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Measurements, Determinants and Improvements of the Quality of Working Life

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Balances in Well-being at Work. Measurements, Determinants and Improvements of the Quality of Working Life

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En hoewel wij het betreuren dat we veel zekerheden moeten ontberen, hebben we wel de zekerheid dat alle dingen ons voorkomen zoals ze ons voorkomen, en dat het onmogelijk niet volkomen waar kan zijn dat ze ons waarlijk zo voorkomen.

Umberto Eco, Het eiland van de vorige dag

Preface

This dissertation concerns well-being at work and is the result of an intensive, challenging, and interesting research project. When I started this research in the summer of 1996, many people warned me that it is a rough road with many ups and downs, and many detours that would lead me off the main goal of the research. Somehow these pitfalls hardly occurred and I especially enjoyed all the aspects of my work. In other words, the well-being in my work has always been excellent. I was lucky to work in an environment that fulfills a few important aspects of well-being at work. I discuss these aspects on the basis of the results of this dissertation.

The first aspect is the control capacity in my work. I thank Marco de Witte for giving me the opportunity to conduct this research and, above all, for his infectious enthusiasm, inexhaustible inspiration, valuable time and kind friendship. I thank Ad van der Zwaan for his trust in me and the inspiring discussions we had together with Marco. Both provided me with sufficient control capacity to successfully overcome problems and finish this dissertation.

One of the problems in my work (control need) was to gather enough empirical data to test my hypotheses. Without these data, this study would have been impossible. Management and respondents from Thuiszorg Noord-West Twente, Icare Thuiszorg Drenthe (Bedrijfseenheid V&V), Union BV, and Giant Europe Manufacturing put a great deal of effort and time into this project. I am grateful for their cooperation and willingness to participate in this research. I also thank Leo Bartelse and Jacques van der Pols from Arbeidsinspectie Regio Oost, who helped me contact most of these organizations. Furthermore, I always enjoyed the interesting and enthusiastic discussions with Leo Bartelse, particularly the anecdotes about everyday practice in the work of the Labor Inspectorate.

Avoidance of short-cyclical work was important when handling all the questionnaires (totaling 1,189) that the respondents returned. This was rather donkey work and I am very grateful to Petra Venema and Willem-Jan van der Stok for their help, perseverance and accuracy, and to Karin Delger, Rutger Kammeraat, Gerla Struik,

Daniël van Winsum and Marieke Zegwaart for their help in collecting data and conducting WEBA analyses.

Despite the focus on the research, I enjoyed a great deal of variety in the work. First of all, I had the opportunity to participate in a Tempus Tacis project in Lipetsk (Russia). Luchien Karsten asked me to join him in this project and we had some very good times in Lipetsk, together with Jos van der Werf. In this project German colleagues from Paderborn, particularly Guido Kaufmann, were responsible for the settling of all the official affairs. This left us the opportunity to concentrate on teaching and working with Russian colleagues and students. I learned a great deal about the culture, educational system, and everyday life in Russia. This was a 'once upon a time' opportunity to falsify my presumptions about Eastern Europe. Moreover, it resulted in good friendship with the 'exchange teachers', Masha, Alexander and Irina, and Alina became a dear friend.

Another source of variety in my work was the job as editorial secretary of *Tijdschrift voor Arbeidsvraagstukken*. I was the spider in the web of this journal – the link between the editorial board, the authors in the research field of labor, and the publisher. I enjoyed this work and the discussions during editorial meetings. The members of the editorial board, Jacques van Hoof, Ronald Batenburg, Paul de Beer, Jac Christis, Lieve De Lathouwer, Tanja van der Lippe, Luc Sels, Kees Vos, Marco de Witte, Jan Denys, and Geert Van Hootegem were always very cooperative, especially immediately prior to deadlines. Michiel Bloemendaal was always very flexible when it came to finding solutions when authors needed more time for finishing their manuscripts.

The years I spent in the WSN building of the University of Groningen have been inspiring and challenging, thanks to the colleagues at the department of Management and Organization, and more particularly the members of the HRM cluster: Ad, Erik, Eric, Marco, Elli, Hans, Sicco, Annick, Alex, Kees, Aukje, Ben, Peter, Rienk, Ellen, Ferry, Jeroen, and Ronald. I enjoyed the discussions and fun with my roommate Sicco, the other PhD students of our department, the VF participants, and the 'lunch colleagues' from the eighth floor. Despite all the expenditure savings and SOM norms, these people are the lubricant that keeps the machine going.

The biggest problem I encountered in the last period of the writing process of this dissertation was the English language. But Judith Rinker from the Language Center conclusively solved this problem for me, by conscientiously correcting my drafts. As a result, all problems I encountered in this work have been solved and this dissertation is the product.

These very positive and inspiring working conditions are not the only reason why I look back very positively on my period as a PhD student. When writing a dissertation it is important to 'switch off' from time to time. For me, the best way to take my mind off work was through sports. I always felt comfortable when swimming, biking or running with the members of GVAV Rapiditas Triathlon. Furthermore, in my private life I found a solid base for steady self-development. My parents and sister are always very interested and encouraging, and not only with respect to the writing of this dissertation. Furthermore, I mention my friends who have always been inter-

ested in me and the progress of my work. Unfortunately, they are too many to mention individually. For that reason – Thank you all!

Finally, last, but certainly not least: Carla. Well, what can I say? First you were a part-time colleague, then we became friends, you hesitated to fall in love with me, and now you are my wife. Thank you for trusting me as your friend, for letting me be myself while growing closer, and for your deep understanding and stress-relieving remarks when all my thoughts were focused on this dissertation.

Roel Schouteten
Groningen, April 2001

Contents

1 Introduction: Labor Trends in The Netherlands

In the past century, and especially the most recent decades, work and working conditions have changed dramatically. These changes are due mostly to one or more of the following factors (Levi, 1994: 79): "introduction of new technology, competition from other countries, access to new markets, market vacillations, fluctuations in the demographic situation, governments striving to reduce budget deficits, and rising expectations in the labor force, with increasing reluctance to accept certain jobs". These factors are often interrelated and the effects are many and various, and sometimes only dimly understood. This study is aimed at the effects of these changes on the quality of working life. Therefore, in this study, the trends and changes with respect to work and working conditions are of particular interest. In The Netherlands, some trends are illustrative of these changes and will be described in the next sections.

1.1 Trends in Employment

During the twentieth century, the employment structure in The Netherlands changed from highly agrarian into a service economy. In the agricultural sector the employment rate declined from 31% in 1899 to 4% in 1992[1], whereas the services sector showed an employment rate increase from 36% in 1899 to 70% in 1992. The growth in the services sector was mainly in banking and insurances, health care, and social and cultural services. The employment rate within the industrial sector did not change dramatically, decreasing from 25% in 1899 to 19% in 1992. In this period employment rose quantitatively in terms of man-years (because of economic growth), although between 1970 and 1995 the number of man-years increased only slightly or not at all in The Netherlands (SCP, 1998).

[1] In percentages of the total employment in all sectors.

From the beginning of the seventies, the unemployment rate began to rise steadily in The Netherlands. After a period of full employment following the Second World War, The Netherlands was confronted with the phenomenon of mass unemployment. In 1970 the number of unemployed people was 50,000. In 1976, for the first time since the fifties, the unemployment rate was higher than 4% of the labor force (more than 200,000 unemployed). As a result of the second oil crisis in 1984 this number rose to 847,000 people (16% of the labor force)[2]. Beginning in 1985, the unemployment rate declined to 5.4% in 1991. But then, after an economic recession, it rose to 7.5% in 1994 (486,000 people). After this it diminished again to 440,000 in 1996 (the official unemployment rate in 1996 was less than 6%[3]) and 375,000 in 1997 (see SCP, 1998; Houtman et al., 1999). After 1997 the number of unemployed decreased rapidly, and in August 2000 this number was even lower than the number of job vacancies. According to CBS (Statistics Netherlands; the Dutch central institute for statistics) the number of job vacancies in August 2000 is 201,000 (De Volkskrant, 23-8-2000). This labor shortage concerns jobs for the higher as well as the lower educated, and is a result of economic growth and shortages of younger and older people in the labor force (Houtman et al., 1999).

Characteristic of the Dutch unemployment situation is that, despite a labor shortage, there is still unemployment. Most striking in this is the structural character of the unemployment. There is imbalance between job demands (in job vacancies) and competences (of unemployed), acknowledged by OSH (1999) as an emerging risk with respect to the safety and health of workers. This imbalance causes long-term unemployment. In 1970 less than 10% of the unemployed were jobless for more than one year, but this figure had risen to 25% by the end of the seventies and since 1984 more than half of the unemployed have been without a job for more than one year. Furthermore, in the second half of the eighties half of all long-term unemployed were in this position for more than three years (SCP, 1998).

The variations in the employment rates through time have different origins. However, on the whole, the growth of the unemployed of 400,000 people between 1970 and 1995 is the result of the difference between the growth rate of the labor force (an increase of 45% or 2.1 million people) and that of employment (an increase of 37% or 1.7 million people) (see SCP, 1998). The growth of the labor force and employment will be explained in the next section.

Within the total number of unemployed, between 1970 and 1996 the shares of men, young people (younger than 25), older people (older than 54) and lower educated have decreased, whereas the shares of women, workers between 25 and 54

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[2] This number is based on the Registration of the Employment Office. According to the current definition of unemployment (among other things, corrected for redundant (or "contaminated") numbers) this number would decline by approximately 200,000 people. In the current definition of unemployment one must meet three criteria in order to classify as unemployed: be registered at an Employment Office, be available to work at least 12 hours a week, and currently not work more than 12 hours a week (SCP, 1998). The broad unemployment definition of the OECD includes people who receive social welfare benefits or are active in subsidized jobs.

[3] Using the broad unemployment definition of the OECD this unemployment rate is 24% (more than 2 million people out of a labor force of 6.7 million).

years of age, people from ethnic minorities and employees with intermediate and higher education have increased strongly (SCP, 1998). These changes reflect the changes in the composition of the labor force, where the shares of women, middle aged people, intermediate and higher educated people, and people from ethnic minorities increased. For most people, the odds of becoming unemployed did not change dramatically (compared to the average number of unemployed of the total labor force). Only the chances of becoming unemployed for younger and older people decreased obviously (SCP, 1998).

1.2 Trends in Working Population

As mentioned in the previous section, in the last quarter of the twentieth century, employment and the labor force both increased in number, however at different paces. The growth of employment in The Netherlands was largely due to the increase in part-time work and the reduction of working hours. To start with the latter, the length of the work week decreased from 60 hours in 1910, to 38 in 1996 (see for instance Smulders, 1995). In 1998 a further reduction was an issue on the political agenda. In some sectors a 36-hour work week has already been realized and plans for a reduction to 34 hours a week are being discussed. Due to the decreasing average of working hours per worker, employment could grow, despite the stagnation in the total amount of working hours[4] (SCP, 1998).

Like in most industrial countries, the number of workers with a flexible labor contract is increasing in The Netherlands (Delsen, 1995). Although still more than 80% of Dutch workers hold a job on a permanent contract, the number of flexible workers is growing. Since 1970 the share of part-time work in the total amount of working hours doubled from 14 to 30%. The absolute number of part-timers even tripled: from 600,000 to 1.8 million (SCP, 1998; Ministerie SZW, 1999). The growing number of part-time jobs means that per 100 man-years more than 100 people are employed. In 1971 this number was 115 and in 1996 this number had increased to 129 (SCP, 1998). In 1997 29% of all employees worked in a job of 12 to 35 hours per week. Differentiated to gender, 59% of the women and 11% of the men work in part-time jobs between 12 and 35 hours per week (Baaijens, 1999).

Furthermore, comparing the figures between 1985 and 1996 shows that this is true for all categories (part-time workers, specific flexible workers, temping agency workers and temporary workers), but especially true for specific flexible and temping agency workers (Steijn, 1998). The turnover of employment agencies has set record after record, often involving externalization of permanent staff. A mobility policy mainly addressing external outflow and flanked by provisions regarding outplacement and a focus on employability is becoming common property (Oeij et al., 1998). It is important to note that in general women, younger people and the lower educated are overrepresented within the various categories of flexible workers (Dekker and Doorenbos, 1997). With respect to women, they do 77% of all part-time jobs. Of the growth in part-time work since 1970, even 81% of the jobs are

[4] Since 1970 the total amount of working hours in all sectors only grew by 1% (SCP, 1998).

done by women. Nevertheless, among men the share of part-time jobs is increasing as well: from 6% in 1970 to 11% in 1996 (SCP, 1998).

Next (and related) to this increasing flexibilization, another major change is the growing participation of women in the labor force. Women's participation degree increased from 23% in 1899 up to 41% in 1971 and 53% in 1997. Between 1985 and 1996 the participation rates for men have grown from 67 to 72%, only 5%[5]. The growth in participation degree of women is mostly due the growing number of married women with jobs. In 1973, 21% of married women had jobs and in 1996 this number increased to 44% (SCP, 1998). Even the number of working mothers increased significantly. In 1988, 27% of mothers with minor children had a job. In 1996 already 42% of them worked outdoors (Ministerie van SZW/CBS, 1998). This trend has a major economical and sociological impact. The growing participation degree of mothers results in a more differentiated supply of labor. Furthermore, the relations between men and women are changing (Groenendijk, 1999). This is also a result of the changing nature of the family. According to Davidson (1991), today women marry earlier, have fewer children, live longer and divorce more frequently. The increasing rate of divorce results in an increasing number of people living in one-parent families with dependent children, predominantly headed by women. Financial pressures force these women to work and earn a living for themselves and their children.

However, not only is the participation rate of women lower than for men, they work fewer hours as well. In 1996 the average number of working hours for Dutch men was 36.6 hours a week and for Dutch women 26.5 hours a week. Women are concentrated in a couple of branches of industry. In the not-for-profit service sector (especially health care and public services), more than half of the employees are female. In these branches, part-time and temporary work are more common than in other (manufacturing) branches. Furthermore, as argued in the previous section, employment in the services sector is increasing. Because of the growing need[6] for women to work and the opportunities to work part-time, women have been recruited as an ideal labor force (Gonäs, 2000). After 1987 the differences between the branches of industry did not change in this respect (Ministerie SZW/CBS, 1998)[7].

These trends, with regard to flexibilization and the participation of women, fit international trends. Although the degree of participation of women in The Netherlands is still one of the lowest in Europe (Houtman et al., 1999). The described trends affect employment policies at different levels (Gonäs, 2000). At a macro level, rules and regulations are developed to encourage actions to facilitate mobility of individuals, job creation, and measures to change working conditions at the workplace. On an organizational level, policies are aimed at changing the size and

[5] In the United States the participation rate of men in the workforce even declined (from 87% in 1951 to 77% in 1970) (see Davidson, 1991).

[6] Not only because of financial pressures, but also because of the changing role of women in society, influenced by the Women's Movement (Davidson, 1991).

[7] As a result of the shortening of the work week and the growing amount of part-time jobs, the average amount of working hours per worker per year is 1,400. This is the lowest of all countries of the OECD (SCP, 1998).

composition of the labor force. Finally, on an individual level, different forms of flexibility in leave and working hour arrangements allow employees to remain in the labor force, which they otherwise would not have been able to do (Gonäs, 2000). Hence, these trends not only affect the labor market and the work organization, but also the daily lives of individuals, especially with regard to combining or balancing working life and family life.

As an effect of the participation of women in the labor force, the number of double-income households is increasing[8]. Women's position on the labor market, however, is not equal to that of men. Men are still the typical breadwinners of the families, with the corresponding wages and amounts of working hours. And, although employers have met women's demands for flexibility with offering temporary contracts (which has led to an increasing use of the female labor force), individual flexibility in order to combine family and working life has mostly not been reached. "On the contrary, the term a-typical is used as an employment category, which actually has become very typical as women's employment situation all over the world" (Gonäs, 2000: 84). This results in typical patterns of women's working lives. The majority of women have discontinuous work patterns, since most withdraw from the labor market to start families and take care of children. Moreover, women are unfairly penalized for taking breaks in their working careers (Davidson, 1991). Women returning to work (as part-timers) are often subject to skill-downgrading; many belonged to a higher skilled occupation before the maternity break (often working full-time) than after the break (often working part-time). These patterns lead Holt (2000: 63) to the conclusion that "women give the family the flexibility that is necessary for men to be able to be flexible at their workplaces". And, as mentioned, opportunities for women to work part-time and take maternity breaks are higher in service industries than in other industries.

Although this segregation of jobs based on gender has reduced over the years[9], it still happens that most men work with other men and are supervised by men, and most women work with women and are supervised by women (although their employers and senior bosses will probably be male). As a result, trends in working population that affect work, work organization and working conditions differ between different sectors of economy.

1.3 Trends in the Quality of Working Life

Most analysts interpret the above-mentioned changes in employment structure and working population as improvements of the quality of working life and working conditions. This is also because of technological innovations, by which handwork is taken over by machines and headwork is taken over by computers. However, this does not mean that there are no problems left concerning health and working conditions (Steijn and de Witte, 1992; Smulders, 1995). Although most changes are well

[8] However, since many women work part-time, it is better to talk about "1.5-income households".

[9] Also because of the effects of Sexual Discrimination and Equal Pay Legislation.

intended, they can still carry negative side effects. Even unintentional changes can lead to (unforeseeable) noxious effects. Furthermore, a lack of change can also cause problems: for example, permitting harmful working conditions or unemployment to persist (Levi, 1994).

One of the most obvious drawbacks of the described changes is the increasing workload. The crisis of the Tayloristic labor organization implies a search for new organizational concepts focusing on guidelines such as flexibility, quality and efficiency (Oeij et al., 1998). Apart from altering the psychological contract between employer and employee, workers run the risk of workloads exceeding the limits (Van Klaveren and Tom, 1995; Nijhuis, 1995; Kompier, 1996). The introduction of new production or organizational concepts often leads to higher workloads and less autonomy, except in cases where employees are explicitly involved in the introduction process (Houtman et al., 1999).

There are serious indications that this is already the case. Increasing numbers of newspaper articles are being published about work stress and workload, and about workload being the number one 'disease' among employees in The Netherlands (e.g. De Volkskrant, 1-7-2000). In Europe, The Netherlands is the leader with regard to workload. Even the growth rate of workload is higher than the average growth rate in Europe (Houtman et al., 1999). Attention to this phenomenon is growing. When unemployment was rapidly increasing, attention to the quality of working life was reduced; the fight against unemployment had first priority. However, since workload is becoming increasingly more of a serious problem, attention to reduce workload and its consequences is growing (SCP, 1998).

A survey held since 1974 about working conditions, conducted by Statistics Netherlands (CBS), shows minimal reductions of exposure to physical hazards (noise, polluted air, heat, cold, vibrations, carrying heavy loads, and working in tiring positions). Furthermore, there is a clear decline of the share of monotonous work. This share diminished by one-third and can be seen as an improvement of the quality of working life (SCP, 1998). On the other hand, however, there is a growing number of employees who report working at high speeds and with tight deadlines. In 1977 this was reported by 39%, in 1992 this percentage rose to 56 and in 1997 it was reported by 59% of the workforce. Furthermore, 10% of the workforce shows symptoms of serious psychological fatigue. Policemen, teaching staff, and people working in the printing industry and health care suffer from especially high workloads. According to Houtman et al. (1999), in these sectors the combination of high job demands and low possibilities for dealing with problems (autonomy) results in health problems and absenteeism.

Other research (Diekstra et al., 1994) shows about the same figures, but also tries to find some causes for the experienced workload. This research shows that 75% of the workers experience time pressure and that 50% think that there is not enough time to finish the work within the time limits. Another source for workload is the nature of work progress discussions. A majority is dissatisfied with the nature of these discussions. Furthermore, 44% report that management is incapable of getting employees to work cooperatively. This workload results in mental and physical exhaustion, absenteeism and illness.

The increasing workloads are also related to the development of the 24-hour economy. The flexibilization of working hours (even by law) has resulted in a more dispersed working day. In 1995, already 55% of the Dutch labor force was confronted with working hours outside the normal '9 to 5' regime, and 48% with evening, night and weekend shifts (Breedveld, 1998).

Another reason for demanding workloads is increasing employment in the service and knowledge sectors. One of the biggest problems in these sectors is the difficulty in defining the output parameters (De Witte and Berting, 1998). When are clients sufficiently satisfied? When is the quality of a policy document, a marketing plan, or a research proposal satisfactory enough? Empowered employees, negotiating with independent and emancipated internal or external clients, must set their own goals and increasingly determine the quality level of the required output themselves. Because most professionals are intrinsically motivated, this determination of output becomes even more problematic. Work that is rewarding produces energy and is at the same time demanding, at least in terms of working hours. With the help of the latest information and communication technology (e.g. faxes, laptop computers, cellular phones), many workers are even no longer constrained by their workplace and working time. They can work whenever and wherever they like, which naturally blurs the demarcation between working and leisure time, between work and family. A fine example of these trends is the growing number of teleworking employees. In this type of work, home is the workplace and naturally the source of many social pressures.

Problems in controlling the natural borders between work and family result in increasing work pressure. These problems with balancing work and family also arise due to the changing nature of the family and the growing participation degree of women (as described in the previous section). Employers and government acknowledge these problems[10], and there are special bureaus aimed at advising employees on finding a balance between their jobs and household situations. Mostly, these bureaus offer training programs to reorganize the household, for instance by buying care activities, such as cleaning and cooking (De Volkskrant, 15-1-2001). In 2000, there were even commercials on Dutch television[11] in which employees were called on to discuss with their employers and family about balancing work and household.

1.4 Conclusions and Outline for this Dissertation

Summarizing the labor trends in The Netherlands, we can conclude that several trends with regard to employment structure, unemployment, flexibilization, and the growing participation of women resulted in very diverse outcomes. Although many

[10] A recent study, based on exit interviews in two Dutch organizations, shows that 5 to 10% of the number of people leaving the organization does this as a result of problems in combining work and private life (NYFER, 2000).

[11] In this commercial employees, obstructed by giant diaries, try to do their daily activities, such as having breakfast, bringing children to school, going to work, shopping, sporting, having dinner, and so on. This, however, is very difficult because of the many contradictory obligations in the diary.

of these developments can be interpreted as improvements of the quality of working life, increased workloads are an obvious drawback. Next to work pressure, work stress and burn out, this is one of the emerging risks that can have a negative impact on safety, health and well-being at work, and that are expected to be in focus in The Netherlands (OSH, 1999). Thus, paying attention to work and the quality of working life is called for, especially as the Dutch situation with regard to workload (high speed work) and the quality of working life gave reason to the International Labor Organization (ILO) to call the Dutch government to account.

Besides this, from the standpoint of social security, it is said that attention to the quality of working life can diminish the costs of disability and absenteeism as a result of bad working conditions. Huys et al. (1997) argue that about one-third of all absence through illness is, directly or indirectly, a result of work stress. Society has to pay for these costs and, therefore, is helped by preventing illness and disability. Moreover, it also becomes harder to find people who are willing to do illness-prone jobs (in a situation of bad quality of working life), especially in a tight labor market.

Another important issue is the balance between work and family. Although this balance is not an aspect of the quality of working life, it is closely related to it. As described, the growing participation degree of women results in demands for solving problems with respect to combining work and family. These demands can consist of flexible working hours, daycare for children and so on. Furthermore, problems in controlling the borders between work and family can result in work pressure, as well.

Because of the growing problems with regard to workload and its consequences, it is interesting to elaborate on the quality of working life. Thereby it is important not to neglect other spheres of life, such as family life. In the next chapter I present different theoretical perspectives with respect to the quality of working life. This chapter ends with a conceptual model in which I integrate the different perspectives.

From this model, I derive three central questions for this study. These questions regard the definition, measurement and practical implications of the study of the quality of working life. The questions, their theoretical background, and the research design are the topic of Chapter 3. In Chapters 4, 5 and 6, I answer the three research questions, respectively, in an analysis of a vast amount of empirical data. Finally, in Chapter 7, I discuss the answers and their theoretical and practical implications for the study of the quality of working life.

2 Theoretical Framework: Defining the Quality of Working life

Labor trends in the Netherlands, as presented in the previous chapter, show emerging risks with respect to increasing workloads, work pressure, work stress and burnout. These risks are mostly seen and defined as outcomes of the work for the worker. In a great deal of literature and research (e.g. Hackman and Oldham, 1980; Ten Horn, 1989; Karasek and Theorell, 1990; Landy, 1992; Van Veldhoven, 1996), these and other terms are used to describe the influence work can have on the worker. However, many of these terms are somewhat confusing, in the sense that they have different meanings in different perspectives or in daily life. For instance, "the term 'stress' is so ubiquitous, that it is used as a noun when we talk about being under 'stress', as a verb when events are 'stressing' us and as an adjective when modern life has become 'stressful'" (Ross and Altmaier, 1994: 1). This kind of confusion is characteristic for discussions on the quality of working life.

Next to this confusion about terms and concepts, there are many different scientific disciplines that can contribute to the discussion. "To mention but a few, industrial engineering and ergonomics, industrial and organizational psychology, sociology, cognitive science, applied physiology, medicine, and epidemiology all have insights to offer that inform the discussion" (Landy, 1992: 121). It goes far beyond the possibilities within this research project to take all of these disciplines into account; therefore, choices must be made. In this chapter I try to define the quality of working life and present a conceptual model that contains the concepts to be used in this research. First, the outcomes of work are further defined (Section 2.1). After this, I present a historical overview of the thinking about the determinants of the quality of working life (Section 2.2). From this historical overview I derive two important dimensions: theoretical and empirical. These are the topics of Sections 2.3 and 2.4, respectively. In Section 2.5, I present the conceptual model for this study. Finally, in Section 2.6, I describe three different theoretical approaches that can offer knowledge about the variables in the conceptual model.

2.1 The Outcomes of Work

As stated before, it is the outcomes of work that raise attention. Quality of working life defined as outcomes focuses on the question as to what effects workers encounter when doing their work. When valuing these outcomes as positive, we say that the quality of working life is high. Such positive outcomes may be status, personal development or job satisfaction (De Witte and Van Ruysseveldt, 1998). Possible negative outcomes are health risks, stress, work alienation and job dissatisfaction. If these occur, we say that quality of working life is low.

In research on the outcomes of work, we can very well work with one common denominator that measures these outcomes. For his study, Van Veldhoven (1996) gathered variables from 50 existing instruments and questionnaires to construct a new questionnaire containing a greatest common denominator of variables to measure different aspects of work and working life. With respect to the outcomes of work (dependent variables in his model), after several rounds of statistical data reduction[12], he had devised the following variables (scales) to measure the outcomes of work for the worker: need for recovery after work, brooding (worrying) about the work, job satisfaction, commitment, inclination to change jobs (turnover), emotional reactions during work, and fatigue during the work. Other frequently used variables are absenteeism (e.g. Ten Horn, 1989), physical health (e.g. Evers, 1995), mental health (e.g. Warr, 1991) and motivation (e.g. Thierry, 1992).

These variables can be divided into two clusters. The first cluster contains experience variables (psychological outcomes), for instance job satisfaction, brooding about the work, commitment, and motivation. The second contains behavior variables (behavioral outcomes), for instance need for recovery, inclination to change jobs, fatigue, and absenteeism. This division into two clusters can be even further diversified into cognitive, emotional, physiological and behavioral pathogenic mechanisms with which an organism reacts to a mismatch between individual needs and environmental opportunities (Levi, 1994). But at this point this diversification is too specific. I will focus on the outcomes described by Van Veldhoven, because they come closest to the variety of outcomes of work that gave rise to this research.

A definition of quality of working life in terms of outcomes, however, can only give information about outcomes, in this case about the effects the work has on the worker. In other words, it is a phenotype definition that focuses on the phenomena of the topic at hand. If only these outcomes are measured, it is very difficult to give any information about what causes them, because a great deal of determinants may cause these effects. Moreover, it is also very difficult to identify what makes work with high quality of working life better than work with low quality of working life, because the characteristics of that work are not taken into account. Therefore, this is an indirect approach; opinions of the work (if formed at all) are deduced from the influence the work has on the worker. According to Christis (1998), this is an absolutely incorrect way to identify risks that can lead to a negative influence of work on the worker. Criteria for identifying risks can never be the outcomes themselves, because the absence of accidents (as an outcome) is no criterion for safety risks; if

[12] Van Veldhoven (1996) used factor analysis and LISREL to construct and test his models.

we behave or act safely no accidents will occur, despite the presence of risks. With respect to the outcomes of work, behaving or acting safely is analogous to coping[13] or control[14].

Another drawback of a definition of the quality of working life as outcomes is that no explicit standards for distinguishing between good and bad quality of working life can be formulated (Jetten and Van Kooten, 1994). Without these standards it is not possible to think of any ways to improve the quality of working life or to prevent negative outcomes from occurring.

Because of these drawbacks, it seems appropriate to search for the determinants of the outcomes of the work and formulate standards with which to compare them. For that reason, a genotype definition that focuses on the determinants of quality of working life is necessary. The outcome variables described thus far are suitable as dependent variables in a conceptual model about the quality of working life. In fact, most of these variables have (separate from each other) been subject to profound research (e.g. Karasek, 1979; Jayaratne, 1993; De Jonge, 1995).

In this description of, and criticism on, defining the quality of working life as the outcomes for the worker we can recognize some elements of a general definition of the quality of working life. Although there is not one universal definition, the quality of working life generally refers to an opinion about the work and its effects on the worker (De Witte and Van Ruysseveldt, 1998). To create such an opinion we need knowledge about the characteristics of the work and about the standards that can be used to distinguish between high and low quality of working life (Jetten and van Kooten, 1994). The knowledge we need is mainly about the causes or determinants of the outcomes described in this section. There are many discussions about this knowledge. Different theories, developed during the twentieth century, take different positions in these discussions. A historical perspective on these developments is an important tool in understanding current problems (Jacques, 1996). Therefore, in the next paragraph, I will highlight certain developments in approaches and theories emergent in the twentieth century with regard to the quality of working life.

2.2 Developments in the Quality of Working Life in the Twentieth Century

"The term Quality of Work Life (QWL) was initially introduced during the 1960s to emphasize the prevailing poor quality of life in the work place" (Bowditch and Buono [1994], cited in Jacques [1996: 157]). However, according to Jacques, this 'new' concept in the 1960s reproduces the concerns of welfare work, the vocational movement and the employment managers' movement between the late 1800s and about 1920. Welfare work, for instance, consisted of programs that included inexpensive meals, music at mealtimes, dances, fashion shows and group discounts on mass purchases of consumer items. These programs were a result of cooperation

[13] See, e.g., Cartwright and Cooper (1997).

[14] See Meijman (1998). Control, from a psychological perspective, enables human beings to adequately deal with infringements on the integrity of our daily functioning.

between social reformers and employers and aimed at ensuring worker loyalty (Jacques, 1996: 121). However, these kinds of programs did not deal with the origins of low worker loyalty or motivation.

According to De Sitter (1980; 1990; 1994), the founder of the Dutch variant of the Sociotechnical Systems Theory[15], the quality of working life is a function of the structure of the division of labor. Therefore it is useful to have a look at the origins of the division of labor. Many of today's structures of division of labor as well as structures of job design originate in F.W. Taylor's Scientific Management. And, as Braverman (1974: 86) states, "it is impossible to overestimate the importance of the scientific management movement in the shaping of the modern company and indeed all institutions of capitalist society which carry on labor processes".

This scientific management approach sought to determine scientifically the best methods for performing any task. With time and motion studies as his base, Taylor subdivided each job into its components and designed the quickest and best ways to perform each part of the job (Stoner and Freeman, 1989). Furthermore, Taylor proposed to clearly separate the management and supervision from the jobs' execution. He also encouraged employers to pay higher wages to more efficient workers in order to increase production and, hence, profits. This system he called the Differential Rate System (Stoner and Freeman, 1989).

An assumption in this scientific management is that human labor is treated as an economic entity that can be bought and sold. Workers are believed to act rationally and sell their labor power to capital (management) in return for their subsistence (Braverman, 1974: 378). By this, management and labor had a common interest in increasing productivity in order to increase material gain for both parties. The emphasis on material gain, however, has overshadowed the human consequences of this system. In fact, Taylorism overlooked the social needs of workers and their human desire for job satisfaction. And as the trend towards simplification developed during this century, so too did the research into its human consequences (Wall, 1991).

In the twenties, the Human Relations Movement originated as a counterpart to scientific management. Its basic assumption is that the worker is a social being who strives for social interaction, protection and respect. These social needs (as opposed to material gains) determine workers' behaviors in the labor processes (Leys et al., 1989). This was one of the major results of the Hawthorne studies executed by Elton Mayo in 1927 and 1932.

However, both approaches – Scientific Management and Human Relations – assume a unilateral portrayal of man. According to scientific management, man can be motivated (to work harder) by an offer of more material gains (money). According to human relations, man is motivated through social relations. It is also important to mention that both approaches, however different in their origins, were aimed at improving efficiency and controllability of the workforce. Still, the human relations

[15] The Dutch variant of Sociotechnical Systems Design (STSD) can be distinguished from Scandinavian, Australian and American variants of STSD (Van Eijnatten and Van der Zwaan, 1998). These variants all elaborate on the Tavistock experiments in British coal mines (Trist and Bamforth, 1951).

approach caused permanent attention to be shown to the human factor in production. By this, it was the basis for approaches that can be classified under the concept of Humanization. These approaches originated mainly in the fifties and later.

However, as early as 1931 the Industrial Fatigue Research Board reported in its Eleventh Annual Report that "'boredom has become increasingly prominent as a factor in the industrial life of the worker and its effects are no less important than those of fatigue' (p. 30). One of the principal causes was identified as 'semi-automatic operations which prevent freedom of thought but are insufficient to keep the mind fully occupied' (p. 36)" (Wall, 1991: 273)[16]. This kind of research is characteristic of the Humanization approaches. The basic assumption is that human complexity (instead of a unilateral portrayal of man) can explain human behavior. Behavioral scientists, such as Maslow, Argyris and McGregor, developed the concept of the 'self-actualizing man' who strives for personal growth and self-realization (Stoner and Freeman, 1989). To achieve this, the focus must shift from working conditions to work organization.

With this concept as a central assumption, since the fifties many approaches have developed in order to improve the quality of working life. Most of these were merely experiments and focused on practical problems. They varied in scale, ambition, motivation, etc., but most were aimed at changing the organization of work (Pruijt, 1996). Some examples of these change studies are Job enlargement, Job enrichment, Job Characteristics Model and Sociotechnical approach.

This brief historical sketch illustrates that the ideas about, and the focus on, the quality of working life changed during the twentieth century. With the notion of the simplification of jobs arose the notion that the focus on improving the production process (in terms of efficiency) oppressed the focus on the quality of working life[17]. At first (in the beginning of the twentieth century), attention on the quality of working life was aimed mainly at improving individual working conditions or terms of employment (wages). Later, with the notion of human complexity, attention shifted towards human relations (during the fifties) and work organization (during the eighties; more general approaches). However, "the evidence from change studies of job redesign is neither unproblematic nor definitive. Performance effects without corresponding attitudinal ones, and vice versa, point to theoretical deficiencies and suggest there may be factors which inhibit or promote particular outcomes" (Wall, 1991: 276). Thus, it seems that there are different ways to reach a diversity of goals that aim to improve the quality of working life. Warr (1991) distinguishes several parallel effects of different job conditions on different outcomes of work, for instance mental health or job satisfaction. And although research on this matter has been examined in recent decades, there are no definite theories that can fully explain

[16] Today, keeping the mind fully occupied is one of the basic assumptions in the Dutch Working Conditions Act (Arbowet 1998, effective November 1st, 1999). See also Chapter 3.

[17] De Sitter (1980: 68): "Two hundred years of industrial development has changed simple, well-organized, flexible, innovative organizations containing complex jobs into very complex organizations containing very simple jobs".

or describe this complex matter or give all-embracing definitions. This is what Wall means by "theoretical deficiencies" (1991: 276).

In sociological research literature, four (development) models that try to capture and explain these historical trends can be distinguished[18]. The developments described earlier in this chapter can be analyzed using these four models, but the outcomes will be different. However, though social scientists and policymakers differ in their analyses of the trends in the quality of working life and the assessment of the results of these analyses, they seem to agree upon the question as to what are *not* characteristics of good quality of working life. Characteristics of work with bad quality of working life are extremely low wages, work that is mentally and physically exhausting, repetitive simple work, and the total absence of autonomy and responsibility (Van der Parre, 1996). Formulated in reverse, characteristics of work with good quality of working life are work with adequate autonomy, complexity and educational opportunities, reasonable terms of employment and appropriate working conditions. For social scientists and policymakers, these characteristics are the main points of action for improving the quality of working life. However, "even when social scientists and policymakers agree on how to improve the quality of [working life] in a particular situation it is still possible that the workers, who should benefit from these improvements, disagree with it" (Van der Parre, 1996: 185). Reasons for this disagreement can be found in personal preferences and perceptions of the situation. It is, however, questionable whether these preferences and perceptions should be dealt with, because they differ from one person to another and it is therefore difficult to improve the perceived quality of working life for each and every worker.

Since this discussion is still a continuing story, I will focus on three questions in particular, in order to present the positions in the discussion. The first question asks what characteristics should be taken into account when measuring the quality of working life. It seems obvious to take into account the characteristics of the work, because they are the direct determinants of the quality of working life (Christis, 1998). However, there is evidence that preferences and perceptions are good predictors of the quality of working life[19] (e.g. Hackman and Oldham, 1980). Besides this, it is important to determine the norms and standards that can and will be used in judging the quality of working life. This is the essence of the second question: What norms and standards can be used to judge the quality of working life? The third question is whether the characteristics should be measured objectively or subjectively. There are several ways to measure the quality of working life (this also depends on which characteristics and norms are taken into account), and the results can be different. This has implications for the possibilities to improve the quality of working life.

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[18] These four models are the model of Modernization, the Reformist perspective, the Rationality model, and the Antagonistic class model (See Van der Parre [1996: 22-23] for a brief presentation). These models recognize, among other things, the undermining of autonomy of individuals, which influences their development and education. The models differ in the trust they have in the human and social capacities to deal with social problems, such as bad working conditions and unemployment.

[19] Thomas (1928) cited in Tischler et al. (1983: 102-103): "If men define situations as real, they are real in their consequences".

These questions represent two dimensions in the discussion about the quality of working life. The first and second represent a theoretical dimension (what), and the third an empirical dimension (how). I elaborate on both dimensions in the next sections.

2.3 The Theoretical Dimension: What to Measure and What Norms to Use?

A great deal of authors have tried to classify the different theories with respect to the content of the quality of working life[20]. There are several ways to create such a classification and there are several dimensions to focus on. Fruytier and Ter Huurne distinguished four dilemmas in their search for a classification of research with respect to the quality of working life (1983: 1):

- What should be the level of analysis with respect to the quality of working life?
- What are the dimensions of the quality of working life?
- Is the quality of working life solemnly a characteristic of the work or can it only be determined by the relation between work and worker?
- Does strategic behavior of management and employees have anything to do with the research on the quality of working life?

These dilemmas and questions are typical of classifications of research on the quality of working life. These questions are interrelated, and answering one restricts the range of answers on others. However, the second and third dilemmas especially are the essence of a great deal of discussion in this field, and classifications focus mostly on these two aspects.

2.3.1 Dimensions of the Quality of Working Life.

With regard to the dimensions of the quality of working life, there seems to be consensus between different classifications. Mostly, four dimensions of work (labor) are distinguished: job content, industrial relations, terms of employment and working conditions (Fruytier and Ter Huurne, 1983; Van der Parre, 1996). On the basis of this distinction, theories and approaches can be classified. However, these dimensions are not unilateral and sometimes overlap. A classification on the basis of this distinction only will not be sufficient. It is therefore necessary, with regard to these dimensions, to develop a model with clearly defined and measurable terms.

Van der Zwaan (1990) argues that it is important not to focus on job content only. It is very possible that workers are more interested in a good employment relationship (salary, job certainty) than in good job structure (job content; autonomy, difficulty).

[20] See, e.g., Fruytier and Ter Huurne, 1983; Landy, 1992; Cooper and Payne, 1992; Van Klaveren, 1994; De Witte and Van Ruysseveldt, 1998.

2.3.2 Standards for a Judgement of the Quality of Working Life.

With regard to the dilemma of whether the quality of working life is a feature of the work itself or the relation between work and worker, there is a great deal of discussion. This is the most important dilemma on which approaches and theories differ the most (Van Klaveren, 1994), focusing as it does on the question as to what standards can be used to distinguish between high and low quality of working life. The different theoretical perspectives of these standards are the keystones by which theories and approaches can be distinguished.

Most classifications distinguish between individual psychological approaches on one hand and systems theoretical approaches on the other. Individual approaches state that the relation between work and worker determines the quality of working life (e.g., Job Characteristics Model, Hackman and Oldham, 1980). Systems theoretical approaches state that it is the work that determines the quality of working life (e.g., Sociotechnical Systems Design, De Sitter, 1980).

Sometimes an action theoretical approach is also distinguished. This approach takes into account strategic human action in the working environment. In the analysis of the quality of working life there is an important role for mental processes, which lead to decisions, and the interaction with the job structure. This interaction leads to the outcomes of work as perceived by the workers (Roe and Zijlstra, 1991).

