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Introduction
People at Work

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Chapter Objectives

After studying this chapter, you should be able to:

- describe the key elements of work;
- explain what work psychology is about and what is meant by *contemporary* work psychology;
- specify some main features of the world's labour force;
- understand the selection bias in contemporary work psychology;
- understand what working means to workers;
- summarize the history of work psychology;
- explain five important changes in the world of work;
- explain the crucial role of task analysis in contemporary work psychology;
- understand the general outline and structure of the current book.

For as long as mankind has existed, people have worked. Needless to say the nature of work has changed tremendously: our ancestors were mostly hunters and collectors, nowadays people work with data, 'goods' or other people, or provide services. What has not changed is that we still spend a substantial part of our lives *working*. It is therefore not surprising that some people's work is about

understanding the nature and conditions of the work of others in an attempt to predict and improve it. These are work psychologists, teachers, trainers and practitioners in work psychology and those who study the phenomenon of work and worker behaviour: the researchers. This book is aimed at everyone who would like to learn more about work psychology. The primary intended readership consists of advanced (second and third year) BA students as well as MA students in work and organizational psychology programmes. However, this textbook will also be useful for advanced students in related fields, including ergonomics and human factors, (applied) social psychology, clinical psychology, (psycho-)social medicine, occupational health, epidemiology, health sciences, industrial engineering, business administration and management science. Finally, researchers who would like to familiarize themselves quickly with state-of-the-art issues in the area of work psychology will also be interested in this volume.

This chapter starts with a brief introduction to what work involves and what work psychology aims to achieve. Next, we consider the world's labour force and discuss what having work means for individuals. After describing the history of the field of work psychology, we describe some important changes that the world of work has witnessed over the last decennia. Finally, we explain the crucial role of task analysis in contemporary work psychology and the chapter ends by explaining the general outline and structure of the book.

1.1   What We Talk About When We Talk About Work Psychology

This book is about *work*. According to the Merriam-Webster dictionary (2013), in everyday life the term 'work' refers to an 'activity in which one exerts strength or faculties to do or perform something; sustained physical or mental effort to overcome obstacles and achieve an objective or result; the labour, task, or duty that is one's accustomed means of livelihood; a specific task, duty, function, or assignment often being a part or phase of some larger activity'. That is, work is about performing activities to achieve a particular objective, and these activities are conducted to obtain some form of income. More formally, work can be defined as *a set of coordinated and goal-directed activities that are conducted in exchange for something else*, usually (but not necessarily and often not exclusively) some form of monetary reward. Three key elements of this definition are as follows:

1. Work consists of a set of *goal-directed* activities, that is, actions at work are intended to bring about a particular previously specified result. After all, the goal of work is to produce a good or to deliver a particular service (Frese & Zapf, 1994).
2. Work consists of a set of *coordinated* activities. To achieve the intended goal, workers do not act randomly. Rather, successful task accomplishment often requires that workers execute a series of interrelated activities following particular work routines, procedures and guidelines, and often using tools and machinery especially devised to bring about the intended goal. Even the

      simplest jobs require incumbents to coordinate their activities. Without coordination, the intended goal will be difficult to achieve, if it is achieved at all.
3. The activities involved in working require some degree of physical, emotional and/or mental effort, and this effort is usually compensated in some way. That is, work is conducted *in exchange for something else*. Few of us would go to work without getting anything in return. Rather, for many people working is a necessary evil: it is easy to think of more attractive, interesting and enjoyable activities, but working is often simply essential for earning a living.

This book is also about *psychology*. Psychology refers to people's behaviour, motivations, thoughts and emotions related to a particular topic. Work psychology thus relates to these concepts in the context of work (Arnold, 2005). As the goal of work is to produce something (goods, services or knowledge), one central aim of work psychology is to facilitate obtaining that goal: how can we use the knowledge and insights of psychology to help workers achieve their work goals in an optimal manner? Or, from an organizational point of view, how can we help organizations achieving their goals?

    Note that work psychologists are not only interested in pushing workers' performance to (and perhaps even beyond) their upper limit. On the contrary, at present many work psychologists are primarily interested in maximizing worker health and well-being (this used to be different in the early days of work psychology, see Section 1.3). This interest partly follows from the idea that happy, satisfied workers are presumed to be productive workers (see Chapter 13 for a discussion). In this view, maximizing well-being is the same as maximizing work performance. Additionally, work psychologists are often genuinely interested in workers' health and well-being. After all, as psychologists their task is to improve people's lives. For example, the American Psychological Association (American Psychological Association, 2013), the largest professional organization of psychologists, says in its mission statement that it '… seeks to advance the creation, communication and application of psychological knowledge to *benefit society* and *improve people's lives*' (authors' italics). Similarly, the British Psychological Society (2013) states that it is 'responsible for the development, promotion and application of psychology for *the public good*' (authors' italics). Similar statements can be found on the web sites of other professional organizations for psychologists. Clearly, work psychologists are not solely there for the benefit of organizations or employers, but surely also for the benefit of workers. This is not to say that a focus on employee health and well-being may not also be beneficial for organizations. It is by now well accepted that work can have adverse effects on employee health and well-being (e.g. consider the potential effects of working with harmful and even carcinogenous substances, or of being chronically bullied by your supervisor and co-workers). Since many organizations frequently face difficulties in finding suitably trained personnel, it is important to them that their current staff remain healthy and motivated. Moreover, the costs of replacing sick employees are high, which also underlines the need for organizations to make sure that the workability of their current staff remains high. Stated differently, *contemporary* work psychology aims to promote what might be called *sustainable performance*, maximizing work performance as well as worker health and well-being.

This book is about *work psychology*, that is, the way workers' behaviours, motivations, thoughts, emotions, health and well-being relate to each other, and about ways to influence these concepts. As we have defined work in terms of the specific *activities* that are conducted by workers, work psychology is *not* about the context in which these activities are conducted (e.g. the organization, the work team, leadership) – that is the realm of *organizational psychology*, not work psychology. Similarly, work psychology is *not* about the characteristics of the person conducting a particular work task (e.g. gender, age, ethnicity, level of education, experience, personality) or selecting or hiring new staff – that is the domain of *personnel psychology*. Work psychology is about the tasks that are carried out at work, that is, the specific activities that are conducted to achieve a particular goal. Of course, these activities are accomplished by workers having specific characteristics within a particular context, and in this sense work psychology is inevitably and often strongly related to the other strands of what is often called 'work and organizational', 'personnel' or 'industrial' psychology. We therefore pay brief attention to some of these subjects in this book. In the present introduction we define work psychology in a considerably narrower sense, namely, in terms of the *psychological study of work activities*. For introductions to other subfields of work and organizational psychology we refer to standard texts in these areas, such as Cartwright and Cooper (2008), Doyle (2003) and Jex and Britt (2008).

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- Work can be defined as a set of coordinated and goal-directed activities that are conducted in exchange for something else, usually (but not necessarily and often not exclusively) some form of monetary reward.
- Work psychology refers to people's behaviour, motivations, thoughts and emotions in the context of work.
- Work psychologists aim to simultaneously maximize work performance and worker health and well-being. In that sense they aim to promote sustainable performance.
- Work psychology focuses on the specific activities conducted to achieve work goals. It does not (or at least not primarily) focus on the work context or on worker characteristics; these are the domains of other subfields of what is known as work and organizational psychology (i.e. organizational and personnel psychology, respectively).

