overall job satisfaction or through questions about satisfaction with specific facets of the job, which can then be aggregated to produce an overall job satisfaction measure. Although best considered as a measure of workers' well-being rather than of their motivation, job satisfaction has been shown to predict work absence, job turnover and work performance.

Several factors need to be taken into account in explaining job satisfaction. Drawing on the US Quality of Employment Survey, Kalleberg (1977) showed that job satisfaction was related both to the rewards that people perceived in their work environment and to their work values. However, this analysis also showed that the objective features of the working environment were of central importance. Satisfaction with the intrinsic aspects of work (i.e. the characteristics associated with the task itself) was the strongest influence on overall job satisfaction. This reflected the importance of the interest of the job, i.e. whether it allows for the use and development of abilities and gives scope to be self-directive and to see the results of one's work.

With respect to specific components of the working environment, a meta-analysis by Spector (1986) found that perceived job control (in terms of autonomy and participation in decision making) was strongly associated with higher job satisfaction. Green (2006) showed that roughly half of the decline of job satisfaction in the United Kingdom between 1992 and 2001 was attributable to decline in workers' sense of control at work. A study based on the European Working Conditions Surveys (Lopes, Lagoa and Calapez, 2014) found that the decline in job satisfaction in Europe was due mainly to an increase in work pressure that was not accompanied by greater work autonomy. An OECD study (Clark, 1998), examining comparable data across nine countries, concluded that pay was the least important of six factors that affected job satisfaction: the most important factors were job security and whether the job was interesting, followed by work pressure and interpersonal relationships at the workplace. A cross-national study of 75 813 employees in three large multinational companies (Andreassi et al., 2014) found a strong link between training and job satisfaction in Europe, North America and Asia (although not in Latin America).

There is now extensive evidence linking job satisfaction to work performance. Job satisfaction is associated with both the frequency and duration of absences from work, which in turn have been found to be associated with less effective job performance, as assessed on the basis of company records and supervisory ratings (Viswesvaran, 2002). The effect of job satisfaction on absences from work has been confirmed by longitudinal analysis. For instance, Hardy, Woods and Wall (2003) have shown that overall job satisfaction at a given point was negatively correlated with both the frequency (-0.25) and the duration (-0.27) of work absences in later periods. Moreover, declines over time in job satisfaction were accompanied by higher absenteeism. There is also strong evidence that

job satisfaction is related to the probability of subsequently leaving a job (Griffeth, Hom and Gaertner, 2000; Warr, 2007). Clark (2001) has shown through longitudinal analysis that low overall job satisfaction is a highly significant predictor of voluntary quits in the next year.

Estimates of the effects of job satisfaction on job performance are sensitive to the extent to which measures are at similar levels of generality. In a meta-analysis that took this into account, Judge et al. (2001) concluded that the correlation of job satisfaction and job performance was close to 0.30 and that the correlation was stronger in more complex jobs; they interpreted this finding as a reflection of the fact that work attitudes have a stronger potential to affect behaviours in jobs where there are fewer situational constraints. In other words, more complex jobs tend to imply greater autonomy and hence give greater scope for the worker to make a difference.

Despite substantial support for the implications for job performance, measures of job satisfaction have been criticised for failing to capture strong motivational activation by workers. Being *satisfied* is compatible with relatively low levels of arousal, i.e. with comfort rather than enthusiasm (Warr, 2007; Inceoglu and Fleck, 2010). Also, job satisfaction is reactive, reflecting what has already been attained, rather than associated with proactive behaviours in the future (Warr and Inceoglu, 2012).

Work engagement

The concept of work engagement has been developed to better capture high levels of employee motivation at work and the work attitudes required by organisations committed to high-quality work performance. Work engagement is a psychological state involving a “positive, fulfilling, work-related state of mind” (Schaufeli, Bakker and Salanova, 2006), characterised by high levels of energy (vigour) and identification/dedication with work. Work engagement is primarily related to intrinsic rather than extrinsic motivation (Schaufeli and Salanova, 2011). In earlier versions, the concept also included a third dimension, absorption in the job, but it remains controversial whether absorption is best understood as an outcome of energy and identification or as an independent dimension of work engagement (Bakker et al., 2008; Bakker, Albrecht and Leiter, 2011; Schaufeli and Salanova, 2011).³