In the above briefly described approaches, we can recognize several different theoretical perspectives for judging the quality of working life. Profound study of these approaches has lead Ruël to the following definition of the quality of working life: "the quality of working life is the extent to which characteristics of the work are appreciated by the workers, c.q. the extent to which the characteristics of work meet the demands of the workers" (Ruël, 1994: 62). To measure the different parts in this definition we need measures of the characteristics of the work, the demands of the workers and the extent to which these demands are met by the characteristics of the work. This information is in accordance with Van Klaveren's (1994) outline of research with respect to the quality of working life (See Figure 2.1). In this outline, Van Klaveren presents the three different theoretical perspectives and their mutual relations. Furthermore, he indicates that the norms (or standards) for judging these different theoretical perspectives can be objective and subjective. This objectivity or subjectivity of norms is different from the objective or subjective way of measuring the quality of working life (The latter is the topic of Section 2.4). Although, as will become clear, these two kinds of subjectivity and objectivity are often closely linked and wrongfully interchanged. Therefore, it is important to make a clear distinction. First I will elaborate on the objectivity and subjectivity of norms in judging the quality of working life, then in Section 2.4 I will present objective and subjective ways of measuring.

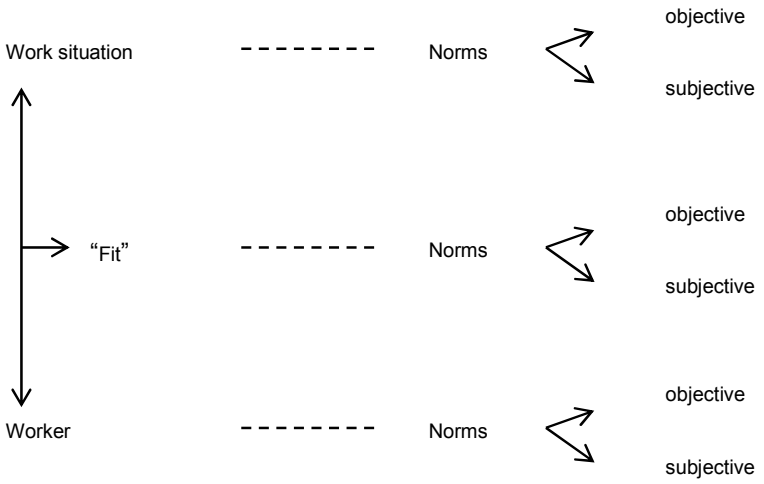

Figure 2.1 Van Klaveren's outline of research with respect to the quality of working life (Van Klaveren, 1994: 31).

Objective/Subjective Norms

Subjective factors with respect to norms are personally and culturally bound. Hence, they are time- and place-dependent. These factors can change over time and differ from one place to the other. This kind of norm is not generally accepted and applicable. The norms workers use to judge their jobs are examples of subjective factors used in research (e.g., in JCM, see Section 2.6.2). Extrinsically motivated workers judge the work differently than do intrinsically motivated workers: The first are interested in higher wages or better status of work, whereas the latter are more interested in personal development. Therefore, they will use different norms to judge the work. Furthermore, these interests can change over time and be influenced by the cultural environment.

Objective factors are independent from persons, time and culture. They refer to the essential and unchanging nature of things, in order to develop a universal standard that is generally accepted and applicable (Van Ruysseveldt, 1989). Approaches that use this kind of norm refer to structural characteristics of the work. De Sitter (1980) argues that job content and the workers' judgments change over time. Therefore, he uses the concept of control capacity as a norm for the quality of working life. Control capacity is the worker's possibility in the work situation to deal with problems (see also Section 2.6.1).

Christis (1998) disagrees with this use of the terms objective and subjective. In order to prevent misunderstandings, he prefers to use the terms "work-bound" and "person-bound" determinants of the quality of working life. Work-bound determinants are the characteristics of the work that potentially lead to certain work outcomes. According to Christis (1998: 19-20), there are five possible work-bound

determinants of stress: the nature of the work, the way in which it is organized, the way in which the employer treats the worker, the way in which colleagues treat the worker, and the combination of the work with other spheres of life (such as family). Person-bound determinants are characteristics of people that potentially lead to certain work outcomes. Christis (1998) argues that these are dependent on what people want, can and prefer to do in their work, and on what people encounter in environments other than working life[21]. Both kinds of determinants can occur at the same time. However, it takes different kinds of research to detect them since they are based on different theoretical backgrounds.

This discussion of work-bound and person-bound determinants as objective and subjective factors in the study on the quality of working life also refers to the three different theoretical perspectives mentioned earlier (see also Van Klaveren, 1994). This is the topic of the next section.

Different Theoretical Perspectives

As previously argued, there are three different theoretical perspectives with respect to the determinants of the quality of working life: characteristics of the work, characteristics of the worker and characteristics of the fit between work and worker.

Characteristics of the work have been widely studied (e.g., Hackman and Oldham, 1980; De Sitter, 1980; Karasek and Theorell, 1990; Van Veldhoven, 1996). Most approaches focus on one or more of the four dimensions of working life: job content, industrial relations, terms of employment and working conditions. Job content refers to the essence of the work; it refers to the actions and tasks necessary to complete the job, and is a result of the division of the work within an organization. Examples are difficulty of the work, monotony of the work, autonomy (Dhondt and Houtman, 1992; 1996), completeness of the work (Hacker, 1989), variety in the work, task changes (Van Veldhoven, 1996), job demands and decision latitude (Karasek and Theorell, 1990), control need and control capacity (De Sitter, 1980).

Characteristics of the worker (with respect to the quality of working life) have been widely studied as well. However, they have been studied in a very broad diversity of studies. The characteristics of the worker refer to specific personal characteristics that influence the outcomes of the work. In almost all studies, obvious, demographic characteristics such as age, sex, and marital status are taken into account. However, these are almost never sufficient. In occupational stress related studies the focus is on relatively stable characteristics of the person, such as personality, ability, and physical traits (Beehr, 1998). In some of these studies, personal characteristics are treated as intervening or moderating variables. Beehr (1998) argues that these characteristics either strengthen or weaken the relationship between stressors and strains, although research results seldom strongly confirmed these relationships, Type A or Type B Behavior Pattern is one of the most popular (see Beehr, 1998). In Type A, hostility is the variable most consistently linked to moderate stressors and strains. Type A employees (as opposed to Type B employees) are considered to be hyper-reactive to potentially stressful situations.

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[21] Working life is only one sphere of life people are involved in. Other spheres are, for instance, family life, sports clubs, religious groups, etc.

Other personal characteristics that might act as moderating variables include flexibility, hardiness, self-esteem, and locus of control (Beehr, 1998); qualifications, self-efficacy, control aspirations, and change orientations (Fay, et al., 1998); coping style (Finney et al., 1984; Edwards, 1998); and work motivation (Thierry, 1992; Rainey, 1993).

Other studies focus on the worker's orientations with respect to working life (Ten Horn, 1989; Van der Parre, 1996), and on growth need strength (Hackman and Oldham, 1980). These variables refer to preferences of the workers. Van der Parre (1996: 185) defines orientations towards work as "specific collective images about work. Collective images are mental pictures which the bearers believe give a representation of their social context". This idea is based on the '*Handlungstheorie'* (Hacker et al., 1978; Greif, 1983; Volpert, 1994). *Handlung* is the German word for 'act' or 'behavior' and is defined as conscious and purposeful behavior[22]. Every behavior is determined by a goal. These goals, in turn, are based on internal representations (images) of a person's own environment, personality and activities (as the case may be, his social context). These internal representations are part of a person's orientation system[23] (Greif, 1983). Hence, following this *Handlungstheorie*, the worker's orientations can be seen as characteristics of the worker.

Van der Parre distinguishes four orientations corresponding to the four dimensions of the quality of working life (see Section 2.3.1). These are job content, industrial relations, terms of employment and working conditions. In their orientations towards work, people differ in their preferences for one or more of these dimensions. The orientations are not mutually exclusive; someone who prefers to become very rich from work (orientation on terms of employment) can also have a strong preference for doing challenging work (orientation on job content). Growth need strength, as defined by Hackman and Oldham (1980), fits into the definition of Van der Parre's orientation on job content.

Characteristics of the relation between work and worker are studied mostly in organizational behavior and industrial/organizational psychology (Edwards, 1991). Next to the Job Characteristics Model (Hackman and Oldham, 1980), the person-environment fit (P-E fit)[24] theory is one of the most well-known concepts in this respect (e.g., Edwards et al., 1998). P-E fit theory is an umbrella term for research in which the correspondence (fit) or discrepancy (misfit) between characteristics of the work and characteristics of the worker operate as joint determinants of individual and organizational outcomes. In different studies these outcomes range from job satisfaction and motivation to job stress and vocational choice (see Edwards [1991] for an overview). However, it is not only in psychological studies that the fit is an important determinant. In labor market studies the phenomena of overeducation and underemployment are being studied as the fit between objective qualifications (worker characteristic) and job demands (work characteristic) (Livingstone, 1998;

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[22] Greif (1983: 156) defined *Handlung* as "bewußtes, zielgerichtes Verhalten".

[23] Greif (1983: 192): "Das gesamte Orientierungssystem eines individuums umfaßt eine Vielzahl von mehr oder minder aufeinander bezogenen internen Repräsentationen oder subjektiver Landkarten der Umwelt, der eigenen Person und eigener Aktivitäten".

[24] Also called person-job (P-J) fit (see Edwards, 1991).

Huijgen, 1989; Asselberghs et al., 1998). With respect to the quality of working life, Huijgen (see Doorewaard et al., 1983) argues that it refers to the relationship between characteristics of the work and the worker. Important is the correspondence between, on one hand, the possibilities the work offers the worker and the demands on that worker, and, on the other hand, the worker's capacities and preferences with respect to the work.

In P-E fit studies, there is an important role for the distinction between objective and subjective characteristics of the person and the environment. Objective characteristics of the person refer to attributes of that person as they actually exist, whereas subjective characteristics refer to the person's perception of these attributes. Analogously, objective characteristics of the environment refer to physical and social situations as they actually exist, and subjective characteristics of the environment refer to the person's perception of these situations. Empirical research shows that the relationships between these four concepts are imperfect, due to perceptual distortions, cognitive construction processes, limited human information processing capacities and organizational structures that limit access to objective information (Edwards et al., 1998).

Important in these models is that person and environment constructs are commensurate. This means that the two must refer to the same content dimension to be able to determine the proximity of the person and environment to one another (Edwards et al., 1998). If the person and environment construct are not commensurate, the comparison of the person and environment will be meaningless. This is especially important since these models do not measure the fit directly; the fit is indirectly measured by deducing it from the comparison between characteristics of the person and the environment.

Another approach is used by Van der Parre (1996), who follows Ten Horn (1983), and measures the fit between characteristics of the worker and those of the work as the worker's satisfaction with respect to the four dimensions of work. The assumption is that if the working situation and the worker's preferences match, the worker's satisfaction with respect to that working situation is higher. Therefore, the measurement of satisfaction with respect to specific working situations is a measurement of the fit between the characteristics of the work and the worker.

Which approach is the best?

With respect to the theoretical dimension of the quality of working life, two questions must be answered in order to choose the best approach. The first asks what kind of norms to use, objective (work-bound) or subjective (person-bound). The second question is about what theoretical perspective to focus on. Based on the previous discussions, with respect to the first question, it seems plausible to choose an approach in which the norms and standards are objective; this produces the most generally accepted approach (Van Klaveren, 1994). With respect to the second question, following Ruël's definition, it seems logical to choose an approach that focuses on the fit between work and worker since the quality of working life manifests itself as the effects the work has on the worker.

However, the approaches that focus on objective norms of the balance between work and worker turn out to fall back on theoretically and conceptually unsatisfac-

tory models (Van Klaveren, 1994). According to Christis (1993; Van Klaveren, 1994), 'fit'-models use a maximizing strategy to integrate as many factors as possible to produce an explanation for each and every phenomenon. This results in indistinctness with regard to different perspectives, levels and disciplines with which human behavior can be explained. Therefore, these models can be used only for relatively stable characteristics of people and environments. A solution to this problem is not to strive for a fit between the work and the person beforehand, but to create a situation in which people have the opportunity to create this fit themselves through their actions (Van Klaveren, 1994).

Furthermore, Fried and Ferris (1987) argue that objective and subjective factors may be related and may even be complementary. They argue that "one might legitimately conclude that it is inappropriate to totally dismiss perceptual and correlational results as simply artifactual in nature. Because not all of the reliable variance in job perceptions is explained by objective job conditions, however, other factors (e.g., social cues, method variance, etc.) must be acknowledged as potential sources of variation" (Fried and Ferris, 1987: 309). Van Hoof (1980) even argues that it is the area of tension and interaction between the objective situation and subjective perception that creates developments in improving the quality of working life. The argument is that the nature of mental processing and the resulting actions depend on characteristics of the work and the worker. This interaction, among other factors, determines the outcomes of the work for the worker (Roe and Zijlstra, 1991). However, as said earlier, it is difficult to measure people's mental processes and objective characteristics.

Summarizing the discussions on the theoretical dimension of the quality of working life, there are different work outcomes that can be seen as indicators of the quality of working life. These indicators consist of psychological as well as behavioral outcomes. The standards for deciding whether these outcomes indicate a good or bad quality of working life can focus on three different theoretical perspectives: characteristics of the work, characteristics of the worker, and characteristics of the fit between work and worker. Furthermore, the standards can be work-bound or person-bound. Different theories take different positions in these discussions, making the field of the quality of working life very complex. However, the two areas of discussion are often closely linked. Most theories that focus on the fit use person-bound standards to judge the quality of working life and most theories that focus on the characteristics of the work use work-bound standards. Furthermore, the choices with regard to these theoretical discussions have implications for, and are linked to, the way of measuring. This is the topic of the next section.

2.4 The Empirical Dimension: How to Measure?

In their article on methodological issues in the study of work stress, Frese and Zapf (1988) distinguish three conceptualizations of objective and subjective stressors. The

third concept[25] is of importance in answering the question of how to measure the quality of working life. In this concept, "objective is in the sense of not being related to one specific individual's perception. Subjective in this sense is tied to one individual's cognitive and emotional processing (e.g. perceptions and appraisals)" (Frese and Zapf, 1988: 377). In literature on the quality of working life, this is an important distinction. As mentioned earlier (Section 2.2), it is possible for workers to disagree with improvements of the quality of working life, suggested by managers, scientists or policymakers, even though these workers should benefit from it. It is therefore important that we pay attention to the distinction between objective and subjective measurements of the quality of working life.

Important in Frese and Zapf's definition of objective is that a particular individual's cognitive and emotional processing does not influence the reporting of social and physical facts. Christis (1998) disagrees with this definition, arguing that it is impossible to report any facts (concerning work) without cognitive and emotional processing. Thus, there is no knowledge without cognitive and emotional processing. This is also acknowledged by Frese and Zapf themselves. Though this is a grammatical problem in defining objective and subjective, Christis shows that the arguments posed by Frese and Zapf are based on the right intuition. To be objective, our observations and reports should be unprejudiced: "it must not be that we only see what we want to see, or even worse, that we imagine to see something that is not present, only because we want to see it" (Christis, 1998: 327).

The question that arises from this discussion is where to get the unprejudiced information needed to say something about the quality of working life. A second question is how to measure the concepts in order to be unprejudiced. Frese and Zapf state that "stress research has typically conceptualized subjective methods to be questionnaire measures filled out by the subjects and objective methods to be ratings done by expert raters, as well as document analyses and physical methods" (1988: 379). Hence, as an answer to the first question, there are two possible sources of information: the workers and third parties (colleagues, managers, experts). As an answer to the second question, Frese and Zapf suggest two ways to measure the concepts: questionnaire measures and expert ratings.

In studies of the quality of working life, much research is generally based on questionnaires filled out by the workers (Meijman and Van Ouwerkerk, 1999). In these questionnaires, the workers give their opinions about characteristics of their work, working conditions and possible effects of the work on them. Drawbacks to this way of measuring are summarized by Frese and Zapf (1988: 380): "(1) method variance as discussed in classical test theory (e.g., central tendency, acquiescence effect, halo effect, etc.); (2) overlap in content between independent and dependent measures; (3) problems associated with a third variable that influences both the dependent and independent variables, e.g. a personality trait or tendency to com-

[25] The first concept (Frese and Zapf, 1988: 377): "Objective can be used to mean material objects and processes in the world, irrespective of psychological processes. Correspondingly, subjective means that psychological processes are involved. […] The second use of objective is in the sense of being real, being part of the reality. Correspondingly, subjective means illusory or unreal".

plain; (4) current well-being influencing the judgment of stressors; and (5) demand characteristics encouraging the respondent to give the researchers what they are perceived to want". Another drawback is the triviality trap (Kasl, 1978). This relates to the fact that all variables in a questionnaire are measured in the same way. The resulting relations between variables may be caused by this fact (more than that they indicate connections between the variables). Van Veldhoven and Meijman (1994) argue that this problem can be overcome by using unilateral wording to generate valid results. Furthermore, questionnaire results can be supplemented with other information. Therefore, it is important to take the triviality trap and its consequences into account when constructing and using questionnaires.

To deal with the drawbacks mentioned by Frese and Zapf, objective (unprejudiced) measures are suggested. This is often done with observers' ratings. However, Frese and Zapf point out that observers are not as unprejudiced as they are said to be, as their ratings are based on cognitive and emotional processing as well[26]. Hence, the same drawbacks apply to these ratings as to the use of questionnaires. Furthermore, additional drawbacks appear when using observers' judgments (Frese and Zapf, 1988: 380): (1) limited time observation; (2) unobservability of mental processes; (3) effects of observation on work behavior; and (4) representativeness of workplaces. These drawbacks lead to a decrease of the correlation between observed stressors and worker behavior, because peak or normal stressors cannot be observed[27]. Hence, an important impact on worker behavior is not reported.

Since both measures (questionnaires and observer ratings) have their own drawbacks, it is important to know whether there are differences between the results of both measures, and which is better. Meijman and Van Ouwerkerk (1999) carried out a study on these questions, arguing that there are neither theoretical nor empirical reasons to prefer one rather than the other. Both measures are valuable, depending on the goal the information will be used for. If the information is needed to gain knowledge about the workers' perceptions, questionnaires filled out by the workers are suitable. However, if information is needed about characteristics of work independent from the worker who actually carries out the job, observer ratings are more suitable. A restriction to this argument is that the goal of the information is not always, or can not always be, clearly defined. Therefore, in practice, it may be more difficult to decide which measure to use. Moreover, other arguments, such as financial restrictions, can be important as well.

However, another study, conducted by Van Eijbergen (1999), shows that there actually are differences between objective work characteristics and the work characteristics as perceived by the workers. Van Eijbergen concludes that the results of this study prove De Sitter's adaptation theory with regard to the job satisfaction paradox (De Sitter, 1994).

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[26] Davidson (1993) describes several different personal roles of auditors that affect the results in different ways. Personal characteristics, such as personality, and contextual factors, such as the auditor's hierarchical position, affect the auditors' decisions.

[27] Whereas the use of objective judgements underestimates the true correlation between stressors and dysfunctioning, there is evidence that the use of subjective judgements can lead to an overestimate of the correlation (Frese and Zapf, 1988: 381).

These different results generate confusion about the question of how to obtain unprejudiced information (whether to use questionnaires or observers' ratings)[28]. The amount of cognitive and mental processing is important. Any kind of measure can be placed on the dimension 'low' to 'high' on cognitive and mental processing. According to Frese and Zapf (1988), the wording of an item influences whether there is high cognitive and emotional processing. This applies to questionnaires as well as observer ratings. The researcher must make sure that judgments by workers or observers are made with as little cognitive and emotional processing as possible.

Furthermore, Frese and Zapf argue that a group median for three or more people doing the same type of job is an unprejudiced measure for work stressors, because the influence of idiosyncratic responses is decreased. However, as Frese and Zapf (1988: 386) point out, there are also potential weaknesses in this procedure. "First there may be a group consensus of what is stressful and what is not, and this consensus may not be related to reality. Second, in contrast to the observers, the respondents can hardly be trained in theoretical concepts and on the use of anchors in answering the scales. Third, there may be problems because workplaces are only very seldomly really identical".

Summarizing this discussion on the empirical dimension, I can conclude that the different methods of measuring variables with regard to the quality of working life (questionnaires and observer methods) all have certain drawbacks, and it depends on the goal of the research as to which method is best suited. For most drawbacks, however, there are solutions. Hence, it is interesting to compare the different methods. This will be further elaborated on in Chapter 3. First, I present a conceptual model for this research.

2.5 Towards a Conceptual Model

From the previous discussions on the theoretical and empirical dimensions of the quality of working life, a conceptual framework emerges for the research with regard to the quality of working life. The discussions represent different positions in the research field with regard to the quality of working life. In this research field, there are different outcomes of the work that can be seen as indicators of the quality of working life. The standards for deciding whether this is a good or bad quality can vary from work-bound to person-bound and can focus on different theoretical perspectives. Furthermore, there are different ways to measure the different outcomes and their possible determinants. This leads to different positions in the research field, which can be summarized in a conceptual model (see Figure 2.2).

[28] There are other sources of information, such as archives. However, gaining access to them can be very difficult and the information might not be as detailed or accurate as the researcher wishes.

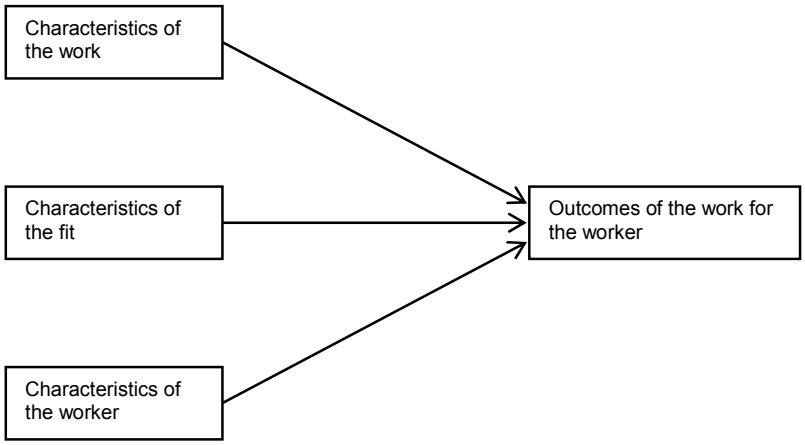

Figure 2.2 Conceptual Model for this study

This model covers the research field of quality of working life. The boxes represent different positions in the research field. The arrows suggest that there are relationships between independent variables (different theoretical perspectives: characteristics of the work, the worker and the fit between work and worker) and a dependent variable (outcomes of the work). These relationships are suggested by the theoretical discussions described in this chapter. However, to the best of my knowledge, these have never been tested in the same study. It is my humble opinion that all three relationships are equally important in the study of the quality of working life. Therefore, I will test these relationships and compare them to one another.

The conceptual model shows a resemblance to Figure 2.1 (Van Klaveren's outline for research on quality of working life). However, in Figure 2.1 there are no dependent variables and the relationships are not explicit. This figure is merely a diagram representing the different theoretical perspectives as discussed by Van Klaveren (1994). In the conceptual model for this study, the relationships between the independent and dependent variables are important. In this sense, the conceptual model shows a resemblance to the HRM-model (Van der Zwaan, 1999). In this model (see Figure 2.3), a proper match between the production structure and the personnel structure will generate positive outcomes with respect to the quality of the organization and the quality of working life. The match between the production structure and the personnel structure manifests itself in the task structure. Van der Zwaan (1999) argues that improvements of the quality of working life can be realized only in a joint treatment of the production structure and the personnel structure. To achieve this, knowledge is needed about the characteristics of the production structure, the task structure and the personnel structure. This resembles the knowledge needed in the conceptual model. Different theories can be used to generate this knowledge.

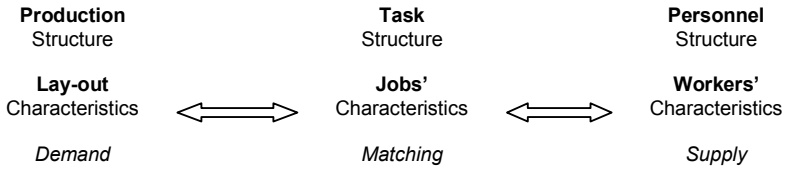

Figure 2.3 Van der Zwaan's HRM-model (Van der Zwaan, 1999: 99)

The assumed relationships in the conceptual model originate from different approaches. The relationship between the characteristics of the work and the outcomes of the work is based on Sociotechnical Systems Theory. The relationship between characteristics of the worker and the outcomes of the work (via worker behavior) is deduced from the Delft Measurement Kit. The relationship between the fit between work and worker and the outcomes of the work is based on fit models (such as Delft Measurement Kit and Job Characteristics Model), which state that the outcomes of the work are (co-)determined by the relationship (fit or misfit) between characteristics of the work and of the worker. I present these three theoretical approaches in the next section.

2.6 Three Theoretical Approaches Described

The three approaches in this study stress different aspects and dimensions with regard to the quality of working life. They can be seen as complementary and sometimes even overlapping. Sociotechnical Systems Theory tries to be objective (work-bound) and focuses on the characteristics of the work, especially job content (production structure in the HRM-model). The Job Characteristics Model is more subjective (person-bound) and focuses on the fit between work and worker (task structure in the HRM-model). The Delft Measurement Kit is subjective and, as opposed to JCM, truly measures the fit between work and worker (task structure) and the workers' orientations (personnel structure in the HRM-model). The importance of this measurement is sketched in Section 2.6.3.[29]

2.6.1 Sociotechnical Systems Theory

The Sociotechnical Systems Theory (SST) is one of the theoretical frameworks frequently used in the Dutch discussion on the quality of working life. It states that jobs and organizations designed according to certain principles improve the quality of the organization and of working life. These principles are based on the striving for balance between problems in the work (also called control need) and possibilities

[29] See also Fruytier and Ter Huurne (1983: 13) for a summary of the three different approaches and their positions on the different aspects with regard to the quality of working life.

of dealing with these problems (also called control capacity)[30]. To deal with problems in the work, an employee should have enough possibilities to solve them conclusively. Thus, there should be enough control capacity located there where the need for control arises[31]. According to the (Modern) Sociotechnical Systems Theory, this balance can be achieved by designing the organization into task groups (teams), which perform 'whole tasks' (a coherent set of tasks within a production cycle)[32]. Within these task groups, the members have enough control capacity to deal with the problems that can occur during the work. In other words, there is a balance between control need and control capacity (Van der Zwaan, 1999). Control is then both effective and efficient.

Control capacity is the central concept in SST, not least because "lack of control at the work place is one of the single greatest contributors to strain and the physiological concomitants of that strain" (Landy, 1992: 138). The concept of control capacity in SST does not relate to competence, but to possibilities that result from the objective nature of the labor process (De Sitter, 1980). Within this labor process, the division of labor (the way in which execution tasks and control tasks are separated) is the main determinant for the outcomes of the work. By focusing on the characteristics of the work and the organization of labor itself, SST is a conditional approach. This means that problems must be solved by balancing or rebalancing control need and control capacity. SST suggests that this can best be achieved by sociotechnical redesign (see footnote 32).

With regard to the quality of working life, the benefit of a sociotechnically designed organization is that the workers perform not just one small, monotonous task in the whole production process (as in Taylorized organizations), but that they perform, and are responsible for, a coherent set of tasks within a production cycle. It is, however, questionable whether the workers themselves appreciate this. In these so-called objective evaluations of the quality of working life, the opinions of those who actually do the jobs are left out; this is a major point of criticism of SST. Factors such as power, conflict and cooperation are left out of the analysis (Huijgen, 1989). According to De Sitter (1990), these factors depend on the division of labor. However, especially for labor process adherents[33], this is not a satisfying answer. Power

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[30] This is the same balance Karasek (1979) described between job demands and decision latitude.

[31] Based on Ashby's Law of Requisite Variety (Ashby, 1969).

[32] The process of sociotechnical organizational (re)design consists of five steps (Kuipers and van Amelsvoort, 1992; Van der Zwaan, 1999). The process starts with an environmental orientation (on market requirements). The primary process must then be analyzed with respect to bottlenecks regarding that environment. The production structure, based on the primary process, is designed top-down. After this, the control structure must be designed bottom-up to tune with the production structure (basic assumption is to locate control capacity where needed; Ashby, 1969). The last step is to design the support systems, such as information, personnel and accounting. The aim of all this is to decrease control problems (by simplifying the production structure) and increase possibilities (control) of dealing with problems (by designing a control structure tuned with the production structure).

[33] The Labor Process Approach is merely a discussion that started after the publication of Braverman's "Labor and Monopoly Capital" (1974).

and conflict can be the result of differences in strategies of different actors in the labor process; these strategies are related to the actors' labor orientations with respect to the employment relations (Huijgen, 1989). SST does not take this into account.

The perceptions of the workers are more prominent in psychological approaches, such as the Job Characteristics Model (see next section) and work stress models.

2.6.2 Job Characteristics Model

The Job Characteristics approach (Hackman and Oldham, 1980; Algera, 1991; 1992) measures, at a micro level, job characteristics relevant to motivation, satisfaction and work effectiveness. With respect to this approach, the most well-known model is the Job Characteristics Model (JCM). In this model, Hackman and Oldham (1980) try to explain why certain jobs lead to high internal work motivation, high growth satisfaction, high general job satisfaction, and high work effectiveness. To develop these "personal and work outcomes", it appears necessary that three critical psychological states are present in the individual workers. First, the person must have knowledge about the results of the work. Second, the person must experience responsibility for these results. And, third, the person must experience the work as meaningful. Without these critical psychological states, Hackman and Oldham claim, the personal and work outcomes will be negative. However, this is only half the model.

The critical psychological states are affected by five core job dimensions. These are: skill variety, task identity, task significance (all three affecting experienced meaningfulness of the work), autonomy (affecting experienced responsibilities for the results of the work), and feedback from the job (affecting knowledge of the results). Since not all individuals respond in the same way to these core job characteristics and to the critical psychological states, certain moderator variables are added to the model. These moderators are knowledge and skill, growth need strength and work context satisfaction. By work context satisfaction, Hackman and Oldham mean satisfaction with pay, job security, co-workers and supervisors. The moderator variables affect the responses of a person to a job. They do this in their own right, but are especially significant when occurring in combination. The complete model is presented in Figure 2.4.

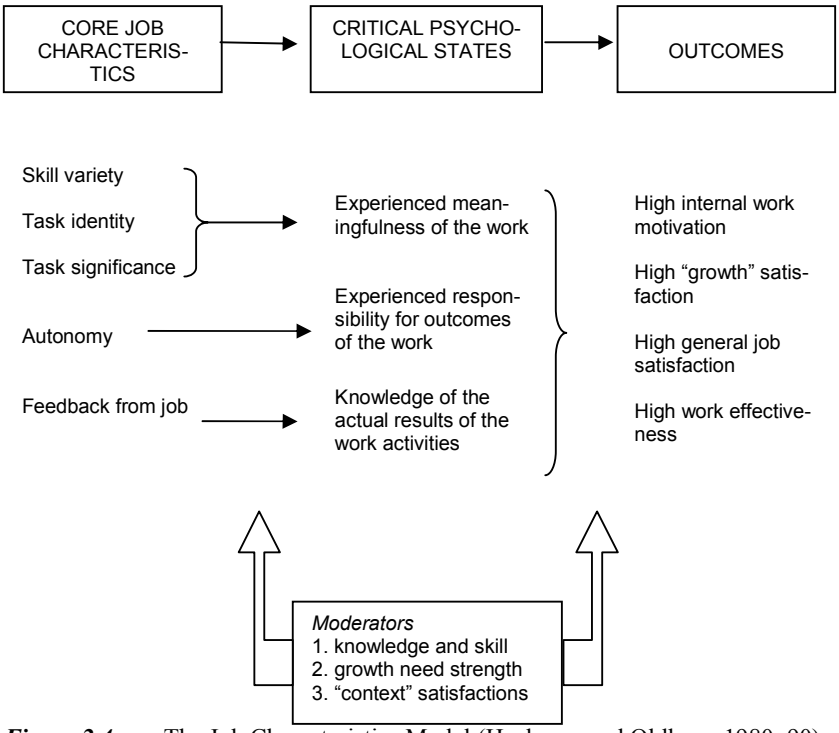

Figure 2.4 The Job Characteristics Model (Hackman and Oldham, 1980: 90)

In this model, the perceived or experienced job characteristics are of major importance. According to Hackman and Oldham, these are the most important determinants of the worker's behavior and, hence, the outcomes of the work. Criticism of this model is that perception of the job characteristics is not determined solely by the objective job characteristics. According to Salancik and Pfeffer (see Algera, 1992), the social context contains cues and information that highly determines the worker's perception and behavior. In other words, experienced job characteristics are a socially constructed reality (Algera, 1992: 74). This means that in this approach the quality of working life cannot be judged objectively. Fried and Ferris (1987), however, argue that there is not one superior model; rather, a combined model of objective job characteristics and social support can explain worker's attitudes, such as motivation and satisfaction.

Based on this view, psychological models (e.g., stress models, see Cooper, 1998) emerged during the eighties and nineties. In most of these models, relations are described between personal and environmental characteristics, psychological and physical processes, personal and organizational outcomes, and coping and adaptation (e.g., Beehr, 1998).

2.6.3 The Delft Measurement Kit

In the eighties, the Delft approach was developed by researchers of Delft University (Ten Horn, 1983), especially as a tool[34] (a measurement kit) for organization diagnostics and to measure (problems concerning) the quality of working life. The aim of this approach is to show the relation between the organization of the work and the people who do the work. The basic theoretical background of the model is that the quality of working life is determined by the interaction between work organization and worker. However, this interaction is not fixed. Situations can change over time; so can people, who can adapt to the situation or try to influence it. This changes the interaction in the model, and therefore it must be seen as a dynamical model (Heming, 1998).

The general model of the Delft Measurement Kit can be adapted to specific organizational requests. In this way, it is a toolkit from which tools can be drawn for organization diagnostics. In the Netherlands, this model has already been used in more than twenty cases for organizational change projects and is thus based mostly on empirical knowledge.

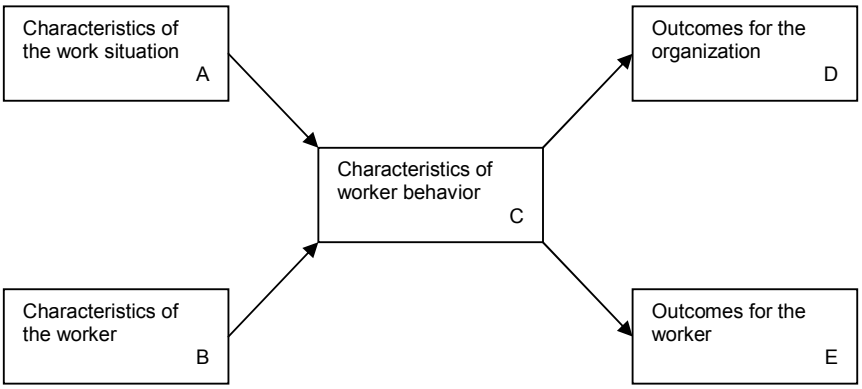

Figure 2.5 The Delft model with regard to the quality of working life (Ten Horn and Steensma, 1989: 36)

The Delft approach consists of two components, descriptive and evaluative. The basis of the descriptive component is an interaction model in which the outcomes of the work depend on the interaction between human and working situation (see Figure 2.5). The central concept of this model is worker behavior. This is the worker's way of working, their effort, their way of cooperation, etc. This behavior determines the outcomes of the work. The Delft Model distinguishes organizational outcomes (product quality, efficiency, productivity, flexibility) and personal outcomes (satisfaction, stress, personal development, fatigue). On the other hand, the worker's behavior is determined by characteristics of the working environment as well as those of the worker. Characteristics of the working environment are, for instance,

[34] As opposed to a theory.

job content, organization of the work, working conditions, and relations with superiors and colleagues. Characteristics of the worker in the Delft Model are capacities and knowledge, needs to be satisfied during the work, and opinions about the work, work organization and leadership style.

The characteristics of the worker and of the working environment "meet" or interact in the concept of the worker's behavior. For instance, work pressure (working environment) and the belief that ignoring the rules will speed up the work (personal characteristic) can lead to unsafe worker behavior. This unsafe behavior, in turn, can lead to accidents that have an effect on personal health and organizational productivity (see Heming, 1998).

In the evaluative component of the Delft model, the focus is on the judgment of the quality of working life. The person who judges the quality of working life confronts his knowledge and perception of the working environment, the workers, the workers' behaviors and the effects with norms. These norms originate, for instance, in laws, government directives and scientific knowledge. The norms used and the conclusion of the confrontation of knowledge and norms depends on the person acting as judge. Different groups of possible judges can be distinguished. In the first place there are directly involved groups, such as employees and management. Next to this there are unions, government, scientists, researchers and advisors who have opinions about the quality of working life. Since these different judges use different norms, the judgment of the quality of working life can be different. To deal with this problem, the Delft approach suggests involving the workers and management in cooperation with a researcher in the judgment process to achieve a judgment recognizable for and accepted by all parties. This result must be evaluated by the organization itself, and the conclusions from the evaluation can lead to actions towards improving the quality of working life.

2.7 Conclusions

The theoretical discussions in this chapter show that it is not easy to define the quality of working life. There is not a universal definition, and the research field is complex and widespread. Different theories and approaches use different definitions and take different positions regarding the content of the concept of the quality of working life. Theories differ with respect to the dimensions of working life they cover, the theoretical perspectives to which they adhere, the objectivity of the norms they use to judge the quality of working life, and the way they measure the quality of working life. The most important discussions in this regard concern the theoretical perspectives and the objectivity of the norms. As Van Klaveren (1994; see Figure 2.1) showed, there are three different theoretical perspectives, for each of which the norms used to judge the quality of working life can be objective or subjective.

Usually, discussions on these aspects are closely linked and choices for a theoretical perspective often determine the objectivity of the norms. Moreover, the dimensions and the way of measuring are related to these discussions as well. Furthermore, although Van Klaveren distinguishes six possible approaches, there are

two main streams – a systems theoretical approach and a psychological approach. Table 2.1 summarizes these.

Table 2.1 Two main approaches in the research field of the quality of working life

	Systems Theoretical approach	**Psychological approach**
Theoretical perspective	Work characteristics	Fit between work and worker
Norms	Work-bound norms	Person-bound norms
Dimensions	Job content Working conditions	Industrial/work relations Terms of employment (Job content) (Working conditions)
Measurement	Observers' ratings	Questionnaires
Examples	Sociotechnical Systems Theory	Job Characteristics Model Delft Measurement Kit

This summary is similar to the results of the study by Fruytier and Ter Huurne (1983). As argued, the differences between the approaches are mainly with regard to the theoretical perspective. There are three different theoretical perspectives (viewpoints): characteristics of the work, characteristics of the worker, and the relationship between work and worker. The various approaches value these perspectives differently, in the sense that they do or do not use characteristics of the worker and the fit in their analyses. Taking the fit into account means that the work characteristics as well as those of the worker should be taken into account. My view is that all three perspectives are equally important in the study of the quality of working life. Therefore, I will focus on these theoretical perspectives, rather than the various approaches from which these perspectives are deduced.

This view is summarized in the conceptual model (see Figure 2.2). The relations in this model are derived from three different approaches. The relationship between the characteristics of the work and the outcomes of the work is based on Sociotechnical Systems Theory. Furthermore, I use the Job Characteristics Model and the Delft Measurement Kit for measuring the relationships between characteristics of the worker and the outcomes of the work, and the relationship between the fit between work and worker and the outcomes of the work. The next chapter presents the ways these relationships are measured. To the best of my knowledge, these different relationships have never been tested and compared to each other in the same study. Therefore, the conceptual model gives rise to some questions about the importance and measurement of the variables used to measure the model and the relationships between these variables. The main goal of this study is to test and compare these relationships. The next chapter presents the central questions and hypotheses of this study in more detail, as well as the research design.

3 Questions, Measures and Design

This chapter presents the central research questions and hypotheses for the present study. The questions are derived from the theoretical discussion as presented in the previous chapter (Section 3.1). To answer them, I chose a research design in which four organizations participate; this design is the topic of Section 3.2. In Section 3.3 I present the measures for the concepts in the model to be tested. Based on frequently used instruments in The Netherlands (described in Section 3.3), these measures have resulted in a questionnaire (Section 3.4) that I used in this study. The way this questionnaire is used and the organizations in which it is used are described in Sections 3.5 and 3.6, respectively.

3.1 Research Questions

As presented in Chapter 2, the assumed relationships in the conceptual model (see Figure 2.2) originate from different theoretical approaches. The relationship between the characteristics of the work (independent variables in the conceptual model) and the outcomes of the work (dependent variables) is based on Sociotechnical Systems Theory (SST). In this approach, the characteristics of the work are the determinants of the outcomes of the work (for the worker as well as the organization). This also means that by changing the characteristics of the work, the outcomes of the work can be changed (or at least influenced). This is an important assumption as it offers the possibility to indicate measures for improving the quality of working life. Moreover, SST suggests that organizations designed according to certain rules offer better quality of working life than do those that are not. Organizations designed according to SST are based on team or group work. The building stones of these organizations are "whole task groups". This means that, according to SST, team-based organizations should report better quality of working life than non-team-based organizations.

The second relationship in the model is between characteristics of the worker and the outcomes of the work. This relationship is deduced from the Delft Measurement Kit, which, with respect to the characteristics of the worker, is based on the *Handlungstheorie*. In this theory the workers' orientations with regard to work are the most important variables in determining the effects the work has on the worker.

In this psychological approach, these workers' characteristics (orientations) determine their behavior in a certain working environment. Although the Delft Measurement Kit pays attention to the characteristics of the work as well, the latter are sufficiently dealt with by SST. Therefore, it is mainly the concept of the workers' orientations from the Delft Measurement Kit and its assumption with regard to the relationship between characteristics of the worker and the outcomes of the work that are used in this study.