1.2   Who Do We Mean When We Talk About *Workers*?

We now have an impression about what we conceive as *work* and what contemporary *work psychology* is about. Next, we turn to the *workers*. There is probably no group in the world that is as heterogeneous and diverse as the world's workforce. This makes it hard to describe this group. For instance, just think about the differences between an elderly woman working in the rice fields in Indonesia and a young urban professional working in Wall Street, New York and you will understand the enormous diversity within the world's workforce.

The world's workforce

In order to have an impression of who we are talking about in the remainder of this book we will present some general figures about the world's workforce. First, however, what do we mean by the workforce of the world? The world labour force comprises people aged 15 and older who meet the International Labour Organization (ILO) definition of the economically active population: all people who supply labour for the production of goods and services during a specified period. It includes both the employed and the unemployed (World Bank, 2013). While national practices vary, in general the labour force includes the armed forces, the unemployed and first-time job-seekers, but excludes homemakers and other unpaid caregivers and workers in the informal sector.

To understand the number of people that are really at work we have to consider unemployment rates. Unemployment rates refer to the share of the labour force that is without work but available for and seeking employment (World Bank, 2013). In 2011 the average unemployment rate in the world was around 6%. In comparison, in the United States the unemployment rate in 2011 was 9%. The average unemployment rate in the 27 EU Member States (EU27) increased from 7% in 2008 to nearly 11% in 2012 (Eurostat, 2012). Taken together, out of a world population of slightly more than 7 billion people, 3 billion are employed and 205 million are unemployed (International Labour Office, 2012).

When considering international labour statistics a distinction is generally made between three different work sectors: (i) agriculture, including forestry, hunting and fishing, (ii) industry, including manufacturing, mining and construction, and (iii) services, including transportation, communication, public utilities, trade, finance, public administration, private household services and miscellaneous other services. Figures from 2007 show that 36.1% of the total labour force was working in agriculture, 21.5% in industry and 42.4% in services (World Bank, 2013). Note that these statistics have been subject to tremendous change during the last decennia and that they differ substantially between countries and regions. For instance, in 1980 agriculture accounted for only 3.4% of employment in the United States, Germany, Canada and the United Kingdom, and that share fell to 1.6% by 2011. Although over the 1999–2008 period the share of agricultural shows generally a declining trend, it remained high in Sub-Saharan Africa, only diminishing from 62.4% to 59%, in South-East Asia and the Pacific, where it declined from 49.3% to 44.3% and in Latin America, where it declined from 21.5% to 16.3%. Employment in industry also declined as a share of total employment in many countries. At the same time, services accounted for a very large share of employment in many Western developed countries. In 2011, about 8 in 10 workers in the United States, Canada, the United Kingdom and France were employed in services and about 7 in 10 workers in Germany, Japan and South Korea.

Selection bias in contemporary work psychology

Does contemporary work psychology really focus on the work of *all* employed workers around the world? Unfortunately the answer to this question is still an undisputed 'no'. One of the major drawbacks of contemporary work psychology

is its narrow scope. Work psychological research is predominantly conducted in Western-oriented economies (e.g. the United States, Europe, Japan and Australia). Countries in Africa, South America and South-East Asia (especially the developing countries) are largely neglected. In addition, even within the countries where work psychology is flourishing, there is an inclination to focus on white-collar, professional and middle to highly educated employees working in large organizations. Although historically work psychology is committed to blue-collar workers in large industries with poor working conditions, it is nowadays more common to focus on middle and highly educated workers: these groups are easier to gain access to, response rates are higher and researchers are spared the difficulties of translating instruments and establishing their cultural equivalence. As a result, with some exceptions, there is comparatively little research on the lower segment of the labour market and on ethnic/racial minorities.

The consequences of the choice to focus mainly on specific groups in specific parts of the world may be serious. It limits our ability to generalize findings and hampers the development of adequate theory by ignoring important issues that may be especially pertinent for vulnerable workers in less developed regions of the world. Last but not least, because we have serious restricted ranges in our critical variables we may not appreciate the full impact that work has on the lives of workers around the world and their families. Thus, instead of targeting our research arrows predominantly on the 'happy few of contemporary work psychology', it is critical to extend the next generation of work psychological research to under-studied groups of workers and their families in all parts of the world.

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- Around the world 3 billion people are at work (out of a total population of slightly more than 7 billion).
- The global unemployment rate was about 6% in 2011; this figure differs widely across countries.
- The number of people working in the service sector is growing fast.
- Worldwide, the agricultural sector is still the second largest source of employment after services.
- There is an inclination in work psychology to focus predominantly on high-status workers and ethnic majorities in well-developed parts of the world.

1.3   The Meaning of Working

In the preceding sections we argued that work psychologists should aim to simultaneously maximize work performance and worker health and well-being (i.e. strive towards promoting sustainable work performance). However, in spite of these efforts, workers do not always (or 'normally', or even 'frequently') enjoy their work. Popular culture (songs, movies, books, TV series) provides many examples of jobs that are not particularly satisfying, suggesting that the sole reason for working is the fact that it yields the money needed to subsist.

Work Psychology in Action: Popular views on working

One way of understanding of what working means to people (i.e. how they think about work) is to look at *cultural artefacts* relating to work and employment, such as popular songs, movies, books and paintings. The idea behind examining such artefacts is that they reflect real cultural and societal values and attitudes (e.g. DeWall, Pond, Campbell, & Twenge, 2011). What do these artefacts say about work and working?

Whereas most popular music is about love, sex or encourages people to party, a small number of songs actually refer to experiences at work. One interesting example is *Sixteen Tons*, a country song penned by Merle Travis about the dark days of industrial capitalism that reached number one in the 1955 US Billboard charts. In this song, a coal miner warns Saint Peter not to call him to heaven, since however hard he works, he will never have earned enough to pay his debts at the company store (in mining towns the local store was owned by the mining company, and miners often had no choice other than to spend their wage at this store, paying the (high) prices asked for by the mining company). The miner therefore owes his soul to the company and not to God. A more recent example is presented by Dolly Parton's 1980 number one hit song *Nine to Five*, in which the *persona* complains about being underpaid and about bosses taking the credit for others' ideas. In *Factory* (1978), Bruce Springsteen contrasts the fact that working yields the income needed to subsist with the fact that work can take away workers' health and well-being. Indeed, pop singers often have little good to say about work. However, whereas work can be bad, boring and even debilitating (e.g. see NBC's long-running comedy *The Office*, in which many characters mainly spend their time trying to *look* busy), it can also be a source of inspiration and even friendship (as in CBS's sitcom *The Big Bang Theory*, in which the characters' jobs at the California Institute of Technology and similar high-tech research organizations constitute an important part of the personal and professional identities of most of the main characters – all technology geeks, and proud of it).

This short and admittedly ad hoc inventory of some of the artefacts of popular culture shows that work may have both positive and negative features: work provides boredom and challenge, success and failure, and friends and foes.