The working environment has a central role in accounts of the determinants of work engagement. Bakker, Albrecht and Leiter (2011) point to two key drivers of engagement: job resources and personal resources (such as self-efficacy and resilience). Job resources include aspects of the working environment such as skill variety, decision latitude (autonomy), opportunities to learn and social support. These resources are viewed as important for motivation partly because they help to fulfil important psychological needs such as those of self-determination and competence, and partly because they are instrumental in facilitating successful job performance. These resources are thought to be particularly likely to predict work engagement in situations of high job demands. A meta-analysis by Halbesleben (2010), based on 74 studies involving 45 683 participants, found that the relationship between job resources and work engagement was confirmed with respect both to measures of overall job resources and to measures of specific resources, particularly job control/autonomy and self-efficacy. There is also some longitudinal evidence confirming the importance of job resources for work engagement. A study of managers in a Dutch company showed that higher job resources predicted higher work engagement in the subsequent year (Schaufeli, Bakker and van Rhenen, 2009). A longitudinal study of Finnish health care personnel (Mauno, Kinnunen and Ruokolainen, 2007) showed that job control was the second-best predictor of

work engagement. However, a large-scale longitudinal study of Australian and Chinese employees found that supervisor or colleague support did not lead to higher work engagement over time (Brough et al., 2013).

Empirical support for the effects of work engagement on workers' performance is still at an early stage, but it is growing. Bakker et al. (2008) argued that engaged workers perform better than others because they experience stronger positive emotions, have better psychological and physical health, are better able to create their own job resources and can transfer their engagement to others with whom they work. Studies have also shown the following: that engaged employees receive higher ratings from colleagues on their in-role and extra-role performance (Bakker, Demerouti and Verbeke, 2004); that work engagement was related positively to in-role performance among employees in a wide range of occupations in the US (Halbesleben and Wheeler, 2008); that engagement was correlated with both in-role and extra-role behaviour (for instance helping co-workers) in a diverse sample of UK employees (Inceoglu and Fleck, 2010); and that it predicted customers' views on the service climate, employee performance and customer loyalty in a study of Spanish restaurants and hotels (Salanova, Agut and Peiró, 2005). Meta-analysis by Halbesleben (2010), while noting the small number of studies available, concluded that work engagement impacts on workers' commitment and quit intentions, as well as on performance measures. While work engagement has been found to be generally favourable for workers' performance on the job, there are conditions in which it could have negative effects, aggravating work-family conflict (Halbesleben, 2011) and, at extreme levels, leading to burnout, especially in conditions where employer reciprocity is lacking (Schaufeli and Salanova, 2011).

Organisational commitment

The concept of organisational commitment seeks to capture workers' strength of attachment to their particular employer. It has been defined as "the relative strength of an individual's identification with and involvement in a particular organisation" (Mowday, Steers and Porter, 1979). The most influential model (Meyer and Allen, 1991 and 1997; Meyer, Allen and Smith, 1990) drew a distinction between three components of organisational commitment: 1) affective commitment, which refers to an employee's emotional attachment to, identification with and involvement in the organisation; 2) continuance commitment, which is based on an evaluation of the costs associated with leaving the organisation; and 3) normative commitment, which reflects workers' sense of obligation to continue in employment with the current employer. Research (predominantly carried out in the United States, but extending in geographical scope with time) has focused predominantly on affective commitment, which is the dimension of commitment closest to a positive motivational construct and the most consistently related to work performance (Meyer et al., 2002).

In a review of the literature on the determinants of organisational commitment, based on 155 published and unpublished studies, Meyer and Allen (1997) concluded that the strongest and most consistent correlations with affective commitment were those relating to work experience factors, with organisational or personal characteristics having weaker effects. In particular, workers' affective commitment was associated with the job challenge, the degree of autonomy in the job and the variety of skills the employee uses. An indicator of "job scope", combining several job characteristic variables, proved even stronger than the specific job characteristics considered separately (Mathieu and Zajac, 1990). Relations with supervisors and social support were also important: affective commitment was stronger

among employees whose supervisors allowed them to participate in decision making and who treated them with consideration and fairness. More recently, some longitudinal studies have provided support for the relationship between aspects of the working environment and organisational commitment. An Australian study (Boyd et al., 2011) showed that job autonomy and procedural fairness predicted workers' future organisational commitment. Hakanen et al. (2008) have also shown an indirect effect of job resources on organisational commitment, passing through resources' effect on work engagement.