The third relationship is between the fit between work and worker and the outcomes of the work. This relationship is based on fit models (such as the Job Characteristics Model), which state that the outcomes of the work are determined by the relationship (fit or misfit) between characteristics of the work and those of the worker. The basic assumption is that a good fit or balance between work and worker will lead to positive outcomes of the work.

As opposed to SST, the Delft Measurement Kit and Job Characteristics Model do not offer specific guidelines for improving the quality of working life. In fact, SST is the only theory that focuses particularly on the quality of working life, which is a spearhead of the theory, next to the quality of the organization[35]. Therefore, it is the only theory that offers (or prescribes) measures for improving the quality of working life. This theory and its basic assumptions with regard to quality of working life will be the most important in this research.

Since there is not a universal definition of the quality of working life and the assumed relationships have all been proven true in different approaches, I want to test these relationships as well as which approach is (or which approaches are) most useful in measuring and improving the quality of working life. Moreover, it is possible that different approaches can complement each other. Therefore, I want to simultaneously test these approaches and their assumptions with regard to the quality of working life[36]. In this way, I hope to reveal the approach that best explains the variance in the outcomes of the work (as the dependent variables in the conceptual model).

Since SST also offers guidelines for improving the quality of working life, the sociotechnical assumption that characteristics of the work are the most important determinants for the outcomes of the work will be the starting point. If the sociotechnical assumption proves not to be true, the guidelines it offers cannot be effective. Therefore, the variables derived from the Job Characteristics Model and the Delft Measurement Kit will be added to the analysis to test this sociotechnical assumption.

To successfully test the relationships in the model, interdisciplinary cooperation between the three different approaches must be found. According to Greif (1983), this kind of research is one of the most productive developments in the field of organizational sociology and organizational psychology. Testing which characteristics are the determinants of the quality of working life (in terms of outcomes) is called a

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[35] The quality of working life and the quality of the organization are two goals that can be reached at the same time by designing an organization according to SST guidelines (De Sitter, 1980).

[36] To the best of my knowledge, these approaches have never been tested simultaneously.

"*situative Ansatz*" (Greif, 1983: 36-37). Characteristic of this approach is a strong reliance on empirical results; existing approaches are being used for interpretation of results. In this way, the explanatory power of these approaches can be tested.

As described in the previous chapter, discussions between different approaches focus on two dimensions: measurement and theoretical. With respect to the measurement dimension the question is how to get unprejudiced, reliable and valid judgments of the quality of working life. What are the results of different measuring methods? Are there any differences between questionnaire results and observers' ratings? And, if so, do these differences cause problems? These questions are important because empirical results are necessary to test the different assumptions.

With respect to the theoretical dimension, the main question concerns what characteristics should be taken into account when judging the quality of working life. This question reflects the assumptions of the different approaches with respect to the quality of working life. Are the characteristics of the work the most important determinants of the outcomes of the work? Or do characteristics of the worker and the fit between work and worker also contribute? And, if so, to what extent?

In addition to these discussions on the measurement and theoretical dimensions it is also relevant to pay attention to a third question, more practical in nature and concerning the practical implications of the theoretical discussions. It focuses on how organizations can take advantage of these theoretical discussions. Different approaches have different views on how to improve the quality of working life. I want to point out what to focus on (which theoretical perspective) in order to improve the quality of working life. This is relevant because good quality of working life has a positive influence on workers' motivation and productivity and, hence, on the profitability of the firm.

In summary, this reasoning leads to three research questions for this study, each representing one of the three dimensions: empirical, theoretical, practical.

1. What are the results of different ways of measuring the quality of working life? (Are there any differences between questionnaire results and observers' ratings?; empirical dimension)
2. What are the most important determinants of the quality of working life? (Are the characteristics of the work the most important determinants of the outcomes of the work, or do characteristics of the worker and the fit between work and worker also contribute?; theoretical dimension)
3. How can the quality of working life be improved? (How can organizations take advantage of the theoretical discussions?; practical dimension)

With respect to the first question, I want to test the hypothesis that the results of questionnaires and observers' ratings used for risk audits with respect to the quality of working life are equal (Hypothesis 1). According to Frese and Zapf (1988) and Meijman and Van Ouwerkerk (1999), both ways of measuring should lead to the same results if both instruments measure the same concepts. It is important to answer this question first, because its answer determines the data that can be used to answer the second question.

The second question is the central question in this study. As stated, it is based mainly on the sociotechnical assumption that the characteristics of the work are the most important determinants of the quality of working life. Therefore, I will test this sociotechnical assumption as Hypothesis 2a. Furthermore, I will also test two alternative hypotheses derived from the other approaches in the conceptual model. From the Job Characteristics Model and the Delft Measurement Kit I derive the hypothesis that the characteristics of the worker are important determinants for the quality of working life, as well (Hypothesis 2b). Furthermore, from these theories I derive the hypothesis that the fit between work and worker is an important determinant of the quality of working life (Hypothesis 2c).

Besides comparing different approaches to test the sociotechnical assumption regarding the quality of working life, it is also possible to do so in an alternative way. Based on the assumption that characteristics of the work determine the quality of working life, SST prescribes that organizations should be designed according to certain rules (see Chapter 2) to improve the quality of working life[37]. The building stones of sociotechnical design are whole task groups, or work teams. This design can be seen as the opposite of more traditionally designed organizations[38], meaning that organizations designed with teams as building blocks should report better quality of working life than do traditionally designed organizations. In team-based organizations, the characteristics of the work differ from traditionally designed organizations. According to SST, the balance between control need and control capacity should be better than in traditional designs. It is most likely that control capacity is higher to meet the control need within the teams and offer opportunities for self-development. This results in Hypothesis 3: Team-based organizations report better quality of working life than do traditionally designed organizations.

In addition to this analysis at organizational level, it is also possible to test the sociotechnical assumption at job level. Jobs that meet sociotechnical standards (a balance between control need and control capacity) should result in positive outcomes of the work for the worker. Hence, these jobs should report better quality of working life (in terms of outcomes) than do jobs that do not meet these standards. I will test this as Hypothesis 4.

The third question is aimed at the practical implications of the theoretical discussions as a result of the first two questions. Based on the conclusions of the first two questions, the practical implications can be studied. Therefore, I am not going to test any hypotheses for answering this question; it focuses merely on the translation from the analyses (Questions 1 and 2) into design.

In summary, the three research questions for this study lead to different hypotheses with regard to the measuring (Hypothesis 1) and theoretical contents (Hypotheses 2a-4) of the quality of working life. The hypotheses to be tested are:

1. The results of questionnaires and observers' ratings are equal.

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[37] Improving the quality of working life can be reached in joint optimization with improving the quality of the organization (De Sitter, 1980; see also Chapter 2).

[38] By "traditionally designed organizations" I mean those designed according to scientific management (or Tayloristic) principles.

2a. The characteristics of the work are the most important determinants of the quality of working life.
2b. The characteristics of the worker are important determinants of the quality of working life as well.
2c. The fit between work and worker are important determinants of the quality of working life.
3. Team-based organizations report better quality of working life than do traditionally designed organizations.
4. Jobs that meet the sociotechnical standards report better quality of working life (in terms of outcomes) than do those that do not.

Empirical data is needed to test these hypotheses. The research design for gathering these data in order to find answers to the research questions and test the hypotheses is described in the next section.

3.2 Research Design

The first research question (What are the results of different ways of measuring the quality of working life?) refers to the measuring technique for the quality of working life. From the discussion in Chapter 2 (Section 2.4), it is clear that there are two major ways of measuring the quality of working life. The first is the use of questionnaires; this is an efficient way to gather many data in a short period of time and it is especially suited to answer 'what', 'where', and 'when' questions (Verschuren and Doorewaard, 1995; Den Hertog and Van Sluijs, 1995). However, 'how' and 'why' questions can only barely be answered with this method. This limitation of surveys can be dealt with by combining different research strategies; for instance, combining surveys with case studies (Den Hertog and Van Sluijs, 1995). The other way to measure the quality of working life is the use of observers' ratings. An observer (expert) uses a checklist to judge the quality of working life in a job. Chapter 2 describes the strengths and weaknesses of these kinds of measuring techniques.

To answer the first question, it is necessary to compare the results from a questionnaire with those of observers' ratings. Therefore, it is necessary to use both ways of measuring the concepts in the conceptual model. However, it is difficult to find instruments that use observers' ratings to measure the characteristics of the worker, the fit between work and worker, and the outcomes of the work for the worker. Therefore, this question can only be answered with respect to the characteristics of the work. Although it is possible to measure, for instance, absenteeism in another way than with questionnaires, it is difficult to relate these measures (on organizational level) with questionnaire measures of work or worker characteristics (on job or personal level). The level of aggregation of these measures is different and they are therefore difficult to compare or relate.

With respect to the level to which the measures are prejudiced, it is desirable to use unprejudiced measures as much as possible. This means that they must be tested with respect to reliability and validity. Therefore, only existing and tested measures will be used in this study. As a result, the instrument(s) used will be derived from existing instruments (see Section 3.3).

The second question is aimed at testing the sociotechnical assumption that the characteristics of the work are the most important determinants of the quality of working life (Hypothesis 2a). To test this hypothesis, the relations between the three independent variables on the left hand side of the model and the dependent variables on the right hand side must be compared. To do this, the variables must be comparable, meaning that they must be measured at the same level of aggregation and should offer the possibility to be related to each other. A questionnaire that measures the variables in the model meets these requirements. Therefore, I will construct (from existing and tested measures) a questionnaire that measures the outcomes of the work, characteristics of the work, characteristics of the worker, and characteristics of the fit between work and worker. Section 3.4 addresses the questionnaire construction.

Furthermore, following Hypotheses 3 and 4, the sociotechnical assumption can also be tested in alternative ways. The first is by comparing different organizations. Since team-based organizations should be compared to those that are traditionally designed, the organizations in this study must differ with respect to design. However, with respect to other variables they should be as similar as possible, as I wish to focus only on differences in the design of the organization. Hence, the different organizations should preferably have the same primary process (see Van Donk and Ruël, 1992). In other words, they should produce the same goods or services.

The second way to test the sociotechnical assumption is by comparing jobs. Therefore, the organizations in the study should employ different kinds of jobs: preferably those that meet the sociotechnical standards on one hand, and those that do not meet these standards on the other hand. However, it is not possible to experiment with respect to the balance between control need and control capacity; that requires a longitudinal study, and the opportunities for this are lacking. Therefore, I chose different organizations to participate in this study and to use cross-sectional analyses.

An advantage to choosing organizations instead of respondents from the labor population in The Netherlands is that it is better possible to make comparisons between different jobs and organizations because their number is limited. Moreover, it is easier to control for unwanted variance due to different (and uncontrollable) environments. Jobs in the same organization are all subject to the same environment, such as primary process, technology, markets, etc.

However, a disadvantage of case studies is the difficulty in generalizing the results of the different analyses. The situation in certain organizations may not be representative of the entire working population. This is not a large problem, since the aim of this study is generalizing relations, rather than situations. It is therefore important to choose the organizations strategically in order to be able to generalize these relations as much as possible. Since it is impossible to cover the entire labor population within a few cases, I focused on the two largest sectors. The services sector is by far the largest in The Netherlands (see Chapter 1); second largest is the industrial sector. Within these sectors, work and working conditions differ among various organizations. Hence, I do not pretend to completely cover these sectors either. However, comparing organizations from both sectors can give an impression of differences in the quality of working life.

This discussion results in a research design in which team-based and traditionally designed organizations can be compared (to test Hypothesis 3), and in which organizations from the services and industrial sectors are present (see Table 3.1).

Table 3.1 Research Design

	Traditional design	Team-based design
Services sector	*Care*	*Care Team*
Industrial sector	*Bicycle*	*Bicycle Team*

As a researcher I was dependent on the willingness of organizations to participate in the study. Nevertheless, I was able to choose four organizations in this design that are interesting for many reasons. The organizations that took part are two involved in home care (services sector) and two bicycle manufacturers (industrial sector). In both sectors, one organization is traditionally designed and the other team-based. Within each sector, both organizations produce the same products (bicycles) and services (home care).

The presence of home care organizations is interesting, as they represent the health care sector in which many women are traditionally employed. As discussed in Chapter 1, the increasing participation degree of women affects daily life, and especially the possibilities to combine work and family. Besides this, it is often found that women value their family more than work. Women especially view work as a means to attain family well-being, or at least both family and work are similarly highly valued (Inglehart, 1990; Tausky, 1992; Voydanoff, 1987; Raabe, 1998). Additionally, in the health care sector a great deal of employees have flexible working hours; not from nine to five but early morning and evening hours and regularly in the night and on weekends.

Another reason that the health care sector is interesting is that in The Netherlands it is difficult to employ enough people in home care to meet the demand. The reason for this is twofold. First, due to the aging population in The Netherlands[39] the demand for home care is dramatically increasing. Second, work pressure in home care is high and wages are low. This is subject to discussion, even at the political level.

As opposed to the home care organizations, the two bicycle manufacturers employ mostly men and working hours are from nine to five. All four organizations are presented in more detail in Section 3.6. First I will describe the measures used in constructing the questionnaire as well as the instrument used.

3.3 Measures in the Model

Based on the research design, questionnaire measures are needed for all the concepts in the conceptual model. Furthermore, I need observers' rating measures for the characteristics of the work. In The Netherlands, several different measures are currently used to measure the different variables in the research field of the quality of

[39] Because of retirement of the post-World War II baby boom generation.

working life. The most well-known and most frequently used are WEBA (Vaas et al., 1995) and NOVA-WEBA (Dhondt and Houtman, 1992; 1996), and VBBA (Van Veldhoven, 1996; Van Veldhoven and Meijman, 1994). These instruments are frequently used to meet the obligations of the *Arbowet* (Dutch Occupational Health and Safety Act). Another important instrument for this study is the Delft Measurement Kit (Ten Horn, 1989), mentioned in the previous chapter. It is used mostly as a tool for organizational diagnostics and to measure the quality of working life as defined in this approach.

These four instruments and their measures of different elements of the conceptual model will be described in Sections 3.3.2 through 3.3.4. Since the Dutch Occupational Health and Safety Act is an important factor for organizations, I will first briefly describe this act and its implications.

3.3.1 The *Arbowet* (Dutch Occupational Health and Safety Act)

The introduction of the *Arbowet* in The Netherlands[40] can be seen as a contribution by the Dutch government to the historical trend of improving the quality of working life (see Chapter 1), and as an interpretation of the directives of the European Community (EEG, 1989). This Act prescribes attention to and improvement of safety, health, and well-being at work, obliging Dutch companies to audit risks related to these factors.

Safety and health at work have been widely studied and many instruments for risk audits in these areas already exist (e.g., Ministerie SZW [1995]: IMA; Inspection Method Working Conditions). Well-being at work, on the other hand, is a more complex and less well-known concept. Organizations are still brooding on questions about the definition of well-being at work, how it can be measured (risk audits), and how it can be improved. In the Dutch research literature, the topic of well-being at work is unique and relatively young[41]. Only since the introduction of the *Arbowet* (in 1980) has the subject of well-being at work aroused interest, although its theoretical background is the same as that of the better known (and older) subject of the quality of working life. Therefore, I will use these concepts as synonyms coinciding with the definition of well-being at work in the *Arbowet*. It was a clear goal of the Dutch government, with this Act, to contribute to the international discussion with regard to the quality of working life.

The basic assumption of the *Arbowet* is that well-being at work, besides safety and health at work, is an independent part of working conditions (Jol et al., 1987). Well-being should be treated in the same way as are health and safety: prevent the occurrence of risks and eliminate existing risks. Standards concerning work conditions have been formulated, and jobs should meet them or alternatively be subject to measures to eliminate the existing risks. In this way, well-being becomes a rather

[40] First introduced in 1980 and renewed several times since. The newest version took effect on November 1st, 1999.

[41] Most other European countries do not use the concept of well-being at work in their attempt to improve work conditions; they merely use the concepts of safety and health at work.

normative and prescriptive concept: independent of the worker, jobs are evaluated on risks concerning the well-being at work (Projectgroep WEBA, 1989).

To make the concept of well-being at work measurable and manageable for companies, the Ministry of Social Affairs and Employment asked several organizations to develop an instrument for this purpose. This resulted in the development of the WEBA[42] method (Projectgroep WEBA, 1989; Vaas et al., 1995), the contents and structure of which will be explained in Section 3.3.2.

3.3.2 WEBA and NOVA-WEBA

The WEBA method was developed by government order to measure well-being at work, and is used by experts to analyze and evaluate the jobs in an organization. This is very time-consuming and demands specific knowledge from the expert (auditor). To overcome these drawbacks, the Ministry ordered the development of a new, less time-consuming method; however, the content should remain the same. This resulted in the NOVA-WEBA, a questionnaire that covers the same topics as WEBA but is filled out by the workers. Both instruments have the same theoretical background, based on the Sociotechnical Systems Theory (SST). Since these instruments are narrowly linked, I describe them together in this section.

As mentioned briefly, these instruments are based mainly on SST. This theoretical basis is complemented with the balance idea of the Job demands – decision latitude Model (Karasek, 1975) and Hacker's (1989) concept of complete tasks. The theoretical aim is to detect risks with respect to well-being at work[43] and to indicate possibilities for improving the quality of working life, particularly for preventing work stress from occurring and improving the worker's opportunities to develop oneself in the work (Dhondt and Houtman, 1992).

The WEBA method uses a conditional approach. The characteristics of the work are the starting point of the analysis. Karasek's model is translated into the balance between the sociotechnical concepts of control need (problems in the work) and control capacity (opportunities to deal with problems conclusively). Work stress is the result of an imbalance between control need and control capacity in the work. Hacker's concept of complete tasks (Vollständige Arbeitstätigkeiten) is used to describe the tasks in a job. The idea is that complete jobs, which consist of a coherent set of executing, preparing and supporting tasks and varying levels of difficulty, offer opportunities to learn on the job (self development).

This theoretical framework resulted in seven characteristics that should be present in the work in order to improve the quality of working life. These are:

1. Completeness of the work: besides the primary executing tasks, a job should contain preparing and supporting tasks.

[42] WEBA is the abbreviation for *Welzijn bij de Arbeid* (Well-being at work).

[43] According to the Dutch Health and Safety Act, risks with respect to well-being at work are described as: 1) the chance to suffer from work stress and 2) the lack of opportunities to develop oneself in the work (Projectgroep WEBA, 1989; De Witte et al., 1998).

2. Difficulty of the work: a job should contain a variety of difficult and easy tasks. The criterion for difficulty is the variety and level of mental processing needed to complete the job. The level of education is not important.
3. Monotony of the work: the job should consist of non-monotonous tasks. Monotonous tasks are defined as short-cyclical tasks that repeat themselves within 90 seconds and take up a great deal of the daily tasks.
4. Autonomy in the work: the worker should be able to decide upon work pace, order and methods.
5. Interaction potential in the work: the ability to ask direct colleagues for help with problems.
6. Presence of organizing tasks: the ability to ask superiors or other departments for help with problems.
7. Information provision: the worker should get enough information with respect to the work to be done (What? How? How much? When?). Furthermore, this information should be on time, complete and reliable.

In these seven work characteristics, we can recognize Hacker's influence in the first three. Karasek's influence (balance between control need and control capacity) reveals itself in the way the seven characteristics are measured and judged in the WEBA method. Problems in the work (control need) and opportunities to deal with them (control capacity) are confronted with each other. A detailed description of this will follow later. However, the measurement of the characteristics is different for WEBA and NOVA-WEBA. WEBA is an "expert instrument" that uses observers' ratings; NOVA-WEBA is a questionnaire. Furthermore, NOVA-WEBA adds two work characteristics: workload and emotional stress. Both instruments are described separately below.

WEBA

A WEBA analysis consists of three steps: describing, judging, and improving. To describe a job, an auditor (expert, scientist, advisor) joins one or more workers per job for one or more days[44]. To obtain a "profile of well-being" for a particular job, the auditor fills out four forms (with the aid of a computer program). On the first form, the auditor distinguishes between the different tasks of the job and determines the completeness, difficulty and monotony of these tasks. On the second form, the auditor investigates the worker's three options for dealing with problems in the work. These are autonomy, interaction potential and organizing tasks. By using '+' and '–', the auditor indicates whether these options are present. Problems in the work are investigated on the third form. These problems can originate from the work order, material to be used, tools to be used, or the action performance. Finally, on the fourth form, the auditor balances the problems in the work (form 3) and the options for dealing with them conclusively (form 2). From the data on the four forms, the computer program distills the profile of well-being (see, for instance, Figure 4.1). The seven work characteristics are classified into three categories: suffi-

[44] As long as needed to get enough information about the job to fill out the forms. This will take, on average, about one day per job (Grobbée, 1995).

cient, marginally sufficient, and not sufficient. This is the second step, the judgment of a job.

Although not measured directly, a balance idea is recognizable in the way of measuring and judging in this instrument. The problems in the work are confronted with the possibilities to deal with them. If some problems cannot be solved conclusively with autonomy, interaction potential or organizing tasks (control capacity), this will result in the score 'not sufficient' for these characteristics and give a negative score with respect to workload, indicating risks with respect to well-being at work. After all, "work that is demanding (within limits) is not the major source of risk. The primary work-related risk factor appears to be the lack of control over how one meets the job's demands and one uses one's skills" (Karasek and Theorell, 1990: 9).

NOVA-WEBA

NOVA-WEBA is a questionnaire that contains the same seven characteristics as WEBA, plus workload and emotional stress (Dhondt and Houtman, 1992). However, the workers who actually perform the jobs, instead of an auditor, fill out the questionnaire. The score per job is the average of all the workers in the same job. In contrast with WEBA, the judgment of the risks with respect to well-being is less straightforward. There are no definite decision rules to indicate risks. The scores per characteristic can be compared to reference tables (Dhondt and Houtman, 1996) or to other jobs. Nevertheless, someone must judge the scores on the questionnaire and balance the characteristics that indicate control need and control capacity. These and other drawbacks to questionnaires were mentioned in Chapter 2, and some apply to the expert approach as well (see also Frese and Zapf, 1988).

On the other hand, an advantage of this way of measuring the seven (or nine) work characteristics is that it is less time consuming, especially for large groups of workers and organizations with many different functions or jobs[45]. Another advantage of this way of measuring is that it can be used in a "cascade approach" (De Witte et al., 1998). In a cascade approach, in order to save time, the questionnaire can be used for an initial quantitative measure of risks. Afterward, WEBA can be used for a more detailed qualitative measure of risks in the jobs indicated as high risk by the questionnaire results. This is also suggested by the developers of both instruments.

After describing and judging the quality of working life in a particular job, WEBA and NOVA-WEBA offer ways to improve the situation, if necessary. This is the third step in the WEBA analysis. WEBA offers three kinds of measures to improve the quality of working life (Arbeidsinspectie, 1993):

1. Adaptation measures: aimed at reducing the control need. For instance, trying to prevent problems from occurring.

[45] It is important to remember that this questionnaire has been developed for analyses at job, not individual, level. The latter is possible, but this does not contribute to the basic assumptions of WEBA.

2. Improvement measures: aimed at increasing control capacity or increasing completeness of the work. For instance, job rotation and job enrichment.
3. Renewal or innovation measures: aimed at reducing control need and increasing control capacity simultaneously. This asks for organizational change, e.g. sociotechnical redesign.

It is naturally impossible to give more detailed measures for improving the quality of working life, because this depends on the specific situation. Nevertheless, the conditional approach and the strong theoretical framework are strong points of WEBA and NOVA-WEBA. If one detects risks with respect to well-being at work, the determinants can be found in the work characteristics; this method also indicates how to deal with these risks.

On the other hand, there are also drawbacks. Already mentioned is the fact that WEBA is very time-consuming. Another problem is that differences can appear between WEBA and NOVA-WEBA analyses. These differences are interesting for everyday practice. If the two instruments show different results, the question arises concerning which instrument to use in order to improve the well-being at work. Moreover, if one instrument indicates risks and the other does not, the question arises regarding whether to take actions to improve the well-being at work or not. These problems refer to the first research question and will be dealt with in Chapter 4. The implications for everyday practice will be presented in Chapter 7.

3.3.3 VBBA

VBBA is the abbreviation for *Vragenlijst Beleving en Beoordeling van de Arbeid* (Questionnaire for Perception and Judgement of the Work). This questionnaire was developed by Van Veldhoven (1996; Van Veldhoven and Meijman,1994; Van Veldhoven et al., 1997), whose aim was to develop a topical questionnaire to measure psychosocial workload and work stress. To reach this goal, Van Veldhoven gathered variables and items from 50 existing instruments and questionnaires to construct a new questionnaire containing the greatest common denominator of variables to measure different aspects of work and working life. Most items in the questionnaire are derived from a questionnaire developed by *Studiecentrum Arbeid en Gezondheid* at the University of Amsterdam. This questionnaire contains translations of the most important scales of the Job Content Questionnaire (JCQ; see Karasek, 1985).

The definitive questionnaire was constructed with the use of a “Mokken analysis”, which ensures that the resulting scales are valid and reliable (Van Veldhoven, 1996). The result was a questionnaire of 201 items distributed over 27 scales. The four main areas that the questionnaire covers are characteristics of the work, work organization (including relations at work), terms of employment, and work stress. The questionnaire is suitable for individual as well as group analysis.

Since this questionnaire was constructed using other instruments and questionnaires, its theoretical background is somewhat eclectic. Different theoretical viewpoints have led to different instruments and questionnaires, which were the basis for VBBA. This variety in instruments and questionnaires is due to the lack of universal definitions and theories concerning the quality of working life. However, the VBBA

measures come close to those of the different concepts in the Beehr and Newman Meta-model facets of occupational stress (see Beehr, 1998: 8). Except for the concepts of Personal facet and Adaptive responses facet (e.g. coping) in the Beehr and Newman model, Van Veldhoven found that at least five questionnaires per concept cover the different concepts of the model.

Over the past couple of years, VBBA has been used in many Dutch organizations. Almost 17,000 workers filled out the questionnaire and the data are being gathered in a central data bank. Based on this data set, Van Veldhoven et al. (1999) published a report with respect to psychosocial workload and work stress. This report gives a good overview of the Dutch situation, since most sectors are well represented in the data set. Furthermore, the questionnaire is being used for periodic health measures, executed mostly by Occupational Health and Safety Organizations (*Arbodiensten*). The opportunities for comparing the results with the central data set make it easier to judge the results.

3.3.4 Delft Measurement Kit

Chapter 2 presented the Delft Measurement Kit as a tool for organizational diagnostics and a measurement for quality of working life. This section takes a closer look at the measures for the quality of working life, and for the fit between work and worker in particular.

The aim of the instrument is to explain and judge the outcomes of the work for the workers and the organization, and to formulate measures for organizational change. It uses a stepwise approach and contains the following steps (Heming, 1998):

1. Rough analysis
2. Development of diagnostic model
3. Diagnosis: data gathering and analysis
4. Discussion on the basis of the results
5. Development and implementation of the measures

This stepwise approach reflects the basic idea that the Delft Measurement Kit is a toolkit that can be adapted to a specific situation. In the first step, rough analysis, the problem is defined and the situation checked for the proper conditions to carry out the organizational diagnostic and change. Important in this step is the presence of commitment by all involved parties in the organization. After this check, the diagnostic model is developed. Together, the different parties choose the tools from the toolkit (variables in the model) that will be used in the third step. Depending on the variables in the model, different instruments will be used for data gathering, ranging from questionnaires to document analysis and group interviews. The data from these instruments can be analyzed with standard methods. The results from this analysis will be discussed with the involved parties from the organization (Step 4). These discussions are very important for the interpretation and evaluation. The result is an overall accepted diagnosis of the quality of working life in the organization. The time is then right to develop and implement measures to improve the quality of working life (Step 5). Again, it is important to involve and commit the different parties to the discussions and resulting measures.

The most important tool in this kit is the questionnaire for measuring different parts of the model with respect to the quality of working life. The questionnaire, entitled 'Questionnaire for the measurement of variables related to the quality of jobs', as well as the coding and processing, are presented in Ten Horn (1989). The scales and variables can be divided into four main categories:

1. Characteristics of the work situation (job content, characteristics of social relations)
2. Characteristics of the employees (preferred leadership style, person related attributes)
3. Personal outcomes (general job satisfaction, tendency to leave, absenteeism, job involvement, feelings of stress)
4. Work situation, satisfaction and personal preferences (situation scales, satisfaction scales, need strength scales)

These categories can be further subdivided, but a great deal of the scales overlap with those in the VBBA, especially in the first three categories; I will not elaborate further on these. The fourth category, however, is very interesting, particularly regarding the coding and processing of the variables.

With respect to the work situation, satisfaction and personal preferences, Ten Horn (1989) describes eleven categories to be measured. These are based mainly on Maslow's theory of basic needs and consist of the following categories: personal growth, self-esteem, esteem from others, company of others, sense of belonging, security, physiological aspects of the work, salary and pay, career and promotion, high workload, and low workload. Regarding each category, three kinds of variables are measured: first, a person's need strength (how important the aspect is to the respondent) for the category; second, the actual fulfillment in the work situation of this growth need strength – the central question is whether the work provides opportunities to satisfy the needs of the worker; finally, the worker's satisfaction with regard to the aspects of the work situation is measured.

The measuring technique of these variables is striking. Per variable, two questions are asked. The first investigates the presence of a certain aspect of the work, the second whether the respondent is satisfied with that aspect. Thus, the situation and the satisfaction with this situation are measured directly. The need strength, on the other hand, is deduced from the satisfaction score. Satisfaction is measured on a nine-point scale, ranging from "I like that very much" (score = 1) to "I neither like nor dislike that" (score = 5) to "I dislike that very much" (score = 9). The measurement of need strength is based on the idea that it can be deduced from the degree of satisfaction a person expresses. "If the situation provides the opportunity to satisfy a particular need, persons expressing great satisfaction are supposed to have a stronger need strength than persons expressing little satisfaction or giving neutral responses. In the same way, a person expressing extreme dissatisfaction in a situation where the need is not met, is supposed to have a stronger need for it, than the person who voices little dissatisfaction in the same situation" (Ten Horn, 1989: 50).

The actual measuring of need strength is based on the satisfaction scores, which are recoded into scores that represent the deviation from the neutral score. The bigger the deviation from the neutral score, the bigger the need strength.

Ten Horn (1983) tested this measuring technique in comparison to direct questioning techniques. The indirect questioning technique showed several advantages. "Predictive validity is somewhat higher, there is less bias due to the ordering of the items in the questionnaire, readability is higher and there are indications that the instrument is less biased by social desirability" (Ten Horn, 1989: 50).

The use of satisfaction scores to measure preferences, however, may encourage the work satisfaction paradox (Blauner, 1964; De Sitter, 1980; Van der Zwaan, 1991; Ruël, 1994). Different studies show that in every study on work satisfaction approximately 75% of the respondents report to be satisfied with the work, regardless the work situation. The argument is that job satisfaction scales do not measure workers' satisfaction, but merely their adaptability to the work[46]. "The capacity of people to adapt to routine repetitive work is remarkable. It is likely that the majority of industrial workers are self-estranged in the sense that their work is not involving and it is seen chiefly as a livelihood. Yet, research in job-satisfaction suggests that the majority of workers, possibly from 75 to 90% are reasonably satisfied with such jobs" (Blauner, 1964: 29).

The measures of workers' preferences coincide with the their orientations, as described by Van der Parre (1996; see also Chapter 2). As shown in Chapter 2, following the *Handlungstheorie*, they can be seen as characteristics of the worker. However, Van der Parre used a direct questioning technique. To deal with the problem of social desirability, he chose a non-characterizing description of the orientations, meaning that workers cannot be characterized as oriented to just one dimension of the work. Different orientations can be present at the same level within one person, for instance a worker can be equally oriented on job content as on working conditions or terms of employment. In this way, Van der Parre was able to conclude that jobs differ not only with respect to the characteristics of the work, but also to groups of workers that have different preferences with respect to those characteristics.

Another (minor) difference between Ten Horn's and Van der Parre's measuring technique is that Van der Parre used a seven-point Likert scale (instead of a nine-point scale).

3.4 Towards Measures of the Concepts in the Model; Construction of the Questionnaire

As explained earlier, the research questions will be answered with the aid of a questionnaire and the results of an expert rating. In this section I will explain how the questionnaire is constructed and how the characteristics of the work measured with the questionnaire can be compared to the results of the expert rating.

[46] This adaptability is described by the Cognitive Dissonance Theory (see Ruël, 1994), which predicts that people will try to make the situation consonant with their cognition (subjective norms). If the situation and cognition are not consonant (that is they are dissonant), people will rationally try to change either the situation or the cognition. If the cognition is changed, people tend to be satisfied with the situation. (see also Huijgen, 1980: 83-84).

3.4.1 Outcomes of the Work

The outcomes of the work are the dependent variables in the model. As shown in Chapter 2, VBBA offers variables (scales) that are very useful as measures of the outcomes of the work, especially since Van Veldhoven (1996) constructed this questionnaire from items gathered from 50 different instruments. Van Veldhoven argues that the greatest common denominator of variables for measuring the outcomes of the work consists of need for recovery after work, brooding (worrying) about the work, job satisfaction, commitment, inclination to change jobs (turnover), emotional reactions during work, and fatigue during work. Other frequently used variables are absenteeism, mental health and physical health during work.

The VBBA scales 'emotional reactions during the work' and 'fatigue during the work' are different from the other VBBA scales. Their wording differs from that of the other scales since they are derived from another questionnaire (SEB; Meijman, 1993) that uses different answering categories. In order to guarantee consistency in the questionnaire, I looked for scales with wording more in accordance with that of the other VBBA scales. The two VBBA scales overlap with the VOS-D[47] scales 'feeling during the work' and 'physical health during the work'. However, the wording (and answering categories) of the VOS-D scales is more in accordance with the others. Therefore, I will use the VOS-D instead of the VBBA scales.

For the analysis, it is also important to distinguish between psychological and behavioral outcomes. "The relationship between job characteristics and psychological outcomes are generally stronger and more consistent than the relationships between job characteristics and behavioral outcomes, although the latter do exist" (Fried and Ferris, 1987: 313). As a result, the following scales for the outcomes of work will be used:

Behavioral outcomes:

1. Need for recovery (VBBA)
2. Inclination to change jobs (turnover) (VBBA)
3. Absenteeism (self)
4. Health/physical reactions during the work (VOS-D)

Psychological outcomes:

5. Job satisfaction (VBBA)
6. Brooding about the work (VBBA)
7. Commitment (VBBA)
8. Feeling/emotional reactions during the work (VOS-D)

3.4.2 Characteristics of the Work

There are two measuring techniques for the characteristics of the work to be compared; therefore, the expert rating and the questionnaire must be comparable. Since SST is an important approach with respect to the quality of working life and WEBA and NOVA-WEBA have a sociotechnical background, I will use these instruments

[47] VOS-D is the abbreviation for *Vragenlijst Organisatie Stress – Doetichem* (Questionnaire Organizational Stress – Doetichem; see Kompier and Marcelissen, 1993).

as measures of the characteristics of the work. Another argument is that both instruments measure the same concepts. However, WEBA and NOVA-WEBA focus mainly on job content, and little on industrial relations; the other dimensions of working life are not covered by NOVA-WEBA. Therefore, scales from other questionnaires that focus more on these dimensions supplement the NOVA-WEBA questionnaire. The selection criterion for these scales was that they should cover the dimensions of working conditions and terms of employment, and should not overlap with other scales. This overlap was tested by checking the wording of the items. The additional scales are derived from VBBA, VOS-D, VAG[48] and JCQ[49].

As a result, the questionnaire measures characteristics of work with the following scales (and the instruments the scales are derived from):

1. Difficulty of the work (NOVA-WEBA),
2. Variety in the work (VBBA)
3. Completeness of the work (NOVA-WEBA),
4. Monotony of work (NOVA-WEBA),
5. Autonomy (NOVA-WEBA),
6. Interaction potential (NOVA-WEBA),
7. Organizing tasks (NOVA-WEBA),
8. Work organization (VAG),
9. Information (NOVA-WEBA),
10. Workload (NOVA-WEBA),
11. Emotional stress (NOVA-WEBA),
12. Task changes (VBBA),
13. Executives and colleagues (VAG)
14. Physical working conditions (VAG)
15. Physical strain (VBBA)
16. Terms of employment (JCQ)

The NOVA-WEBA scales are covered in WEBA, with the exceptions of workload and emotional stress. The remaining seven scales can be compared if the results from the questionnaires from workers in the same jobs are taken together. A group median of at least three people enables a decrease of the influence of idiosyncratic responses (Frese and Zapf, 1988).

3.4.3 Characteristics of the Worker

In most questionnaires, demographic variables are used as characteristics of the worker, to distinguish between different groups of workers. They consist mostly of questions regarding age, sex, marital status, educational level, and job experience. These general demographic variables, however, can only slightly give any impressions about the worker's behavior at work. In this study, more specific demographic

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[48] VAG is the abbreviation for *Vragenlijst Arbeid en Gezondheid* (Questionnaire Work and Health; see Kompier and Marcelissen, 1993).

[49] JCQ is the abbreviation for Job Content Questionnaire (Karasek, 1985; Karasek and Theorell, 1990)

variables can be useful. As described in Chapter 1, ever increasing numbers of women take part in the labor process. Thus, combining work and family becomes more difficult. Therefore, in this study, some demographic variables regarding the household situation will be added to the more general variables. The more specific variables consist of questions regarding the worker's working hours, the partner's working hours, care for children, and the age of the children. These variables can give an impression about the worker's household situation.

In this study, however, I want to distinguish groups not only on the basis of demographic variables, but also on that of variables with regard to the work. For this purpose the workers' orientations (need strength), as defined by Van der Parre (1996), are suitable. There are four dimensions of the work on which workers can be oriented: job content, working conditions, work relations, and terms of employment.

One way to measure the orientations is asking directly how important certain characteristics of the work are. The answer gives an impression as to which categories of scales (dimensions) are important in the workers' jobs (according to those workers) (Ten Horn 1989). However, bluntly asking how important certain characteristics are may cause socially desirable answers. Ten Horn's (1989) solution to social desirability is to derive the need strength from the satisfaction a worker reports (described in Section 3.3.4). This, on the other hand, may encourage the work satisfaction paradox (see also Section 3.3.4).

For this study, I chose to measure the orientations by direct asking. To reduce socially desirable answers I also chose to ask the satisfaction question (as a measure for the fit, see Section 3.4.4) immediately after the orientation question. In this way, the respondents could see the difference between the two kinds of questions. Furthermore, for orientation and fit the same variables and wording are used, which makes it easy to compare these variables.

As a result, the characteristics of the worker are measured with demographic variables (general and more specific) and the following scales: orientation on job content, orientation on working conditions, orientation on work relations, and orientation on terms of employment. These orientation scales are derived from Van der Parre (1996).

3.4.4 Characteristics of the Fit between Work and Worker

There are many direct and indirect ways to measure the relation (fit) between characteristics of the work and characteristics of the worker, some of which are described in Chapter 2. The easiest way to measure fit is to compare a worker's knowledge and experience (characteristics of the worker) with the job's demands in this respect (characteristics of the work). This results in two measures: utilization of the worker's educational level and utilization of the worker's experience. The advantage of these measures is that they are fairly unprejudiced (if the job demands are clearly defined). However, when the worker's characteristics are being measured as the orientations towards work, it is likely to measure the fit as the satisfaction of

these orientations (preferences) by the work characteristics[50]. Once again, this corresponds with Van der Parre's (1996) study.

In his study, Van der Parre used two questions about the same characteristic. In the first, he asked how important that characteristic was to the worker. As described, this is a measure of the worker's preference (orientation). The second question asked how satisfied the worker was with respect to that present characteristic of working life. This is a question about how the worker experiences the characteristics of the work, reflecting the worker's perception of working life. Two examples of questions in the questionnaire can explain the difference between a measurement of a characteristic of the worker and that of a characteristic of the relation between work and worker. The following are questions 173 and 174 from the questionnaire (see Appendix).

173. How important is good cooperation with your colleagues?

174. How satisfying is the cooperation with your colleagues?

The first question concerns someone's need strength for good cooperation. This is a personal characteristic. The second asks how someone's need strength is satisfied in the present work situation. This is a measurement of the relation between the work (how the situation is) and the worker (what is important). The questions are asked in pairs in order to make sure that the respondents can see the difference between them, and to prevent the respondents from giving socially desirable answers.

As a result, the following scales measure the fit between work and worker: 1) perception of the job content; 2) perception of working conditions; 3) perception of work relations; 4) perception of terms of employment; 5) utilization of the worker's educational level; and 6) utilization of the worker's job experience.

All measures and scales are presented in the questionnaire in the appendix. This is the questionnaire as it was used in one[51] of the organizations. The next section offers more detailed information about the way the questionnaire and WEBA method were used in the different organizations, as well as more detailed information about the organizations themselves.

3.5 Procedure

The questionnaire and WEBA method were presented to the participating organizations (see Section 3.6) as risk audits with respect to well-being at work. This kind of audit is an obligation due to the Dutch Occupational Health and Safety Act, and the results, presented in a report, could be used to improve well-being at work. The procedure was generally the same in all four organizations, except for *Bicycle*. In this case, the questionnaire was not sent to the workers' home addresses, as was done in the other organizations; it was instead distributed to the workers during

[50] As a result, the fit is measured directly as a theoretical construct (as opposed to a statistical construct). Moreover, the fit between work and worker can be defined as the level to which a worker, given certain work characteristics, can actualize his work orientations in the work.