Research on what working *means* to people has found that people do not just work for money, but that work serves many other functions as well. One way of examining the functions of working is to compare the effects of having a job to those of *not* having a job, especially being unemployed. In a sense, the history

of mankind can be construed as a continuous and ongoing pursuit to make working life easier, that is, to reduce the effort needed to subsist. For example, the introduction of new technologies (ranging from the wheel in the distant past to the industrial revolution of the eighteenth century and the rise of information and communication technology (ICT) during the 1980s) all made it easier to accomplish the work tasks of the day – or even made these superfluous, promising to free time and energy to be invested in other, more pleasurable, activities (cf. Basalla, 1988). From the perspective of the individual worker, an important driver of the acceptance of these innovations was the desire to spend less time on work.

What would a world without work look like? Would people be happier without having to work? In many Western societies, unemployed workers receive an unemployment benefit that allows them to subsist (although often only barely) without having to work. Research comparing the quality of life of unemployed and employed people shows that the latter are usually considerably happier than the former. For example, levels of suicide, mortality, long-term illness, anxiety, depression and risky behaviours (drinking and smoking) tend to be higher among unemployed than employed people, whereas for the first group lower levels of life satisfaction and general health have been found (e.g. Paul & Moser, 2009; Wanberg, 2012). The relation between unemployment and health runs both ways: whereas lack of health increases the chances of becoming unemployed, unemployment also contributes to the emergence of health problems.

Apparently, having a job contributes positively to people's health and well-being. But *why* would this be the case? Obviously, being without a job often negatively impacts on one's income, meaning that it is difficult to spend money on goods and activities that go beyond the bare necessities for survival. However, research into unemployment has generated several theoretical perspectives on the reasons why being unemployed yields these negative consequences. The most influential of these is Marie Jahoda's (1982) *Relative Deprivation Model*. Born in Vienna in 1907, Jahoda examined the impact of unemployment on the 478 families living in the small community of Marienthal (now in Germany) during the Great Depression of the 1920s. At the time, the only factory in town was heavily hit by the depression, and Jahoda and her colleagues showed that the often devastating psychological consequences of unemployment went beyond the obvious hardships of financial deprivation. Based on these observations, Jahoda concluded that apart from providing an income, having employment also provides five classes of social benefits: time structure, opportunities for social contact, sharing of a common purpose, social identity or status, and regular activity. Without work, people are deprived of all five benefits, accounting for many of the adverse consequences of unemployment for health and well-being. Of course, this does not imply that having a job is necessarily fun; rather one might say that being unemployed – especially in the dire circumstances of the 1920s – is worse. In this sense, the insights presented in this section can be summarized by paraphrasing Matt Groening's (1987) famous dictum: 'work is hell – but it beats unemployment'.

Replay

- Examining the artefacts of popular culture may provide some insights into what working 'means' to people, that is, what they think of it and what function it has in their lives.
- Popular culture frequently depicts work and working life as something that is unpleasant and may have adverse consequences for health and well-being.
- Contrary to this popular view, research strongly suggests that having a job contributes positively to health and well-being, at least when compared to having no job (i.e. being unemployed).
- According to Marie Jahoda's influential relative deprivation theory, the main drivers for these positive consequences of having employment are the fact that working provides people with time structure, opportunities for social contact, sharing of a common purpose, social identity or status, and regular activity.

1.4   The Roots of Work Psychology

As indicated above, contemporary work psychology is concerned with promoting sustainable performance, that is, stimulating high work performance as well as maintaining (and even enhancing) worker health and well-being (e.g. Frese & Zapf, 1994). Historically, these two foci of work psychology have not always been emphasized equally strongly by researchers and practitioners in the area of work and work performance. Indeed, when researchers and practitioners started to study work and organizations systematically in the middle of the nineteenth century, the emphasis was on the best way of organizing work and the work organization (with an eye to maximizing productivity and profit, leading to what has come to be known as industrial capitalism), and on the socio-political implications of this (e.g. consider the criticism of industrial capitalism by scholars such as Karl Marx and Friedrich Engels).

Systematic thinking about the organization of work

However, far before this era, scholars had already considered how particular tasks should be conducted. For example, Ancient Greek medical knowledge is documented in what is known as the *Hippocratic collection*, a collection of about 60 books written by various authors during the fifth to third centuries BC. The Hippocratic collection provided Greek doctors with detailed guidelines on how particular types of complaints were to be treated, and is basically a collection of routines and guidelines prescribing how the tasks of a medical doctor should be accomplished. As an example, here is how doctors were expected to start their examinations:

> First of all the doctor should look at the patient's face. The following are bad signs – sharp nose, hollow eyes, dry skin, strange colour of face such as green, black or leaden. If the face is like this, the doctor must ask the patient if he has lost sleep, or had diarrhoea, or not eaten. (Lloyd, 1982)

Another early example of systematic thinking is seen in the Roman army, which was organized according to simple and clear rules. Positions in this organization were relatively well-defined in that it was clear what tasks were required of these positions and how these should be conducted. This applied especially to the operation of the army during times of war. The Roman army used several military manuals describing how the various parts of the army could operate in specific situations. For example, based on earlier sources, the Roman writer Vegetius compiled his *De Re Militari* (*On military matters*) around 390 AD, in which he discussed the organization, equipment and drill of the Roman legions, the strategies to be followed, the maintenance of supply lines and logistics, and leadership. Vegetius proposes that Roman soldiers should learn to use their swords as follows:

> [Roman soldiers were] taught not to cut but to thrust with their swords … A stroke with the edges, though made with ever so much force, seldom kills, as the vital parts of the body are defended both by the bones and armor. On the contrary, a stab, though it penetrates but two inches, is generally fatal. Besides in the attitude of striking, it is impossible to avoid exposing the right arm and side; but on the other hand, the body is covered while a thrust is given, and the adversary receives the point before he sees the sword. (Vegetius, 390 AD)

Interestingly, Vegetius also understood that psychological processes could affect the execution of soldiers' tasks. For instance, he argues that a defeated enemy should always be offered an easy escape route, since in a situation 'where no hopes remain, fear itself will arm an enemy and despair inspires courage. When men find they must inevitably perish, they willingly resolve to die with their comrades and with their arms in their hands'. However, if offered an escape, they would 'think of nothing but how to save themselves by flight', for convenience throwing away their weaponry, meaning that they could be slaughtered easily during the flight. Elsewhere he addresses issues such as the recruitment and selection of soldiers, their socialization, how motivation could be fostered, and the relationship between leadership and performance.

As these examples illustrate, early work on how particular tasks should be conducted largely rested on common sense, moral axioms, tradition, long-standing practices and laymen's psychological insights. A more *scientific* (i.e. systematic, evidence-based) approach to examining work and its effects and antecedents only emerged much later, after the middle ages had ended.

The birth of occupational medicine

The scientific study of work, worker health and well-being, and work performance can be traced back to the 1500s, when Georg Bauer (otherwise known as Agricola) published *De Re Metallica* (*On metal matters*), an influential book on the art and science of mining. Being the town physician in Chemnitz, Saxony (at the time an important mining area in Central Europe), Agricola not only discussed the technical details of mine operation, but also paid attention to miners and their typical diseases: 'It remains for me to speak about the ailments and accidents of

miners, and of the methods by which they can guard against these'. He recommended wearing personal protective clothing (e.g. elbow-high leather gloves for work with aggressive minerals, and a veil worn before the face to protect from dusts, since 'The dust which is stirred and beaten up by digging penetrates into the windpipes and lungs and produces difficulty in breathing, and the disease which the Greeks call asthma. If the dust has corrosive qualities, it eats away the lungs, and implants consumption in the body.' Furthermore, Agricola stated that mines should be operated in a 5-day work week with three shifts of 8 hours each per day, and recommended that miners should not work two shifts per day because of the increased risk of occupational injury (Weber, 2002). Agricola's work was later followed up by Bernardino Ramazzini (1633–1714), an Italian physician and university professor who wrote a seminal book on the typical diseases encountered by workers in 52 occupations. These works can be considered the starting point for the discipline now known as occupational medicine (Gochfeld, 2005).