Organisational commitment, especially affective commitment, has been found by meta-analyses to be positively related to job turnover, absenteeism and performance (Meyer et al., 2002). But, surprisingly given the strongly positive character of the wording of organisational commitment scales (Mowday, Steers and Porter, 1979; Meyer and Allen, 1991), its relationship with workers' performance measures is often weaker than that found in meta-analyses of job satisfaction. For instance, in a study based on 111 samples from 93 published studies, Riketta (2002) found a mean correlation between organisational commitments and performance indicators of 0.20. The correlation was somewhat stronger for extra-role performance (0.25) than for in-role behaviour (0.18), which may reflect the more voluntary nature of the first characteristic and the greater importance of motivational factors. The relatively weak overall relation between affective organisational commitment and performance was broadly consistent with other estimates (Mathieu and Zajac, 1990; Cohen, 1991).⁴ This may be due in part to the fact that the items in the most commonly used measures are designed predominantly to tap workers' propensity to stay with or leave the firm that is currently employing them (Solinger, Van Olffen and Roe, 2008), rather than attitudes to the organisation's activities more broadly conceived.

Innovative behaviour

The primary concern of research on workers' attitudes and performance has been with the way in which work attitudes may lead to high levels of performance in the context of firms' established practices. Arguably, however, the increasing pace of technological change and higher levels of competitiveness are creating conditions in which employers need to draw, to a greater extent than before, on workers' abilities and skills to contribute to innovation in work processes. This is reflected in a relatively recent growth of research on "innovative work behaviour", defined as "finding, suggesting and implementing new and beneficial work-related ideas" (De Spiegelaere et al., 2014).

While research on the determinants of workers' innovative behaviour has been predominantly based on relatively small samples in specific organisational contexts, studies have highlighted some interesting results. In a study of UK shop-floor employees, Axtell et al. (2000) argued that it is important to distinguish between the generation of new ideas and their implementation, since these may be affected by different factors. Implementation is more likely to be a social process requiring collaboration with others, given that changes in the design of any one job are likely to affect a number of others. Axtell et al. also confirmed that, while individual factors (such as self-efficacy and role breadth) were generally most strongly related to the propensity to generate suggestions, factors at the level of the group or organisation (in particular, the supportiveness of team members for new ideas, and the extent to which decision-making processes are participative) had the greatest influence on implementation. Decision-making participation has a rather special status as the only variable that influenced both suggestions and implementation.

A wide range of studies has found that workers' control over their immediate job (autonomy, task discretion) is an important predictor of their innovative behaviour. In a meta-analysis, Hammond et al. (2011) concluded that, of all predictor categories, job characteristics demonstrated the strongest relationship with individual innovation. The main determinants were autonomy, task complexity and supervisory expectations of creativity; these proved of greater importance for individual innovation than personality factors, education and job tenure. An analysis of the importance of different spheres of decision making (De Spiegelaere, Van Gyes and Van Hootegeem, 2016) concluded that workers' control over their methods of work is more important for innovative behaviour than their control over work scheduling and times of work (*flexitime*). Workers' control over their job task is important for innovation, as it enables them to experiment with different approaches and methods and to develop their ideas (De Spiegelaere et al., 2014). Both control over immediate job tasks and involvement in wider organisational decisions are associated with greater opportunities for workers to use their skills and knowledge on the job, as well as with better learning opportunities (Gallie, 2013). These aspects also increase the likelihood that people will share their knowledge with others (Inanc et al., 2015).

The demand-control model of Karasek and Theorell (1990) also predicted an effect of job control on learning and the development of new skills in jobs that combined high control with a high level of job demands. These were depicted as *active jobs*, in which high demands constitute a challenge that could stimulate new learning experiences. This argument, although important for the theoretical development of the model, has led to much less empirical research than the health predictions relating to job strain. While, given the number of studies currently available, any conclusions must be regarded as tentative, existing evidence provides some support for the view that high-control/high-demand jobs are particularly conducive to innovative work behaviour. In particular, on the basis of a study involving 3 098 Belgian employees from 76 companies across a range of industries, De Spiegelaere et al. (2015) found that such jobs were associated with the highest level of innovative work behaviour, even after controlling for education and occupational level. The direct effect of autonomy, however, was the strongest factor, while the effect of the interaction between demand and control was relatively modest.

The working environment and organisational performance

It would be reasonable to expect – given the substantial evidence at the individual level of the effect of the working environment on workers' attitudes that are important for absences, job turnover and job performance – a significant association between average workplace characteristics and firms' performance. There is, however, only a small body of research that has addressed this issue. This partly reflects the fact that the design of studies that would provide relevant evidence is exceptionally complex, requiring the matching of data on the worker and employer level at different points in time. The need to establish causal direction is particularly important, as there are plausible theoretical arguments both for the view that a good working environment may contribute to a high level of organisational performance and for the view that a high level of organisational performance may lead to a better working environment. Causation may, in other words, run both ways.