[51] In the four organizations, I used the same questionnaires. Questions 10 and 10a are the only questions that varied for the different organizations.

work time and they were allowed to fill it out during work time as well. The employees who received the questionnaire at home could send it back in an enclosed return envelope, so that they would not have to pay postage.

The WEBA-analyses were conducted in the same way in all four organizations with the help of research assistants. These assistants accompanied one or more workers per job in order to gain enough information about the job content to fill out the WEBA forms. These WEBA forms resulted in the "profiles of well-being", which, along with the results from the questionnaire, were presented to the organizations in research reports (Struik and Schouteten, 1998; Schouteten and Zegwaart, 2000; Kammeraat, 2000; Schouteten and Van Winsum, 2000). For this study, the results of the data gathered with the questionnaire and WEBA method will be presented in the next chapters as I answer the research questions.

3.6 Case Studies

3.6.1 Care

The first organization to participate in this study was *Thuiszorg Noord West Twente* (Home care North West Twente) located in Almelo. To distinguish this organization for home care from the team-based organization for home care, I will call it *Care* and the team-based organization *Care Team* (see also Table 3.1).

In this first study, only the employees in caring jobs participated; management and staff were left out of the audit. At the time of the study (March 1998), 532 people were employed in these caring jobs. There are eight different caring jobs, ranging from Home help A (mostly help activities) to Specialized care E (help activities and nursing activities) and District nurse (mostly nursing activities). Furthermore, there is a separate group of employees that participate in night and weekend shifts. The jobs differ in the degree of nursing activities. Home helps conduct mostly housekeeping activities, such as shopping and cleaning. Home helps C and D also wash and dress clients. The more specialized the job, the more nursing activities (such as changing bandages and giving injections) are part of the job. Besides these caring activities, the employees register their own working hours. The central office uses this registration for budgeting, planning and payment purposes.

Most employees work alone (at the client's home), receiving their assignments from the central office, which coordinates all care activities. They sometimes meet with colleagues and superiors at the central office to discuss the work progress, Specialized helps and District nurses (every week) more often than Home helps (every month). Table 3.2 shows some general figures about the respondents in this organization.

3.6.2 Care Team

The second organization for home care participating in this study was the *Verpleging & Verzorging* (Nursing and Medical Care) division of *Icare Thuiszorg Drenthe* (Icare Home Care Drenthe), with its central office in Assen. In this study, besides

employees in caring jobs, staff and management also participated. At the time of the audit (January 2000), 1,306 employees were working in this division: 1,226 in caring jobs and 80 in staff and management.

This organization has a team-based design. Generally, the same caring activities are conducted in this organization as in *Care*[52]. However, the way these activities are coordinated differs greatly. In *Care Team*, employees in the same jobs in the same region form a team. Within these teams the team members are responsible for one or more extra activities (star activities), such as quality, logistics, personnel, planning, or education. Furthermore, the teams frequently contact office managers, such as account managers, production managers, personnel consultants, or planners. Every team, in cooperation with an office manager, is responsible for the care for clients in an area. Within a team the employees help each other in cases of too much work or illness. With regard to the star activities, the employees are expected to rotate over the different activities.

3.6.3 Bicycle

The *Union* bicycle factory is located in Nieuwleusen. I called this bicycle manufacturer *Bicycle* to distinguish it from the one that is team-based (called *Bicycle Team*). This factory mainly assembles bicycles for the Dutch market; a minor portion is intended for export. At the time of the audit (December 1999), 153 employees were working in the factory and office.

The factory consists of several departments. The central department is Assembly, where different parts are assembled to complete bicycles. This department consists of three assembly lines. Some parts undergo a pretreatment in one or more other departments. Suppliers outside the company provide frames, which must first be checked on quality before they go to the paint department. After drying, they are ready for assembly. There is also a department that assembles the wheels. In the assembly department, there are also employees who pre-assemble handlebars and luggage carriers. All these parts, along with others such as lamps, breaks, gears, chains, chain wheels, sprocket wheels, cranks and pedals, are assembled on the assembly line where every employee has a fixed position and adds the same parts to every bicycle that passes. The bicycles are stored in a warehouse (Expedition), as are the materials (Purchase).

In addition to the production facilities, there are salesmen and an administration department (planning, logistics, personnel). Furthermore, there are a quality assurance and a technical (engineering) department that support the production departments. All employees in the organization had the opportunity to participate in the risk audit; however, due to workload some were not able to leave their jobs during work time to fill out the questionnaire and only few took the time to do so after work.

[52] The contents of the different caring jobs in organizations for home care are laid down in Collective Labor Agreements.

3.6.4 Bicycle Team

The fourth organization to participate in this study is *Giant Europe Manufacturing B.V.* (*GEM*), located in Lelystad. This is the only European manufacturing plant of this Taiwanese bicycle brand. *GEM* is only the production facility of Giant Europe; therefore, staff and office personnel are limited. These employees are part of Giant Europe LTD. According to the management philosophy[53], this manufacturing plant is designed in work teams. At the time of the risk audit (April 1999), 177 employees were working in the factory and office.

The primary process is the same as with *Bicycle*, with the same departments that supply the assembly line. However, the production layout is centered around these assembly lines – all supplying departments are situated around these lines, and logistics are very clear. This results in short communication lines and high controllability of the production process. The teams in this plant are, in fact, the same as the different departments. Within the teams, the employees rotate over different tasks.

Table 3.2 General figures about the organizations participating in this study (in brackets are percentages of the total number of respondents)

	Care	*Care Team*	*Bicycle*	*Bicycle team*
N of employees*	532	1306	153	177
N of respondents	309	677	130	73
Response rate	58%	52%	85%	41%
Male	3 (1)	14 (2)	97 (75)	51 (70)
Female	306 (99)	661 (98)	32 (25)	22 (30)
Age < 26	13 (4)	25 (4)	17 (13)	18 (25)
Age 26-35	101 (33)	112 (17)	48 (37)	27 (37)
Age 36-45	95 (31)	237 (35)	38 (29)	18 (25)
Age 46-55	81 (26)	262 (39)	25 (19)	10 (14)
Age > 55	18 (6)	36 (5)	0	0
Primary education**	83 (27)	88 (13)	75 (58)	32 (44)
Secondary education	184 (60)	495 (73)	44 (34)	36 (49)
Higher education	40 (13)	87 (13)	10 (8)	6 (8)

* at the time of the risk audit
** including Lower vocational education.

[53] The company is operated based on principles such as Just In Time (JIT), Total Quality Control, Total Productivity Maintenance, standardization of work processes and 5S-management (Kammeraat, 2000).

3.7 Summary

This chapter presented this study's research questions. Derived from different theoretical discussions, the following questions will be answered in the next chapters:

1. What are the results of different ways of measuring the quality of working life? (Chapter 4)
2. What are the most important determinants of the quality of working life? (Chapter 5)
3. How can the quality of working life be improved? (Chapter 6)

These questions represent the theoretical and empirical dimensions in the research of the quality of working life. To answer these questions I formulated five hypotheses, which will be tested in the following chapters. The data to test these hypotheses were gathered in four organizations with a questionnaire that measures all the concepts in the conceptual model. In addition to this questionnaire, the results of WEBA analyses will be used.

4 Observers' Ratings and Questionnaires

The central question in this chapter concerns what the results of different measures of the quality of working life are. A related question is whether there are differences between different measures. As argued in Chapter 3, there are two major ways to measure the quality of working life: first, with the help of observers' ratings, and second with questionnaires to be filled out by the workers (self-report method). The corresponding hypothesis is that the measures show no differences in the results with respect to risk audits on the quality of working life (Hypothesis 1), which is based on studies of Frese and Zapf (1988) and Meijman and Van Ouwerkerk (1999). To test this hypothesis, it is necessary to compare the results of the WEBA (observers' ratings) and NOVA-WEBA (questionnaire) methods. As argued in Chapter 3, these methods have the same sociotechnical background and are both used for risk audits with respect to well-being at work. In this chapter I test whether the results of WEBA and NOVA-WEBA are the same.

The results of both methods can be defined in different ways. First, as a risk audit for well-being at work, both measures generate a picture of risks in a job. In WEBA this picture is a bar chart (see, e.g., Figure 4.1) and in NOVA-WEBA a series of scale scores (see, e.g., Table 4.1). Second, to be useful as a risk audit, the bar charts as well as the scale scores must be interpreted; this is mostly a textual interpretation of the results. Therefore, in the reports about the risk audits, the bar charts and scale scores are accompanied by a textual interpretation of these scores. These reports (pictures and interpretations) are the basis for the final conclusions with respect to the well-being at work in a certain job. Moreover, these form the basis for taking measures to improve the quality of working life.

Therefore, the results of the measuring are twofold. First, the measures generate bar charts and scale scores. Second, the bar charts and scale scores must be interpreted in order to serve as risk audits. These interpretations are results of the measurements as well. Comparing these different results tests the validity of the measures. Validity denotes the scientific utility of a measuring instrument, broadly referred to in terms of how well it measures what it purports to measure (Nunnally and Bernstein, 1994). According to Nunnally and Bernstein, there are three kinds of

validity: construct, predictive and content validity[54]. The goal of construct validation is to "employ one or more measures whose results generalize to a broader class of measures that legitimately employ the same name" (1994: 85). This means that measures of the same construct should highly correlate. In this study this means that the results of WEBA and NOVA-WEBA as constructs of job content should highly correlate.

Predictive validity refers to the functional relations between a predictor and criterion events occurring before, during, and after the predictor is applied. In this study, the predictors are WEBA and NOVA-WEBA. The criterion events are the outcomes of the work (as measured in the questionnaire) as they occur during the measuring. This kind of predictive validity is also referred to as concurrent validity, and is determined as the degree of correspondence between the predictor and the criterion.

Content validity refers to the adequacy of the measurement with regard to a specified domain of content. The measurement must stand by itself as an adequate measure of what it is intended to measure. "In essence, the test *is* the criterion of performance" (Nunnally and Bernstein, 1994: 101). In this study WEBA and NOVA-WEBA should be the measurement of risks with regard to well-being at work. In other words, WEBA and NOVA-WEBA should result in a description of risks.

Table 4.1 NOVA-WEBA results for the function of District Nurse in *Care*.

Scale	**Score**	Explanation:
Completeness	.330	*Scores can range from 0 to 1. A high score (close*
Monotony	.147	*to 1) represents high risks with respect to that*
Difficulty	.687	*characteristic. A low score (close to 0) represents*
Autonomy	.425	*low risks with respect to that characteristic.*
Interaction potential	.289	
Organizing tasks	.131	
Information	.267	N = 34

4.1 Construct Validity: Comparing WEBA Bar Charts and NOVA-WEBA Scale Scores

Construct validation is a complex process that results in a construct that "(1) is well defined through a variety of observables, (2) is well represented by alternative measures, and (3) relates strongly to other constructs of interest" (Nunnally and Bernstein, 1994: 87). Since WEBA and NOVA-WEBA are already existing instruments, they were tested on the first two aspects of construct validity (measuring job content) when they were developed (see, e.g., Dhondt and Houtman, 1992). This is

[54] Other authors have used different names to describe these types of validity. "Predictive validity has been referred to as "empirical validity", "statistical validity", and more frequently "criterion-related validity"; content validity has been referred to as "intrinsic validity", "circular validity", "relevance", and "representativeness"; and construct validity has been spoken of as "trait validity" and "factorial validity"." (Nunnally and Bernstein, 1994: 109).

in fact true for all measures in this study, since they are all derived from existing (and tested) instruments. In this paragraph, I will test the third aspect of construct validity – whether WEBA and NOVA-WEBA relate to each other.

However, bar charts and scale scores cannot be compared just like that; the three possible outcomes per characteristic in the WEBA method (sufficient, marginally sufficient, and not sufficient) were coded[55] into the same SPSS file as the scale scores of NOVA-WEBA. With these numbers it is possible to execute statistical analyses. The first analysis is to test whether the WEBA scores and NOVA-WEBA scores correlate. If WEBA and NOVA-WEBA measure the same constructs (job characteristics), correlation between the WEBA scores and their NOVA-WEBA counterparts should be high. Since WEBA measures at job level and NOVA-WEBA at individual level, the NOVA-WEBA scores are aggregated to job level. Table 4.2 presents the results of this correlation analysis.

Table 4.2 Correlation between WEBA scores and the NOVA-WEBA counterpart per characteristic (n=28).

WEBA characteristic	*Correlation with NOVA-WEBA counterpart*
Completeness of the work	.282
Monotony	.698**
Difficulty	-.525**
Autonomy	.200
Interaction potential	.083
Organizing tasks	-.132
Information	.028

* Correlation is significant at .05 level

** Correlation is significant at .01 level

This analysis shows that only two WEBA characteristics, 'Monotony' and 'Difficulty' correlate with their NOVA-WEBA counterparts (significance level at .01). The other correlation coefficients are not significant, which means that these variables are not related. This is a very low score for variables that aim to measure the same constructs. Furthermore, the characteristic 'Difficulty' shows even a negative correlation coefficient. This means that this characteristic has a reversed relationship; a positive score on WEBA ('sufficient') relates to a negative (high-risk) score on NOVA-WEBA.

From this correlation analysis it is questionable whether the construct validity with regard to the third aspect (relating to each other) of both measures is high. Only for the characteristic 'Monotony' is there a strong correlation between the WEBA and NOVA-WEBA scores. An ANOVA analysis can show how different WEBA scores and NOVA-WEBA scores relate to each other on a more detailed level. This analysis can help to interpret and understand the correlation coefficients. If construct

[55] The scores 'sufficient', 'marginally sufficient' and 'not sufficient' were coded as 0, .5 and 1, respectively.

validity is high, in an ANOVA analysis, the WEBA score 'sufficient' should correspond to the lowest NOVA-WEBA score and 'not sufficient' should correspond with the highest NOVA-WEBA score. And, as a result, 'marginally sufficient' should correspond to the middle NOVA-WEBA score with regard to that job characteristic. Table 4.3 presents the results of the ANOVA analysis[56].

Table 4.3 ANOVA analysis for WEBA and NOVA-WEBA scores: the mean NOVA-WEBA score per WEBA category (n=1095, all scores significant at level .001).

Characteristic	WEBA sufficient	WEBA marginally sufficient	WEBA not sufficient
Completeness	.3710	.3808	.4780
Monotony	.4071	.6547	.7604
Difficulty	.9220	.6817	.5743
Autonomy	.3441	.4889	.4221
Interaction potential	.2384	.1333	.3832
Organizing tasks	.4640	.2765	.2563
Information	.3166	.3737	.2670

This analysis shows that 'Completeness' and 'Monotony' show the expected pattern: WEBA 'sufficient' corresponds to the lowest NOVA-WEBA score, and WEBA 'not sufficient' corresponds to the highest NOVA-WEBA score. This means that if the WEBA score indicates a risk, the NOVA-WEBA score does so as well. 'Difficulty' and 'Organizing tasks' show a reversed pattern: WEBA 'sufficient' corresponds to the highest NOVA-WEBA score, and WEBA 'not sufficient' corresponds to the lowest NOVA-WEBA score (this resulted in a negative correlation between WEBA and NOVA-WEBA; see Table 4.2). A reversed pattern means that if the WEBA score indicates a risk, the NOVA-WEBA score does not, and vice versa. The other characteristics show mixed patterns. For these characteristics, the scores for the WEBA category 'marginally sufficient' do not fit the expected pattern in the sense that they do not correspond to the middle NOVA-WEBA score. Moreover, with respect to 'Information', the mean NOVA-WEBA score for the WEBA category 'sufficient' is higher than for the category of 'not sufficient'. This seems to represent a reversed pattern.

This ANOVA analysis, as well as the correlation analysis, shows that there are substantial differences between the WEBA and NOVA-WEBA results[57]. Not only do the patterns differ, some patterns are even reversed. The latter is the case for the characteristics of 'Difficulty' and 'Organizing tasks'. An explanation for the reversed pattern with respect to 'Difficulty' can be found in the wording of the items

[56] These analyses are at individual level. Otherwise, the number of jobs per cell would be too low. However, I used the mean NOVA-WEBA score per job for each respondent in that job.

[57] Separate analyses for the two different sectors show the same pattern of results, however there are slight differences. WEBA and NOVA-WEBA seem to match slightly better for the bicycle manufacturers than for the home care organizations.

in the questionnaire. Whereas WEBA is based on the assumption that 'too difficult' is not a problem (it generates opportunities for learning), NOVA-WEBA focuses on the difficulty as such. In WEBA, 'Difficulty' is sufficient when a job consists of a sufficient number of difficult tasks. 'Difficulty' is not sufficient when a job only contains easy (routine) tasks. However, a high score on the NOVA-WEBA scale 'Difficulty' represents a difficult job. This means that if the coding of the NOVA-WEBA items is reversed, the results of WEBA and NOVA-WEBA match.

Regarding the other differences between WEBA and NOVA-WEBA, an explanation can be the limited variance in WEBA scores. For most of the jobs in the sample, the WEBA scores for 'Autonomy', 'Interaction potential' and 'Organizing tasks' are not sufficient. This means that most jobs have the same score on these characteristics, whereas the NOVA-WEBA scores on these characteristics show more variance. In WEBA there is such little variance because of the decision rules in the instrument. As described in Chapter 3, WEBA is based on the balance between control need and control capacity. With respect to the problems in the work (control need), the options for dealing with these problems (control capacity) are audited. If there is just one problem that cannot be dealt with conclusively, the characteristics of 'Autonomy', 'Interaction potential' and 'Organizing tasks' get a score of not sufficient. As mentioned, this is the case in most jobs. Therefore, there is limited variance in the WEBA scores.

As a result, construct validity with regard to its third aspect (strong relation with other constructs) is very low. It is therefore important to test predictive and content validity of WEBA and NOVA-WEBA to find out which instrument is better suited for studies on the quality of working life and for risk audits.

4.2 Predictive Validity: Relating WEBA and NOVA-WEBA Scores to Outcomes of the Work

Since the correlation and ANOVA analyses show substantial differences between WEBA and NOVA-WEBA, the question arises as to what measure best explains the outcomes of the work. This refers to the predictive (or concurrent) validity of the measures. The predictive validity is determined by the degree of correspondence between predictor(s) and criterion (Nunnally and Bernstein, 1994). Regression analysis is a measure of determining this degree of correspondence. With different outcomes of the work as dependent variables, the explanatory powers (R^2) of the WEBA and NOVA-WEBA scores are tested. For a fair comparison, I used the aggregated NOVA-WEBA scores at job level. Table 4.4 presents the results.

Table 4.4 Explanatory power (R^2) of WEBA and NOVA-WEBA with respect to different dependent variables.

Dependent variables	R^2 of WEBA scores as independent variables (n=28)	R^2 of NOVA-WEBA scores as independent variables (n=34)
Need for recovery	.310	.425*
Brooding about the work	.314	.515**
Job satisfaction	.523*	.472**
Commitment	.158	.500**
Health reactions	.314	.639**
Mental reactions	.245	.485**
Overall effects	.218	.385

* Correlation is significant at .05 level

** Correlation is significant at .01 level

From Table 4.4 it is clear that the NOVA-WEBA scores better explain the outcomes of the work than the WEBA scores. For most outcomes, the explanatory power (R^2) of NOVA-WEBA is higher than that of WEBA. Moreover, most explanatory powers of the WEBA scores are not significant. Only with regard to job satisfaction R^2 of the WEBA scores is better than that of the NOVA-WEBA scores. This means that the results of NOVA-WEBA are better indicators for bad quality of working life (in terms of the outcomes of the work) than are those of WEBA. However, this reasoning is not completely fair. Since the NOVA-WEBA scales and those for the outcomes of the work are measured with the same instrument, the triviality trap (Kasl, 1978; see also Chapter 2) is at stake. It is possible that the resulting relations between NOVA-WEBA and outcomes are caused by the fact that they are both measured with the same self-report method. This triviality trap can be dealt with by using unilateral and validated terms in the questionnaire in order to generate as few prejudiced results as possible (Van Veldhoven and Meijman, 1994). Moreover, group data will generate unprejudiced results as well (Frese and Zapf, 1988; see also Chapter 3). Nonetheless, Table 4.4 shows that the explanatory power of NOVA-WEBA is much higher than that of WEBA.

Another possible explanation for the different results is that the translation from WEBA to NOVA-WEBA[58] did not take into account that the respondents, in contrast to observers who use WEBA, are not aware of the underlying theoretical framework. This could mean that the translation from WEBA to NOVA-WEBA is not valid in the sense that the wording of NOVA-WEBA is not unilateral. To generate the same results, the observer's judgment in WEBA and the respondent's judgment in NOVA-WEBA should be made with as little cognitive and emotional processing as possible (Frese and Zapf, 1988). The results in this study show that both instruments have a different predictive validity. Therefore, it is likely that both in-

[58] WEBA was developed first (Projectgroep WEBA, 1989) and NOVA-WEBA was later based on WEBA (Dhondt and Houtman, 1992).

struments require different levels of cognitive and emotional processing from respondents and observers[59].

The predictive validity is important in this study, as I wish to find the most important determinants of the quality of working life. This analysis shows that predictive validity for NOVA-WEBA is better than for WEBA. However, as argued before, the outcomes of WEBA and NOVA-WEBA are twofold. First, they generate a picture of the quality of working life. For this picture, construct and predictive validity are important. Secondly, WEBA and NOVA-WEBA serve as risk audits. Therefore, the conclusions drawn from the results of these instruments should be labeled as risks. The question in the next section is whether both instruments generate the same conclusions about the risks with respect to well-being at work. This is the content validity of the instruments.

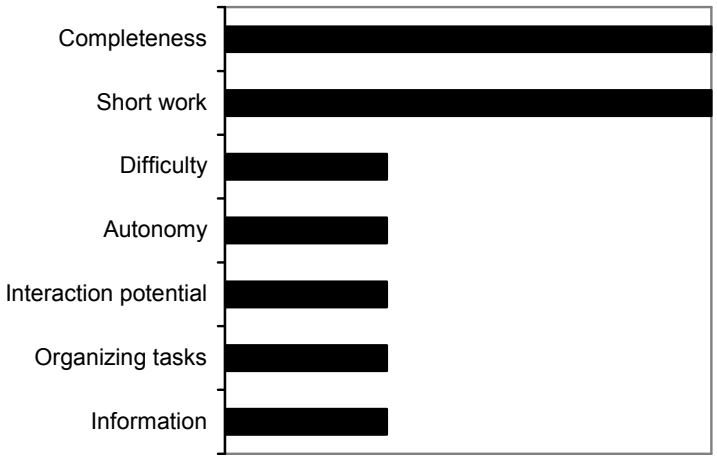
4.3 Content Validity: Comparing WEBA and NOVA-WEBA Conclusions in Terms of Risks with Respect to Well-being at Work.

For the four participating organizations in this research, the WEBA and NOVA-WEBA results together served as risk audits with respect to well-being at work. These risk audits can and must be used as a basis for measures to improve the quality of working life. WEBA and NOVA-WEBA claim to offer these possibilities. Therefore, the content validity is important for testing whether WEBA and NOVA-WEBA actually generate conclusions that can serve as a basis for measures to improve the quality of working life.

In the reports about these risk audits (see Struik and Schouteten, 1998; Kammeraat, 2000; Schouteten and Van Winsum, 2000; Schouteten and Zegwaart, 2000), the results of WEBA and NOVA-WEBA and the interpretations of these results were combined to present the risks with respect to well-being at work. In these reports, the risk analysis per job was as follows: First, based on the WEBA analysis, we presented a description of the job, in which the different tasks and their difficulty are the main ingredients. After this description we presented the problems in the work and the opportunities to deal with them. This results in a conclusion with respect to the well-being at work. After this conclusion based on the WEBA analysis, we presented the results of the questionnaire as an addition or refinement to the WEBA conclusion. Together, the WEBA and NOVA-WEBA conclusions result in an integrated conclusion.

For most jobs, the interpretation of the NOVA-WEBA results confirmed the interpretation of the WEBA analysis. There were no big differences or surprises, though for most jobs the picture of WEBA looked more negative than that of NOVA-WEBA (See, e.g., Figures 4.1 and 4.2. These figures represent, respectively, a WEBA and NOVA-WEBA profile of well-being for the job of District Nurse in *Care*).

[59] By the level of cognitive and emotional processing Frese and Zapf (1988: 379) mean the level in which, e.g., an individual's perceptions and appraisal influence the reporting of social and physical facts.



Explanation: A long bar indicates that the score on the characteristic is 'sufficient'. A middle long bar (not present in this figure) indicates a score of 'marginally sufficient', and a short bar indicates a score of 'not sufficient'.

Figure 4.1 Profile of well-being of a District Nurse resulting from the WEBA analysis

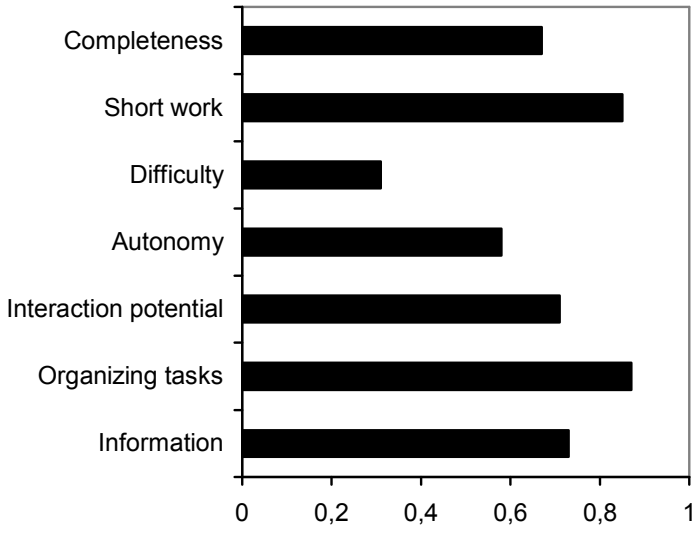


Figure 4.2 Profile of well-being of a District Nurse resulting from the NOVA-WEBA analysis

These profiles of well-being clearly differ. A long bar indicates a favorable situation and a short bar indicates a risk with respect to the concerned characteristic. In the profile of well-being that results from the WEBA analysis (Figure 4.1), the bars are shorter than in the profile resulting from NOVA-WEBA (Figure 4.2). This means that WEBA clearly indicates risks with respect to well-being at work (most characteristics are not sufficient), whereas NOVA-WEBA shows less risks. This could mean that WEBA detects more risks than does NOVA-WEBA.

A possible explanation for the differences in the length of the bars can be found in the job satisfaction paradox (Blauner, 1964; De Sitter, 1980; 1994; Van der Zwaan, 1991). Different researchers have found that in surveys with respect to job satisfaction, an average of 75% of respondents would answer that they were satisfied with their jobs. The reason for this can be found in the theory of cognitive dissonance (see Ruël, 1994), which predicts that workers try to make their situation (their jobs) consonant with their cognition (subjective standards). If it is impossible to adjust the jobs to the workers' standards, the workers will adjust their standards to their jobs. Therefore, if workers judge their own jobs, they are inclined to give more positive answers than is 'objectively' true. This fits De Sitter's (1994) adaptation theory, which states that workers adapt to their jobs and, as a result, report high satisfaction because the job characteristics and the workers' (adjusted) standards are in balance.

This result also fits the conclusion that resulted from the construct and predictive validity tests that there are differences between the questionnaire and the observers' ratings. This conclusion contradicts other studies (Frese and Zapf, 1988; Vogelaar and Van der Vlist, 1995) that conclude that objective job characteristics correspond with perceived job characteristics. These authors have based their conclusions on literature review, whereas Meijman and Van Ouwerkerk (1999) based their results on empirical data. Their conclusion is that for some characteristics (workload, monotony, autonomy), questionnaire data and 'objective' job characteristics correspond, and for other characteristics (interaction potential, relationships with colleagues and superiors), questionnaire data and observers' ratings do not. Van Eijbergen (1999) also concludes that perceived and actual situations with respect to work characteristics do not correspond.

Although the profiles of the WEBA and NOVA-WEBA analyses clearly differ from each other, the interpretations of both profiles are relatively the same. To interpret the profiles it is necessary to be familiar with the underlying concepts and theories of WEBA and NOVA-WEBA. Furthermore, it is necessary to 'understand' the results, and to be able to read the results. With regard to WEBA, one should know how the forms (see Chapter 3) are filled out and what the decision rules in the instrument are. And with regard to NOVA-WEBA, it is important to know which items comprise a scale.

For example, the conclusion in the report with respect to the District Nurse in *Care* (Struik and Schouteten, 1998) is that in this job, there are many problems (control need) that cannot be dealt with conclusively. Therefore, there are risks with respect to the well-being at work for this job. This conclusion is drawn from the

WEBA profile and its accompanying description of the job and is confirmed by the results of NOVA-WEBA, which show that the work is difficult and that autonomy and interaction potential (control capacity) are limited. However, based on NOVA-WEBA scores only, we would not have judged this job as potentially very problematic, since the scale scores are not very high (on risks). On the other hand, the scales in the questionnaire that represent the outcomes of the work[60] indicate risks as well. From the WEBA description we learn that it is a lonely job (District Nurses operate alone) and that the worker must be creative in finding solutions to deal with problems. Many problems originate from communication problems with third parties, such as general practitioners. Furthermore, clients sometimes request more services than the District Nurses are inclined to, or have time for, which causes some emotional problems. Such a detailed description of problems can barely be deduced from NOVA-WEBA analyses.

This example is typical of the differences between WEBA and NOVA-WEBA. In most jobs there were these kinds of differences, however they were usually smaller, especially for the jobs at the bicycle factories. In these organizations, the WEBA and NOVA-WEBA results were more similar (and, hence, the interpretations). This indicates that WEBA and NOVA-WEBA are better suited for industrial production than service organizations. The reason for this can be that the wording of NOVA-WEBA better matches with the situation of an industrial than a services environment[61]. This coincides with the conclusion of Morée and Vulto (1995a; 1995b; Vulto and Morée, 1996), who also used WEBA in an organization for home care. Their conclusion is that WEBA is not suited for these kinds of jobs, because healthcare jobs are a combination of hand, head and heart[62] tasks, whereas WEBA only pays attention to the hand and head tasks in a job. The extra 'heart' tasks cause extra workload that cannot be taken into account in WEBA. Furthermore, they argue that the wording is aimed at industrial jobs, with terms such as "working with materials" and "contradictory orders". I do not agree with this conclusion, because WEBA is a general instrument and its terms can be translated for every job. Moreover, it is possible to take the extra workload in healthcare jobs into account in WEBA analyses by seeing it as a problem (control need) that requires solutions (control capacity) (Meerman and Vaas, 1995). However, this requires sufficient theoretical and empirical knowledge from the auditor about the instruments and how to use them in different situations and contexts. Nonetheless, my research shows that WEBA and NOVA-WEBA results are more alike for the jobs in the bicycle manufacturers than in the home care organizations.

With regard to the content validity of WEBA and NOVA-WEBA, there are two important conclusions. First, their interpretations generate the same conclusions. These interpretations, however, can only be made with sufficient knowledge about the underlying theories and concepts. Moreover, knowledge about the contents and

[60] Note that these scales are not part of NOVA-WEBA.

[61] This kind of reasoning is characteristic of testing face validity (Nunnally and Bernstein, 1994: 109-110).

[62] According to Morée and Vulto (1995a), healthcare jobs are characterized by a combination of rational (hand and head) and instinctive (heart) actions during the caring work.

methods of WEBA and NOVA-WEBA is necessary to be able to make judgments. This makes it very difficult for the non-skilled to use WEBA or NOVA-WEBA.

The second conclusion is that WEBA presents more detailed information about the risks with respect to well-being and their possible causes. WEBA urges the observer to give a detailed description of the job, its control capacity and its control need. NOVA-WEBA, on the other hand, only signals risks, making it very difficult to find the exact causes. From NOVA-WEBA it is far more difficult to get a detailed description of a job and its exact tasks. Moreover, the interpretation of NOVA-WEBA results is easier if there is already a WEBA analysis available.

4.4 Discussion

In this chapter I tested the validity of WEBA and NOVA-WEBA in order to test the hypothesis that both measures of the quality of working life generate similar results (Hypothesis 1). The results of WEBA and NOVA-WEBA are twofold: First, they generate a picture of the quality of working life in a specific situation; second, they serve as a risk audit with regard to well-being at work. Therefore, they should offer indications for measures to improve the quality of working life.

The analyses show differences between the two measures; the correlation coefficients between WEBA scores and their NOVA-WEBA counterparts are low and hardly significant. This means that construct validity is limited and that there are differences in the results of both measures. With regard to predictive validity, NOVA-WEBA shows better explanatory powers with regard to outcomes of the work. This means that NOVA-WEBA scores, rather than those of WEBA, show stronger relationships with outcome variables. With regard to content validity, the analysis shows that WEBA offers increasingly more detailed information about jobs and the risks with regard to well-being at work. Hence, it offers better indications for improvement measures.

As a result, Hypothesis 1 must be rejected. The question then arises as to what instrument can best be used. This depends on the goal of the risk audit. In order to take measures to improve well-being at work, WEBA should be used as it generates the most detailed information as well as suggestions for interventions. For a quick overview of risks, NOVA-WEBA is sufficient. Furthermore, the choice of one of the two instruments depends on the means (time and money) an organization wants to spend on the risk audit. Depending on the amount of different jobs in an organization, NOVA-WEBA generates results in a quicker and cheaper way than does WEBA. A possibility for dealing with this problem of costs is to use NOVA-WEBA and WEBA sequentially. First, use NOVA-WEBA to detect where risks exist, then use WEBA to analyze these risks in a more detailed manner – this is called a Cascade approach. However, a problem with this approach is that it is possible that NOVA-WEBA, unjustly, does not indicate risks although there are risks present[63]. In

[63] The differences between WEBA and NOVA-WEBA can be metaphorically described by seeing risks with respect to well-being at work as an iceberg (Schouteten and De Witte, 1999). Only a small part of an iceberg floats above sea level. This part can be investigated

such a case, WEBA will not be used and, hence, the risks will not be dealt with. Therefore, when choosing between the two instruments, it is important to consider the goals and purposes of the risk audit.

For this research, however, it is important that the predictive (concurrent) validity (as a measure of the relationship between independent and dependent variables) is well in order to find the most important determinants of the quality of working life. Therefore, NOVA-WEBA will be used in the next chapter as a measure of the characteristics of the work (job content). The characteristics of the worker and the fit between work and worker are also measured with a questionnaire. Therefore, the problem of the triviality trap is less important since all constructs are measured with a questionnaire.

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using a signaling instrument, such as NOVA-WEBA, however it can easily be overseen. Most of the iceberg, however, is beneath sea level and can only be investigated by using a more detailed instrument, such as WEBA. Both instruments give information about the same iceberg, however NOVA-WEBA can give information only about the presence of an iceberg (the presence of risks), but not about the iceberg's shape and extent (the extent of the risks). To acquire information about the extent of the risks, WEBA is more appropriate.

5 Determinants of Well-being at Work

This chapter's central question is what the most important determinants of quality of working life are. As presented in Chapter 2, there are several theories about these determinants. From these theories I distinguished three different theoretical perspectives: characteristics of the work, characteristics of the worker, and characteristics of the fit between work and worker. Chapter 3 presented three hypotheses with regard to these determinants. These hypotheses will be tested in this chapter; however, before doing so I will give some general remarks about the data and analyses.

5.1 Data and Analyses

Chapter 3 described two ways to measure the variables in the conceptual model, the first using questionnaires and the second the WEBA method to measure the job content. In Chapter 4, I concluded that there are differences in results between the use of questionnaires and WEBA, however the use of questionnaires is appropriate for the analyses in this research. Therefore, only the results of the questionnaire will be used to determine the most important determinants of the quality of working life.

Chapter 3 also presented the contents of the questionnaire, which consists of five parts: after some general questions to identify the respondents, the four parts of the conceptual model are measured. Furthermore, in Chapter 3, I described the methods used to gather the data: I distributed the questionnaire among the employees of two home care organizations and two bicycle manufacturers. In Section 5.1.2, I will present information about the differences between these organizations. First, however, I will present some general empirical remarks about the scales in the research.

5.1.1 Scales: Reliability, Means and Normality of the Distributions

As argued, the questionnaire consists of existing scales. Still, it is important to test whether these scales are reliable in this particular study. Table 5.1 presents the results of the reliability analysis.

Table 5.1 Means and reliability of the scales in this study

Scale	Mean	Reliability (α)	n[64]
Characteristics of the work			
Difficulty of work	.6089	.7791	1124
Variety in work	.4279	.7278	1157
Completeness of work	.3709	.7908	891
Monotony of work	.5327	.3026	520[65]
Autonomy	.4029	.7276	1133
Interaction potential	.3687	.5830	1160
Organizing tasks	.2708	.7466	1118
Work organization	.2689	.7248	1153
Information	.3642	.7598	1114
Workload	.3512	.7722	1085
Emotional stress	.1795	.3611	1143
Task changes	.2883	.6599	1157
Executives and colleagues	.3373	.7496	1139
Physical working conditions	.2616	.6388	1155
Physical strain	.5292	.8768	1159
Terms of employment	.4229	.3693	1116
Characteristics of the worker			
Orientation on job content	2.3773	.8631	1078
Orientation on work relations	1.5312	.8403	1159
Orientation on working conditions	4.3460	.8045	1084
Orientation on terms of employment	1.7956	.7378	1161
Characteristics of the fit			
Perception of job content	3.3735	.8863	1049
Perception of work relations	3.1901	.8422	1145
Perception of working conditions	2.9805	.8073	1066
Perception of terms of employment	3.1512	.7822	1128
Outcomes of the work			
Need for recovery	.2816	.8864	1072
Brooding about the work	.1920	.7604	1159
Work satisfaction	.1040	.8063	1138
Commitment	.4264	.7638	1068
Inclination to change jobs	.2800	.7586	1157
Health/physical reactions	.0988	.8670	1124
Feelings/emotional reactions	.2606	.8045	1084

Explanation: except for the 'orientation' and 'perception' scales, the mean can vary between 0 and 1. A low score (close to 0) indicates no or only few risks with respect to that scale, a high score (close to 1) indicates high risks. The 'orientation' and 'perception' scales can vary between 1 and 7. A low score on orientation indicates that the respondent has a high need for this characteristic, a high score indicates a low need. A low score on perception indicates high satisfaction of the respondent's needs with respect to that characteristic; a high score indicates high dissatisfaction of the respondent's needs.

[64] Because of missing data in the data set, the numbers of respondents per scale can differ. When a respondent has not answered one or more questions per scale correctly (i.e., 'tick just one answer'), this respondent has been excluded from the measuring of that scale.

[65] The number of respondents for this scale is so low due to the scale construction. The questions with regard to monotony of the work contain 'if yes' constructions (see Appendix, Questions 55-56B). Hence, not all respondents had to answer all questions. Therefore, the number of respondents that answered all questions is limited. Moreover, these respondents suffer from monotonous work, which explains the rather high mean score on this scale.

5.1.1.1 Reliability

One can draw several conclusions from Table 5.1. First, the major aim of this table is to test the reliability of the scales in the questionnaire. Although all scales are derived from existing and tested questionnaires, not all scales prove reliable. A scale is reliable when α equals .7 or more, and not reliable when α equals less than .6 (Peterson, 1994: 382). Table 5.1 shows three scales with reliability less than .4: monotony of the work, emotional stress, and terms of employment. Attempts to make these scales reliable (by deleting items that do not contribute to the scale) were not successful. Therefore, these scales will not be used in the analyses for this research. Besides this, there are some scales with α between .6 and .7, indicating a low, but not unacceptable, level of reliability. Despite these rather low scores on reliability, these scales will be used for further analyses.

5.1.1.2 Means

A second conclusion from Table 5.1 concerns the mean scores of all respondents in this study. With respect to the scales that measure outcomes (from 'need for recovery' to 'feelings/emotional reactions'), we can see that there are rather few risks. All scores are lower than .5 and most are lower than .2. The only rather high score is on the commitment scale (.4264). These scores indicate that the respondents experience only few risks in terms of outcomes of the work. The same conclusion can be drawn from the independent variables, as far as the characteristics of work are concerned (from 'difficulty' to 'terms of employment'). From these scales also only a minority indicate risks. Most striking are the scores with respect to difficulty, monotony and physical strain. These scores indicate that the work in home care and bicycle manufacturing is difficult, monotonous and physically exhausting. However, it is premature to draw these kinds of conclusions for the whole data set, because there are major differences between jobs in the home care sector and jobs in bicycle manufactories. I will therefore highlight some differences between the organizations and particular jobs in Section 5.1.2.

With respect to the orientations and perceptions regarding work, some conclusions can be drawn from Table 5.1 as well. The respondents report the highest need strength (lowest score on orientation) with respect to work relations. Work relations deal with the ways in which people at work (colleagues and executives) cooperate and get along with each other (or do not). The lowest orientation is on working conditions (noise, pollution, temperature, etc.). Thus, the respondents feel that work relations are most important, followed by terms of employment, job content and, finally, working conditions. Although least important, current working conditions is what the respondents are most satisfied with (lowest perception score). Moreover, this is the only perception score that is lower (better) than its orientation counterpart. The other perception scores are more negative than their orientation counterparts. From these characteristics, the respondents are least satisfied with their current job content, followed by work relations and terms of employment. The fact that these scores are more negative than the orientations could indicate that the respondents are not satisfied with their jobs. However, on a scale from 1 to 7, a score of 3.37 is closer to 1 (satisfied) than 7 (dissatisfied). Furthermore, it can be concluded from the

outcome scales that the respondents do not experience many negative outcomes (commitment, satisfaction, health, feelings).