Work psychology, 1850–1930

The industrial revolution of the 1750–1850s marked a transition towards new manufacturing processes, in that production processes were increasingly mechanized (using novel technology such as water power, steam power and machine tools) and industrialized (i.e. production processes changed from artisanal, piece-by-piece production to mass production). These changes reformed the economic system into that of industrial capitalism, transforming the social and physical landscape in the process. Large mills and factories were built, and canals, roads and railways were constructed to transport materials to the factories and their products to the stores selling them. Working people found increased opportunities for employment in the new mills and factories, leading to increased urbanization. However, the working conditions in the mills and factories were harsh, working days were long and pay was low.

From a work-psychological perspective, the nature of the tasks conducted in this new era was different from the pre-industrial (or agrarian) time preceding it. The emergence of the industrial economy meant that young workers entering the labour market could seek out, occupy and identify with jobs that were completely different from the jobs that their fathers and mothers could choose from. However, this also implied that many young people struggled to find a career that suited their interests, talents and accomplishments (Porfeli, 2009). Moreover, the tasks in the factories were characterized by a high level of division of labour and were usually simple, repetitive and boring, requiring few skills. The important issues in this era therefore became how can workers be motivated to work hard and how can they be made more productive?

The then-young science of *psychotechnics* or *applied psychology* promised to provide answers to these issues. Its founders (psychologists such as the Germany-born Hugo Münsterberg and William Stern, who both obtained professorships in the United States early in the twentieth century) attempted to apply psychological insights, obtained through empirical research and rigid measurement, to the work environment. Both Münsterberg and Stern worked in the field of

vocational psychology – the branch of personnel psychology that focuses on the link between workers' characteristics and job requirements, assuming that worker well-being and productivity are optimal when there is a good match between the job and the worker.

Scientific management

Productivity could also be optimized by not focusing on the match between the worker and the task, but rather by concentrating on the task itself, especially by simplifying it to such a degree that any worker would be able to do it. This idea was worked out in great detail by the American engineer Frederick Taylor (1856–1915), the founder of the *scientific management approach* (or Taylorism). As one of the first management consultants, he sought to maximize industrial efficiency and his ideas were highly influential until at least the 1950s. His ideas were also controversial because they rested on two basic assumptions, namely, workers are both *lazy* and *stupid*. As regards laziness, Taylor (1911) stated that:

> … instead of using every effort to turn out the largest possible amount of work, in a majority of the cases [a worker] deliberately plans to do as little as he safely can – to turn out far less work than he is well able to do … Underworking, that is, deliberately working slowly so as to avoid doing a full day's work … is almost universal in industrial establishments … the writer asserts without fear of contradiction that this constitutes the greatest evil with which the working-people of both England and America are now afflicted.

As regards stupidity, Taylor writes that 'one of the very first requirements for a man who is fit to handle pig iron as a regular occupation is that he shall be so stupid and so phlegmatic that he more nearly resembles in his mental make-up the ox than any other type'. Taylor proposed to counter the stupidity issue by:

1. *simplifying tasks* using scientific methods: tasks requiring complicated actions were broken down into considerably smaller and simpler subtasks;
2. *examining the best way to conduct these tasks*: it was assumed that for each task there is *one best way* to accomplish this task and that any other approach is suboptimal and should therefore be discouraged;
3. *training* workers in the 'one best way' to conduct their simplified task so that even relatively unskilled (or dumb) workers could be trained to perform the task fast and efficiently, resulting in higher productivity;
4. *separating the planning of tasks from their execution*: during the execution of their tasks workers should not think about how they should conduct the tasks, but instead this should be decided for them by their supervisors;
5. *selecting workers* for particular tasks: if a major requirement for a man who is fit to handle pig iron is that he is as stupid as an ox (cf. Taylor, 1911), then there are also workers that are too intelligent for this particular task. Similarly, some tasks would involve great strength, other tasks require high levels of precision, and so forth, meaning that not all workers were equally well-suited for all tasks.

The laziness issue was addressed by introducing high levels of control and supervision, as well as by introducing pay-for-performance systems – you work harder, you get paid more; you work slower, you get fired. Taylorism may be construed as being the start of contemporary work science, with standardization and efficiency as its core concepts.

Work Psychology in Action: Discovering the one best way

A basic assumption of scientific management is that there is one best way for each task to be conducted. However, how can this one best way be discovered? Taylor proposed to analyse tasks thoroughly and systematically ('scientifically'). For instance, he often selected the employee most successful in his or her task, studied the way this person worked and then trained the other employees to use these work methods. Later on Taylor used the possibilities offered by modern technology – photography and movies – in order to reduce process times.

The possibilities of these new media were fully explored by the US couple Frank and Lillian Gilbreth, who conducted so-called *time and motion studies* in the 1910s and 1920s. The Gilbreths developed a method based on the analysis of work motions that consisted of filming the details of a worker's activities while recording the time needed for these activities. In this way they could see how the work had been done, showing where improvement was possible (e.g. which motions were superfluous and could be skipped). In doing this, the Gilbreths sought to make processes more efficient by optimizing the *motions* involved, rather than by reducing *process times*, as Taylor had done. After Frank's death in 1924, Lillian Gilbreth continued working in this area and eventually became the first female engineering professor at Purdue University, where she was granted a full professorship in 1940. Dividing her time between industrial psychology, industrial engineering and home economics, she was one of the first work/industrial psychologists as well as a pioneer of the discipline of *human factors* or *ergonomics*. Basically, this discipline involves the study of designing equipment, tools and machines that fit the human body and its cognitive abilities ('cognitive ergonomics').

Work psychology, 1930–present

Perhaps not surprisingly, scientific management became quickly popular among the management of the large factories of the early twentieth century, whereas (equally unsurprisingly) workers and worker unions detested this system. The introduction of Tayloristic principles at work often resulted in repetitive, boring

and physically demanding jobs, as the management of these organizations sought to maximize productivity and profit, irrespective of the cost to the workers involved. The heyday of Taylorism was over by the middle of the 1930s. Employers realised that redesigning jobs in line with the principles of scientific management affected worker morale negatively and tended to stimulate conflicts between managers and workers, resulting in the strengthening of the position of labour unions and recurring strikes (e.g. Ingham, 1966). All this neutralized part of the benefits of the productivity gains achieved by the introduction of scientific management, and it was superseded by the *human relations movement.*

The human relations movement

Rather than fitting the worker to the job (as scientific management had attempted), the adage of the human relations movement was to fit the job to the worker, paying special attention to the human side of working. It originated from the series of experiments conducted from 1924 to 1933 by Harvard-based researchers such as Elton Mayo and Fritz Roethlisberger at the Hawthorne plant of Western Electric/AT&T. At the time, some 40,000 people worked at the plant, producing telephones, cables, transmission equipment and switching equipment. Western Electric had adopted the principles of scientific management in the early 1900s, and in the 1920s the company had become aware of its drawbacks for employee well-being and motivation. To promote worker commitment and to discourage worker turnover and unionization, the company's managers began to focus on the well-being of the workers. Western Electric introduced pensions, sick pay and stock purchase plans, and there was a range of educational and recreational programmes for its employees.