Research on how the working environment impacts on firms' performance has followed two main approaches to date: the first has examined the association between average work attitudes (in particular job satisfaction) and organisational performance,

while the second has focused on the relationship between specific features of the working environment (in particular forms of worker involvement) and firms' performance.

With respect to the first type of studies, the working environment has been shown to be predictive of productivity-related work attitudes. Research into the relationship between average worker attitudes and organisational performance has found a positive relationship between the two, but varies in its conclusions about whether this relation is causal. For instance, in a study providing data over a two-year period for 193 branches of a US bank (Bartel et al., 2011), those branches in which workers had more favourable attitudes had higher sales, although this could be explained by unobserved characteristics of the workplaces associated with both worker attitudes and performance. In contrast, in a Finnish study matching individuals' data from the European Household Panel over the period 1996-2001 with administrative data on firms' productivity, Brockerman and Ilmakunnas (2012) found a robust causal link between workers' job satisfaction and workplace productivity two years later. Similarly, Bryson, Forth and Stokes (2014), drawing on a panel survey of British workplaces, found that increases in the average level of job satisfaction were associated with higher workplace financial performance, labour productivity and output/service quality, as assessed by managers. Conversely, workplaces characterised by declining job dissatisfaction experienced deterioration in all performance measures. Moreover, this study concluded that the non-pecuniary aspects of job satisfaction were predictive of higher performance by firms, while workers' satisfaction with pay showed no positive relationship. While well-designed studies are too few to draw strong conclusions, to date none have highlighted a negative effect that might suggest a trade-off between workers' well-being and firms' performance.

The second approach has focused on the relationship between organisational performance and managerial practices that could be seen as indicative of a good working environment. A recent OECD study (Arends, Prinz and Abma, 2017) has reviewed evidence on the effect of job quality on "at-work productivity", drawing on 48 studies that met criteria for good quality. The indicators of performance used by these studies were primarily the time spent at work by workers with health problems (which are assumed to lead to productivity loss due to reduced worker efficiency) and self-reported job performance. Only a minority of these studies were longitudinal, but they consistently supported the view that job stress, job resources and job strain affect firm-level productivity. In contrast, most studies did not find any relationship between social support (general job support and supervisory support) and productivity. Arends et al. also highlight the moderating influence of health conditions on the relationship between work factors and at-work productivity: the association between positive work factors (such as job control) or negative work factors (such as job stress) and firms' productivity was strongest for people in good health.

Another source of evidence has drawn on the literature on high-involvement management that emerged in the 1980s (Walton, 1985; Lawler, 1986), which suggested that the greater involvement of workers both in their immediate jobs and in wider organisational decisions would improve firms' performance by increasing workers' commitment. An assessment of the results of such research is made difficult by the fact that the notion of high-involvement management has been operationalised in very diverse ways, with many studies including aspects of human resource practices – such as pay incentives – that are more appropriately considered as *motivational* rather than *involvement* practices. In an analysis of those studies that have used more rigorous measures of workers' involvement, Wood (2010) concluded that, while there was evidence of a positive effect on organisational performance of workers' empowerment at the level of job tasks, there was inconsistent

support for an independent effect (either positive or negative) of wider organisational involvement. For instance, two of the best-designed longitudinal studies came to quite different conclusions: Capelli and Neumark (2001), using the US National Employers' Survey, found no effect of wider organisational involvement practices on workplace performance, while Birdi et al. (2008), analysing the performance of 308 UK companies over 22 years, found a significant link with productivity as measured using data from company accounts. There was stronger evidence that wider organisational involvement was important in interaction with other firms' policies, such as total quality management (Wood and de Menezes, 2008), lean production (MacDuffie, 1995) and human resource policies on training and motivational incentives (MacDuffie, 1995; Wright, Gardner and Moynihan, 1999).

Summing up

The research evidence on the effects of the working environment on firms' productivity is less substantial than with respect to the effect on workers' well-being. The strongest evidence relates to its impact on worker attitudes that are important for absences from work, job turnover and job performance. While much of the existing research on how the working environment impacts on workers' attitudes bearing on firms' productivity has focused on job satisfaction, the results of research on work engagement, organisational commitment and innovative behaviour point in a similar direction. Well-designed research examining the effects on firms' performance either of average work attitudes or of organisational characteristics indicative of a good working environment is still scarce and the results are inconsistent. Current evidence, however, indicates that the quality of the working environment has either positive effects or no effects on firms' performance. There is, in other words, no support for the view that the pursuit of a good working environment comes at a cost for organisational performance.