5.1.1.3 Normality of the Distributions

In addition to the reliability analysis I also conducted a test on normality of the distributions of the scales; only three scales, however, showed distributions that are not skewed and show kurtosis not different from zero (see Appendix 2). This means that most scales do not have a normal (or Gaussian) distribution. This is not a problem in conducting regression analyses, because in the General Linear Model no distributional assumptions are made about the independent variables (Fox, 1991). For ANOVA analysis, however, it is important that the dependent variables are normally distributed, though as a result of the Central Limit Theorem (Fox, 1991; Stevens, 1996) it can be argued that if the number of independent observations (respondents) increases, the results will approach a normal distribution. "The sampling distribution of F is only slightly affected, and therefore the critical values when sampling from normal and non-normal distributions will not differ by much" (Stevens, 1996: 243).

5.1.2 Differences Between Categories

5.1.2.1 Sector Differences

The data in this study originate from four different organizations, differences between which can affect the results of regression analyses in an undesirable way. In regression analysis it is important to exclude as many uncontrollable effects as possible. Therefore, I will highlight and discuss how to deal with some of the differences between categories in the sample in this section. First, Table 5.2 shows the results from the different organizations.

Table 5.2 Mean scores of the different organizations on the scales in the questionnaire

Scale	***Care*** (n=309)	***Care Team*** (n=677)	***Bicycle*** (n=130)	***Bicycle Team*** (n=71)
Characteristics of the work				
Difficulty of the work	.5604	.6552	.5066	.5636
Variety in the work	.4298	.3982	.5251	.5362
Completeness of the work	.4082	.3366	.4346	.4180
Autonomy	.3371	.4379	.3477	.4542
Interaction potential	.3937	.4101	.1947	.1914
Organizing tasks	.3167	.1844	.5207	.4507
Work organization	.1762	.2463	.4417	.5857
Information	.2780	.3833	.4680	.3402
Workload	.3205	.3243	.4569	.5529
Task changes	.2578	.2976	.3152	.2836
Executives and colleagues	.2419	.3688	.3857	.3629
Physical working conditions	.2025	.2263	.5067	.4051
Physical strain	.5902	.5103	.4747	.5460

[See next page]

***Table 5.2** [Continued]*

Scale	***Care*** (n=309)	***Care Team*** (n=677)	***Bicycle*** (n=130)	***Bicycle Team*** (n=71)
Characteristics of the worker				
Orientation on job content	2.3155	2.4101	2.4444	2.2177
Orientation on work relations	1.4717	1.5510	1.6371	1.4149
Orientation on working conditions	4.3968	4.3586	4.2926	4.1081
Orientation on terms of employment	1.6417	1.8047	2.0599	1.8896
Characteristics of the fit				
Perception of job content	3.1484	3.4558	3.4195	3.4790
Perception of work relations	2.8393	3.2157	3.6991	3.5318
Perception of working conditions	2.8459	2.9630	3.3028	3.1392
Perception of terms of employment	3.0012	3.1534	3.2618	3.5602
Outcomes of the work				
Need for recovery	.2778	.2539	.3222	.4901
Brooding about the work	.1556	.2159	.1786	.1493
Work satisfaction	.0919	.0716	.2294	.2479
Commitment	.3579	.4464	.4741	.4467
Inclination to change jobs	.2209	.2888	.3260	.3582
Health/physical reactions	.1018	.0916	.1253	.1075
Feelings/emotional reactions	.2485	.2483	.3217	.3191

Explanation: except for the 'orientation' and 'perception' scales, the mean can vary between 0 and 1. A low score (close to 0) indicates no or only few risks with respect to that scale, a high score (close to 1) indicates high risks. The 'orientation' and 'perception' scales can vary between 1 and 7. A low score on orientation indicates that the respondent has a high need for this characteristic, a high score indicates a low need. A low score on perception indicates high satisfaction of the respondent's needs with respect to that characteristic, a high score indicates high dissatisfaction of the respondent's needs.

The most striking differences between the four organizations are those between home care organizations on one hand and bicycle manufacturers on the other. For all outcome variables except 'brooding about the work', the scores for the two bicycle manufactories are higher than for the two home care organizations. This indicates that the respondents in the bicycle manufactories experience more negative outcomes than do those in the home care organizations. The scores on 'need for recovery' and 'work satisfaction' show particularly large differences. Moreover, the differences between the sectors are significant (at level .05) for all outcome variables, except for 'brooding about the work' (see also additional tables in Appendix 2).

With respect to the independent variables, there is a relatively identical pattern. The work organization and the physical working conditions are better for the home care organizations, and there are fewer risks with respect to completeness and variety in the work and organizing tasks. Moreover, the respondents in home care report fewer risks with respect to workload. Interaction potential is better in the bicycle manufactories[66], however; the reason for this is that the home care organization nurses work mostly alone at a client's home. Interaction potential with colleagues and executives is thus very limited. The use of communication technology, such as radiotelephones, offers possibilities for direct communication, however the scores on interaction potential are still rather high.

[66] All these differences are significant at level .05.

As a result, the general picture of Table 5.2 is that quality of working life in home care organizations is better than in bicycle manufactories. This is rather surprising, since workload in the care sector, and more specifically in the home care sector, raises a great deal of attention among policymakers (employers, government) in The Netherlands. There are also differences between organizations that work in teams and those that do not. This will be the topic of Section 5.7.1.

5.1.2.2 Gender Differences

The differences between organizations and sectors correspond with gender differences. Comparing the scores of men and women results in the same significant differences as described for differences between the sectors (see also Appendix 2). This is not surprising, since in the home care organizations it is mostly women who are employed, whereas in the bicycle manufactories it is mostly men (see Table 5.3).

Table 5.3 Distribution of men and women amongst the sectors

		SECTOR		Total
		Home care	Bicycle	
GENDER	Male	17 (10%)	149 (90%)	166 (14%)
	Female	965 (95%)	54 (5%)	1019 (86%)
Total		982 (83%)	203 (17%)	1185 (100%)

What causes the differences between the sectors and the sexes is not clear. It is possible that the sector differences are caused by gender differences; however, it is also possible that gender differences are caused by sector differences. Mottaz (1986) conducted a study in which men and women in comparable occupations were compared with respect to work satisfaction and several work dimensions (such as task autonomy, salary, supervisor support, and working conditions). Mottaz concluded that there were no essential differences between the sexes. Mottaz's finding "indicates that the factors in the model, taken collectively, have essentially the same impact on the job attitudes of the two sexes. Moreover, the relative impact of the various individual work factors appears to be fairly similar" (1986: 370-371). This result strongly supports the hypothesis that gender and overall work satisfaction are unrelated. Spector (1997: 28) draws the same conclusion based on "dozens of studies and thousands of people".

In the present study, it is difficult to test for gender differences in equal situations (equal jobs), because the distribution of men and women is skewed. Since the distribution of men and women in the bicycle factories is more equal (see Table 5.3), I could use only these data to test for gender differences in equal situations. This test resulted in only few significant differences between men and women. Only with respect to physical working conditions did women report significantly more risks than did men. The fact that there are only few differences supports Mottaz's conclusions. Moreover, a comparison between sectors for women only shows the same differences between the sectors as for all respondents. Following this result, the differences in the present study must be the result of the sector differences. However, since the sample is such that differences exist between the sexes and the sec-

tors, and that these differences manifest themselves differently, it is important to control for these differences in the analyses to come.

5.1.2.3 Age Differences

Another demographic variable that raises interest is age. In the questionnaire I asked the respondent's age, categorizing answers into five categories: 1) through 25; 2) 26 through 35; 3) 36 through 45; 4) 46 through 55; and 5) 56 and older. Comparing these categories results in differences between the groups and especially between the younger and older respondents (see Appendix 2). Older respondents report fewer risks than do younger ones, especially with respect to the outcome variables 'work satisfaction', 'commitment' and 'feelings'. Also with respect to the independent variables 'variety in the work', 'completeness', 'work organization', 'organizing tasks', and 'physical working conditions', younger respondents report higher risks than do older respondents[67]. With respect to 'brooding' (outcome variable), 'difficulty' and 'interaction potential' (independent variables), however, younger respondents report fewer risks than do older respondents. These differences correspond with Mottaz's (1987) conclusion that age and work satisfaction are positively related. However, the explanations of these differences are various. One explanation is the job change explanation: older workers are more satisfied with jobs simply because they have better jobs. Another explanation is the grinding down explanation: older workers are more satisfied simply because their work values have deteriorated over the years and hence they demand less from work[68]. However, Mottaz's study mostly supports the intrinsic reward-accommodation hypothesis: "while workers of all ages assign great importance in intrinsic rewards, it is the older workers to whom these rewards are most readily available" (Mottaz, 1987: 404). Since these age differences occur, it is important to control for these differences in the regression analyses in this study.

Conclusions

The comparisons between different categories show that it is important to control for sector, gender and age in the regression analyses to find the most important determinants of the quality of working life. Another possibility is to compare different sectors or team-based and traditionally designed organizations. This is the topic of Section 5.7. Before describing the different regression analyses, however, I will first present the dependent variables to be used in these analyses (Section 5.2).

5.2 Outcome Variables

The number of scales for measuring the dependent variables, as described in Chapter 3, is rather large. Hence, data reduction is desirable. As described in Chapter 3, the different scales can be categorized into two groups: behavioral outcomes and psy-

[67] Significance at level .05.

[68] This reasoning fits the job satisfaction paradox (De Sitter, 1980; 1994; Ruël, 1994; Van der Zwaan, 1990).

chological outcomes. However, there are problems in creating two dependent variables. First, it is very difficult to use the items meant to measure absenteeism. Although most respondents (65%) reported that they had been absent as a result of illness in the twelve months preceding the questionnaire, only a minority indicated the number of days they had been absent. And as to the question of whether the illness was related to the work, only 14% answered yes. Therefore, these variables are extremely skewed and show little variance. Moreover, it is difficult to discern the causes of the illness, and this study is not concerned with illness that is not a result of the work (for instance illness as a result of cold, flu, sport injuries, etc.). This means that with the data gathered, it is almost impossible to find a relation between characteristics of the work and absenteeism. Therefore, these items will not be used as dependent variables.

A second problem is that a factor analysis to reduce the number of dependent variables did not result in well-interpretable factors; the expected two-factor solution (behavioral outcomes and psychological outcomes) did not appear. Following the decision rules in the analysis, a seven or eight-factor solution would be more appropriate. However, this will not reduce the number of dependent variables. What this analysis did show was that the scales in the questionnaire resulted from the factor analysis, as well. Another result was that the scales 'commitment' and 'inclination to change jobs' could be combined; these items turned out to belong to the same factors in the different analyses. I therefore created a new variable, 'commitment', which comprises the two former scales of 'commitment' and 'inclination to leave' in the remainder of this study. The reliability coefficient α of this new variable is .8261, and the scale mean is .3757. The new variable is slightly skewed and shows some kurtosis, however less so than the two former scales.

Another attempt to reduce the number of dependent variables was by simply adding the scale scores of the different dependent variables. This resulted in a variable called 'overall effects' representing all effects of the work on the worker. The reliability coefficient α for this variable is .7279. And, however skewed and kurtose 'overall effects' may be, it shows a more normal distribution than do the itemized dependent variables. An advantage of the use of this variable is that the dependent variables can be reduced to just one. Therefore, I will use 'overall effects' throughout the analyses. Afterwards, I will try to discern whether and why certain differences with respect to the specific (itemized) dependent variables ask for further interpretation and investigation.

In the following sections, therefore, I will use the following dependent variables to test Hypotheses 2a, 2b and 2c: 'overall effects', 'need for recovery', 'brooding about the work', 'work satisfaction', 'commitment', 'health', and 'feelings'.

5.3 Characteristics of the Work

Hypothesis 2a reads as follows: The characteristics of work are the most important determinants of the quality of working life. As argued, this hypothesis is derived from the sociotechnical systems theory. In this section I will test part of this hypothesis with the use of regression analysis to determine whether characteristics of

work are important determinants for the quality of working life. To test this hypothesis, the results of different analyses must be compared. In Section 5.4 I will conduct the parallel analysis with characteristics of the worker as independent variables, and in Section 5.5 I will do the same with the characteristics of the fit. Afterwards, I can compare the results and draw conclusions about the most important determinants of the quality of working life.

As dependent variables in this analysis I will use the variables as described in Section 5.2. As independent variables I will use the characteristics of the work as measured with the questionnaire. However, not all characteristics of the work will be used in this analysis. The reliability analysis showed that some of the independent scales were not reliable; these will therefore not be used in the analysis. Table 5.4 shows the scales that are used. Furthermore, as discussed in Section 5.1.2, I will control for gender, age and sector. Therefore, I will conduct a layered regression analysis with the control variables entered at the first layer (Model 1) and the independent variables entered at the second layer (Model 2). Table 5.4 presents the results of the regression analysis with 'overall effects' as the dependent variable. Table 5.5 presents the same analysis with the itemized dependent variables.

Table 5.4 Results of the regression analysis of the characteristics of the work on 'overall effects'

	Standardized coefficient Beta	
	Model 1	**Model 2**
Gender (1=female)	-.149**	-.071
Age[69] < 26	Ref.	Ref.
Age 26-35	-.068	-.079
Age 36-45	-.091	-.071
Age 46-55	-.147*	-.131*
Age >55	-.100*	-.039
Sector (1=bicycle)	.014	-.070
Difficulty of the work		.038
Variety in the work		.185***
Completeness of the work		-.053
Interaction potential		.048
Work organization		.162***
Autonomy		.048
Organizing tasks		.011
Information		.031
Workload		.178***
Task changes		.256***
Executives and colleagues		.118**
Physical working conditions		-.006
Physical strain		.030
N=682		
R^2	.042	.381
R^2 change	.042***	.338***

** p=<.05, ** p=<.01, *** p=<.001, ref. = reference category*

[69] Note that the age variables are entered as dummy variables.

Table 5.5 R^2 Change and Standardized coefficients Beta of the characteristics of the work on different dependent variables

R^2 change	***Need for recovery***	***Brooding***	***Work satisfac-tion***	***Commit-ment***	***Health***	***Feelings***
Mod. 1 R^2 change	.025**	.011	.111***	.048***	.010	.067***
Mod. 2 R^2 change	.246***	.135***	.168***	.257***	.120***	.260***
Standardized coefficients Beta in Model 2						
Gender (1=female)			-.170***			
Age < 26	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Age 26-35						
Age 36-45						
Age 46-55				-.198***		-.153**
Age >55				-.103**		
Sector (1=bicycle)				-.143**		
Difficulty of the work	.125**	.113**	-.115**			.078*
Variety in the work	.106**		.207***	.212***		.129***
Completeness of the work						
Interaction potential	.071*					
Work organization	.088*		.084*	.178***		.178***
Autonomy						
Organizing tasks			.082*			
Information					.091*	
Workload	.269***	.159***	.180***		.143**	
Task changes	.116**	.121**	.099**	.233***	.128***	.286***
Executives and colleagues				.208***		.141***
Physical working conditions						
Physical strain	.099**				.121***	.082*

** p=<.05, ** p=<.01, *** p=<.001 (only significant values are presented), ref. = reference category*

Tables 5.4 and 5.5 show that the characteristics of work are important determinants of the quality of working life. Characteristics of work explain 33.8% of the variance in the 'overall effects'. The explanatory power (R^2) of the characteristics of work on the itemized dependent variables ranges from 12% ('health') to 26% ('feelings/emotional reactions'). This means that there are considerable differences between the different outcomes of the work and the variables that can explain the variance in these outcomes.

With respect to 'overall effects', older respondents (especially those between 46 and 55 years of age) report fewer negative outcomes. Besides this, the following scales have a significant effect on the outcomes: 'variety in the work', 'work organization', 'workload', 'task changes', and 'executives and colleagues'. The directions of these effects are positive. This means that more problems with respect to the independent variables result in more problems with respect to the dependent vari-

ables. For instance, more problems regarding workload (exceeding the limits) will result in more problems with respect to overall effects. More explicitly, Table 5.5 shows that more workload will result in higher need for recovery, more brooding about the work, less work satisfaction, and more health problems.

Although not significant, the direction of the relations between 'overall effects' and 'completeness of the work' and 'physical working conditions' are negative. This means that more problems with regard to completeness and physical working conditions lead to fewer negative outcomes. In other words, incomplete tasks and bad physical working conditions lead to better overall effects.

With respect to the itemized dependent variables, Table 5.5 shows that some independent variables do not have significant effects on any of the dependent variables. These variables are 'completeness of the work', 'interaction potential', 'autonomy', and 'physical working conditions'. This means that these variables are unimportant – their individual effects are not significantly different from zero.

Furthermore, Table 5.5 shows that for different dependent variables, different independent variables are important. However, 'task changes' has significant effects on all dependent variables. Most directions of the relations are positive. This means that more problems with regard to the independent variables lead to more negative outcomes. The relation between 'difficulty' and 'satisfaction', however, is negative. This means that more difficult tasks lead to less satisfaction.

The results thus far confirm that characteristics of work are important determinants of the quality of working life. However, the models with different dependent variables (outcomes) show different values of R^2 (and R^2 change) and different independent variables that are important in explaining the variance of these outcomes. In the next section I will conduct the same analyses with respect to the characteristics of the worker.

5.4 Characteristics of the Worker

5.4.1 Variables

In this section I will test whether the characteristics of the worker are important determinants for the quality of working life (Hypothesis 2b). The characteristics of the worker to be taken into account are rather diverse. First, I measured the workers' orientations towards the work, which are divided into four categories: orientations on job content, on work relations, on terms of employment, and on working conditions. As described in Chapter 3, these orientations are measured as need strength with respect to the four dimensions of work.

In addition to these orientations, I measured some demographic characteristics, such as gender and age (which are used as control variables) and education and characteristics of the household situation. Education can be divided into six groups: primary, lower vocational, secondary, secondary vocational, pre-university, and higher (including university). In the regression analyses, these variables are entered as dummy variables.

With regard to the household situation, there is evidence that work-family conflicts correlate significantly with job satisfaction. Employees who experience high levels of conflict tend to report low levels of job satisfaction (Spector, 1997). Work-family conflicts exist when demands of the family and those of the work interfere with one another. According to Spector (1997), the problem can occur for anyone with a family but is particularly troublesome for two-career couples, couples with children and single parents. I therefore created two variables to measure the household situation, the first an indication for the caring activities needed in the household and the second an indication for the regularity of working hours of the persons in a certain household. To create the first variable I combined the following questions:

- Are you living alone or together? (Question 3)
- Are you responsible for the care for children? (Question 7)
- What is the age of these children? (Question 7b)

From these questions I constructed six household situations (in brackets the number of respondents in each situation):

1. Living alone without children (113)
2. Living together without children (478)
3. Living together and having a youngest child older than 12 (202)
4. Living alone and having a youngest child older than 12 (15)
5. Living together and having a youngest child younger than 12 (320)
6. Living alone and having a youngest child younger than 12 (12)

The idea is that respondents with children, especially young children, have a great deal of caring activities at home (taking care of children and possibly coordinating these activities with a partner), particularly when children are sick and when school activities require parent involvement. Hence, there are more coordinating activities required to combine work and family and to deal with work-family conflicts. My expectation is that these problems and conflicts have a negative effect on the way the respondents judge their work and its outcomes (see Chapter 2). Therefore, I expect that respondents with young children will judge work and its outcomes more negatively than will respondents with no (or older) children.

The second variable with respect to the household situation is an indication for the regularity of working hours in the household. To create this variable, I combined the following questions:

- Are you living alone or together? (Question 3)
- Do you work regular hours between 8 am and 5 pm? (Question 5)
- Does your partner work regular hours between 8 am and 5 pm? (Question 4a)

From these questions I constructed three household situations (the number of respondents in each situation in brackets):

1. Both partners (or in cases of living alone, the respondent) working regular hours (330);
2. One of the partners working irregular hours (396);
3. Both partners (or in cases of living alone, the respondent) working irregular hours (255).

The idea is that people working irregular hours have more difficulties combining work and family. As with young children, working irregular hours requires more coordination. Problems in coordinating work and family make people vulnerable to negative experiences at work. Therefore, I expect that these people who work irregular hours will judge work more negatively than do those who work regular hours. With respect to this regularity of working hours, the amount of working hours is also important. This variable will therefore be taken into account as well.

As a result, in the analyses with worker characteristics as independent variables, the following variables will be used: four orientations as measures for need strength, five dummy variables for education (primary education is the reference group), five dummy variables for the caring activities in the household situation (living alone is the reference group), two dummy variables for the regularity of working hours (both partners regular is the reference group), and the amount of working hours.

5.4.2 Analyses

Table 5.6 presents the results of the regression analysis with the above-mentioned independent variables and 'overall effects' as dependent variable. And again, gender, age and sector are used as control variables. In Table 5.7 the results with the itemized dependent variables are presented. In Model 1 the control variables gender, age and sector are entered, and in Model 2 the independent variables with respect to the characteristics of the worker are added.

Table 5.6 Results of the regression analysis of the characteristics of the worker on 'overall effects'

	Standardized coefficient Beta	
	Model 1	**Model 2**
Gender (1=female)	-.125*	-.085
Age < 26	Ref.	Ref.
Age 26-35	-.068	-.055
Age 36-45	-.121	-.102
Age 46-55	-.149*	-.124
Age >55	-.100*	-.088*
Sector (1=bicycle)	.045	.022
Orientation on job content		-.001
Orientation on work relations		-.039
Orientation on terms of employment		-.006
Orientation on working conditions		.078*
Primary education		Ref.
Lower vocational education		-.026
Secondary education		.034
Secondary vocational education		.055
Pre-university education		.050
Higher education		.158*

[See next page]

Table 5.6 *[Continued]*

	Standardized coefficient Beta	
	Model 1	**Model 2**
Living alone		Ref.
Living together		-.039
Together and child > 12		.002
Alone and child >12		.016
Together and child < 12		-.016
Alone and child < 12		-.004
Both regular		Ref.
One irregular		-.026
Both irregular		.033
Amount of working hours		.129*
N=847		
R^2	.044	.092
R^2 change	.044***	.048***

** p=<.05, ** p=<.01, *** p=<.001, ref. = reference category*

Table 5.7 R^2 Change and Standardized coefficients Beta of the characteristics of the worker on different dependent variables

R^2 change	***Need for recovery***	***Brooding***	***Work satisfac-tion***	***Commit-ment***	***Health***	***Feelings***
Mod. 1 R^2 change	.029***	.012*	.125***	.051***	.010	.060***
Mod. 2 R^2 change	.052***	.022	.023*	.061***	.024	.030*
Standardized coefficients Beta in Model 2						
Gender (1=female)			-.195***	-.144**		
Age < 26	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Age 26-35						
Age 36-45			-.172**			
Age 46-55			-.175**	-.200**		
Age >55				-.157***		-.102**
Sector (1=bicycle)			.136*			
Or. job content				.110**		
Or. work relations						
Or. terms of em-ployment						
Or. working condi-tions	.075*		.066*	.087**		
Primary education	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Lower vocational education			-.128*		-.138*	
Secondary ed.					-.122*	
Sec. voc. ed.					-.203*	
Pre-university ed.						
Higher education				.118*	-.169**	

[See next page]

Table 5.7 *[Continued]*

Standardized coefficients Beta in Model 2						
	Need for recovery	***Brooding***	***Work satisfaction***	***Commitment***	***Health***	***Feelings***
Living alone	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Living together				-.105*		
Together and child > 12						-.095*
Alone and child >12						
Together and child < 12						
Alone and child < 12						
Both regular	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
One irregular						
Both irregular						
Amount of working hours	.191***	.115*			.113*	.113*

** p=<.05, ** p=<.01, *** p=<.001 (only significant values are presented), ref. = reference category*

Tables 5.6 and 5.7 show that the characteristics of the worker (as measured in this study) are not very important as direct determinants of the quality of working life. Characteristics of the worker can explain only 4.8% of the variance in 'overall effects'. With respect to the itemized dependent variables, this is not different. The maximum amount of variance explained is 6.1% for 'commitment'. Additionally, from the values of the coefficients Beta it is obvious that the characteristics of the worker are hardly important as direct determinants of quality of working life.

Although hardly significant, I can draw several cautious conclusions from the directions and values of Beta in Table 5.6. First, women and older respondents report fewer risks than do men and younger respondents. Second, with respect to the workers' orientations, Table 5.6 shows that the more respondents are oriented on job content, work relations and terms of employment, the more negative effects they report. On the other hand, the more they are oriented on working conditions, the fewer negative effects they report[70]. A third conclusion is that higher educated respondents report more negative outcomes than do those who are lower educated (primary education as reference group). However, with regard to health as dependent variable (see Table 5.7), the higher educated report fewer risks than do the lower educated. With regard to the household situation, Table 5.6 shows that respondents who live together and/or have a youngest child under 12 report fewer risks than do those who live alone (reference group) and/or have a youngest child older than 12; this conclusion is contradictory to my expectations. With regard to the irregularity of the working hours, Table 5.6 shows that respondents in a household situation in

[70] A high score on 'orientation' means that the respondent is not oriented to that characteristic. A high score on 'overall effects' means that the respondent reports high risks (negative effects).

which both partners work irregular hours report the most negative outcomes; this is what I expected. However, respondents in a situation in which both partners work regular hours report more negative outcomes than do those in a situation in which only one partner works regular hours (and the other irregular hours). The last conclusion from Table 5.6 is that the more hours respondents work per week, the more negative outcomes they report. This is also true for 'need for recovery', 'brooding about the work', 'health', and 'feelings/emotional reactions' (see Table 5.7).

Since the characteristics of the worker hardly have direct effects on the dependent variables, they may have an indirect moderating or mediating effect (see, e.g., Baron and Kenny (1986) or the Job Characteristics Model in Chapter 2). Therefore, I also tested a model in which the characteristics of the worker moderate the relationship between characteristics of the work and the dependent variables[71]. This test did not result in significant moderating effects of the characteristics of the worker. Therefore, Hypothesis 2b, which states that the characteristics of the worker are important determinants of the quality of working life, cannot be confirmed and must therefore be rejected. Moreover, using regression analysis, I was unable to verify my ideas about the influence of the household situation on the outcomes of the work.

Another method of testing the influence of the household situation is with the help of ANOVA[72]. In regression analysis, these variables had to be entered as dummy variables. With the help of ANOVA it is possible to test whether there are significant differences between respondents in different household situations. To do this, I conducted several analyses with different variables of the household situation as factors, and with the dependent and independent variables of the conceptual model as dependent variables. As factors I used Question 3 (living alone or together; see Table 5.8), Question 7 (responsible for taking care of children; see Table 5.9), the caring variable as used in the regression analysis (see Table 5.10), and the regularity of working hours as used in the regression analysis (see Table 5.11).

With Question 3 (living alone or together) as factor, the analysis showed that respondents living alone report more problems than do those living together. Respondents living alone report significantly[73] more problems on the variables 'organizing tasks', 'workload', 'physical working conditions', 'work satisfaction', 'feelings', and 'commitment'. Only with respect to 'interaction potential' do these respondents report significantly fewer problems. Table 5.8 presents the significant differences.

[71] To test the moderating effects of the characteristics of the worker, I multiplied the characteristics of the work and the characteristics of the worker. These products were entered into a regression analysis with control for gender, age, sector and the direct effects of the characteristics of the work and of the worker (see Baron and Kenny, 1986).

[72] Analysis of variance.

[73] At level .05.

Table 5.8 Significant differences in mean scores between respondents living alone and respondents living together (ANOVA; *F*-test, significance level .05)

	Living alone	Living together
n	147	1016
Interaction potential	.3148	.3776
Organizing tasks	.3329	.2591
Workload	.3972	.3461
Physical working conditions	.3124	.2554
Work satisfaction	.1585	.0953
Feelings	.2931	.2553
Commitment	.4263	.3695

Table 5.9 Significant differences in mean scores between respondents who are responsible for taking care of children and those who are not (ANOVA, *F*-test, significance level .05)

	Children	No children
n	561	605
Variety in the work	.4166	.4381
Interaction potential	.3970	.3433
Workload	.3235	.3728
Physical working conditions	.2321	.2837
Need for recovery	.2562	.2964
Work satisfaction	.0824	.1219
Health	.0890	.1043
Feelings	.2472	.2698

Using Question 7 (responsible for taking care of children) as factor, the analysis showed that respondents responsible for taking care of children report fewer problems with respect to well-being at work (see Table 5.9). This is a rather surprising result (especially with respect to the dependent variables), because the idea was that respondents responsible for taking care of children (a demanding home situation) would have more problems combining work and family. However, the results of this analysis show that these respondents are more positive than those not responsible for children. It is possible that, since work is not the only important sphere of life, problems at work are more easily set aside in favor of caring activities. It is also possible that respondents who actually combine work and family have learned to deal with the problems that arise from balancing these two spheres of life. It is possible that these respondents are better able to juggle demands of work and family so that work-family conflict has less impact on their work attitudes (Spector, 1997). Moreover, people who are not able to balance work and family are not represented in the sample, because they have left the labor market. It is widely accepted in Dutch culture for women to quit their jobs in favor of a career as full-time mother if the com-

bination of work and family causes problems (Guérin et al,. 1997). More detailed information about the relation between work and family is required to deal with these matters in more detail.

As described in Section 5.4.1, I combined different questions to create six household situations with regard to the combining of work and taking care of children at home. The idea was that respondents who combine work and caring activities, especially when they are alone, would have more problems in combining these activities and that this would influence their judgment about work. The ANOVA with this variable as factor shows significant differences between the groups (see Table 5.10). General conclusions are rather difficult to draw, however it seems that respondents living alone report more problems than do those living together. This conclusion is the same as that based on Table 5.8. However, this analysis shows that this is also true when they are responsible for children. Furthermore, Table 5.10 shows that respondents with children younger than 12 report more problems than do those with children older than 12. This conclusion contradicts the conclusion based on the regression analysis in Table 5.6. The latter conclusions were based on non-significant values of Beta, however, and only the effect on 'overall effects' was taken into account.

A possible reason for the result that respondents with children younger than 12 report more problems than do those with children older than 12 is that the latter have learned to deal with combining work and family. Moreover, older children often require fewer caring activities. In this respect, Groenendijk (1999) concludes that labor participation of mothers is higher if they have smaller families and older children. In such a situation, mothers can more easily combine work and family.

Table 5.10 Significant differences in mean scores between respondents who have different household situations with respect to caring activities (ANOVA, *F*-test, significance level .05)

	1	2	3	4	5	6
Alone	.3000	.4109	.3213	.1583	.2934	.4233
Together	.3553	.3667	.2757	.1126	.2642	.3471
Together, child >12	.4012	.3136	.2338	.0770	.2341	.3663
Alone, child >12	.3444	.2667	.2556	.1746	.2338	.3988
Together, child <12	.3976	.3282	.2282	.0807	.2523	.3974
Alone, child <12	.4167	.3258	.1667	.1333	.3131	.4773

1 = Interaction potential, 2 = Workload, 3 = Physical working conditions, 4 = Work satisfaction, 5 = Feelings/emotional reactions, 6 = Commitment

In addition to this household situation with respect to caring activities, I also created a combined variable with respect to the regularity of working hours of the family members (see Section 5.4.1). Using this variable as a factor in ANOVA shows that there are significant differences between different situations (see Table 5.11). Again, however, general conclusions are difficult to draw. The idea was that if both partners (or only the respondent in cases of living alone) work irregular hours there would be more problems in combining work and family. I thus expected more problems, espe-

cially with respect to the dependent variables, if irregular working hours characterized the household situation. Table 5.11 shows that there are differences, but that the directions vary between the variables. With respect to 'autonomy', the differences are as expected; regarding the other variables, however, the differences do not meet the expectations. These results require more analysis, which is not possible with these data. In future research, more detailed information is required for further analysis.

Table 5.11 Significant differences in mean scores between respondents in different household situations with respect to the regularity of working hours (ANOVA, *F*-test, significance level .05)

	n	1	2	3	4
Both regular	330	.3390	.3561	.3836	.2954
One irregular	396	.4028	.3874	.3248	.2403
Both irregular	255	.3767	.4613	.3415	.2989

1 = Interaction potential, 2 = Autonomy, 3 = Workload, 4 = Need for recovery

5.4.3 Conclusions

The regression analyses in the previous section show that the characteristics of the workers are not important as determinants of the quality of working life. Based on this result, I reject Hypothesis 2b. However, ANOVA showed that household characteristics and work irregularity may be important. More detailed information about the way workers combine work and family is required in future research to more deeply test the relationship between household situation and quality of working life.

5.5 Characteristics of the Fit Between Work and Worker

After the characteristics of the work in Section 5.3 and the characteristics of the worker in Section 5.4, I will test whether the characteristics of the fit between work and worker are important determinants of the quality of working life (Hypothesis 2c). The variables that measure the fit can be divided into two groups. First, I measured the respondents' satisfaction with four characteristics of work in comparison to his or her work orientations. In this way there are four variables coinciding with the workers' orientations: perception of job content, perception of work relations, perception of terms of employment, and perception of working conditions. The second group consists of two variables that measure the workers' education and experience utilization in the work; these variables are dummies. If the workers' abilities (knowledge) with respect to education and experience meet the work demands with respect to education and experience, there is a fit (coded 0). Otherwise, there is a misfit (coded 1)[74].

[74] In the questionnaire I chose to ask the workers whether they have sufficient, too much or too little education and experience for their jobs (see Appendix, Questions 12 and 13). This kind of measurement of the probably underestimates the misfit (Groeneveld and Van Kooten,

As a result, the fit between work and worker can be measured with six variables. These will be used in regression analysis to test their importance in determining the outcomes of the work (dependent variables). Again, the analysis will be controlled for gender, age, and sector. The control variables are entered in Model 1, and the independent variables are added in Model 2. Table 5.12 shows the results with 'overall effects' as dependent variable. Table 5.13 presents the results with respect to the other dependent variables.

Table 5.12 Results of the regression analysis of the characteristics of the fit between work and worker on 'overall effects'

	Standardized coefficient Beta	
	Model 1	**Model 2**
Gender (1=female)	-.119*	-.079
Age < 26	Ref.	Ref.
Age 26-35	-.078	-.095
Age 36-45	-.134*	-.136*
Age 46-55	-.147*	-.132*
Age >55	-.108**	-.059
Sector (1=bicycle)	.042	-.004
Perception job content		.164***
Perception work relations		.255***
Perception terms of employment		.146***
Perception working conditions		.043
Education utilization (1=misfit)		.027
Experience utilization (1=misfit)		.038
N=840		
R^2	.041	.286
R^2 change	.041***	.245***

** p=<.05, ** p=<.01, *** p=<.001, ref. = reference category*

Table 5.13 R^2 Change and Standardized coefficients Beta of the characteristics of the fit between work and worker on different dependent variables

R^2 change	***Need for recovery***	***Brooding***	***Work satisfaction***	***Commitment***	***Health***	***Feelings***
Mod. 1 R^2 change	.028***	.013*	.124***	.047***	.011	.060***
Mod. 2 R^2 change	.128***	.048***	.109***	.204***	.083***	.162***
Standardized coefficients Beta in Model 2						
Gender (1=female)			-.182***	-.120**		
Age < 26	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Age 26-35						
Age 36-45			-.183***	-.140*		
Age 46-55			-.175**	-.233***		-.138*
Age >55				-.127***		-.092**

[See next page]

1999). Other more objective measures, such as job analysis, might result in more misfit situations.

Table 5.13 *[Continued]*

Standardized coefficients Beta in Model 2						
	Need for recovery	***Brooding***	***Work satisfac-tion***	***Commit-ment***	***Health***	***Feelings***
Sector (1=bicycle)			.091*	-.135**		.094*
Perception job content			.140***	.176***		
Perception work relations	.082*	.145***	.122***	.249***	.097*	.303***
Perception terms of employment	.213***	.070*		.102**	.159***	.109***
Perception working conditions	.109***	.088**	.062*		.108***	.099***
Education utiliza-tion (1=misfit)			.109***	.074*		
Experience utiliza-tion (1=misfit)			.059*			

** p=<.05, ** p=<.01, *** p=<.001 (only significant values are presented) , ref. = reference category*

Tables 5.12 and 5.13 show that the characteristics of the fit between work and worker are important determinants of the quality of working life. Characteristics of the fit can explain almost 25% of the variance in 'overall effects' (Table 5.12). Furthermore, the effects of the perceptions of job content, work relations, and terms of employment are significant (at level .001). The explanatory power of the fit on the itemized dependent variables ranges from 5% ('brooding') to 20.4% ('commitment'). Hence, there are rather large differences between the different outcomes. There are also large differences with respect to the variables, which can explain the variance in the outcomes. For all outcomes the perception of work relations turns out an important independent variable. All other independent variables in the model are important for one or more dependent variables.

The scores for the perception variables are larger than 0 (positive). This means that the more a respondent is satisfied with a certain work characteristic in comparison to the orientation with respect to that characteristic (i.e. the respondent's perception), the more positive the respondent reports about well-being at work. For example, the more positive a respondent's perception (low score) about work relations, terms of employment, and working conditions, the fewer problems the respondent experiences with respect to need for recovery (see Table 5.13). The same conclusion is valid for the dependent variables 'brooding', 'health', and 'feelings'.

The utilization variables are only important for 'work satisfaction' and 'commitment'. If there is a misfit between work and worker with regard to education and experience, the respondents are less satisfied with their work[75]. And if there is an educational misfit, the respondents are less committed. An ANOVA analysis showed that it makes no difference whether respondents are over- or under-educated or –experienced. Respondents with sufficient education and experience report fewer

[75] Note that with respect to work satisfaction, a high score indicates problems.

problems with regard to outcomes than do those with an educational or experience misfit.

Another result that attracts attention is the influence of the control variables 'gender', 'age' and 'sector' on 'satisfaction', 'commitment' and 'feelings/emotional reactions'. Although fit characteristics are added in Model 2, the influence of these variables remains important. Tables 5.5 (work characteristics) and 5.7 (worker characteristics) show similar results, though less clearly. This means that these demographic variables have an important influence on the outcomes of the work, particularly on work satisfaction, commitment and emotional reactions[76].

To summarize, Tables 5.12 and 5.13 show that the characteristics of the fit between work and worker are important determinants of the quality of working life. The perception variables have an especially significant influence on the outcomes of the work. Therefore, I accept Hypothesis 2c, which states that characteristics of the fit are important determinants of the quality of working life.

5.6 What Characteristics are Most Important?

In the previous three sections I conducted regression analyses with one group of variables at a time. First I used characteristics of the work; second, characteristics of the worker; and third, characteristics of the fit between work and worker. There are two ways to test which of these characteristics is the most important. The first is to compare the different results of the regression analyses, and the second to test an integrated model in which all of these characteristics are taken into account. I will describe both comparisons in the next sections.

5.6.1 Comparison of the Regression Analyses

The regression analyses in Sections 5.3 to 5.5 showed the different explanatory powers of the dependent variables in the models. These results are summarized in Table 5.14.

Table 5.14 Explanatory powers of the independent variables (R^2 Change) in the different models

R^2 Change	Characteristics of the work	Characteristics of the worker	Characteristics of the fit
Overall effects	.338	.048	.245
Need for recovery	.246	.052	.128
Brooding	.135	.022 (ns)	.048
Work satisfaction	.168	.023	.109
Commitment	.257	.061	.204
Health	.120	.024 (ns)	.083
Feelings	.260	.030	.162

ns = not significant at level .05.

[76] Despite Mottaz' findings (1986) that gender is not related to work satisfaction.

Table 5.14 shows that the work characteristics have, by far, the highest explanatory power. This means that, from this comparison, the characteristics of the work are the most important determinants of the quality of working life. Hence, the characteristics of work are the best predictors for the outcomes of the work (i.e., the effects the work has on the worker). It is also obvious that the characteristics of the worker are not important as determinants of quality of working life. The characteristics of the fit between work and worker are quite important, though less important than the characteristics of the work.

As a result of this analysis I accept Hypothesis 2a, which states that the characteristics of the work are the most important determinants of quality of working life. I also accept alternative Hypothesis 2c, which states that the characteristics of the fit are also important determinants. However, I reject alternative Hypothesis 2b that the characteristics of the worker are important determinants.

This is not the only way to determine which characteristics are the most important determinants. Another way is to compare all the independent variables taken into account in the same model of analysis. The next section deals with this analysis.

5.6.2 Integrated Model

The second way to test which characteristics are most important is to test an integrated model in which all of the independent variables as used in the previous regression analyses are taken into account. Using all these independent variables makes the model rather extended, however. Moreover, the use of many variables dramatically decreases the number of degrees of freedom in the model. Therefore, I chose to reduce the number of independent variables.

First, in Section 5.4, I concluded that the characteristics of the worker (in a regression analysis) are not important as determinants of the quality of working life. The effects of the rather large number of independent (dummy) variables, especially, are very limited. Therefore, I will only use the four orientation variables as measures for the characteristics of the workers.

Second, I also used many independent variables to measure the characteristics of the work, especially with regard to job content. To measure the other three dimensions of work, I used fewer variables; nevertheless, I reduced this number to make the model more compact.

With regard to job content, Sociotechnical Systems Theory distinguishes two main variables: control need and control capacity. The balance or fit between these two variables determines the quality of working life. Following this approach, I selected items from the questionnaire that measure either control need or control capacity. The result was a 19-item scale for control need[77] and a 14-item scale for

[77] For control need I used the following questions (see Appendix): 22, 26, 28, 50, 51, 52, 53, 54, 82, 83, 85, 86, 87, 88, 89, 91, 92, 93, and 104. These originate mainly from the scales 'difficulty of the work', 'work organization', and 'workload'.

control capacity[78]. Reliability of these scales is .8230[79] and .7042[80], respectively. Moreover, both variables measure different concepts, as Pearson correlation coefficient is only .048.