It is against this background that Western Electric became increasingly interested in research on the antecedents of worker productivity, motivation and satisfaction, and it undertook a series of behavioural experiments to examine the effects of contextual factors (such as lighting, rest periods and wage incentives) on worker productivity. These studies provided little, if any, evidence for the systematic effects of the factors of interest (later re-analysis of the original data showed that productivity did not even increase; see Kompier (2006) for a discussion). However, during the course of the experiments Mayo and Roethlisberger became convinced that the intimate atmosphere of the experiments led the participants to develop strong friendships across time, and the fact that they were a *team* was the main driver of the increased productivity witnessed by the researchers: 'the most important finding of all was unquestionably in the general area of teamwork and cooperation' (Mayo, 1945, p. 82). Although the evidence for this claim is weak at best, the Hawthorne studies helped develop ground-breaking ideas on social relations at work, motivation, satisfaction, resistance to change, group norms, worker participation and leadership that even today inspire much research on the effects of job characteristics on work performance (Sonnenfeld, 1985).

Contemporary work psychology

Work psychology as it is today builds on the notions discussed in this section. It aims to improve productivity by optimizing the organization of work, work methods and job characteristics, but at the same time strives towards

maximization of worker health and well-being. It is interdisciplinary, in that it builds on, contributes to and blends ideas and findings developed in disciplines such as occupational medicine, ergonomics, organizational sociology, social psychology and personality psychology. However, at its core is always a focus on work as a set of coordinated activities that are conducted by people – each with their own capacities, needs and talents. Added to this, it is assuming that sustainable work performance can only be achieved if task requirements, worker characteristics and worker health and well-being are all taken into account.

Replay

- Scholars have long thought systematically about the best way of conducting work tasks. For example, the Roman army used military manuals that showed how soldiers should conduct their tasks, and medical doctors in Ancient Greece worked according to the routines and guidelines documented in the books of the Hippocratic collection.
- In the early 1500s, the first truly scientific texts on the association between work and health appeared. Agricola documented the impact of working in mines on the health and well-being of miners; later on, Ramazzini extended this work to include no less than 52 occupations. These books constituted the starting point for the discipline now known as occupational medicine.
- The industrial revolution marked a transition to new manufacturing processes. These also affected the shape of employment of the masses, changing it from artisanal piece-for-piece production to mass production.
- A major issue in work concerned the productivity of the workers. Psychotechnics, as introduced in Germany at the end of the nineteenth century, applied psychological insights to working life, focusing on optimizing the match between worker and vocation. Scientific management, as introduced and popularized by Frederick Taylor, focused on the simplification and optimization of tasks and increased work motivation by introducing strict supervision and pay-for-performance systems.
- After 1930, the popularity of Taylor's ideas waned, to be replaced by the insights of the human relations movement. Based on experiments conducted in General Electric's Hawthorne plant, this school of thought focused particularly on the social context in which the work tasks were conducted.
- Contemporary work psychology merges ideas from all these (and other) disciplines in an attempt to promote sustainable performance: high productivity combined with much attention for worker health and well-being.

1.5   The Times, They are A-changin'

As we have seen in the preceding section, systematic thinking about work and the organization of work already dates back to the Ancient Greeks and Romans. However, in Chapter 3 you will learn that most job design theories have been

developed in the mid-twentieth century when workers were still predominantly working in large-scale manufacturing plants. After that time, things kept on changing. There is general agreement that the world of work has changed considerably over recent decades. The levels at which transformations take place range from the macro level of economies and demography to the meso level of organizations and the micro levels of tasks. Many of these changes arise from a combination of technological advances and economic trends which themselves often go hand in hand to some extent. 'It is no exaggeration to say that modern technology is changing the way we live and work. The information revolution will transform everything it touches – and it will touch everything' (Cascio, 2003, p. 406).

The changing nature of work

Probably one of the most important changes in the world of work has to do with the *nature of work*. Since the mid-1970s the developed economies have witnessed a vast increase in service sector working and a simultaneous decline in the number of employees working in manufacturing. This transition implies that a larger proportion of workers is involved in less physically strenuous jobs with less exposure to physical health risks. Related to this, heavy manufacturing jobs have been made easier with the help of new technologies that have made jobs less labour-intensive. Working in service jobs is also not without risks as it brings about new types of job demands. Typically, service work requires some degree of emotion labour (see Chapters 6 and 7), in which employees have to adhere to rules regarding the expression of emotions (Hochschild, 1983). Service organizations depend on their customers. This usually implies that service employees have to interact with customers in a positive way, for example by being friendly and showing positive emotions. In this sense 'service with a smile' becomes a job requirement.

Another rapidly growing segment of the workforce is that of the 'knowledge worker', a highly educated employee who applies theoretical and analytical knowledge to developing new products and services. Knowledge workers include those working in the areas of product development, consultancy and information systems. The existence of 'knowledge workers' is not new: it was described by Peter Drucker in his 1959 book *The Landmarks of Tomorrow*. Drucker (1999) states that 'The most valuable assets of a 20th-century company were its production equipment. The most valuable asset of a 21st-century institution, whether business or non-business, will be its knowledge workers and their productivity' (p. 135). Knowledge work is typically characterized by a high degree of cognitive load, a term which is used in cognitive psychology to illustrate the load or effort related to the executive control of the working memory. In knowledge work the level of information processing is high in order to produce intellectual performances.

The changing workforce

Along with the change in the nature of work, the composition of the workforce itself is also very different to the era when work design first became of psychological interest. About 50 years ago the demographic features of most

work organizations were fairly homogeneous (William & O'Reilly, 1998). Many employees shared a similar ethnic background, were male and worked for the same employer throughout their working lives. Nowadays managers are confronted with a workforce that is more diverse in terms of gender, age, ethnicity, organizational tenure, educational background and so on. Such demographic changes have a major impact on creating new territories for research and practice in work psychology. Work psychology has much to offer in managing differences between individuals and/or groups at work. However, as it becomes more and more clear that work group diversity may have positive as well as negative effects we have to look more deeply into issues of how we can overcome prejudices and biases, and how we can make diversity work (van Knippenberg & Schippers, 2007).