3.5. Conclusion

Reliable and regularly collected data on the quality of the working environment are essential complements for policy purposes to existing indicators of social progress. Measures of economic growth cannot be translated into indicators of the quality of the working environment. It is important to monitor changes in the working environment directly, as they are critical factors in the psychological and physical health of working people. Developments in the types and intensity of work are increasing certain types of work-related risks (psychosocial) even as they reduce others (physical). In this context, the failure to develop preventive policies could lead to higher public costs with respect to both welfare assistance and health care, as well as private costs in the form of lower well-being for workers and their families and the lower productivity of firms. The quality of the working environment is also important for the motivation of people in work, a factor that is likely to become more important for productivity in a highly skilled, technologically advanced economy, and in a context where slow productivity growth has become a matter of major public concern.

Policy intervention requires a good knowledge of the categories of the workforce that are most exposed to a poor working environment and of the specific types of disadvantage that they experience. A central objective of developing high-quality data is to provide a detailed mapping of how various characteristics of the working environment are distributed among workers and to assess the extent to which specific groups of workers are

exposed to cumulative disadvantage. Existing research has provided a much sharper and more detailed picture of the distribution of these work environment characteristics, although only in some countries has it been on the scale needed to move beyond general distinctions between broad categories of workers to highlight the situation of more detailed sub-groups. This research has shown, however, that, in contrast to some earlier descriptions of labour-market segmentation, problematic factors in the working environment differ substantially between specific groups of disadvantaged workers, in terms of both the types of factors that are most salient and the extent to which they are cumulative.

Recent research also has made considerable progress in highlighting the aspects of the working environment that have the most important consequences for workers' psychological and physical health and that it is most important to monitor. This research has provided strong evidence, based on high-quality data, that the nature of the working environment has significant effects both on the risks of mental and physical ill health confronting workers and on their overall well-being. It has underlined in particular the importance of work intensity, task discretion, the adequacy of job resources, personal recognition at work and job security as components of the working environment that affect workers' well-being and health status. Moreover, it has highlighted the importance of taking account of the way in which different aspects of the working environment are combined, showing that the effects of work with high job demands are not inherently negative for worker well-being, but depend upon whether the working environment provides workers with adequate task discretion, rewards and resources.

This important contribution of the job demands-resources model is one reason for using it as an organising framework for identifying the key aspects of the working environment in later chapters of these *Guidelines*. Another practical reason is that this model is somehow flexible and allows considering a large number of factors of various natures. Accordingly, the specific features of the working environment that are conducive to a higher or lower quality of the working environment will be examined in Chapters 4 and 5 as belonging to either a job demand or a job resource.

There has been less extensive research into the implications of the working environment for workers' and firms' productivity. The research that exists, however, has provided consistent evidence of a beneficial effect of a good working environment on productivity-related workers' attitudes – such as job satisfaction, work engagement and organisational commitment – as well as on workers' innovative behaviour. Components of the work environment that have been found to be especially important in encouraging productivity-related attitudes and behaviour are the interest and variety of job tasks, the discretion that workers exercise over how to do their work, the work pressure they face, the adequacy of job resources, supervisory practices, job security and workplace voice. Productivity-related attitudes are associated with fewer absences from work, lower job turnover and better job performance. There are, however, relatively few studies on the relationship between a good working environment and firms' productivity. The results to date suggest either no association or a positive effect. There is no evidence, however, from major longitudinal studies that policies to improve the working environment undermine organisational performance. This is important given the view sometimes advanced that there is a necessary trade-off between improving the quality of the working environment and firm competitiveness.

Notes

1. The pay gap between men and women for broadly comparable work highlights the limitations of using pay as an indicator of skills.
2. Although there has been considerable concern recently about the emergence of other types of non-standard contract arrangements (for instance, zero hour contracts), the research evidence is too limited to provide rigorous conclusions about their implications for the quality of the work environment.
3. A number of instruments have been developed to measure work engagement. The most commonly used is the "Utrecht Work Engagement Scale UWES", which includes absorption as a dimension. Kahn (1990) and Rich, Lepine and Crawford (2010) have proposed an alternative conceptualisation, focused on the physical, cognitive and emotional investment of people in their work roles.
4. Meyer et al. (2002), exceptionally, found a correlation of 0.32 between affective commitment and organisational citizenship behaviour.

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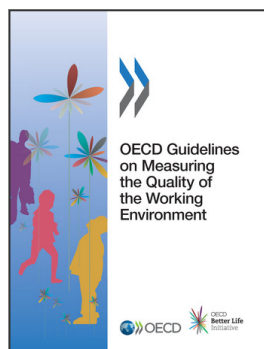
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