With regard to work relations I followed the same strategy and constructed one scale, which resulted in a 7-item scale representing the work relations[81]. The reliability of this new scale is .7369[82]. I also followed this strategy with regard to working conditions, constructing a 13-item scale that represents the working conditions[83]. The reliability of this scale is .8273[84]. Unfortunately, I was unable to construct a reliable scale to represent the terms of employment; there is only one in the questionnaire and it is not reliable (see Section 5.1.1). Therefore, I will not use a measure for terms of employment. As a result, with respect to characteristics of the work I will use four variables: control need, control capacity, work relations, and working conditions.

Third, with respect to the characteristics of the fit between work and worker, I used only six variables. However, the contribution of the utilization variables was very limited. Not only was the value of the regression coefficients (Beta) limited, but so was the contribution in the explanatory power (R^2). Therefore, I will use only the perception variables that represent the workers' satisfaction with the four different dimensions of work.

Summarizing, as a result of these decisions the model to test consists of the following variables:

- Characteristics of the work: control need, control capacity, work relations, and working conditions;
- Characteristics of the worker: orientation on job content, orientation on work relations, orientation on terms of employment, and orientation on working conditions;
- Characteristics of the fit: perception of job content, perception of work relations, perception of terms of employment, and perception of working conditions.

Furthermore, as in the previous regression analyses, gender, age and sector are control variables. Table 5.15 presents the results of this analysis with 'overall effects' as dependent variable. Table 5.16 presents the results with the itemized dependent variables. In order to make comparisons between the importance of the different independent variables, standardized coefficients β (beta) are presented.

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[78] For control capacity I used the following questions (see Appendix): 45, 46, 47, 57, 58, 59, 61, 62, 63, 65, 66, 67, 68, and 69. These originate from the scales 'interaction potential', 'autonomy', and 'organizing tasks'.

[79] n = 1056

[80] n = 1076

[81] For work relations I used the following questions (see Appendix): 71, 72, 106, 107, 108, 109, and 110. These originate from the scales 'information' and 'colleagues and executives'.

[82] n = 1129

[83] For working conditions I used the following questions (see Appendix): 111 until 123. These originate from the scales 'physical working conditions' and 'physical strain'.

[84] n = 1130

Table 5.15 Results of the regression analysis of the characteristics of an integrated model on 'overall effects'

	Standardized coefficient Beta	
	Model 1	**Model 2**
Gender (1=female)	-.151**	-.065
Age < 26	Ref.	Ref.
Age 26-35	-.086	-.142**
Age 36-45	-.110	-.152**
Age 46-55	-.142*	-.183***
Age >55	-.101*	-.074*
Sector (1=bicycle)	.017	-.038
Control need		.340***
Control capacity		.068
Work relations		.089*
Working conditions		-.031
Orientation job content		-.057
Orientation work relations		-.018
Orientation terms of employment		-.062
Orientation working conditions		.030
Perception job content		.129**
Perception work relations		.108*
Perception terms of employment		.103**
Perception working conditions		.031
N=753		
R^2	.042	.384
R^2 change	.042***	.342***

** p=<.05, ** p=<.01, *** p=<.001, ref. = reference category*

Table 5.16 R^2 Change and Standardized coefficients Beta of the characteristics of an integrated model on different dependent variables

R^2 change	***Need for recovery***	***Brooding***	***Work satisfaction***	***Commitment***	***Health***	***Feelings***
Mod. 1 R^2 change	.031***	.015*	.111***	.048***	.013	.059***
Mod. 2 R^2 change	.253***	.138***	.124***	.222***	.132***	.249***
Standardized coefficients Beta in Model 2						
Gender (1=female)	-.034	.025	-.186***	-.097*	-.003	.008
Age < 26	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Age 26-35	.024	-.083	-.106	-.111	-.119*	-.112*
Age 36-45	-.002	.011	-.153*	-.148*	-.059	-.150**
Age 46-55	.049	.041	-.166**	-.262***	-.065	-.215***
Age >55	.032	.007	-.026	-.135***	-.022	-.103**
Sector (1=bicycle)	.010	-.072	.069	-.119*	.009	.093
Control need	.371***	.339***	.092*	.095**	.181***	.289***
Control capacity	.028	.013	.142***	.093**	.039	-.002
Work relations	-.008	.010	.053	.155***	.038	.105**
Working conditions	.096**	-.087*	.003	-.091**	.098**	-.054

[See next page]

Table 5.16 *[Continued]*

Standardized coefficients Beta in Model 2						
	Need for recovery	***Brooding***	***Work satisfac-tion***	***Commit-ment***	***Health***	***Feelings***
Orientation job content	-.056	.029	-.083*	.002	-.048	-.067
Orientation work relations	.056	-.070	.084*	-.045	.043	.036
Orientation terms of employment	-.076	-.053	-.042	-.002	-.079	-.120**
Orientation work-ing cond.	.060*	.027	.043	.030	.004	-.027
Perception job content	.065	-.036	.113**	.129**	.014	.032
Perception work relations	-.021	.050	.077	.139**	.009	.152***
Perception terms of employment	.123***	.021	.004	.108**	.117**	.054
Perception working cond.	.040	.107**	.039	-.039	.070*	.118***

** p=<.05, ** p=<.01, *** p=<.001, ref. = reference category*

In general, Tables 5.15 and 5.16 confirm the conclusions of Section 5.6.1; that is, that the characteristics of the work are most important and that the characteristics of the fit are also important. However, these tables also show that this conclusion is not as straightforward as it seems. The influence of the different independent variables varies for the different dependent variables[85]. Hence, it depends on the dependent variable what independent variables are most important.

With respect to the different dependent variables there is only one independent variable, 'control need', whose influence on all dependent variables is significant; in most cases it is the most influential variable (highest value of Beta). The other independent variables have a significant influence on one or more dependent variables. The orientation variables (characteristics of the worker) are each important for only one dependent variable. Moreover, these variables are not important with respect to 'overall effects', 'brooding', 'commitment', and 'health'. The values of Beta hardly differ from 0 and their directions are uncertain. A negative value of Beta means that the more a respondent is oriented to a certain dimension, the more problems the respondent reports. However, since most values of Beta are not significant, I can conclude that the characteristics of worker, as measured, are not important determinants of the quality of working life. Hence, I reject Hypothesis 2b.

The influences of the characteristics of the work and characteristics of the fit are significant for at least two independent variables. In most cases, when the influence of the perception variable is significant, so is the influence of the work characteristic variable with respect to the same dimension of work. However, it is not the case that for all independent variables the influence of the work characteristic is stronger than

[85] Coefficient Beta is a measure for this influence. The higher the value of Beta, the greater the influence of the independent variable on the dependent variable.

that of the fit characteristic. This makes the interpretation less straightforward and rather difficult. For instance, with respect to commitment, job content and the perception of job content are both important variables; the same is true for work relations and the perception of work relations. With regard to job content, the contribution of the perception of job content is the strongest. However, with regard to work relations, the work characteristic has the strongest influence. Hence, with respect to commitment it is not legitimate to conclude that the characteristics of work are more important than the characteristics of the fit between work and worker. Nevertheless, in general, it is legitimate to conclude that if the characteristics of the work are taken into account, a great deal of the variance in the outcome variables can be explained (because if the influence of the perception variable is significant, so is the influence of the work characteristics with regard to the same dimension of work).

5.7 Alternative Ways to Test the Sociotechnical Assumption

Finally, as suggested in Chapter 3, I also wish to test Hypothesis 2a in two alternative ways. The first is at organizational level, comparing team-based with non-team-based organizations. According to sociotechnical systems theory, team-based organizations should report better quality of working life than do traditionally designed organizations (Hypothesis 3). Organizations designed according to sociotechnical principles have whole task groups or work teams as building blocks. Therefore, I compare the team-based organizations in this study with the traditionally designed organizations.

The second alternative for testing the sociotechnical assumption is at job level, comparing jobs that meet WEBA standards (as a measure of the sociotechnical standards) with those that do not. Jobs that meet the WEBA standards should report better quality of working life in terms of outcomes than do those that do not (Hypothesis 4). Both tests are described in the next sections.

5.7.1 Differences Between Team-based and Traditionally Designed Organizations

As described in Chapter 3, this study took place in four organizations. The differences in organizational design between the two home care organizations are obvious. In the traditionally designed organization, the Home helps and District nurses are mostly responsible for executing tasks and they mostly perform their jobs solitarily. In the team-based organization, the Home helps and District nurses work together in functional teams. Furthermore, most team members are responsible not only for executing tasks, but also for tasks with respect to planning, quality, education or personnel.

The differences in organizational design between the two bicycle manufacturers are not as obvious. The primary process is the same: both organizations assemble different parts into end-products and are designed in functional departments. However, in one organization the groups of workers within a department are called teams. This does not quite fit the sociotechnical definition of whole task groups, in which teams are designed around a whole task (including preparing and supporting

sub-tasks) and team members have complementary as well as redundant skills. However, there are different definitions of team concepts. Hut and Molleman (1998) distinguish four (non-linear) phases of team development: job-enlargement, job-enrichment, teamwork, and high performance team. These phases differ with regard to the empowerment of the team, but the borders are not definite (see, e.g., Kuipers, 2000). The sociotechnical definition coincides with the high performance team, whereas in *Bicycle* the job-enlargement phase is already labeled as team work.

Since the differences between the team-based and traditionally designed organizations are not the same for both sectors in this study, it is of no use to compare team-based with traditional design for all respondents. Moreover, since the home care organizations are much larger than the bicycle manufacturers, the differences between the latter organizations would be eclipsed by the differences between the home care organizations. Therefore, I will describe two comparisons – first between the home care organizations (see Table 5.17) and second between the bicycle manufacturers (see Table 5.18).

Table 5.17 Differences between *Care* and *Care Team* with regard to the mean scores on the outcomes of the work (T-test)

Outcome variables	*Care*	*Care Team*	Significance
Overall effects	1.405	1.577	.030
Need for recovery	.276	.246	.152
Brooding	.157	.213	.004
Work satisfaction	.091	.067	.036
Commitment	.312	.390	.000
Health	.101	.092	.194
Feelings	.248	.248	.948

Note: the lower the score, the better the outcomes (fewer problems).

Table 5.17 shows some significant differences between the two home care organizations. Following Hypothesis 3, I expect *Care Team* to report better results (lower scores) than *Care*. However, this is true only for work satisfaction. With regard to 'overall effects', 'brooding' and 'commitment', the scores of *Care* are better. Hence, this is contradictory to the expectations.

Table 5.18 Differences between *Bicycle* and *Bicycle Team* with regard to the mean scores on the outcomes of the work (T-test)

Outcome variables	*Bicycle*	*Bicycle Team*	Significance
Overall effects	1.954	2.160	.330
Need for recovery	.322	.477	.002
Brooding	.179	.153	.544
Work satisfaction	.229	.244	.709
Commitment	.423	.414	.845
Health	.125	.105	.228
Feelings	.322	.316	.802

Note: the lower the score, the better the outcomes (fewer problems).

Table 5.18 shows that the two bicycle manufacturers differ at only one outcome variable, 'need for recovery'. This difference is contradictory to the expectation, as I expected the scores for *Bicycle Team* to be better than those for *Bicycle*. Otherwise, there are no significant differences between *Bicycle* and *Bicycle Team*; therefore I cannot accept Hypothesis 3.

The comparison between team-based and traditionally designed organizations does not show the expected differences. I therefore reject Hypothesis 3, which states that team-based organizations report better quality of working life than do traditionally designed organizations. The respondents of *Care Team* report better satisfaction than do those of *Care*, but they report more problems with regard to the other outcome variables. This coincides with the conclusions of Van Klaveren and Tom (1995) that in organizations that have introduced sociotechnical work teams, workload and stress have increased. This is a result of the increasing number of tasks and responsibilities (increasing control need) and a lack of corresponding control capacities. Further, as the current study also shows, increasing workload leads to more negative outcomes.

5.7.2 Differences Between Jobs that Meet WEBA Standards and Jobs that Do Not Meet these Standards

The second alternative for testing the sociotechnical assumption with regard to the quality of working life is to compare jobs that meet WEBA standards and those that do not. WEBA, as a measure of sociotechnical criteria, is suited to differentiate between jobs that are sociotechnically designed and those that are not. Respondents in jobs that meet these standards should report better quality of working life than do those in jobs that do not meet these standards (Hypothesis 4).

However, there are no jobs in the sample that fully meet WEBA standards. Therefore, I have made a comparison between jobs with a good (or reasonable) mean score and those with a more negative mean score on WEBA. To make this distinction I simply added all WEBA scores[86]. As a result, the minimum score is 7 (there are seven variables; 7*1) and the maximum score is 21 (7*3). The minimum score represents jobs in which all variables meet the standard of 'sufficient'; the maximum score represents jobs in which all variables are 'insufficient'. If a job has the score 'marginally sufficient' at all variables, the score is 14.

It is difficult to find a classification for the distinction between jobs that meet WEBA standards and those that do not. As discussed in Chapter 4, due to the decision rules of the instrument, most jobs have the score 'insufficient' at the variables 'autonomy', 'interaction potential', and 'organizing tasks'. This means that for most jobs the best possible score is 13. Moreover, as a result most jobs have a score between 15 and 17 (see Table 5.19). In this large group, mean scores of outcome variables tend to be blurred. For differences between jobs that meet and do not meet WEBA standards, reasonably good jobs (according to WEBA standards) must be

[86] As presented in Chapter 3, WEBA scores can take three values: sufficient, marginally sufficient, and insufficient. These are coded as 1, 2, and 3, respectively.

compared to bad jobs. As a result, this large group must be excluded from the analyses. Therefore, for this analysis I chose the following classification: Jobs with a score of 14 (mean score 'marginally sufficient') or less are classified as (relatively) meeting WEBA standards. Jobs with a score of 18 or more (at least four variables 'insufficient' and none 'sufficient') are classified as not meeting WEBA standards. This results in two groups of respondents of almost equal size (see Table 5.19). Table 5.20 presents the differences between these two groups with respect to the outcome variables.

Table 5.19 Distribution of total WEBA scores among the respondents

Total of WEBA scores	14 or less	15 - 17	18 or more
Number of respondents	169	878	143

Table 5.20 Differences between jobs that meet WEBA standards and jobs that do not, with respect to the outcome variables (T-test)

Outcome variables	Meet WEBA	Do not meet WEBA	Significance
Overall effects	1.682	1.731	.754
Need for recovery	.332	.307	.525
Brooding	.145	.159	.648
Work satisfaction	.144	.209	.021
Commitment	.353	.357	.888
Health	.093	.125	.023
Feelings	.281	.286	.772

This table shows that, in general, respondents in jobs that meet WEBA standards report better outcomes (lower scores) than do those in jobs that do not meet these standards. Only with regard to 'need for recovery' is this difference reversed. However, Table 5.20 also shows that most differences are not significant. This means that there is not enough evidence to conclude that there are differences (in outcomes) between jobs that meet WEBA standards and those that do not. Only the differences with regard to 'work satisfaction' and 'health' are significant. This is, however, not enough evidence to accept Hypothesis 4; therefore, I reject it.

Conclusions with regard to Hypotheses 3 and 4

These sections show that respondents in team-based organizations, at best, report the same quality of working life as do those in traditionally designed organizations. Therefore, I reject Hypothesis 3. Moreover, respondents in jobs that meet WEBA standards do not report better (nor worse) well-being than do those in jobs that do not meet these standards[87]. As a result, I also reject Hypothesis 4.

[87] One could expect that jobs that meet WEBA standards are represented only in team-based organizations, and jobs that do not only in traditionally designed organizations. However this is not the case; jobs that meet WEBA standards as well as jobs that do not are represented in Care. Analyses with these respondents only, result in similar conclusions.

5.8 Conclusions and Discussion

This chapter attempted to answer the following question: What are the most important determinants of the quality of working life – characteristics of the work, characteristics of the worker, or characteristics of the fit between work and worker? To answer this question I tested five hypotheses. Regression analyses show that characteristics of the work are the most important determinants of the quality of working life, and that characteristics of the fit are important determinants. However, characteristics of the worker are found to be not important. As a result, I accept Hypotheses 2a and 2c and reject Hypothesis 2b.

Accepting Hypothesis 2a means that the sociotechnical assumptions with regard to the quality of working life are valid. However, if this is the case, respondents in team-based organizations should report better quality of working life than do those in organizations that are traditionally designed (Hypothesis 3). Moreover, respondents in jobs that meet sociotechnical criteria should report better quality of working life than do those in jobs that do not meet these criteria (Hypothesis 4). The analyses in this chapter show that both hypotheses (3 and 4) must be rejected. Table 5.21 presents a summary of the hypotheses in this chapter.

Table 5.21 Summary of the hypotheses with regard to the most important determinants of the quality of working life

Hypothesis		
2a	The characteristics of the work are the most important determinants for the quality of working life.	Accepted
2b	The characteristics of the worker are important determinants for the quality of working life as well.	Rejected
2c	The fit between work and worker is an important determinant of the quality of working life.	Accepted
3	Team-based organizations report better quality of working life than do traditionally designed organizations.	Rejected
4	Jobs that meet the sociotechnical standards report better quality of working life (in terms of outcomes) than do jobs that do not meet these standards.	Rejected

The conclusion is that work characteristics are the most important determinants (acceptance of the sociotechnical assumption), however respondents in organizations and jobs that meet sociotechnical standards do not report better quality of working life than do those in organizations and jobs that do not meet these standards (rejection of the sociotechnical assumption). This sounds rather paradoxical and means that characteristics of the work are important, however not in the way SST expects.

There are several comments to be made on this paradoxical conclusion. First, it is difficult to determine whether the characteristics measured as sociotechnical in this study truly fit the sociotechnically desired characteristics. I used the measures from WEBA and NOVA-WEBA to qualify organizations and jobs as sociotechnical

or not. However, the analyses in this section show that no organization in this study fits the ideal sociotechnical design. To the best of my knowledge, there is no instrument to test whether control need and control capacity are in balance at organizational level. Therefore, it is difficult to truly test the sociotechnical assumption with regard to quality of working life on organizational level.

The second comment, closely linked to the first, concerns the measures in WEBA and NOVA-WEBA. It is possible that WEBA and NOVA-WEBA are biased measures of the sociotechnical principles with regard to quality of working life. As described earlier, SST distinguishes only two variables to determine the quality of working life – control need and control capacity (De Sitter, 1980). WEBA and NOVA-WEBA, on the other hand, distinguish seven and nine variables, respectively. It is questionable whether these variables are good measures for the sociotechnical assumptions. Apparently, these WEBA measures differ from the sociotechnical standards with regard to quality of working life.

In the analysis in Section 5.6.2 I used only two variables instead of seven to measure the job content, creating one to measure control need and one to measure control capacity. These two variables alone explain 26.8% of the variance in 'overall effects'. This is almost as high as for the nine variables used earlier to measure job content. Using these variables shows that 'control need' is the most important variable in the model. This means that problems with regard to control need have the strongest influence on the outcomes of the work. This is contradictory to De Sitter's opinion that it is not control need that raises problems, but the lack of control capacity to deal with these problems (De Sitter, 1980). In this study, however, the respondents do not acknowledge this vision. The outcomes of the work are influenced more by problems with regard to control need (problems in the work, such as too much work) than by those with regard to control capacity (such as too little autonomy over one's tasks). This means that the respondents in this study suffer more from problems in the work than from the lack of control to deal with these problems. However, it is possible that the respondents experience the lack of control as too much control need[88]. In this sense it is possible that the variable 'control need' is a measure more for the balance between control need and control capacity than for control need alone. From this point of view, De Sitter's view still holds: it *is* the lack of control capacity that raises problems, however it manifests itself as too much control need.

A third explanation for the paradoxical conclusion with regard to the sociotechnical assumptions can be found in the job satisfaction paradox (De Sitter, 1980; see also Chapter 3). The argument in this paradox is that job satisfaction scales do not measure the worker's satisfaction, but merely measure the worker's adaptability to the work. The outcome variables in this study show that, regardless of the work situation, most respondents are extremely positive about their quality of working life in terms of outcomes. WEBA and NOVA-WEBA analyses, however, showed that in many jobs there are considerable risks with regard to quality of working life. Either the respondents experience their work differently (and do not yet experience the

[88] The reasoning, then, is that a certain amount of control need demands a certain amount of control capacity.

negative effects), or they only reported that they are satisfied because they want to make their cognition consonant with the actual work situation (the job satisfaction paradox is valid in this study). However, this only explains why the respondents do not report bad quality of working life in terms of outcomes. Furthermore, the outcomes are measured not only as satisfaction scales (psychological outcomes); they are also measured as behavioral outcomes, which are less vulnerable to the job satisfaction paradox. Moreover, the job satisfaction paradox can also not explain why respondents in team-based organizations report more problems with regard to the outcome variables.

The fourth comment on the conclusion is that I used only the quantitative information from WEBA in the analyses. WEBA offers more information than the qualifications 'sufficient' or 'insufficient' (see Chapter 4). These qualifications are based on a large amount of qualitative information that makes up a WEBA analysis. For the sake of comparability I was forced to leave this information out of the analysis, as SPSS cannot compute with words and sentences. It would be useful to link the information from WEBA analyses to that concerning the quality of working life. However, this is another way of research that uses other methods than used in this study.

Finally, *Care Team* is described as a team-based organization. However, this organization is still in a transition phase from a traditionally designed to a team-based organization. The reorganization started two to three years ago and while some departments already work in the new team-based design, others are still changing. Being in a transition phase can have a negative influence on the quality of working life. In their study on the influence of organizational change on commitment in two organizations for home care, Freese et al. (1999) conclude that the change has a negative influence on commitment to the organization. This results in problems with regard to workload and communication. This could be a reason why *Care Team* reports more risks with respect to quality of working life. Therefore, it would be useful to conduct the same survey again after one to two years in order to test whether the quality of working life improved as a result of the new team-based design.

The same applies, generally, to *Bicycle Team*. This is a young organization that is struggling with a number of starting problems. These problems, combined with uncertainty, can have a negative influence on the quality of working life. Moreover, these problems forced the organization to (temporarily) give up the team-based design. Therefore, it is difficult to specify whether the negative results (based on which Hypotheses 3 and 4 were rejected) are determined by the characteristics of work as measured in this study, or by circumstances I am unable to control for.

The fact that both team-based organizations do not meet the ideal sociotechnical design is not exceptional in the sense that there are very few organizations that are truly sociotechnically designed. In The Netherlands, only 7% of all organizations have a team-based design with whole task groups as building blocks (Benders et al., 1999). It is therefore difficult to empirically test the sociotechnical assumptions with regard to quality of working life.

Despite the paradoxical conclusion with regard to the sociotechnical assumptions, this study shows that the characteristics of the work (especially 'control need') are the most important determinants of the quality of working life. The fit characteristics are important as well. This conclusion has important implications regarding the way to improve the quality of working life. The next chapter deals with the practical implications of this chapter's results.

6 Measures to Improve the Quality of Working Life

The central question in this chapter is how to improve the quality of working life, i.e. the practical implications of the conclusions in the previous chapters. There is a close relationship between determinants of quality of working life and measures to improve this quality. Many times, determinants can be considered measures as these determinants turn out parameters that can be altered. Christis (1998) argues that determinants can be work-bound and person-bound, and hence, so too can measures for improvements. If, for instance, a risk audit[89] indicates work-bound problems that cause bad quality of working life, improvement measures must be work-bound in order to be effective. On the other hand, if there are person-bound problems, person-bound measures are required for effective improvements.

The conclusions in the previous chapter imply that the work characteristics (especially control need) are the most important determinants of quality of working life. However, the characteristics of the fit between work and worker are important as well. This means that measures, in order to be effective, must be aimed at the work and fit characteristics. As previously argued, measures can be work-bound and person-bound. This results in the following matrix of possible measures to improve the quality of working life (see Table 6.1). These possibilities are described in the next sections.

Measures aimed at the work characteristics can, by definition, only be work-bound. These are described in Section 6.1. However, fit-aimed measures can be work-bound as well as person-bound. Work-bound measures aim at fitting the work to the worker, while person-bound measures to improve the fit aim at fitting the worker to the work. The work-bound fit improvements are described in Section 6.2, the person-bound fit improvements in Section 6.3.

[89] Aimed at the risks concerning well-being at work.

Table 6.1 Possible measures to improve the quality of working life

	Work-bound	**Person-bound**
Aimed at work characteristics	Organizational design (Section 6.1)	N.A.[90]
Aimed at fit improvement	Organizational change (Section 6.2)	Personnel development (Section 6.3)

6.1 Work-bound Measures to Improve the Characteristics of the Work: Organizational Design

The conclusions in Chapter 5 support the sociotechnical assumption that quality of working life is a function of the characteristics of the work. Moreover, these conclusions state that control need is the most important determinant of quality of working life. Therefore, it seems logical to find measures to improve the quality of working life in this sociotechnical theory.

Sociotechnical Systems Theory (SST) is very clear about the way to improve the quality of working life. The only way to do this, while at the same time improving the quality of the organization, is by sociotechnical redesign of the organization (Kuipers and Van Amelsvoort, 1992; Van der Zwaan, 1999; see also Chapter 2). As argued, SST uses a conditional approach in which the characteristics of work are modified in a way that the organization achieves its organizational goals together with the goals of the employees (in this case good quality of working life). Sociotechnical redesign affects the production structure as well as the control structure in an organization; first by decreasing the control need and second by increasing control capacity. Decreasing control need can be achieved by simplifying the production structure, and increasing control capacity by designing a control structure that is in harmony with this production structure. Finally, the support systems are adapted to the production and control structure. The result is an organization with "whole-task groups" (teams) as building blocks. Each whole-task group is responsible for a well-defined whole set of tasks in the production process or control system of the organization.

However, an extreme sociotechnical redesign is fairly rigorous, especially when the problems (as indicated by a risk audit) are not severe. The WEBA instrument, however much it is based on SST, offers less radical measures to deal with problems that arise from the risk audit. These measures are important parts of the instrument, and are the third and final step of the WEBA method[91]. The three possible measures that WEBA offers are (Arbeidsinspectie, 1993; see also Chapter 3):

1. Adaptation measures: these aim at reducing the control need (For instance, trying to prevent problems from occurring).

[90] Not applicable; by definition, person-bound work improvements do not exist.

[91] The first step in WEBA was describing the jobs (by filling out different forms), and the second step was a judgment of the quality of working life based on that description and resulting in a profile of well-being. See also Chapter 3.

2. Improvement measures: these aim at increasing control capacity or increasing completeness of the work (For instance, job rotation and job enrichment).
3. Renewal or innovation measures: these aim at reducing control need and increasing control capacity simultaneously. This asks for organizational change, e.g. sociotechnical redesign.

These measures affect either control need or control capacity, or both. Table 6.2 summarizes the different measures.

Table 6.2 Different work-bound measures and their impact on control capacity and control need

		Decreasing control need?	
		Yes	No
Increasing control capacity?	Yes	Innovation measures	Improvement measures
	No	Adaptation measures	Other measures[92]

These measures are very general and must be specifically applied to a particular situation. To start with the third type of measures, renewal or innovation measures involve organizational change, as in a sociotechnical redesign. Chapter 2 describes sociotechnical redesign in more detail; hence, I will not elaborate further on these measures here.

Adaptation and improvement measures do not affect the whole organization, thus they are less rigorous than the sociotechnical redesign. Adaptation measures aim at decreasing the problems that can occur during the work, and are aimed only at reducing or eliminating control need. These measures do not affect the labor organization within the firm. An example of an adaptation measure is buying a new piece of equipment or replacing an old one that breaks down every hour. Other adaptation measures include, for instance (see Peeters and Mossink, 1995):

- providing better communication devices (telephones, terminals) to ensure that information is available on time
- using better materials to ensure fewer defects
- establishing clear agreements about when certain products should be ready
- establishing clear agreements about the policy and tasks with regard to rush orders
- establishing clear agreements on what tasks should be executed (to reduce complexity of the work)

Improvement measures affect the control structure of an organization, aiming at increasing the possibilities for dealing with problems in the work (increasing control capacity). This affects the organization of labor but leaves the production structure undisturbed. The division of executing, preparing and supporting tasks is subject to

[92] Other measures are not applicable in this study, since they do not affect control need and control capacity. Hence, they do not deal with the origins of possible problems but can offer only temporary relief. Examples are coffee breaks, part-time work or computerizing the job, so that workers suffer less or not at all from the problems.

changes. An example of improvement measures is to offer workers the possibility to plan their own tasks (autonomy) in order to deal with fluctuating flows. These kinds of measures can also be classified as job enrichment.

A drawback to these improvement measures is that most are not fully incorporated into an organization's strategy; they are instead usually used to improve the situation of one or two jobs. This carries with it the risk of sub-optimization. Moreover, improving one job (for instance, by adding more autonomy) can lead to problems in other jobs where this autonomy is taken away. Therefore, it is important to strive for integrated measures. Moreover, measures must be integrated in a double sense; first, by integrating the production and control systems in order to reduce control need and increase control capacity at the same time, and second, by taking as many jobs as possible into account in order to prevent sub-optimization. The most far-reaching way to deal with this problem is organization-wide redesign. As argued before, sociotechnical redesign is an example of this kind of organizational redesign[93].

The results in Chapter 5, however, show that control need is the most important determinant of the quality of working life. Therefore, when risk audits indicate risks or problems, it is most important to reduce the control need in the work; adaptation and innovation measures are suited for this. However, to decide what measures are best suited to deal with problems it is important to know the exact origins of the problems with regard to the quality of working life. In Chapter 4, I presented a comparison between WEBA and NOVA-WEBA as risk audits with respect to the quality of working life and aimed at the characteristics of the work. The conclusion was that, although NOVA-WEBA indicates risks as well, WEBA offers the most detailed information about the origins of these risks. This information is necessary in deciding what measures can best be used to improve the quality of working life. The best way to deal with any problems is to deal with the origins of the risks. Dealing with the symptoms alone will not lead to constructive and structural solutions.

As discussed in Chapter 4, the choice for WEBA or NOVA-WEBA is extremely dependent on the goal of the risk audit. If the goal is to detect whether there are risks, NOVA-WEBA is sufficient. If the goal is to detect what the risks are and their origins WEBA is more useful, as it generates the most detailed information about risks with respect to well-being at work as far as they originate in the job content. With the conclusion that the right measures for improving the quality of working life focus on the origins of the problems, a WEBA analysis seems necessary to generate the right information to successfully improve the quality of working life.

The improvement measures in this section are based on SST, which can be called a design theory (Christis, 1995). Its view of the organization is an instrumental one, since it aims at the design (grouping, division and coupling) of the labor process (Christis, 1995). Therefore, the measures are the result of a design strategy and aim

[93] However, sociotechnical redesign is not the only approach for dealing with organizational redesign or change. Other ways include, for instance, lean production (Womack et al., 1990) and shop floor management (Suzaki, 1993). Most of these approaches, however, are merely modern variants of Taylorism (Pruijt, 1996) with all of its drawbacks regarding quality of working life (see Chapter 2).

at organizational (re)design. However, Christis argues that for an intervention strategy (for taking measures successfully), an institutional view of the organization in which the employment relationship takes a central position is necessary. SST lacks such an intervention theory to account for the existing (power) relations in an organization; this is one of its major criticisms (see Huiskamp, 1995; Martens, 1995; Steensma, 1995; Van der Zwaan, 1995; 1999; Van Klaveren, 1995; Doorewaard and De Nijs, 2000). This criticism is twofold. First, scientists argue that SST does not incorporate several important organizational factors, such as the employment relationship. This relationship in principle concerns the contractual and psychological relationship between employer and employee. This relationship differs from the instrumental view of the organization of labor to which SST adheres, namely the operational relationship (Van der Zwaan, 1999)[94]. Second, organizational consultants (practitioners) argue that SST lacks an intervention strategy for successful organizational change (Steensma, 1995; Van der Zwaan, 1999). Even by definition, SST is in need of an intervention theory, because the design of the labor process demands theory other than the implementation of organizational change (Christis, 1995).

Sociotechnical theory does contain some clues for systematic organizational change, however it lacks attention to certain practical implementation problems for successful intervention (Van der Zwaan, 1995; Steensma, 1995). In practice, sociotechnical consultants encounter several hindrances inherent in implementation (Van der Zwaan, 1999). For successful intervention, SST should adapt to organizational change theories. These theories, however, focus on fitting the organizational design to the existing organizational characteristics, such as organizational structure, culture, personnel, and power relations. This is the topic of the next section (6.2), which deals with work-bound measures to improve the fit. First, I will present a number of work-bound measures for improving the work characteristics of the four organizations in this study.

Case Studies

WEBA and NOVA-WEBA analyses were conducted in the four organizations in this study. With the information from these analyses, I am able to advise certain work-bound measures in order to improve the quality of working life in these organizations. Here I present some examples.

The risks are rather identical in the organizations *Care* and *Care Team*[95]. These risks are not very high (there are few negative outcomes), although WEBA-analyses show that in most jobs there is more control need than control capacity (imbalance)[96]. A problem with regard to control capacity is the lack of interaction potential

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[94] See also Fruytier (1994), who distinguishes between an operational and a contractual relationship, which coincide with the instrumental and employment relationships as described by Christis (1995).

[95] Although the jobs in *Care Team* are more complete and offer better opportunities for self-development.

[96] This conclusion is based on the WEBA analyses (see Struik and Schouteten, 1998; Schouteten and Zegwaart, 2000).

with colleagues and superiors, due to the solitary character of the work This means that the workers must put extra effort into the work to deal with occurring problems. In the long run, this can lead to negative outcomes such as stress and burnout.

Since control need is high, work-bound measures for improving the quality of working life must be aimed at decreasing this control need. This is quite difficult, because many problems that occur (control need) are unexpected and unpredictable, for instance clients who ask for more care than is scheduled, difficulties in interaction with third parties (such as a client's family or the family doctor), and fluctuations in the amount of work (due to the number of clients).

However, work-bound measures can help to prevent other problems from occurring. The problem that travel times from one client to another are not scheduled (which leads to working overtime) can be solved by taking these travel times into account when scheduling the work. The problem of lack of feedback can be solved by regular discussions of progress. These measures, however, would lead to a situation with fewer clients per employee, as other activities must be scheduled into the workers' work schedules – and one of the major problems in the home care sector is a shortage of personnel and a long list of potential clients waiting for home care. Hence, the work-bound opportunities for dealing with the problems are rather limited due to environmental pressures.

In the organizations *Bicycle* and *Bicycle Team* the risks are also quite identical. The work in both factories is short cyclical and routine. Furthermore, the completeness of the work and control capacity are very limited. Hence, the workers have limited opportunities to deal with control problems. Besides these problems with respect to work content, there are also problems concerning the working conditions (Kammeraat, 1999; Schouteten and Van Winsum, 2000).

Most problems are a result of lack of control capacity. Despite the main focus on control problems (as a result of the conclusions in Chapter 5), the work-bound measures for dealing with these problems must focus on increasing the control capacity. For both organizations it is recommended to take a close look at the production process and the way it is organized. To improve the quality of working life, most jobs should be enlarged and/or enriched in order to make them more complete and offer opportunities to deal with problems. Since most jobs suffer from short cycles and routines, an integrated redesign is helpful in creating more complete and independent tasks. However, this demands a specific development of competencies. The way in which this can be approached is the topic of the next two sections, as the successful implementation of an organizational redesign is at stake in order to achieve a fit between work and worker.

6.2 Work-bound Measures for Fit Improvement: Organizational Change

Work-bound measures to improve the fit between work and worker aim at fitting the work to the worker, a very common concept in ergonomics (see, e.g., Kroemer and Grandjean, 1997). In ergonomics, the aim is toward constructing machines and/or tasks to fit human physical and psychological possibilities and limitations.

As argued in the previous section, fitting the work to the worker has to do with the successful implementation of work-bound measures. In The Netherlands, more than 70% of organizational change processes fail (Boonstra, 2000). Reasons for this are generally found in the strategy, the organizational structure, power relations, individual psychological factors, and organizational culture. These reasons are linked to the existing organization. However, according to Boonstra, it is the organizational change process or strategy itself that determines the success or failure of organizational change.

From the scientific and practical criticism of SST, it is clear that an intervention strategy that accounts for the employment relationship and the organizational context is important. The goal of such a strategy is to create acceptance (Martens, 1995), participation (Steensma, 1995) and the utilization of tacit knowledge within an organization. Different parties in an organization, such as management, employees, unions and works councils must be involved in order to create support for organizational change. This is an important condition for successful change. However, there are no relations between the level of support and organizational characteristics (Boonstra, 2000)[97]. It is therefore important to actively create this support for successful organizational change.

There are two general approaches to organizational change (Boonstra, 2000): design and development. The design approach is suited to stable and predictable situations in which problems and solutions are known. With this approach, top-management initiates, directs and controls the change process. There is also an important role for experts[98]. The change process is mostly linear, and standardized rules and norms are used. The method is aimed mostly at reducing organizational complexity. Examples of design approaches are Business Process Redesign, Total Quality Management, and Balanced Score Card (Boonstra, 2000: 15). SST can also be labeled as a design approach.

A development approach is suited to situations in which the problems are not yet clearly defined and the directions of the change are not yet clear. This approach starts with an analysis of problems and possible solutions. All concerned groups participate in this analysis. Attention is aimed at the change of structures, culture and individual behavior. Changes are introduced gradually and the method of change depends on the change process. The people most concerned participate in every phase of the process, and during the entire process possible hindrances to the change are dealt with by interventions (Boonstra, 2000).

Keywords in this development approach are participation and learning. The starting point is that improving the quality of working life and the quality of the organization, simultaneously, cannot be realized solely by structure (re)design, since such design is worthless without people being able and willing to organize their work and learn this way (Hoogerwerf, 1998). With regard to participation, Van Amelsvoort (1996) argues that the effectiveness of an organizational change process increases

[97] According to Korver (1995), this support is a result of a worker's career perspectives. The career determines the worker's role in, and judgment of, the work. Workers accept certain jobs when these contribute to a career, not because they are interesting or challenging.

[98] This approach is also called an expert approach.

when the degree of acceptance among the most concerned parties is higher. This degree of acceptance is determined by the degree of participation. Active participation of the most concerned parties in the change process generates 'emotional ownership' of this process among the participants. This increases the acceptance with regard to the desired situation. Fruytier (1994) uses the term 'redesign dialogue' to describe the process of communication that should lead to trust and commitment among those most concerned. These are essential conditions for participation and organizational change[99].

Learning can be defined as learning to operate within the latitude of a certain design and organizational change process. This means that the latitude restricts the learning possibilities[100]. The more a design or change process is laid down in detailed rules, the less latitude (Van Amelsvoort, 1996), and the fewer learning possibilities. The aim of a development approach is to offer sufficient latitude for learning to all participants in the change process.

According to the development approach, the best way to learn is through 'learning by doing' and 'learning to learn' from one's own experiences. In this way, change managers, consultants and participants must continuously tune the direction of the change process (toward a desired design) and the learning capabilities of the members of the organization. Hoogerwerf (1998) proposes using methods that help organization members to explicitly confront the logic of a (SST) design to the logic of their own actions. In this way they can learn from their own actions in dealing with new situations. This can be done with the help of conferences, group model building, organizational prototyping and gaming. Furthermore, Hoogerwerf (1998) proposes that for whole task groups (she calls them 'multidisciplinary design teams') only participants sufficiently qualified for such complex work must be selected, and that there must be facilities for individual learning to stimulate individuals to take responsibility for their own work careers. This means that not only should the design (production structure) be tuned to the capacities of the personnel, but the capacities of the personnel must also be tuned to the design. In this way, for successful organizational change, there should be a compromise between designing the organization and developing the personnel. Most effective is a continuous tuning between an organizational design and a development approach (Boonstra et al., 1996). Personnel development is the topic of the next section (6.3), which presents person-bound measures for improving the fit between work and worker.

As a result the measures to improve the fit between work and worker, from a work-bound perspective, are twofold. First, a design approach with work-bound measures to improve the work characteristics (see Section 6.1) is suited to improve this balance. However, this is possible only in stable and predictable situations; it is

[99] Bouwman (1989) even argues that the result of the organizational change is a result of a process of negotiation and bargaining between management and subordinates. This process is affected by power relationships, technology, labor market, etc.

[100] According to Fruytier (1994), the learning opportunities in a Tayloristic Production Concept (TPC) are very limited, because there is little latitude. In a New Production Concept (NPC) such as SST, there is more latitude. Therefore, organizational change is more difficult in a TPC.

a linear change process. Second, when problems and directions for change are not yet clear, a development approach that continuously tunes the organizational design (production structure) to the personnel structure is more appropriate. This means that, particularly when problems and change directions are not clear, the organizational change process fluctuates between design and development. In this process sufficient participation, learning opportunities and the utilization of tacit knowledge are essential for successful implementation of work-bound measures to improve the quality of working life.

Case Studies

In Section 6.1, I described several work-bound measures for improving the work characteristics in the four organizations in this study. In order for these measures to be successful, it is important that they are implemented successfully. Successful implementation demands acceptance and adaptation by the organization and its members.

For *Care* and *Care Team* the work-bound measures for improving the quality of working life are limited, due to environmental pressures (see Section 6.1). The best effects are expected from measures to increase the number of workers in this sector, first and foremost, through higher wages. These measures do not require organizational change or development.