The changing flexibility of working

Rapid developments in information technology are having major implications for the way in which work is conducted. More and more organizations have started to redesign their approach to work. Central to this new approach is the fact that employees have high work flexibility. Such a flexible work design, also referred to as 'new ways of working' (NWW), is characterized by (i) flexibility in the timing of work, that is, employees have more autonomy in deciding when they work, (ii) flexibility in the place of work, for example employees can work from home, at the office and/or during commuting time (e.g. on the train), and (iii) the facilitation of *new media technologies*, such as smartphones and videoconferencing (Baarne, Houtkamp, & Knotter, 2010). Thus, NWW offer the employee various options for communication with co-workers, supervisors and clients, including phone calls, email, online messaging and (online) virtual meetings. NWW also enable employees in different locations and on different schedules to work together as 'virtual teams' (Duarte & Tennant-Snyder, 2000). Teams located in different countries can even exploit time zone differences to provide 24/7 working. However, whereas the organizational benefits of NWW have been emphasized in previous studies (Sánchez, Pérez, De Luis Carnicer, & Vela Jiménez, 2007), little is known yet about how NWW influence employees and their families. Recently, Demerouti and colleagues (2013) considered the opportunities and pitfalls of NWW, and it seems that NWW have the potential to contribute to work–life balance, as long as they are used in a considerate and moderate way. In other words, NWW can be beneficial for employees and their families if boundaries to separate work and family life are created.

The changing organization

Organizations themselves, whether service, manufacturing or other, have also undergone dramatic changes. They are no longer the rather static and inflexible enterprises of earlier times. Some used to say that the only constant factor that characterizes organizations is 'change'. Two major trends are mainly responsible for the ongoing changes in organizations: (i) globalization, or commerce

without borders, which, along with the interdependence of business operations in different locations (Cascio, 2003), changes the markets and environments in which organizations have to operate, thereby creating a global economy with both opportunities and threats, and (ii) ICT, which is redefining how, where and when work is performed. Organizations have responded to these developments with managerial innovations and new organizational forms such as network organizations, strategic alliances and virtual corporations. Fortunately, most organizations seem to undertake the kinds of organizational changes needed to survive and prosper in today's environment (Cummings & Worley, 2009).

The changing psychological contract

Finally, the relationships that employees have with their organizations are also subject to change. Whereas once it was considered normal for employees to spend their entire working career with one or two companies, changed notions of careers prescribe now that employees are expected to move between organizations much more often. Education and training throughout a career have become more common, increasing the potential for employees to continuously develop and improve their own competencies, which improves their employability. As a consequence of all this, the psychological contract – what employees and employers want and expect from each other – has changed dramatically in recent years. Characteristics such as stability, permanent employment, predictability and mutual respect are out. Instead the new features of self-regulation, flexibility and employability are required. More and more, the old psychological contract is paving the way for idiosyncratic deals ('i-deals'), where individual employees negotiate with an employer to adapt work arrangements to better meet their personal needs (Rousseau, 2005).

In conclusion, this brief and necessarily incomplete account shows that the world of work today is very different from the time in which the major work design theories were developed. Altogether, these changes have led to what may be called in developed countries the *intensification of work*. Intensification refers to increasing work hours and work pressure, the need for lifelong learning and the ability and willingness to continuously change the type of work one does (Arnold, 2005). These developments call for some reorientation and new perspectives on job demands. The restricted range of job characteristics and outcomes addressed by traditional theories might become insufficient to capture the salient aspects of modern work. New demands such as illegitimate tasks (Semmer, Tschan, Meier, Facchin, & Jacobshagen, 2010), demands arising from temporal and spatial flexibility (Kattenbach, Demerouti, & Nachreiner, 2010) and demands arising from accelerated change (Obschonka, Silbereisen, & Wasilewski, 2012) might represent promising approaches for future research. In Chapters 5 and 6 you will learn more about job demands.

Replay

- The nature of work has changed from mainly manufacturing work to predominantly service and knowledge work.

- The workforce has become more diverse in terms of gender, age, ethnicity, organizational tenure and educational background.
- New ways of working are characterized by (i) flexibility in the timing of work, (ii) flexibility in the place of work and (iii) the facilitation of information technologies.
- Because of globalization and the increasing use of ICT organizations must continuously adapt to new realities.
- The psychological contract – what employees and employers want and expect from each other – has been changed from an emphasis on stability and permanent employment to a desire for flexibility and employability.

1.6   The Crucial Role of Task Analysis in Contemporary Work Psychology

As discussed earlier, the changing nature of work is associated with new types of demands at work, such as mental and emotional demands. The key question, however, is how can these demands be described and analysed? Such a description and analysis of demands at work has a prominent position within work psychology, and is important for both theory and practice. *Task analysis* is the common name given to any process that identifies and examines the (demanding) tasks that must be performed by employees. Task analysis is a fundamental approach which assists in achieving higher performance and safety standards (cf. Kirwan & Ainsworth, 1992).

Task analysis within work psychology

Task analysis is used in different disciplines, such as ergonomics, design studies, engineering, operations and psychology, to describe, analyse and evaluate human–human and human–machine interactions in systems (Kirwan & Ainsworth, 1992). In general, it can be defined as the study of what an employee (or team) is required to do, in terms of actions and/or processes, to achieve a system goal. The idea is that task analysis provides the user with a 'blueprint' of human involvement in a system, or, to put it another way, to give a detailed picture of that system from a human perspective. This makes it easier to describe how activities fit together and to evaluate the design implications. The resulting information can be used for many purposes, such as tool or equipment (re)design, personnel selection and training, allocation of jobs to 'families' of similar functions, task (re)design, job organization and performance assessment.

Within the context of work psychology, task analysis can be considered a methodology in which data will be collected, ranked and evaluated to say something about the nature of the task, that is, its *psychologically relevant* characteristics (van Ouwerkerk, Meijman, & Mulder, 1994). The aim of work-psychological task analysis is to lead to a more efficient and effective integration of the human factor into system designs and operations via task (re)design in order to optimize human performance and safety.

Task-analysis methods and techniques

Task analysis within work psychology covers a range of *methods* and *techniques* used by work psychologists. Generally, a task-analysis method is based on a theoretical model that indicates which task characteristics will be analysed. An example of a method is Hackman and Oldham's (1975) job characteristics approach (see Chapter 3). In the literature, all methods can be categorized using four different approaches (cf. Fleishman & Quaintance, 1984):

1. *Behaviour description approach.* In this approach the focus is on the actual behaviours employees display in executing the task, such as mopping the floor or reading instruments.
2. *Behaviour requirements approach.* This approach focuses on the actual behaviour employees *should* display to perform the task in a successful way, for example showing dedication and concentration.
3. *Ability requirements approach.* In this approach, tasks are analysed in terms of employees' abilities, knowledge, skills and personal characteristics. These are usually needed to perform a task properly.
4. *Task characteristics approach.* The focus of this approach is to analyse the objective characteristics of a task, independent from the behaviour that is actually displayed (behaviour description) or that should be displayed (behaviour requirements) or the abilities needed (ability requirements).

In addition, there are many task-analysis techniques available that deal with the description and analysis of tasks. Techniques are instruments or protocols with which data can be collected and described in a systematic way. Task-analysis techniques can be divided into at least three broad categories (van Ouwerkerk et al., 1994): (i) data-collection techniques, (ii) task-representation techniques and (iii) task-simulation techniques (see also Kirwan & Ainsworth, 1992). Data-collection techniques consist of interviews, survey questionnaires, observations, and organizational documents and records. These techniques are common in work psychology, for instance to measure quantitative demanding tasks, as discussed in Chapter 5. Task-representation techniques use graphic descriptions such as flow charts and hierarchical networks. The underlying idea is that formal graphical representations of tasks are easier to understand and more concise than textual descriptions. Finally, task-simulation techniques make use of computer modelling and computer-aided design programmes. There are two main types: (i) those which try to simulate the dynamic aspects of tasks in work environment simulation models ('mock-ups') and (ii) those which are used for ergonomically laying out work environments ('workspace designs').