For *Care Team*, however, I concluded that the organizational change process might be the cause of a number of negative results regarding the quality of working life[101]. In order to learn from good practice, it can be useful to compare different regions; some show better results than others (Schouteten and Zegwaart, 2000). Comparing these regions and discussing the differences with all concerned parties can lead to adjustments in the change processes of some regions.

In *Bicycle* and *Bicycle Team*, I suggested redesigning the production process to increase control capacity and prevent short cycles for most of the jobs. Before doing so it is recommended to involve the workers in the design process, first and foremost because they know (a part of) the production process very well and know where it can be improved. Most workers, however, are not highly educated; it is therefore important that they be involved and monitored during the organizational change process. A new organizational design must be gradually introduced, so that the workers can adapt to it and learn to work in a new situation. This might take some time, however the workers will feel valued (taken seriously) and committed, and will not resist the new ways of working. The gradual introduction of a new production design must offer sufficient latitude for participation and learning.

[101] *Care Team* did not show better quality of working life than did *Care*, although this was expected based on the organizational design (see Chapter 5).

6.3 Person-bound Measures Fit Improvement: Personnel Development

Person-bound measures for improving the fit between work and worker aim at fitting the worker to the work; hence, at allocating the right person to the right job. This has thus far been the area of personnel management which is, however, much broader than merely allocating the human assets within an organization. Personnel management consists of those activities in an organization that are related to the management (control, maintenance, and development) of people (Kluytmans and Hancké, 1990). The objects of this discipline include labor relations, employment conditions, employee relations, working conditions, recruitment, selection, appraisal, rewarding systems, out-placement, and career planning (Van der Zwaan, 1999). A great deal of literature and textbooks have been published about personnel management and its accompanying instruments and techniques[102], but it is not the aim of this study to review these publications. Instead I wish to indicate which personnel management instruments are especially suited to improve the quality of working life as measured in this study and based on the conclusions in the previous chapter. I am aware that all personnel management instruments are important and necessary in executing an effective personnel management, because their absence would have disastrous effects for both the organization and employees. In this study, however, the focus is on those instruments that can improve the quality of working life by allocating the right person to the right job.

Personnel management instruments suited for this allocation consist of selection, recruitment, training, and planning instruments or techniques. First and most obviously, it is important to select and recruit the right persons for certain jobs. Therefore, it is important that the work characteristics be well-defined; if this is achieved it is possible to find employees who fit these characteristics. This is the most ideal situation and works well for new jobs or job vacancies. In the event that a risk audit indicates certain risks in an existing situation, however, it is almost impossible to select and recruit new personnel. In the first place, by labor law, it is very hard to 'hire and fire' employees just like that; it is, further, not ethical[103].

Since selection and recruitment are suitable only in particular ideal situations, other measures are more important. Tasks and jobs change rapidly, e.g. as a result of technological developments. Therefore, it is important that workers be able to change (develop) as well, in order to maintain a fit between the work and the worker. As described in the previous section (6.2) personnel development, along with organizational design, must be an important part of organizational change. In practice there is a large distance between organizational design and personnel management (Huiskamp, 1995; Doorewaard and De Nijs, 2000), and these aspects are rarely integrated.

To achieve personnel development, the term 'competence management' is useful. Personnel management instruments suited to manage workers' competencies are

[102] See, e.g., Fombrun et al., 1984; Beer, 1984; Kluytmans and Hancké, 1990; Legge, 1995; Story, 1995; Manders, 1998; Stone, 1998; Baron and Kreps, 1999.

[103] A 'hire and fire' strategy is possible only with temporary agency workers.

education and training, more important in improving the fit between work and worker than selection and recruitment. Education and training aim at teaching workers how to cope with the work situation. Moreover, as described in the previous section, learning and the utilization of tacit knowledge are important conditions for successful organizational change.

There are a great many courses and training programs that teach workers how to cope with, for instance, stressful situations. There are stress management courses, time management courses, etc. However, these courses aim at coping with too much work to do in too little time. It is highly questionable, though, whether person-bound determinants are the main source of stress problems[104]. According to Christis (1998), work-bound and person-bound determinants can coexist as equally important; however for a preventive strategy, work-bound measures are easier to implement. Moreover, as Christis (1998) argues, offering these kinds of coping courses sounds sympathetic to the employees, because management pays attention to them and their problems. It also indicates, however, that the management believes that the employees are the main origins of the problems; they are held responsible for their own negative outcomes of the work (such as stress). In this sense, these measures are not as sympathetic to the workers as they seem.

Other kinds of training programs, however, can be very helpful when work characteristics change as a result of technological developments. For instance, when new machines are bought, it is helpful to offer training programs to teach the employees to properly handle the machines. The same applies to all kinds of new technology, whether it be machines, routines or software packages. Other kinds of training programs and courses focus on improving relationships between employees and between employees and executives, for example courses on leadership and coaching, dealing with conflicts, and team-building.

However, learning is not restricted to formal training and education programs as such. Workers also learn by doing, from their own experiences (e.g., Hoogerwerf, 1998), or from others, such as colleagues or other organizations (e.g., through benchmarking or knowledge exchange meetings). These kinds of learning must be encouraged, particularly since they are most important for organizational change. One way to do this is by offering challenging jobs. This refers to organizational or job design, which was the topic of Section 6.1: Work-bound Measures to Improve the Work Characteristics. Again, this indicates that measures must be integral; a coherent set of mutually reinforcing measures aimed at organizational design, organizational development and personnel development.

Case Studies

Fitting the worker to the work may have positive effects in the case of *Care Team*, one of whose problems is the relationship between team members on one side and coordinators on the other. Due to the team structure in this organization, the coordination and cooperation between teams (Home helps, District nurses) and office workers (Planners, Account managers) is very important. However, the risk audit (Schouteten and Zegwaart, 2000) presented several problems in this area, showing

[104] This study shows that the work-bound determinants are most important.

that it is not the team design causing the problems, but merely the team development. *Care Team* has operated for only two years in this team structure, hence the workers must still get used to this new way of working in teams. In the previous section I argued that learning could be encouraged by comparing different regions. Person-bound measures for dealing with these problems are, for example, offering courses on coaching for office workers, or on team building for team members.

Since the workloads for *Care* and *Care Team* result mainly from external pressures[105], stress-coping courses may be helpful in dealing with the fact that the care workers must nurse too many clients in too little time. However, this will not deal with the origins of the workload. Measures for dealing with long waiting lists and a shortage of personnel in the care sector are not within reach of the individual organizations. Regional or national measures are necessary, and the current Minister of Public Health is taking different measures to deal with these problems. One of these measures is a promotion campaign aimed at promoting the working in the care sector.

For the organizations *Bicycle* and *Bicycle Team*, I suggested innovation measures to deal with the occurring problems of short cycles, routine work and lack of control capacity. However, innovation or renewal measures are very rigorous and workers must deal with this kind of organizational change. Moreover, their jobs will become more complicated and some workers may need extra education or new skills. These skills and knowledge can be learned in extra training courses or, for instance, through on-the-job training (learning by doing).

6.4 Conclusions

Based on the conclusions in Chapter 5, one could argue that the best way to improve the quality of working life is by taking measures to improve the work characteristics and the characteristics of the fit between work and worker. Measures for improving the work characteristics are work-bound; those for improving the fit can be work-bound and person-bound. With respect to work-bound measures, those aimed at decreasing the control need are expected to be most effective, as control need is the most important determinant of quality of working life. To decrease control need, adaptation measures and innovation measures are suitable (see Table 6.2), aiming at organizational or job design. With respect to fit improvement, work-bound as well as person-bound measures are helpful. Fit improving work-bound measures aim at successful implementation of organizational design (work-bound measures). The organizational change process is important in achieving this goal. The person-bound measures aim at fitting the worker to the work by allocating the right person to the right job; this is the area of personnel management. Personnel management instruments suitable to allocate the right person to the right job consist of selection, recruitment, training, and planning instruments. Of these instruments, training and education are the most important for personnel development, which is important in

[105] Such as long waiting lists and a shortage of personnel in the care sector.

maintaining a fit between work and worker. The different measures for improving the quality of working life are summarized in Table 6.3.

Table 6.3 Possible measures to improve the quality of working life

	Work-bound	**Person-bound**
Aimed at work characteristics	Organizational design: Adaptation measures: – Clear agreements – Improving communication – High quality materials and machinery (equipment) Innovation measures: – Organizational (sociotechnical) redesign	Not applicable
Aimed at fit improvement	*Fitting the work to worker* Organizational change: Design approach – Linear (top-down) intervention Development approach – Continuous tuning – Participation – Learning	*Fitting the worker to the work* Personnel development: Personnel management instruments: – Selection – Recruitment – Training – Planning

However, as the different cases show, the best way to improve the quality of working life is by taking integrated measures, which must be accomplished in two ways: First, by taking measures for more jobs or the whole organization at one time it is possible to avoid sub-optimization. Redesigning one or two jobs will affect other jobs as well, therefore integrated measures are desirable; the second way is by integrating work-bound and person-bound measures aimed at organizational design, organizational development, and personnel development. A coherent set of integrated work-bound and person-bound measures can prevent the occurrence of undesired (negative) effects of organizational change.

These conclusions fit general Human Resource Management (HRM) definitions; however, there is no clarity about its exact content (Doorewaard and De Nijs, 2000). In general, HRM involves the productive use of people in achieving an organization's business objectives and satisfaction of individual employee needs (Stone, 1998). With regard to the meaning of HRM for employers and employees, there seems to be agreement about the following (Doorewaard and De Nijs, 2000: 27): "only in a challenging and responsibility encouraging working environment is it to be expected that employees are willing to make an effort and be treated as 'resource', which will lead to 'commitment', which in return is a condition for realizing the organizational goals of productivity, flexibility, etc."

Work-bound and person-bound measures on the operational level 'meet' at the strategic level in HRM policies. Personnel management is often focussed only on the implementation and use of traditional personnel management instruments, such

as selection, recruitment, appraisal, promotion, and out-placement. The control systems for working hours, appraisal, etc., are based on a functional (Tayloristic) organizational design (Huiskamp, 1995). In HRM these instruments must be incorporated in the general company strategy, along with strategic issues such as organizational design, organizational change, corporate culture, and competence management. HRM can be a major contributor to the success of an organization. Likewise, ineffective HRM can be a barrier to an organization's success and employee satisfaction (Stone, 1998). It is therefore important to jointly treat work-bound and person-bound measures in order to pursue an effective HRM policy.

In the HRM model of Van der Zwaan (1999; see Figure 2.3), this joint treatment of work-bound and person-bound measures is a logical result. Work-bound measures aim at changing the production structure (characteristics of the work), while person-bound measures aim at changing the personnel structure (characteristics of the worker). The production and personnel structures meet in the task structure, where the work and worker must fit and where the quality of working life manifests itself. Further, according to Van der Zwaan (1999), improvements of the quality of working life can be realized only in a joint treatment of the production structure and the personnel structure. This study subscribes this viewpoint.

However, in most HRM literature personnel development and organizational design are treated separately, likely because HRM's theoretical roots are in social psychological theories about behavior and motivation of employees (Doorewaard and De Nijs, 2000). Therefore, Doorewaard and De Nijs (2000) developed a classification model that combines recent theories concerning HRM, organizational change, and organizational design. Using this model in different work organizations led them to the conclusion that HRM strategies combine direct control and human resource mobilization, notwithstanding the fact that the contents of these measures differ among various work organizations. This means that these kinds of HRM strategies, which simultaneously treat organizational design and personnel development, are particularly suited to improve the quality of working life.

7 Conclusions and Discussion

In the chapters thus far, I have tried to find answers to three related questions with respect to the quality of working life. The underlying question was: What is the quality of working life? This question was divided into the following three questions:

1. What are the results of different ways of measuring the quality of working life? (empirical dimension)
2. What are the most important determinants of quality of working life? (theoretical dimension)
3. How can the quality of working life be improved? (practical dimension)

With the answers to these questions (as successively presented in Chapters 4, 5 and 6), I wish to contribute to the debate regarding the quality of working life. This debate takes place at theoretical and practical (empirical) levels. In this chapter I present some recommendations for these discussions, as my results can help determine which definition is most useful in further theorizing, as well as in everyday practice. In other words, this study can actually help to effectively improve the quality of working life. First, I present the most important conclusions of this study (Section 7.1). In Section 7.2 I present some methodological comments on the present study, after which I present this study's theoretical, empirical and practical contributions to discussions about the quality of working life. Finally, I discuss recommendations for the further study on the quality of working life and for everyday practice.

7.1 Conclusions of this Study

Chapter 2 presented three different theories with respect to the quality of working life: Sociotechnical Systems Theory (SST), Job Characteristics Model (JCM), and the Delft Measurement Kit (DMK). These theories differ with regard to the attributes of the quality of working life, and with regard to the standards used to judge the quality of working life (see Chapter 2). In SST, the quality of working life is a function of the division of labor being an objective (unprejudiced) work characteristic. In JCM and DMK, it is a result of the balance between characteristics of the worker and characteristics of the work. The characteristics of the work are perceived in a

certain way, resulting in the quality of working life as the workers themselves experience and judge it.

From these theories, I constructed a conceptual model (see Chapter 2) and a number of hypotheses (see Chapter 3), which I tested empirically. In Chapters 4, 5 and 6, I answered the three research questions in this study. In Chapter 4, I compared two ways of measuring the quality of working life: observers' ratings and questionnaires. The analyses showed differences between the two methods, although they are both used as risk audits. Questionnaire results showed better predictive validity, while observers' ratings showed better content validity. This means that questionnaires (as used in this study) are best suited to analyses regarding the determinants of the quality of working life. Observers' ratings are better suited as risk audits on which measures should be based to improve the quality of working life.

The results in Chapter 5 show that the characteristics of the work are the most important determinants of the quality of working life; this supports the sociotechnical assumption in this regard. However, this study also shows that the fit is an important determinant as well: not only are the work characteristics of importance when studying the quality of working life, so is the fit. Furthermore, this means that improving the quality of working life cannot be realized by changing (improving) the work characteristics only. This conclusion is underscored by comparing organizations and jobs that meet WEBA (sociotechnical) standards with those that do not. Organizations and jobs that meet these standards are expected to report better quality of working life in terms of outcomes (if the sociotechnical assumption is true); in this study, however, the organizations and jobs that meet the standards do not. Therefore, the conclusion is that work characteristics are not the only important item in measuring and improving the quality of working life.

These conclusions have important practical implications. Chapter 6 showed that there are different ways to improve the quality of working life; since it is not only determined by the work characteristics, measures other than work-bound ones to improve the work characteristics (organizational design) are also of interest. For effective improvements of the quality of working life, measures aiming at organizational change and personnel development are necessary as well. The best results are expected from integral measures in which different kinds of measures (work- and person-bound) are combined.

7.2 Methodological Comments

To answer the research questions and test the hypotheses, I used two ways of measuring the concepts in the conceptual model. I first used WEBA as an expert instrument to measure the job content, and second, a questionnaire to measure the characteristics of the work, the characteristics of the worker, the fit, and the outcomes of the work. These instruments were used in four organizations – two bicycle manufacturers and two organizations for home care – within each sector, one traditionally designed and one having a team structure. In retrospect, there are some comments on the contents of the measurement and the research design.

7.2.1 Measurement

To construct the questionnaire, I used existing (and validated) scales from other questionnaires that measure different aspects of the quality of working life. Still, some scales did not show reliable results and therefore had to be left out of the analyses. Nevertheless, the scales used in the analyses sufficiently represent the concepts in the conceptual model.

Another problem in this study may be due to the design of the questionnaire. The wordings of the worker characteristics and fit characteristics are very similar; this may have caused some confusion among respondents, sometimes visible in the patterns of the answers. However, one can never be sure whether a respondent did or did not understand the questions, and discriminate between the questions with regard to worker characteristics (need strength) and fit characteristics (fulfillment of the need strength). Beforehand, I tried to be as clear as possible about the different questions by giving a clear explanation about the questionnaire and its contents. I also tried to make clear the difference by asking the two questions in direct succession, so that the respondent could immediately see the difference between the question on need strength (e.g., "How important is good cooperation for you?") and that on fulfillment (e.g., "How satisfied are you with the amount of cooperation in your current job?").

Furthermore, the questionnaire strongly emphasized the work content. This was the result of the strong emphasis in this study on the sociotechnical assumptions with respect to the quality of working life. I concentrated mainly on testing these sociotechnical assumptions. However, in many analyses I did not use all the variables or items in the questionnaire, but rather reduced the number of variables in order to save degrees of freedom. In this data reduction process the emphasis on work content diminished in favor of other aspects of work and working life, such as the characteristics of the worker and the fit, the working conditions and industrial relations. Only the terms of employment are underexposed, since the only scale in the questionnaire to measure them shows too little reliability.

A final comment on the measurement concerns the household situation. In this study, the items for distinguishing between different household situations are not very precise. In order to test the hypothesis that the household situation also has a bearing on the effects the work has on the worker, the items for measuring the different situations should be defined more conclusively. In this study a first attempt was made, however a more precise differentiation is desirable (see, e.g., Fredriksen-Goldsen and Scharlach, 2001).

7.2.2 Research design

The first comment on the research design concerns the selection of the cases. As described in Chapter 5, the organizational differences between the team-based and traditionally designed organizations (especially regarding the bicycle manufacturers) are not as large as I envisaged. This means that the research design, as meant, is not fully accomplished. Therefore, it would be interesting to replicate this study in a situation in which these differences between sociotechnically designed and tradi-

tionally designed organizations are more significant. In such a study, the results of this study can be validated (or rejected).

Furthermore, the four cases in this study are not a representative sample of the Dutch labor force; men and higher educated people are especially underrepresented. And there is, of course, a much broader spectrum of jobs than represented in the four cases in this study. Therefore, it would be interesting to test the results of this study in other organizations, perhaps even in a representative sample of the Dutch labor force. However, the question then arises as to whether the sample should only contain working people. Due to self-selection mechanisms on the labor market (see Van der Parre, 1996), certain groups have left the labor force. Especially with respect to personal characteristics or possibilities of balancing work and family, the current labor force is biased. For instance, people not able to combine work and family have dropped out of the labor force; as a result, only those able to do so are represented in the sample. Therefore, the problems that occur when trying to find this balance do not lead to problems for these respondents.

7.3 Contributions to the Theoretical Debate

Notwithstanding the comments in the previous section, the main conclusion of this study is upheld: Not only are the work characteristics important determinants of the quality of working life, so are fit characteristics. As a result, a definition of the quality of working life in terms of work characteristics only is not sufficient as a 'working definition' for validly measuring or effectively improving the quality of working life. Although De Sitter (1980) acknowledges that the outcomes of the work (job satisfaction) are a result of the worker's perception of the work and the standards this worker uses to judge the work, he argues that this subjective element should be left out of the definition of the quality of working life[106]. However, this study shows that these perceptions are also important explaining factors for the outcomes of the work[107]. As a result, the quality of working life is determined by two types of balances: first, by a good balance between control need and control capacity (work characteristics); second, by the extent to which the workers perceive this balance as desirable. In this study, the latter is measured as the workers' need strength. However, from Chapter 6 it is clear that need strength is not the only important item to be treated as a measure of fit. The workers' competencies (learning abilities) are also important, as they contribute to successful organizational change[108]. The balance between control need and control capacity offers opportunities to create good quality of working life (stochastic relationship), however the extent to which these opportu-

[106] According to De Sitter (1980), the judgment of the work is highly determined by that work. Therefore, De Sitter follows a conditional approach to define the quality of working life.

[107] Compare the Thomas theorem (Tischler et al., 1983: 102-103): "if men define situations as real, they are real in their consequences".

[108] For successful organizational change, learning and participation are keywords. To achieve sufficient learning and participation, it is important that the workers have the right competencies to deal with organizational change (see Chapter 6).

nities are utilized (fit) is also important for the quality of working life. In other words, a good balance between control need and control capacity is an imperative condition for the balance between work and worker.

These results cannot be explained with the work satisfaction paradox (Blauner, 1964; De Sitter, 1980; Van der Zwaan, 1991), because in this study the outcomes are not measured only as job satisfaction. Other outcomes for the workers, such as health and commitment, have also been taken into account. It would, however, be interesting to take outcomes or effects for the organization, such as productivity or organizational performance, into account as well. If this is done, the sociotechnical assumptions with respect to the quality of working life and the quality of the organization as joint goals can be tested. The results of a study in which outcomes for the workers and effects for the organization are both taken into account look very promising (Kuipers, 2000).

Based on the results of this study, I can formulate a genotypical definition of the quality of working life that meets the conditional and fit approaches. This definition is:

> *The quality of working life is the extent to which characteristics of the work offer opportunities to create such a balance between control need and control capacity that meets the demands and competencies of the workers.*

In fact, this definition is a combination of De Sitter's definition (the extent to which work characteristics offer opportunities for meaningfulness as a result of the structure of the division of labor) and Ruël's (1994) definition (the extent to which work characteristics meet the demands of the worker; see also Chapter 2). Moreover, this definition resembles a definition by Huijgen, who states that quality of working life is a result of the correspondence between the possibilities (freedom of action) and demands of the work situation on one hand, and the possibilities (capacities) and demands (wishes, expectations, need strength) of the workers on the other (Huijgen, 1983: 17). This new definition is more precise, particularly with regard to the first part. The possibilities and demands of the work are the result of the structure of the division of labor, in my definition (and following De Sitter) described as the balance between control need and control capacity[109]. The second part of the definition refers to a balance between work (i.e., the balance between control need and control capacity) and worker (i.e., the need strength and competencies to deal with change). Hence, this new definition brings back a dynamical aspect of the quality of working life, which disappeared with De Sitter's conditional point of view (see Huijgen, 1983; see also Molleman, 1994).

As a result of this definition, bad quality of working life, resulting in negative outcomes of the work, can be caused by a lack of opportunities to create a balance between control need and control capacity (work characteristics), and a misbalance between these opportunities and the worker's demands (fit characteristics). This definition offers the following possibilities for improving the quality of working life: first and foremost, the characteristics of the work must be the object of intervention;

[109] Note that this fits the conditional approach; important is the presence of possibilities to create this balance between control need and control capacities, irrelevant is whether these possibilities are used.

then, the fit between work and worker should be the focus for improvements. This offers possibilities to create more dynamic and integrated approaches for dealing with occurring problems. In Chapter 6 I argued that, especially with regard to organizational change, the continuous striving for fit between the work design and the personnel structure is one of the most important challenges. In this respect, there is an important role for Human Resource Management (HRM) theories that combine knowledge about organizational design, organizational development and personnel development. These are particularly suited to bridge the gap between the production and personnel structures. Joint (integral) treatment of both structures can effectively improve the quality of working life.

The next section deals more explicitly with these and other practical implications of this study.

7.4 Contributions to the Practical Debate

The theoretical discussions, as described in this study, have a major influence on the way the quality of working life is dealt with in everyday practice, especially with respect to risk audits and measures to improve the quality of working life. These are tightly coupled, since the measurement (risk audit) determines the kind of results, which in return determines the direction for improvements. Still, I discuss them separately in the following sections.

7.4.1 The Measurement of Quality of Working Life

With regard to the empirical dimension of the quality of working life, I concluded in Chapter 4 that the choice for an instrument depends on the goal of the risk audit. If this goal is to present a basis for measures to improve the quality of working life, observers' ratings (such as WEBA) are preferred, because their content validity is the highest. If the risk audit is aimed only at indicating risks, a questionnaire (e.g., NOVA-WEBA) is sufficient, as its predictive validity with regard to bad outcomes is good.

The goals of risk audits are various. An important reason in The Netherlands for conducting risk audits is because the Occupational Health and Safety Act obliges organizations to do so[110]. Table 7.1 presents different goals and the (possible) instruments that are suited to meet these goals. In this table I distinguish different goals, sizes of organizations, and instruments. First I will explain these different categories.

The goals of risk audits can vary from evaluating organizational changes to improving the quality of working life. I distinguish between four goals. The first is improving the quality of working life. This means that the results of the risk audit are the input for the measures to improve the quality of working life. As a result, the risk audit should determine the origins of the eventual risks with respect to well-being at work. The second and third goals are the periodical evaluations of the quality of working life. One of the health and safety regulations is that risk audits should

[110] If organizations violate these regulations they can be fined by the Labor Inspectorate.

be repeated occasionally (for the most part, every two years). These evaluations can be thorough assessment (second goal) or a quick-scan (third goal). The results of the risk audit should give a detailed picture of the status of the well-being at work. It is not entirely necessary to provide measures for improvement, since this is another goal. Finally, the fourth goal of risk audits can be an evaluation of organizational change. The risk audit, then, must provide information about changes in the quality of working life as a result of organizational changes.

In addition to these different goals, the size of the organization and, more specifically, the number of different jobs in an organization are important factors in deciding which instruments to use. In large (more than 100 employees) or complex organizations with many different jobs, it is very time-consuming to conduct qualitative audits with the help of observers' ratings. In small organizations (fewer than 100 employees and/or few different jobs), it is less time-consuming to conduct these audits.

The instruments or methods for reaching the goals can be divided into five categories:

1. WEBA: this is a qualitative method used by an expert to judge the risks in the work. It pays attention only to the characteristics of the work and offers detailed information about the origins of risks in the work. It also offers measures for improvement.
2. NOVA-WEBA: this is a questionnaire over the same topics as WEBA; however, it is filled out by the workers.
3. Extended questionnaire: pays attention to characteristics of the worker and fit, along with work characteristics. Examples of such a questionnaire are the one used in this study (Schouteten; see Appendix) or VBBA (see Van Veldhoven and Meijman, 1994).
4. Cascade approach: in this approach, a quantitative instrument is first used to determine the jobs or groups of workers for which a qualitative instrument will be needed in order to develop improvement measures. Such an approach is often used in large populations to save time and money.
5. Shortlist: the short list of questions that can give a quick overview of risks with respect to well-being at work. It is merely a checklist in order to determine whether a situation gives rise to a more detailed study. The list used for some of the analyses in Chapter 5 (see Section 5.6.2) can be used for this purpose.

Table 7.1 is rather self-explanatory. Decisions for an instrument depend on the answers to two questions, the first concerning the degree of detail of the desired information. The more detailed it should be, the more qualitative or extended the instrument should be. For improving the quality of working life, very detailed information about the origins of possible risks is necessary; as a result, WEBA is the appropriate instrument to determine this information.

Table 7.1 Instruments suited to meet organizational goals concerning well-being at work

Goals	**Size of the organization**	
	Small	*Large*
Improving the quality of working life	WEBA	Cascade approach (extended questionnaire and WEBA)
Periodical evaluation of the quality of working life (thorough)	WEBA or extended questionnaire (Schouteten or VBBA)	Extended questionnaire (Schouteten or VBBA)
Periodical evaluation of the quality of working life (quick)	NOVA-WEBA or shortlist (work characteristics)	NOVA-WEBA or shortlist (work characteristics)
Evaluating organizational change	Extended questionnaire with an emphasis on organizational change[111]	Extended questionnaire with an emphasis on organizational change

The second question concerns how much time and resources (money) should be spent. If these are unlimited, it is possible to choose any instrument that gives the required information, no matter the costs. However, as described before, WEBA is a very time-consuming (and, hence, expensive) method. If resources are limited a cheaper method, such as a questionnaire, can offer a satisfactory solution. Nevertheless, based on the results in Chapter 4, I recommend WEBA as the method that preserves the most detailed information about risks with respect to well-being at work. Moreover, the conclusions in Chapter 5 (that work characteristics are the most important determinants of the quality of working life) justify this choice. After all, WEBA only measures the characteristics of the work. If there are indications that problems do not originate mainly in the work characteristics (however, this is difficult to determine without any knowledge about the determinants), an extended instrument that also pays attention to characteristics of the worker or the fit is necessary. The extended questionnaire as used in this study may be helpful.

Furthermore, the choice for an instrument and the contents of that instrument can depend on the outcome variables that are expected to be important. In Chapter 5, I concluded that it depends on the outcome variable what determinants are most important. For instance, with regard to work satisfaction, the job content scales in the questionnaire are important determinants. With regard to commitment, all work characteristics (job content, work relations, and working conditions) as well as the workers' perceptions of the job content, work relations, and terms of employment are important determinants (see Table 5.16). Therefore, it is recommended to determine what outcome variables are of specific interest, before deciding what measurement to use.

[111] Such an extended questionnaire with an emphasis on organizational change does not yet exist; this is a challenge for future research.

7.4.2 Improving the Quality of Working Life

The contribution of this study to the debates about improving the quality of working life is also related to the conclusion that the fit, in addition to work characteristics, is an important determinant of the quality of working life. This means that measures must not be aimed exclusively at improving the work characteristics. In Chapter 6, I presented three different ways to improve the quality of working life: organizational design, organizational change, and personnel development. The way on which to focus depends on the results of the risk audit. However, integral measures that jointly treat the production and personnel structure are expected to be most effective. This should be the heart of modern HRM.

However, there are still many discussions about the contents of this aspect of HRM and its contributions to successful improvement of the quality of working life (Doorewaard and De Nijs, 2000). This study has only slightly dealt with this relationship. However, it supports the recent discussions about relating organizational design to organizational change and personnel management, largely since it supports the criticism of SST that not only work characteristics, but also fit characteristics, are important determinants of the quality of working life. Therefore, this study supports the recent attention to organizational development as an intervention method in organizations (e.g., Boonstra, 2000). Organizational development approaches explicitly combine organizational design and personnel development (see also Van Amelsvoort and Scholtes, 1996; Hoogerwerf, 1999).

7.5 Concluding Remarks

This chapter presented the theoretical, empirical and practical contributions of this study. It also offered recommendations for further research, most of which are mentioned in Section 7.2.

In order to strengthen the knowledge about the relationship between the quality of working life and the quality of the organization, it would be interesting to add organizational outcomes, such as performance, efficiency, productivity, profitability, etc., to the measurements. This would makes it possible to test not only the socio-technical assumption concerning the quality of working life, but also the assumption concerning the quality of the organization. HRM can play a major role in this relationship, since it is particularly suited to bridge the gap between management and employees. Both groups are interested in organizing the work in a way that workers can effectively mobilize their capacities.

Moreover, this relation between quality of working life, quality of the organization and HRM is important because it is difficult for organizations to hold on to personnel, since there is shortage on the labor market. As a result, in HRM it is important to pay attention to attraction and motivation[112] of the workers. Improving the quality of working life can be a major contribution in reaching this goal. Moreover,

[112] In The Netherlands, the expression “binden en boeien” (literally translated as “to commit and to hold on”) is used to describe this phenomenon of attracting and motivating workers in order to prevent them from leaving the organization.

according to NYFER (2000), paying attention to and improving the balance between work and family is also a major contribution toward achieving this goal. Therefore, I recommend an improvement of the measurement of the household situation in this study by adding items for a more precise differentiation between various household situations (e.g., Fredriksen-Goldsen and Scharlach, 2001).

References

Algera, J.A. (1991), "Arbeidsanalyse ten behoeve van motivatie en satisfactie.", in: J.A. Algera (red.), *Analyse van de arbeid vanuit verschillende perspectieven*, Amsterdam, Swets & Zeitlinger.

Algera, J.A. (1992), "Taakkenmerken.", in: P.J.D. Drenth, H.K. Thierry and Ch.J. de Wolff, *Nieuw handboek arbeids- en organisatiepsychologie. Studenteneditie.*, Houten/Zaventem, Bohn Stafleu Van Loghum, 63-92.

Arbeidsinspectie van het Directoraat-Generaal van de Arbeid van het Ministerie van Sociale Zaken en Werkgelegenheid (1993), *Functie-inhoud analyseren en beoordelen. De WEBA-methode.* Den Haag Sdu Uitgeverij Plantijnstraat, SZW publikatie CV 22.

Ashby, W.R. (1969), "Self-regulation and requisite variety", in: F.E. Emery (ed.), *Systems thinking; selected readings*, Harmondsworth, Penguin Books, 105-124.

Asselberghs, K., R. Batenburg, F. Huijgen and M. de Witte (1998), *De kwalitatieve structuur van de werkgelegenheid in Nederland, deel IV; Bevolking in loondienst naar functieniveau: ontwikkelingen in de periode 1985-1995*, OSA-voorstudie V44.

Baaijens, C. (1999), "Deeltijdarbeid in Nederland", in *Tijdschrift voor Arbeidsvraagstukken, 15*, nr. 1, 6-18.

Baron, J.N. and D.M. Kreps (1999), *Strategic human resource management*, New York, John Wiley.

Baron, R.M. and D.A. Kenny (1986), "The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations", in: *Journal of Personality and Social Psychology, 51*, no. 6, 1173-1182.

Beehr, T. (1998), "An organizational Psychology Meta-Model of Occupational Stress", in: C.L. Cooper, *Theories of organizational stress*, Oxford University Press, 6-27.

Beer, M. (1984), *Managing human assets*, New York, The Free Press.

Benders, J., F. Huijgen and U. Pekruhl (1999), "Column: De metamorfose van zeven procent", in: *Tijdschrift voor Arbeidsvraagstukken, 15*, nr. 3, 273-274.

Blauner, R. (1964), *Alienation and freedom*, Chicago-London, University of Chicago Press.

Boonstra, J.J. (2000), *Lopen over water*, Amsterdam, Vossiuspers AUP (oratie).

Boonstra, J.J., H.O. Steensma and M.I. Demenint (red.) (1996), *Ontwerpen en ontwikkelen van organisaties. Theorie en praktijk van complexe veranderingsprocessen*, Utrecht, De Tijdstroom.

Bouwman, Th. (1989), "Ontwerpbeïnvloeding door werknemers; de Coveco-case", in: *Tijdschrift voor Arbeidsvraagstukken, 5*, nr. 4, 36-47.

Braverman, H. (1974), *Labor and monopoly capital; The degradation of work in the twentieth century*, New York, Monthly Review Press.

Breedveld, K. (1998), "Illusies van een 24-uurs economie; ontwikkelingen in gespreid werk en verschillen in zeggendschap", in: *Tijdschrift voor Arbeidsvraagstukken, 14*, nr. 1, 23-36.

Cartwright, S. and C.L. Cooper (1997), *Managing workplace stress*, London, Sage Publications.

Christis, J. (1993), "Arbeid en stress. Kritische kanttekeningen bij het Michiganmodel", in: *P & M*, nr. 62, 31-46.

Christis, J. (1995), "Arbeidsprocesdicussie en sociotechniek", in: F. Huijgen and F.D. Pot (red.), *Verklaren en ontwerpen van produktieprocessen. Het debat over arbeidsprocesbenadering en sociotechniek*, Amsterdam, SISWO, 187-220.

Christis, J. (1998), *Arbeid, organisatie en stress; Een visie vanuit de sociotechnische arbeids- en organisatiekunde*, Amsterdam, Het Spinhuis.

Cooper, C.L. (1998), *Theories of organizational stress*, Oxford University Press.

Cooper, C.L. and R.L. Payne (1992), "International perspectives on research into work, well-being, and stress management", in: J.C. Quick, L.R. Murphy and J.J. Hurrell, Jr. (eds.), *Stress & well-being at work; Assessments and interventions for occupational mental health*, Washington, DC, American Psychological Association.

Davidson, M. (1991), "Women and employment", in: P. Warr (ed.), *Psychology at work*, London, Penguin Books, 223-246.

Davidson, R.A. (1993), "Behavioral research in auditing", in: R.T. Golembiewski (ed.), *Handbook of organizational behavior*, New York, Marcel Dekker Inc., 375-404.

De Jonge, J. (1995), *Job autonomy, well-being, and health; a study among Dutch health care workers*, Maastricht, Rijksuniversiteit Limburg.

Dekker, R. and R. Doorenbos (1997), "Flexibel werk aan de onderkant van de arbeidsmarkt", in: *Tijdschrift voor Arbeidsvraagstukken, 13*, nr. 2, 103-112.

Delsen, L. (1995), *Atypical Employment: An International Perspective,* Groningen, Wolters Noordhoff.

Den Hertog, F. and E. van Sluijs (1995), *Onderzoek in organisaties; een methodologische reisgids*, Assen, Van Gorcum.

De Sitter, L.U. (1980), "Kenmerken en functies van de kwaliteit van de arbeid.", in: J.J.J. van Dijck, J.A.P. van Hoof, A.L. Mok and W.F. de Nijs (red.), *Kwaliteit van de arbeid. Een sociologische verkenning*, Leiden/Antwerpen, Stenfert Kroese, 43 - 80.

De Sitter, U. (1990), "Het sociotechnisch perspectief", in: *Tijdschrift voor Arbeidsvraagstukken, 6*, nr. 3, 4-19.

De Sitter, L.U. (1994), *Synergetisch produceren. Human resources mobilisation in de produktie: een inleiding in de structuurbouw*, Assen, Van Gorcum.

De Volkskrant (1-7-2000), "Driekwart van Nederlanders vindt werkdruk zwaarste last".

De Volkskrant (23-8-2000), "CBS meet record aantal openstaande vacatures".

De Volkskrant (15-1-2001), "'Werkende vrouw moet leren delegeren'".

De Witte, M.C. and J. Berting (1998), "Inleiding: een toekomst met kwaliteit", in: *Tijdschrift voor Arbeidsvraagstukken, 14*, nr 1, 4-5.

De Witte, M., A. van der Zwaan, and R. Schouteten (1998), "Sociotechnische meetinstrumenten", in: J. Van Ruysseveldt, M. de Witte and J. von Grumbkow (red.), *Organiseren van mens en arbeid; hedendaagse benaderingen van de kwaliteit van de arbeid*, OU Heerlen, Kluwer Bedrijfsinformatie, 87-112.

De Witte, M. and J. Van Ruysseveldt (1998), "Oordelen over 'kwaliteit van de arbeid': hedendaagse stromingen" in: J. Van Ruysseveldt, M. de Witte and J. von Grumbkow (red.), *Organiseren van mens en arbeid; hedendaagse benaderingen van de kwaliteit van de arbeid*, OU Heerlen, Kluwer Bedrijfsinformatie, 11-38.

Dhondt, S. and I. Houtman (1992), "*NIPG Onderzoeksvragenlijst Arbeidsinhoud: constructie en eerste toets op betrouwbaarheid en validiteit.*", NIPG-publikatienummer 92.088, Leiden, Nederlands Instituut voor Praeventieve Gezondheidszorg TNO.

Dhondt, S and I. Houtman (1996), *"De WEBA-Methode. NOVA-WEBA handleiding. Een vragenlijst om welzijnsknelpunten op te sporen.*", TNO-rapport 96.027, Leiden, TNO Preventie en Gezondheid.

Diekstra, R.F.W., P. De Heus, M.H. Schouten and I.L.D. Houtman (1994), *Werken onder druk. Een onderzoek naar de omvang en factoren van werkstress in Nederland.* Den Haag, VUGA Uitgeverij bv.

Doorewaard, J.A.C.M. and W.F. de Nijs (2000), "Human resource management en team based work – bijdragen aan de discussie", in: *Tijdschrift voor HRM*, nr.2, 25-45.

Doorewaard, H., M. Van Klaveren, F. Pot and M. Van der Woude (1983), *Stratego op bedrijfsniveau. Onderzoek naar techniek en organisatie als resultaat van strategisch handelen*, Nijmegen, ITS-Uitgeverij.

Eco, U. (1995), *Het eiland van de vorige dag*, Amsterdam, Uitgeverij Bert Bakker.

Edwards, J.R. (1991), "Person-job fit: a conceptual integration, literature review, and methodological critique", in: C.L. Cooper and I.T. Robbertson (eds), *International Review of Industrial and organizational psychology, 6*, New York, Wiley, 283-357.

Edwards, J.R. (1998), "Cybernetic theory of stress, coping, and well-being", in: C.L. Cooper, *Theories of organizational stress*, Oxford University Press, 122-152.

Edwards, J.R., R.D. Caplan, and R. Van Harrison (1998), "Person-environment fit theory", in: C.L. Cooper, *Theories of organizational stress*, Oxford University Press, 28-67.

EEG (1989), "Richtlijn van de Raad van 12 juni 1989 betreffende de tenuitvoerlegging van maatregelen ter bevordering van de verbetering van de veiligheid en de gezondheid van de werknemers op het werk", (89/391/EEG), in: *Publikatieblad van de Europese Gemeenschappen*, Nr. L 183/1 - 8, 19. 6. 89.

Evers, A. (1995), *Meetinstrumenten voor arbeidsomstandigheden, stress en welzijn*, Lisse, Swets en Zeitlinger.

Fay, D., S. Sonnentag and M. Frese (1998), "Stressors, innovation, and personal initiative", in: C.L. Cooper, *Theories of organizational stress*, Oxford University Press, 170-189.

Finney, J.W., R.E. Mitchell, R.C. Cronkite and R.H. Moos (1984), "Methodological issues in estimating main and interactive effects: examples from coping/social support and stress field", in: *Journal of Health and Social Behavior*, vol. 25, 85-98.

Fombrun, C.J., N.M. Tichy and M.A. Devanna (1984), *Strategic human resource management*, Chichester, Wiley & Sons.

Fox, J. (1991), *Regression diagnostics*, Newbury Park, Sage Publications, a Sage University paper, vol. 79.

Fredriksen-Goldsen, K.I. and A.E. Scharlach (2001), *Families and work. New directions in the twenty-first century*, Oxford University Press.

Freese, C., J. Heinen and R. Schalk (1999), "Organisatieverandering en het psychologisch contract, betrokkenheid en intentie tot verloop bij werknemers in de thuiszorg", in: *Tijdschrift voor Arbeidsvraagstukken, 15*, nr. 3, 208-218.

Frese, M. and D. Zapf (1988), "Methodological issues in the study of work stress: Objective vs subjective measurement of work stress and the question of longitudinal studies.", in: C.L. Cooper and R. Payne, *Causes, coping and consequences of stress at work*, Chichester, John Wiley & Sons Ltd.