Benefits of task analysis

Task analysis within work psychology can be applied in a wide range of organizations. It is a popular, well-structured and useful approach to describe, analyse and evaluate particular tasks to improve performance and safety by means of task

(re)design. Many organizations have made use of task-analysis methods and techniques, and have benefitted from such usage. The interested reader could consult Kirwan and Ainsworth (1992) for 10 successful case studies.

Replay

- Work-psychological task analysis can be considered a methodology in which data will be collected, ranked and evaluated to say something about the nature of the (demanding) task. It is a popular, well-structured and useful approach to describe, analyse and evaluate particular tasks to improve performance and safety by means of task (re)design.
- Task-analysis methods can be categorized using four different approaches: the behaviour description approach, the behaviour requirements approach, the ability requirements approach and the task characteristics approach.
- Task-analysis techniques can be divided in at least three broad categories: data-collection techniques, task-representation techniques and task-simulation techniques.

1.7   The Organization of the Book

This book is organized around seven parts, which are discussed below. At the end of this section we will describe how this book can best be used.

Overview of the book

Now we have explained the background of people at work, we will introduce the general outline and structure of the book. A central assumption in this textbook is that working constitutes a series of usually conscious and goal-directed acts in order to produce a particular good or service. Thus, *worker behaviour* is at the core of work psychology, and work psychology is concerned with the psychological aspects of that behaviour, in terms of both its antecedents and its outcomes. A second important assumption in the present book is that, while working admittedly requires effort expenditure and may result in psychological and/or physiological costs on the side of the worker, working may also result in positive outcomes for both the organization and the worker. Traditionally, work psychology has tended to emphasize the fact that specific constellations of job characteristics could result in adverse consequences for workers (such as high levels of stress, fatigue and sickness absence). More modern approaches acknowledge that work offers incumbents many desirable features. At present, the idea that the consequences of working are not negative by definition certainly enriches current theorizing and research in the area of work psychology. This volume will therefore systematically emphasize not only the negative, but also the positive aspects of working.
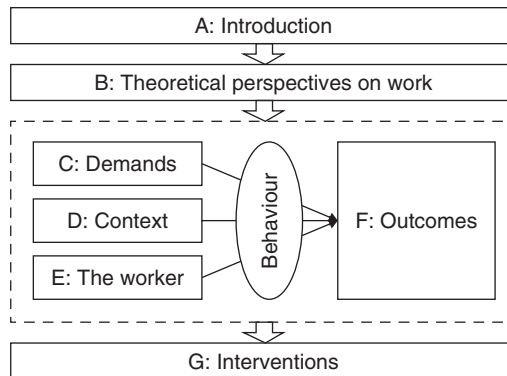
Figure 1.1   General outline of the volume.

The book consists of seven interrelated parts (A–G). Figure 1.1 presents the general outline of the volume graphically. Part A is the *introduction*. It includes two chapters. The current chapter (Chapter 1) presents a general introduction to work psychology. Chapter 2 provides a discussion of research designs and research methods that are typically applied in this area of psychology, including experimental, quasi-experimental, survey methods, cross-sectional and longitudinal designs (including diary research). The basic principles of classical test theory are also explained and the two major characteristics of measurement in work psychology are highlighted: reliability and validity.

Part B consists of two chapters that discuss major *theoretical perspectives* on the relations between job characteristics and work outcomes. Chapter 3 describes the five most significant approaches to job design that have laid the foundation for contemporary work psychology. These models are the Job Characteristics Model (Hackman & Oldham, 1975), the Demand–Control–Support Model (Karasek & Theorell, 1990), the Vitamin Model (Warr, 1987), the Effort–Reward Imbalance Model (Siegrist, 1996) and Contemporary Socio-Technical Systems Thinking (Cherns, 1987; Clegg, 2000). Strengths, weaknesses and empirical evidence for these models are addressed. Many of these models propose a specific and limited set of job characteristics that are presumed to lead to a relatively well-specified set of work outcomes (i.e. they are rather specific and 'closed' models). The second chapter in this part (Chapter 4) presents two current work psychological models that are rapidly developing, that is, Demerouti, Bakker, Nachreiner and Schaufeli's (2001) Job Demand–Resources Model and de Jonge and Dormann's (2003) Demand-Induced Strain Compensation Model. These two models both impose fewer restrictions on the work-related factors that may be included in them or on the outcomes studied (i.e. they are more generic and open, contrary to most approaches discussed in Chapter 3).

Part C (Demands) and Part D (Context) build further on the information discussed in Part B. As mentioned above, Part B discussed several theoretical models for the relations among various job characteristics on the one hand and work outcomes on the other. Parts C and D extend this information with an in-depth focus on specific types of job characteristics and their relations to particular outcomes. Based on the idea that work entails goal-directed behaviour and that these goals usually describe what has to be achieved in a job (i.e. what one's task actually involves), Part C focuses on various types of *job demands*. Basically, a rough

distinction can be made of the degree to which the tasks require much effort – either quantitatively (i.e. how much work has to be done during a particular time period) or qualitatively (referring to the difficulty of the task to be done) – versus the content of one's tasks (i.e. is the task physically, emotionally and/or cognitively demanding). Based on these distinctions, Part C includes two chapters, addressing quantitative (Chapter 5) versus qualitative job demands (Chapter 6).

Part D addresses the characteristics of the *context* in which workers must achieve their goals. Contrary to the subject matter discussed in Part C, the material presented here does not refer to *what* has to be achieved, how hard one must work or how difficult the task is, but rather to characteristics of the *situation* in which the work goals have to be reached. This situation has dimensions that are specifically linked to the psychosocial characteristics of the job and the opportunities to recover during and after work. Chapter 7 addresses the *characteristics of the task*. The discussions in Chapters 3 and 4 have shown that a wide array of job characteristics may affect worker performance and well-being. However, two sets of characteristics stand out as being especially important: job control and the social context in which the tasks are done (including social stressors, social support and bullying). As regards *opportunities for recovery*, Chapter 8 builds on Meijman and Mulder's (1998) effort–recovery theory and McEwen's (1998) allostatic load theory to discuss the impact of demanding work hours (i.e. prolonged and abnormal work hours) on recovery, and its potential effect on health and well-being. This chapter also deals with the recovery-promoting potential of worktime control (e.g. flextime) and with modern work practices such as self-scheduling and boundaryless work. Finally, issues such as breaks and holidays, all of which have recovery-promoting potential, are discussed. The final chapter in this part (Chapter 9) discusses the nature and consequences of the growth of new types of technology in work organizations. The chapter reviews theories which seek to explain the impact of technology on individuals and the conduct of their work. The chapter also uses a number of examples of technology which are prevalent within the twenty-first century and are likely to grow in importance, including the design and use of health information technologies (HIT), mobile working and technology-supported virtual team working.

Part E includes two chapters that focus on the *characteristics of the worker* and his/her home environment, insofar as these characteristics are relevant for workers' functioning at work. This part starts from the assumption that work behaviour is not just a function of job demands (Part C) and the characteristics of the work context (Part D), but also depends to some degree on the person conducting the task. Many individual characteristics that could affect workers' functioning at work (e.g. personality factors) traditionally fall within the remit of personnel psychology and therefore are not discussed here. However, several of these characteristics are becoming increasingly important in the area of work psychology, meaning that attention for such characteristics in a textbook on work psychology is warranted. The first chapter in this part (Chapter 10) addresses the role of employee characteristics in the light of work-related outcomes such as motivation, well-being, sustainable employability and job performance. Both objective and subjective employee characteristics are considered. Objective characteristics refer to demographics (such as age, gender and ethnicity) and lifestyle risk factors. Subjective employee characteristics

concern 'trait-like' characteristics such as workers' core self-evaluations. 'State-like' characteristics such as psychological capital (a construct encompassing the constructs of hope, self-efficacy, optimism and resilience) and 'states' are also being considered as subjective characteristics of employees. Chapter 11 discusses positive and negative work-to-home and home-to-work interactions, showing that the work–home interface may affect worker motivation and performance, and could moderate and/or mediate the associations between work demands (Part B) on the one hand and work outcomes (Part F) on the other.

Part F is concerned with the *outcomes* of work behaviour. On the one hand, this cluster of outcomes includes instances of individual-level outcomes such as burnout, work engagement and boredom. On the other hand, this part discusses organizationally relevant behaviour, such as motivation, work performance, mistakes and accidents at work, and sickness absence. The first chapter in this part (Chapter 12) deals with burnout, boredom and engagement. These concepts can be placed in a two-dimensional model consisting of an activation dimension and a pleasure dimension. These indicators of work-related well-being have often been related to work performance, and are considered to result from the job characteristics discussed in parts C and D. Regarding the organizationally relevant outcomes, Chapter 13 deals with issues as satisfaction, motivation and performance. As workers may not always be motivated to 'do the right thing', this chapter also addresses counterproductive work behaviour. The chapter ends with a discussion of the possibility that the strength of the satisfaction–performance relationship depends on several factors, such as reward contingency, job complexity and job demands.

Chapter 14 addresses what might be called 'unintended' counterproductive work behaviour: slips, mistakes and accidents at work. This chapter also discusses models for the link between job characteristics, errors and mistakes, and safety at work, and the concept of safety culture. Finally, Chapter 15 deals with work-related sickness absence as well as sickness presence and discusses its prevalence and costs. The chapter introduces contemporary models that consider sickness absence vis-à-vis sickness presence and presents an integrative, multilevel framework for research on and management of work attendance and sickness.

The final part of this volume (Part G) addresses the issues of prevention and *intervention* in the context of work psychology. The introductory chapter to this part (Chapter 16) discusses the basic concepts and approaches relevant to managing psychosocial risks in the workplace. The basic three-phase model for interventions (development, implementation and evaluation of results) is explained and the principles of participatory action research (PAR), that is, how employees, line managers and directors can participate in the development and implementation of interventions, are explained. Finally, the psychosocial safety climate, which can be considered as the 'cause of the causes' of work stress is outlined. The remaining chapters in this part address various interventions. Chapter 17 introduces job crafting as a new form of job redesign. The conceptualization and the predictors and outcomes of job crafting are explained, and the link between job crafting and the implementation of organizational change and innovation is elaborated. Chapter 18 discusses the issues of teams at work, explaining how teams develop, what effective teams are and how team interventions work in organizations. The key processes teams engage in and how they impact performance are discussed. Finally, Chapter 19 deals with the issue of 'positive'

interventions, that is, whereas traditional work-psychological interventions usually target stressed or burned-out workers, positive interventions aim to 'amplify' the well-being and productivity of employees who are functioning well. Building on recent insights from positive psychology, this chapter discusses the principles of such positive interventions and presents some examples thereof, showing that interventions may also have positive effects on the functioning of healthy workers.

How to use this book

Each chapter is guided by sections that accommodate learning. These parts are as follows:

- *Chapter objectives*: These are listed at the start of each chapter, and highlight the knowledge and skills students should have acquired after studying the chapter. This section starts with the following statement: '*After studying this chapter, you should be able to*: …'.
- *Replays*: These are situated at regular intervals throughout the text, providing a brief review of the main concepts and topics covered in the preceding section.
- *Work psychology in action*: These boxes encompass real-life and practical examples throughout the text that illustrate cases or case studies in which theoretical concepts are translated and/or applied into practice.
- *Discussion points*: These encourage critical cognitive reflection on the main topics and issues covered in each chapter. They are presented at the end of the main text of the chapter. Discussion points stimulate the students to contemplate critically the themes that are addressed in the chapter.
- *Learning by doing points*: These encourage practical reflection on the main topics and issues covered in each chapter. These points are presented after the discussion points and provide practical assignments or applications.
- *Further reading*: Annotated further reading encourages students to read more widely around the subject and provides a shortlist of literature recommendations.

Discussion Points

1. In Section 1.1 work was defined as 'a set of coordinated and goal-directed activities that are conducted in exchange for something else – usually some form of monetary reward'. Consider the case of someone who has won a large amount of money in a lottery. It frequently occurs that such people continue to go to work, in spite of the fact that they do not *need* to work for their subsistence. Are these people still 'working' in the sense of the definition above? Does work still have the same meaning to these people as before they won the lottery, or is their job now better classified as a form of leisure activity? Similar questions may be raised concerning the nature of volunteer work: is this a form of 'working' according to the definition given above, and in what sense does volunteer work differ from paid work?
2. In response to discussion point 1 above, you may have argued that volunteer work is just another form of working. If so, discuss whether and how the

principles of scientific management would apply to volunteer work. Can the work performance of volunteers be improved using Tayloristic principles? Similarly, would the ideas of the human relations movement help in improving the performance of volunteers? The answers to these questions should help you in determining whether and in which respects 'volunteer work' is comparable to regular, paid work.

3. Suppose you have to assess job characteristics without subjective perceptions of workers (see also Chapter 5). Which task-analysis approach would you prefer as a basis for your examination? Explain why.

Learning by Doing

1. The time-and-motion studies conducted by Frank and Lillian Gilbreth aimed to reduce the steps needed to conduct a particular task. In this way they could improve the efficiency of workers and reduce the effort needed to perform their tasks. The principles behind this approach can also be applied to other contexts in which people conduct particular tasks. Consider the task of preparing a meal, eating it and cleaning up afterwards, with sub-tasks such as (i) take ingredients from the refrigerator, (ii) cook the meal, (iii) put the dishes on the table, (iv) dispose of the waste (empty packages), (v) clean the dishes in the dishwasher and (vi) put the clean dishes in a cupboard. Assume that all these activities are done within your own (large) kitchen. What would the layout of your kitchen look like if you organized your activities according to the principles of Lillian Gilbreth? Where would you put the refrigerator, cupboard, dishwasher, etc. if you wanted to minimize the effort needed to prepare your meal, eat it and clean up afterwards?

2. Modern work is increasingly characterized by flexible work designs such as new ways of working. Think of somebody you know who is currently working under such conditions. Ask this person what he or she considers to be the advantages and disadvantages of this kind of work design. Next, think about the ways in which human resource managers can support employees who face difficulties working in such a context.

3. Pick three models from Chapters 3 and 4, and write down the task-analysis method and technique that fit these models best.

Further Reading

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