Fried, Y. and G.R. Ferris (1987), "The validity of the job characteristics model: a review and meta-analysis.", in: *Personnel Psychology*, nr. 40, 287-322.

Fruytier, B.G.M. (1994), *Organisatieverandering en het probleem van de Baron Van Münchhausen: een systeemtheoretische analyse van de overgang van het Tayloristisch Productie Concept naar het Nieuwe Productie Concept*, Delft, Eburon.

Fruytier, B. and A. ter Huurne (1983), *Kwaliteit van de arbeid als meetprobleem. Een vergelijkende literatuurstudie*, Tilburg, IVA.

Gonäs, L. (2000), "Search for flexibility, fairness and prosperity: alternative employment policies in the twenty-first century" in: conference proceedings of the 12th *IIRA World Congres*, May 29-June 2, Tokyo.

Greif, S. (1983), *Konzepte der Organisationspsychologie; Eine Einfürung in grundlegende theoretische Ansätze*, Bern, Verlag Hans Huber.

Grobbée, J.B.G.M. (1995), *Welzijnsrisico-analyse en arbo-beleid Sima Kunststoffen BV. Een onderzoek naar de welzijnsrisico's en de implicaties van de gewijzigde Arbeidsomstandighedenwet bij Sima Kunststoffen BV.*, Doctoraalscriptie Rijksuniversiteit Groningen.

Groenendijk, H.J. (1999), "Arbeid en zorg: de subjectieve factor", in: *Tijdschrift voor Arbeidsvraagstukken, 15*, nr. 1, 19-32.

Groeneveld, S. and G. van Kooten (1999), "Kwalificatie: en kostbaar begrip. Over de kloof tussen arbeidsmarkttheorie en onderzoek naar overscholing", in: *Tijdschrift voor Arbeidsvraagstukken, 15*, nr. 3, 260-272.

Guérin, A., P. de Heus and R. Diekstra (1997), "Is het gezond om werk en kinderen te combineren?", in: *Tijdschrift voor Arbeidsvraagstukken, 13*, nr. 3, 200-215.

Hacker, W. (1989), "Vollständige vs. unvollständige Arbeitstätigkeiten", in: *Arbeits- und Organisationspsychologie*, München, Psychologie Verlags Union, 463-466.

Hacker, W., H.E. Plath, P. Richter and K. Zimmer (1978), "Internal representation of task structure and mental load of work: approaches and methods of assessment", in: *Ergonomics*, vol. 21, no. 3, 187-194.

Hackman, J.R. and G.R. Oldham (1980), *Work redesign*, Addison-Wesley, 1980.

Heming, B. (1998), "Kwaliteit van arbeid als wisselwerking tussen mens en werk; De Delftse benadering", in: J. Van Ruysseveldt, M. de Witte and J. von Grumbkow (red.), *Organiseren van mens en arbeid; hedendaagse benaderingen van de kwaliteit van de arbeid*, OU Heerlen, Kluwer Bedrijfsinformatie, 159-178.

Hoijtink, H. and I. Molenaar (1997), *Multivariate statistiek in de praktijk*, Groningen, Heymans Instituut & Basiseenheid Statistiek, Meettheorie en Informatiekunde.

Holt, H. (2000), "Looking for a new balance between family life and working life – a Scandinavian perspective" in: conference proceedings of the 12th *IIRA World Congres*, May 29-June 2, Tokyo.

Hoogerwerf, L. (1998), *Opnieuw leren organiseren. Sociotechniek in actietheoretisch perspectief*, Utrecht, Lemma.

Houtman, I.L.D., P.G.W. Smulders, D.J. Klein Hesselink (1999), *Trends in arbeid 1999*, Alphen aan den Rijn, TNO Arbeid/Samsom.

Huijgen, F. (1980), "Kwaliteit van de arbeid in de industriële sector: problemen en achtergronden", in: J.J.J. van Dijck, J.A.P. van Hoof, A.L. Mok and W.F. de Nijs (red.), *Kwaliteit van de arbeid. Een sociologische verkenning*, Leiden/Antwerpen, Stenfert Kroese, 83-106.

Huijgen, F. (1983), "Werkne(e)m(st)ers, management en kwaliteit van de arbeid" in: H. Doorewaard, M. Van Klaveren, F. Pot and M. Van der Woude, *Stratego op bedrijfsniveau. Onderzoek naar techniek en organisatie als resultaat van strategisch handelen*, Nijmegen, ITS-Uitgeverij, 9-25.

Huijgen, F. (1989), *De integrale aanpak van organisatievernieuwing*, Oratie, Nijmegen, Instituut voor Toegepaste Sociale Wetenschappen.

Huijgen, F. and F.D. Pot (red.) (1995), *Verklaren en ontwerpen van produktieprocessen. Het debat over arbeidsprocesbenadering en sociotechniek*, Amsterdam, SISWO.

Huiskamp, M.J. (1995), "Arbeidsverhoudingen en sociotechniek: een nieuwe benadering", in: F. Huijgen and F.D. Pot (red.), *Verklaren en ontwerpen van produktieprocessen. Het debat over arbeidsprocesbenadering en sociotechniek*, Amsterdam, SISWO, 243-263.

Hut, J.A. and E. Molleman (1998), "Empowerment and team development", in: *Team Performance Management, 4*, nr. 2, 53-66.

Huys, R., I. Pollet, G. Van Hootegem and L. Wouters (1997), *Bouwen en schaven aan de kwaliteit van de arbeid; een handboek*, Leuven, HIVA.

Inglehart, R. (1990), *Culture shift in advanced industrial society,* Princeton, Princeton University Press.

Jacques, R. (1996), *Manufacturing the employee; management knowledge from the 19th to 21st centuries*, London, Sage Publications.

Jayaratne, S. (1993), "The antecedents, consequences, and correlates of job satisfaction", in: R.T. Golembiewski (ed.), *Handbook of organizational behavior*, New York, Marcel Dekker Inc., 111-140.

Jetten, B. and G. van Kooten (1994), *Kwaliteit van de arbeid. Van theorie naar toetsing*, Rotterdam, Erasmus Universiteit.

Jol, J.A., N. Van Kempen and P. Voskamp (1987), *De inhoud van het welzijnsbegrip in artikel 3 van de Arbowet*, Voorburg, Directoraat-Generaal van de Arbeid, Directie Sociaal Arbeidsbeleid.

Kammeraat, R. (2000), *Welzijn bij Giant Europe Manufacturing B.V. Een onderzoek naar het verbeteren van het welzijn en het verhogen van de betrokkenheid van de medewerkers op de assemblage-afdeling van een fietsenfabriek*, Rijksuniversiteit Groningen, Bedrijfskunde, afstudeerscriptie.

Karasek, R.A. (1979), "Job demands, job decision latitude, and implications for job redesign", in: *Administrative Science Quarterly*, June, volume 24, 285-307.

Karasek, R. (1985), *Job Content Questionnaire*, Los Angeles, Department of Industrial and Systems Engineering, University of Southern California.

Karasek, R. and T. Theorell (1990), *Healthy work. Stress, productivity, and the reconstruction of working life*, New York, Basic Books.

Kasl. S.V. (1978), "Epidemiological contributions to the study of work stress", in: C.L. Cooper and R. Payne (eds.), *Stress at work*, New York, Wiley.

Kluytmans, F. and C. Hancké (red.) (1990), *Leerboek personeelsmanagement*, Deventer, Kluwer Bedrijfswetenschappen.

Kompier, M.A.J. (1996), "Job design and well-being", in M.J. Schabracq, J.A.M. Winnubst and C.L. Cooper, *Handbook of work and health psychology*, Chichester, John Wiley & Sons, 349-368.

Kompier, M.A.J. and F.H.G. Marcelissen (1993), *Handboek werkstress. Systematische aanpak voor de bedrijfspraktijk*, Amsterdam, NIA.

Korver, T. (1995), "Sociotechniek en loopbaan", in: F. Huijgen and F.D. Pot (red.), *Verklaren en ontwerpen van produktieprocessen. Het debat over arbeidsprocesbenadering en sociotechniek*, Amsterdam, SISWO, 265-279.

Kroemer, K.H.E. and E. Grandjean (1997), *Fitting the task to the human. A textbook of occupational ergonomics*, London, Taylor & Francis.

Kuipers, B.S. (2000), *Driving teams to better performance. Team-development at Volvo Trucks Umeå*, master thesis, University of Groningen, Faculty of Management and organization.

Kuipers, H. and P. van Amelsvoort (1992), *Slagvaardig organiseren: inleiding in de sociotechniek als integrale ontwerpleer*, Deventer, Kluwer Bedrijfswetenschappen.

Landy, F.J. (1992), "Work design and Stress", in: G.P. Keita and S.L. Sauter (eds.), *Work and well-being; an agenda for the 1990s*, Washington, DC, American Psychological Association, 119-158.

Legge, K. (1995), *Human Resource Management: rhetorics and realities*, Houndmills, MacMillan Business.

Levi, L. (1994), "Work, worker and wellbeing: an overview", in: *Work & Stress, 8*, no. 2, 79-83.

Leys, M., H. Steensma and J. Van Ruysseveldt (1989), "De humaniseringsbeweging", in: J. Van Ruysseveldt, (red.) and J. von Grumbkow, *Kwaliteit van de arbeid. Hedendaagse stromingen*., Assen/Maastricht, Van Gorcum, 20-31.

Livingstone, D.W. (1998), *The education-jobs gap. Underemployment or economic democracy*, Boulder Colorado, Westview Press.

Manders, F. (1998), *Praktisch personeelsmanagement*, Utrecht, Lemma.

Martens, W. (1995), "Arbeidsprocesbenadering en sociotechnische systeembenadering: hun logica en problemen", in: F. Huijgen and F.D. Pot (red.), *Verklaren en ontwerpen van produktieprocessen. Het debat over arbeidsprocesbenadering en sociotechniek*, Amsterdam, SISWO, 155-184.

Meerman, M. and F. Vaas (1995), "Zorgarbeid, een buitenbeentje? Een repliek", in: *Tijdschrift voor Arbeidsvraagstukken, 11*, nr. 2, 124-126.

Meijman, T.F. (1993), "De vermoeidheidsbeleving: beschouwingen over het begrip en de meting ervan". In: M.J. Schabracq and J.A.M. Winnubst (red.), *Handboek arbeid en gezondheid psychologie. Toepassingen*, Utrecht, Lemma.

Meijman, T. (1998), "Kritiek: gemiste kansen in een indrukwekkend stuk werk, boekbespreking proefschrift Jac Christis", in: *Tijdschrift voor Arbeidsvraagstukken, 14*, nr. 4, 293-295.

Meijman, T.F. and R. van Ouwerkerk (1999), "Zien anderen ook wat wij van ons werk vinden? Over de samenhang van observaties met zelfbeoordelingen van psychosociale taakkenmerken", in: *Gedrag en Organisatie* 1999-12, nr. 6, 384-396.

Ministerie SZW (1995), *Inspectiemethode Arbeidsomstandigheden (IMA)*, Den Haag.

Ministerie van SZW/CBS (1998), *Jaarboek Emancipatie 1998. Tijd en ruimte voor arbeid en zorg*, Den Haag, VUGA.

Ministerie SZW (1999), *Arbobalans '99*, Den Haag, Opmeer Drukkerij.

Molleman, E. (1994), *Personeelscapaciteit in flexibele organisaties*, Deventer, Kluwer Bedrijfswetenschappen.

Morée, M. and M. Vulto (1995a), "Zorgarbeid als zorgenkind? De kwaliteit van de arbeid in de gezinsverzorging" in: *Tijdschrift voor Arbeidsvraagstukken, 11*, nr. 1, 48-59.

Morée, M. and M. Vulto (1995b), "De WEBA past altijd? Een dupliek", in: *Tijdschrift voor Arbeidsvraagstukken, 11*, nr. 2, 127-128.

Mottaz, C. (1986), "Gender differences in work satisfaction, work-related rewards and values, and the determinants of work satisfaction", in: *Human Relations, 39*, no. 4, 359-378.

Mottaz, C.J. (1987), "Age and work satisfaction", in: *Work and Occupations, 14*, no. 3, 387-409.

Nijhuis, F.J.N. (1995), *De paradoxale gezondheidseffecten van arbeid. Van gezondheidsbedreiging naar gezondheidsbevordering*, Maastricht, Rijksuniversiteit Limburg (oratie).

Nunnally, J.C. and I.H. Bernstein (1994), *Psychometric theory, third edition*, New York, McGraw-Hill.

NYFER (2000), *Besparingen op de kosten van personeelsverloop en ziekte door balans werk en privé*, Breukelen, NYFER.

Oeij, P., B. Fruytier, and I. van den Broek (1998), "Research into the quality of work", in: G. Evers, B. van Hees and J. Schippers, *Work, organisation and labour in Dutch society. A state of the art of the research,* Dordrecht/Boston/London, Kluwer Academic Publishers, 105-138.

OSH (1999), *The state of occupational safety and health in the European Union. Data on the NL state of OSH, Netherlands focal point*, the Hague, European Agency for Safety and Health at Work (http://nl.osha.eu.int/statistics/).

Peeters, M.H.H. and J.C.M. Mossink (1995), *De WEBA-methode, Deel 2: Herontwerp*, Alphen aan den Rijn/Zaventem, Samsom BedrijfsInformatie.

Peterson, R.A. (1994), "Meta-analysis of Chronbach's coefficient Alpha", in: *Journal of Consumer Research, 21*, September 1994, 381-391.

Projectgroep WEBA (1989), "Functieverbetering en Arbowet.", in: *Gedrag en Organisatie, 2*, nr. 4/5, 361-382.

Pruijt, H.D. (1996), *The fight against Taylorism in Europe; strategies, achievements in job design and technology, setbacks, obstacles, chances for upgrading work*, Rotterdam, Erasmus Universiteit.

Raabe, P.H. (1998), "Women, work, and family in Czech Republic and comparisons with the West, Community", in: *Work & Family, 1*, nr. 1, 51-64.

Rainey, H.G. (1993), "Work motivation", in: R.T. Golembiewski (ed.), *Handbook of organizational behavior*, New York, Marcel Dekker Inc., 19-39.

Roe, R.A. and F.R.H. Zijlstra (1991), "Arbeidsanalyse ten behoeve van (her)ontwerp van functies: een handelingstheoretische invalshoek.", in: J.A. Algera (red.), *Analyse van de arbeid vanuit verschillende perspectieven*, Amsterdam, Swets & Zeitlinger.

Ross, R.R. and E.M. Altmaier (1994), *Intervention in occupational stress. A handbook of counselling for stress at work*, London, Sage Publications.

Ruël, G.C. (1994), *Van structuur tot kwaliteit: relaties tussen produktiestructuur, arbeidssituatie en kwaliteit van de arbeid*, Groningen, Wolters-Noordhof.

Schouteten, R.L.J. and M.C de Witte (1999), "Well-being at work: objective versus subjective measurement and the iceberg problem", paper for *International Research Conference 'Health Hazards and Challenges in the New Working Life'*, 11-13 January 1999, Stockholm, Sweden.

Schouteten, R. and D. van Winsum (2000), *Verslag van de welzijnsrisico-inventarisatie bij Union B.V.*, Rijksuniversiteit Groningen, Bedrijfskunde.

Schouteten, R. and M. Zegwaart (2000), *Verslag welzijnsrisico-inventarisatie bij Bedrijfseenheid V&V en Bedrijfsbureau V&V van Icare Thuiszorg Drenthe*, Rijksuniversiteit Groningen, Bedrijfskunde.

SCP (1998), *Sociaal en cultureel rapport 1998*, Rijswijk, Sociaal en Cultureel Planbureau.

Smulders, P.G.W. (1995), "Arbeid en gezondheid: inleiding.", in: P.G.W. Smulders and J.M.J. op de Weegh (eds.), *Arbeid en Gezondheid: Risicofactoren*, Utrecht, Lemma, 19-41.

Spector, P.E. (1997), *Job satisfaction; application, assessment, causes, and consequences*, Thousand Oaks, Sage Publications.

Steensma, H.O. (1995), "Veranderkundige notities bij sociotechniek als humanisering van de arbeid", in: F. Huijgen and F.D. Pot (red.), *Verklaren en ontwerpen van produktieprocessen. Het debat over arbeidsprocesbenadering en sociotechniek*, Amsterdam, SISWO, 281-314.

Steijn, A.J. (1998), "Career chances to become unemployed of flexible and permanent workers. Proof of a segmented labour market?", Paper *Weswa Conferentie*, Rotterdam, 25 november 1998.

Steijn, A.J. and M.C. de Witte (1992), *De Januskop van de industriële samenleving. Technologie, arbeid, en klassen aan het begin van de jaren negentig*, Alphen aan den Rijn, Samsom BedrijfsInformatie.

Stevens, J. (1996), *Applied multivariate statistics for the social sciences*, Mahwah, Lawrence Erlbaum Associates Publishers.

Stone, R.J. (1998), *Human resource management*, Brisbane, John Wiley & Sons.

Stoner, J.A.F. and R.E. Freeman (1989), *Management, fourth edition*, Englewood Cliffs, Prentice Hall.

Story, J. (ed.) (1995), *Human resource management. A critical text*, London, Routledge.

Struik, G. and R. Schouteten (1998), *Verslag welzijnsrisico-inventarisatie bij Thuiszorg Noord West Twente*, Rijksuniversiteit Groningen, Bedrijfskunde.

Suzaki, K. (1993), *The new shop floor management; empowering people for continuous improvement*, New York, The Free Press.

Tausky, C. (1992), "Work is desirable/loathsome", in: *Work and Occupations, 19*, nr. 1, 3-17.

Ten Horn, L.A. (1983), *Behoeften, werksituatie en arbeidsbeleving*, Pijnacker, Dutch Efficiency Bureau.

Ten Horn, L.A. (1989), *Your work ..... and what you think of it. Questionnaire for the measurement of variables related to the quality of jobs*, Delft, University of Technology.

Ten Horn, L.A. and H. Steensma (1989), "Recente stromingen in de humaniseringsbeweging", in: J. Van Ruysseveldt, (red.) and J. von Grumbkow, *Kwaliteit van de arbeid. Hedendaagse stromingen*, Assen/Maastricht, Van Gorcum, 32-43.

Thierry, H. (1992), "Motivatie en satisfactie.", in: P.J.D. Drenth, H.K. Thierry and Ch.J. de Wolff, *Nieuw handboek arbeids- en organisatiepsychologie. Studenteneditie.*, Houten/Zaventem, Bohn Stafleu Van Loghum, 3-62.

Thomas, W.I. (1928), *The child in America*, New York, Knopf.

Tischler, H.L., P. Whitten and D.E.K. Hunter (1983), *Introduction to sociology, second edition*, New York, Holt, Rhinehart and Winston.

Trist, E.L. and K.W. Bamforth (1951), "Some social and psychological consequences of the longwall method of coal-getting; an examination of the psychological situation and defences of a work group in relation to the social structure and technological content of the work system", in: *Human Relations, 4*, nr. 1, 3-38.

Vaas, S., S. Dhondt, M.H.H. Peeters and J. Middendorp (1995), *De WEBA-methode, Deel 1: WEBA-analyse handleiding*, Alphen aan den Rijn/Zaventem, Samsom BedrijfsInformatie.

Van Amelsvoort, P. (1996), *Het programmeren en regisseren van veranderingsprocessen. Vormgeven aan complexe veranderingsprocessen van organisatievernieuwing*, Vlijmen, ST-Groep.

Van Amelsvoort, P. and G. Scholtes (1996), *Zelfsturende teams: ontwerpen, invoeren en begeleiden*, Oss, ST-Groep.

Van der Parre, P. (1996), *Zonder arbeid geen zegen. Kwaliteit van de arbeid, arbeidsoriëntaties, arbeidssatisfactie en het zoekgedrag op de arbeidsmarkt*, Delft, Eburon.

Van der Zwaan, A.H. (1990), "Arbeidsprocessen: het ontwerp- en adviesproces", in: *Tijdschrift voor Arbeidsvraagstukken, 6*, nr. 1, 76-90.

Van der Zwaan, A.H. (1991), *Organiseren van arbeid*, Assen, Van Gorcum.

Van der Zwaan, A.H. (1995), "Van partieel ontwerpen naar integraal vernieuwen", in: F. Huijgen and F.D. Pot (red.), *Verklaren en ontwerpen van produktieprocessen. Het debat over arbeidsprocesbenadering en sociotechniek*, Amsterdam, SISWO, 221-239.

Van der Zwaan, A.H. (1999), *Organising work processes. Engineering work & managing workers*, Assen, Van Gorcum.

Van Donk, D.P. and G.C. Ruël (1992), "Sociotechnisch systeemdenken in human resource management", in: *Bedrijfskunde: tijdschrift voor modern management, 64*, nr. 2, 168-179.

Van Eijbergen, R. (1999), *De invoering en het effect van zelfsturende teams in organisaties*, Utrecht, Lemma.

Van Eijnatten, F.M. and A.H. van der Zwaan (1998), "The Dutch IOR approach to organisational design. An alternative to Business Process Re-engineering?", in: *Human Relations*, *51*, no. 3, 289-318.

Van Hoof, J.A.P. (1980), "Kwaliteit van de arbeid: nieuwe combinatie van doelmatigheid en legitimiteit" in: J.J.J. van Dijck, J.A.P. van Hoof, A.L. Mok and W.F. de Nijs (red.), *Kwaliteit van de arbeid. Een sociologische verkenning*, Leiden/Antwerpen, Stenfert Kroese, 243-265.

Van Klaveren, M. (1994), *Trends en keuzes in het onderzoek naar de kwaliteit van de arbeid,* Amsterdam, SISWO (publikatie 381).

Van Klaveren, M. (1995), "Hoe integraal is de sociotechniek? Ervaringen met onzekerheid en botsende belangen in ontwerpprocessen", in: F. Huijgen and F.D. Pot (red.), *Verklaren en ontwerpen van produktieprocessen. Het debat over arbeidsprocesbenadering en sociotechniek*, Amsterdam, SISWO, 97-126.

Van Klaveren, M. and T. Tom (1995), "All-round groepswerk: doen of doen alsof?", in: *Tijdschrift voor Arbeidsvraagstukken*, *11*, nr. 1, 21 – 33.

Van Ruysseveldt, J. (1989), "Kwaliteit van de arbeid", in: J. Van Ruysseveldt (red.) and J. von Grumbkow, *Kwaliteit van de arbeid. Hedendaagse stromingen*., Assen/Maastricht, Van Gorcum, 1-19.

Van Veldhoven, M.J.P.M. (1996), *Psychosociale arbeidsbelasting en werkstress*, Lisse, Swets en Zeitlinger.

Van Veldhoven, M., J.P.J. Broersen and R.J. Fortuin (1999), *Werkstress in beeld; psychosociale arbeidsbelasting en werkstress in Nederland*, Amsterdam, SKB

Van Veldhoven, M. and T. Meijman (1994), *Het meten van psychosociale arbeidsbelasting met een vragenlijst. De Vragenlijst Beleving en Beoordeling van de Arbeid (VBBA)*, Amsterdam, NIA.

Van Veldhoven, M., T.F. Meijman, J.P.J. Broersen and R.J. Fortuin (1997), *Handleiding VBBA; Onderzoek naar de beleving van psychosociale arbeidsbelasting en werkstress met behulp van de vragenlijst beleving en beoordeling van de arbeid*, Amsterdam, SKB.

Verschuren, P. and H. Doorewaard (1995), *Het ontwerpen van een onderzoek*, Utrecht, Lemma.

Vogelaar, A.L.W. and R. Van der Vlist (1995), "Het Job Characteristics Model en taakontwerp.", in: *Gedrag en Organisatie, 8*, nr. 2, 65-87.

Volpert, W. (1994), *Wider die Maschinenmodelle des Handelns; Aufsätze zur Handlungsregulationstheorie*, Lengerich, Pabst Science Publishers.

Voydanoff, P. (1987), *Work and family life,* Newbury Park, CA, Sage.

Vulto, M. and M. Morée (1996), *Thuisverzorging als professie. Een combinatie van hand, hoofd en hart*, Utrecht, De Tijdstroom.

Wall, T.D. (1991), "New technology and job design", in: P. Warr, *Psychology at work*, London, Penguin Books, 270-290.

Warr, P.B. (1991), "Job characteristics and mental health", in: P. Warr, *Psychology at work*, London, Penguin Books, 247-269.

Womack, J.P., D.T. Jones and D. Roos (1990), *The machine that changed the world*, New York, Rawson Associates.

Appendices

Appendix 1: Questionnaire

Appendix 2: Statistical tests

Appendix 1: Questionnaire

Questionnaire (in Dutch) as used in a bicycle manufactory.

VRAGENLIJST WELZIJNSRISICO-INVENTARISATIE

BIJ EEN FIETSENFABRIEK

Roel Schouteten
Rijks*universiteit* Groningen

LEES EERST DIT.

Deze vragenlijst gaat over uw werk, uw werkomstandigheden, uw voorkeuren en uw ervaringen met uw werk. Hoe deze eruit zien kunt u aangeven door de vragen te beantwoorden.
De vragenlijst bestaat uit 266 vragen en het beantwoorden van de vragen neemt ongeveer drie kwartier tot een uur in beslag. Veel vragen kunt u gewoon met 'ja' of 'nee' beantwoorden. Andere vragen kunt u op een schaal van 'heel belangrijk' tot 'heel onbelangrijk' beantwoorden. De verschillende mogelijkheden worden steeds duidelijk vermeld. In de vragenlijst komen drie soorten vragen voor. Deze worden hieronder uitgelegd aan de hand van voorbeelden.
Het is de bedoeling dat u de vragen zonder lang nadenken beantwoordt want uw eerste reactie op een vraag is vaak het beste antwoord. Ik verzoek u de vragen zèlf, dus zonder overleg met anderen, te beantwoorden, want het gaat in dit onderzoek om úw mening.
Het kan zo zijn dat een vraag een beetje vreemd aandoet of niet van toepassing lijkt op een functie bij Union BV. De reden hiervoor is dat deze vragenlijst ook wordt gebruikt in andere organisaties. Het weglaten van enkele vragen kan echter betekenen dat de resultaten geen goed beeld meer opleveren van de situatie en de relaties tussen verschillende vragen. Probeert u daarom toch alle vragen in te vullen door ze op uw functie te betrekken.
Geef per vraag slechts één antwoord, ook al vindt u de keus tussen de antwoordmogelijkheden soms moeilijk. Kies dan voor het antwoord dat naar uw mening het beste past bij uw werk of werkomstandigheden. U beantwoordt de vragen door een kruis te zetten in het vakje bij het antwoord van uw keuze. Als u per ongeluk een verkeerd vakje heeft aangekruist, dan kunt u dit corrigeren door het vakje helemaal zwart te maken en een kruis te zetten in het vakje dat u wel wil aankruisen.

VOORBEELD 1:

Bespreekt u vaak het werk met uw collega's? ja O nee O

Dit soort vragen met de antwoordmogelijkheden 'ja' *en* 'nee' *komt het meeste voor. Als u vaak of zeer veel met uw collega's het werk bespreekt, dan zet u een kruisje in het vakje bij* 'ja'. *Als u nooit, zelden of niet zo vaak uw werk met uw collega's bespreekt, kiest u voor* 'nee'. *Twijfelt u, probeer dan toch te kiezen voor de mogelijkheid die het dichtst bij de werkelijkheid komt. Zet nooit een kruis in het vakje bij zowel* 'ja' *als* 'nee' *of iets ertussenin; want dan kan uw antwoord niet meer verwerkt worden!*

VOORBEELD 2:

	altijd	**vaak**	**soms**	**nooit**
Treden er belangrijke veranderingen op in uw taken?	O	O	O	O

Bij deze vragen heeft u meerdere antwoordmogelijkheden. De verschillende mogelijkheden zijn duidelijk vermeld. Kruis het antwoord aan dat het dichtst bij uw werkelijkheid komt. Zet nooit een kruis in meerdere vakjes aan of iets ertussenin; want dan kan uw antwoord niet meer verwerkt worden.

VOORBEELD 3:

Antwoordmogelijkheden: **1** = zeer belangrijk/tevreden, **7** = zeer onbelangrijk/ontevreden

	1	**2**	**3**	**4**	**5**	**6**	**7**
Hoe belangrijk is een goede sfeer op het werk?	O	O	O	O	O	O	O
Hoe tevreden bent u met de sfeer op het werk?	O	O	O	O	O	O	O

Deze vragen worden steeds in groepjes van twee gesteld. In de eerste vraag gaat het steeds om hoe belangrijk u een bepaald kenmerk van uw werk vindt. Hierbij heeft u zeven antwoordmogelijkheden. Daarbij staat een **1** *voor 'zeer belangrijk', een* **4** *staat voor 'neutraal' (niet belangrijk, maar ook niet onbelangrijk) en een* **7** *staat voor 'zeer onbelangrijk'. Door een cijfer tussen* 1 *en* 7 *aan te kruisen kunt u aangeven hoe belangrijk u dat kenmerk vindt.*
In de tweede vraag gaat het steeds om uw tevredenheid met dat kenmerk van uw werk. Ook hier heeft u zeven antwoordmogelijkheden. Daarbij staat een **1** *voor 'zeer tevreden', een* **4** *staat voor 'neutraal' (niet tevreden, maar ook niet ontevreden) en een* **7** *staat voor 'zeer ontevreden'. Door een cijfer tussen* 1 *en* 7 *aan te kruisen kunt u aangeven hoe tevreden u met dat kenmerk in uw werk bent.*
Ook hier geldt: kruis maar één antwoord aan en alleen ín de vakjes, niet tussen twee vakjes. Anders kan uw antwoord niet verwerkt worden.

ALGEMENE VRAGEN OVER UZELF

1. Wat is uw leeftijd? …….. jaar

2. Bent u man of vrouw? man O vrouw O

3. Woont u alleen of woont u samen? alleen O samen O

4. Indien u samenwoont, werkt uw partner? ja O nee O n.v.t. O
   Zo ja, werkt deze altijd op tijdstippen tussen half 8 ’s morgens en half 5 ’s avonds? ja O nee O n.v.t. O
   En hoeveel uur gemiddeld per week? ..... uur

5. Werkt u zelf altijd op tijdstippen tussen half 8 ’s morgens en half 5 ’s avonds? ja O nee O

6. Hoeveel uur werkt u gemiddeld per week? ..... uur

7. Bent u verantwoordelijk voor de dagelijkse zorg voor (uw) kinderen? ja O nee O
   Zo ja, hoeveel kinderen? .....
   En hoe oud zijn deze kinderen? ....

8. Wat is de hoogste opleiding die u heeft voltooid?

lager onderwijs	O
lager beroepsonderwijs (bijvoorbeeld LEAO, LTS, LBO)	O
middelbaar onderwijs (bijvoorbeeld MAVO, 3-jarige HBS)	O
middelbaar beroepsonderwijs (bijvoorbeeld MEAO, MTS, MDGO)	O
voortgezet onderwijs (bijvoorbeeld HAVO, HBS, Atheneum)	O
hoger beroepsonderwijs (bijvoorbeeld HEAO, HTS, PA, HBO)	O
academisch onderwijs	O

9. Sinds wanneer bent u in dienst van uw huidige werkgever? ..... (maand) 19...

10. In welke afdeling werkt u?

Assemblage	O	Administratie	O
Oppervlaktebehandeling spuiterij	O	Inkoop/Logistiek	O
Oppervlaktebehandeling overig	O	Commercie Buitendienst	O
Wielbouw	O	Commercie Binnendienst (incl. Productmanagement)	O
Magazijn Expeditie	O	Technische dienst	O
Magazijn Koopdelen/overig	O	Kwaliteitsdienst	O

10A. Welk werk doet u voornamelijk?

Leidinggevende	O
Meewerkend voorman	O
Medewerker	O

11. Sinds wanneer doet u dit werk? ..... (maand) 19...

12. Heeft u voor uw werk een te hoge, te lage of juist goede opleiding?

te hoge opleiding	O
juist een goede opleiding	O
te lage opleiding	O

13. Heeft u voor uw werk te veel, te weinig of juist voldoende ervaring?

te veel ervaring	O
juist voldoende ervaring	O
te weinig ervaring	O

14. Heeft u in aanvullende opleidingen (bijvoorbeeld trainingen of bijscholingscursussen) te veel, te weinig of juist voldoende geleerd voor uw werk?

te veel aanvullende opleidingen	O
juist voldoende aanvullende opleidingen	O
te weinig aanvullende opleidingen	O
niet van toepassing	O

In de hieronder volgende vragen gaan wij in op ziekteverzuim.

15.	Bent u de afgelopen 12 maanden wel eens thuisgebleven wegens ziekte?	ja O	nee O
	Zo ja, hoe vaak?	..... maal	
	En hoe lang (aantal werkdagen)?	..... dagen	
16.	Had de ziekte te maken met uw werk?	ja O	nee O
	Zo ja, hoe vaak?	..... maal	
	En hoe lang (aantal werkdagen)?	.....dagen	
17.	Bent u de afgelopen 12 maanden wel eens thuisgebleven wegens een ongeval op het werk?	ja O	nee O
	Zo ja, hoe vaak?	..... maal	
	En hoe lang (aantal werkdagen)?	.....dagen	
18.	Bent u de afgelopen 12 maanden wel eens thuisgebleven wegens een ongeval buiten het werk (bijvoorbeeld een sportblessure, of auto-ongeluk)?	ja O	nee O
	Zo ja, hoe vaak?	..... maal	
	En hoe lang (aantal werkdagen)?	.....dagen	
19.	Bent u de afgelopen maanden wel eens thuisgebleven voor iets anders dan ziekte of een ongeval (bijvoorbeeld voor zorgtaken, maar niet vakantie of verlof)?	ja O	nee O

VRAGEN OVER UW WERK

Moeilijkheidsgraad

20.	Vereist uw werk voortdurend (meer dan 75% van de tijd) intensief nadenken?	ja O	nee O
21.	Moet u veel informatie gedurende lange tijd onthouden?	ja O	nee O
22.	Kunt u tijdens uw werk over andere dingen nadenken?	ja O	nee O
23.	Vergt uw werk dat u er voortdurend (meer dan 75% van de tijd) uw gedachten bij houdt?	ja O	nee O
24.	Vergt uw werk voortdurend (meer dan 75% van de tijd) veel aandacht van u?	ja O	nee O
25.	Vergt uw werk voortdurend (meer dan 75% van de tijd) oplettendheid?	ja O	nee O
26.	Moet u in uw werk veel dingen tegelijk in de gaten houden?	ja O	nee O
27.	Kunt u uw werk grotendeels op routine doen?	ja O	nee O
28.	Wordt u op het werk vaak voor onverwachte gebeurtenissen geplaatst?	ja O	nee O

Afwisseling in het werk		**altijd**	**vaak**	**soms**	**nooit**
29.	Moet u in uw werk steeds dezelfde dingen doen?	O	O	O	O
30.	Is voor uw werk creativiteit vereist?	O	O	O	O
31.	Is uw werk gevarieerd?	O	O	O	O
32.	Vraagt uw werk een eigen inbreng?	O	O	O	O
33.	Doet uw werk voldoende beroep op al uw vaardigheden en capaciteiten?	O	O	O	O

Vereiste capaciteiten

34. Welk opleidingsniveau wordt op dit moment door het management minimaal nodig geacht om uw functie uit te kunnen voeren? (Dit hoeft niet overeen te komen met uw eigen opleidingsniveau)

lager onderwijs	O
lager beroepsonderwijs (bijvoorbeeld LEAO, LTS, LBO)	O
middelbaar onderwijs (bijvoorbeeld MAVO, 3-jarige HBS)	O
middelbaar beroepsonderwijs (bijvoorbeeld MEAO, MTS, MDGO/VP)	O
voortgezet onderwijs (bijvoorbeeld HAVO, HBS, Atheneum)	O
hoger beroepsonderwijs (bijvoorbeeld HEAO, HTS, HBO/V, PA, MO-B)	O
academisch onderwijs	O

Functievolledigheid

35.	Bepaalt u vooraf de volgorde van hoe u het werk gaat uitvoeren?	ja O	nee O	
36.	Voor de verschillende machines, (hulp)middelen of gereedschappen waarmee u werkt:			
	- stelt u deze zelf in?	ja O	nee O	n.v.t. O
	- kunt u zelf kiezen met welke u een taak gaat uitvoeren?	ja O	nee O	n.v.t. O
	- kunt u zelf kiezen welke u gebruikt bij uw klanten/cliënten?	ja O	nee O	n.v.t. O
	- onderhoudt u deze zelf?	ja O	nee O	n.v.t. O
	- kijkt u zelf na of deze in orde zijn?	ja O	nee O	n.v.t. O
	- indien deze kapot zijn, herstelt of vervangt u deze zelf?	ja O	nee O	n.v.t. O
37.	Houdt u zelf bij hoeveel informatie u per dag/week/maand in uw werk nodig heeft?	ja O	nee O	
38.	Houdt u zelf bij hoeveel materiaal u per dag/week/maand in uw werk nodig heeft?	ja O	nee O	
39.	Beoordeelt u zelf de kwaliteit van uw afgeleverd werk?	ja O	nee O	
40.	Werkt u wel eens een nieuwe collega in zijn/haar werk in?	ja O	nee O	

In de volgende vragen wordt gevraagd of u een bepaalde taak wel of niet uitvoert. Er wordt daarbij uitgegaan van drie soorten functies:

- *functies waarin u vooral te maken krijgt met het verwerken of bewerken van **grondstoffen** of materiaal (bijvoorbeeld een metaalbewerker bewerkt materiaal, een naaister stikt kledingstukken aan elkaar, de chemisch analist bestelt zelf zijn chemische producten, een bouwvakker haalt zelf zijn stenen op,...)*
- *functies waarin u vooral omgaat met **informatie** (bijvoorbeeld een secretaresse corrigeert vooral teksten of voert deze in, een bewaker van een controlekamer observeert een controlebord en reageert zonodig op signalen op dit bord,...)*
- *functies waarin u vooral met **personen** werkt (bijvoorbeeld een leraar werkt met pupillen, een verpleegkundige verzorgt patiënten, een verkoper werkt met klanten,...)*

Er zijn sommige functies waarin de werknemer zowel met grondstoffen, informatie als met mensen te maken krijgt. Wilt u eerst aanduiden waar u in de eerste plaats in uw werk mee te maken krijgt, en dan de verwijzing naar de juiste vraag te volgen? Voor de overige vragen die niet voor uw functie opgaan, kunt u 'niet van toepassing' ('n.v.t.'*) aankruisen.*

Waar werkt u voornamelijk mee?:

- grondstoffen of materiaal? O ***ga naar vraag 41***
- informatie? O ***ga naar vraag 42***
- personen (klanten, leveranciers)? O ***ga naar vraag 43***

41. Indien u vooral met grondstoffen of materiaal werkt:

- Haalt u zelf de grondstoffen op die nodig zijn voor uw werk?	ja O	nee O	n.v.t. O
- Bestelt u zelf de grondstoffen die nodig zijn voor uw werk?	ja O	nee O	n.v.t. O
- Bent u betrokken bij het vaststellen van de bewerkingswijze?	ja O	nee O	n.v.t. O
- Krijgt u uw grondstoffen via een lopende band-systeem?	ja O	nee O	n.v.t. O

42. Indien u vooral met informatie werkt:

- Verzamelt u zelf de informatie die nodig is voor uw werk?	ja O	nee O	n.v.t. O
- Vraagt u zelf de informatie op of aan die nodig is voor uw werk?	ja O	nee O	n.v.t. O
- Stelt u zelf een plan op voor de be- en verwerking van uw informatie?	ja O	nee O	n.v.t. O

43. Indien u vooral met personen werkt:

- Benadert u in eerste instantie zelf deze klanten/patiënten/pupillen?	ja O	nee O	n.v.t. O
- Bedenkt u doorgaans zelf hoe u deze klanten/patiënten/pupillen gaat bedienen/helpen?	ja O	nee O	n.v.t. O
- Bepaalt u zelf hoe lang u met een klant/patiënt/pupil werkt?	ja O	nee O	n.v.t. O

Contactmogelijkheden

44.	Bent u in het werk altijd op uzelf aangewezen?	ja O	nee O
45.	Kan een collega werk van u overnemen als u er niet uitkomt?	ja O	nee O
46.	Helpen uw collega's u bij het afwerken van een opdracht als dat nodig is?	ja O	nee O
47.	Praat u op het werk met collega's uit de eigen afdeling over het werk?	ja O	nee O
48.	Praat u met uw leidinggevende over het werk?	ja O	nee O
49.	Bent u vaak (meer dan de helft van de tijd) alleen op uw werkplek?	ja O	nee O

Werkorganisatie

50.	Is het werk doorgaans goed georganiseerd?	ja O	nee O
51.	Kunt u voldoende overleggen over uw werk?	ja O	nee O
52.	Wordt uw werk vaak belemmerd door onverwachte situaties?	ja O	nee O
53.	Wordt u in het werk geregeld gehinderd door gebreken van anderen?	ja O	nee O
54.	Wordt uw werk vaak bemoeilijkt door afwezigheid van anderen?	ja O	nee O

Kortcyclische arbeid

55. Is uw werk eentonig? ja O nee O

56. Komen in uw werk steeds dezelfde kortdurende werkzaamheden terug? ja O ***ga naar vraag 56A***
nee O ***ga naar vraag 57***

56A. Zo ja, hoe lang duurt dan één herhaling van deze taken?

minder dan 90 seconden O
tussen 90 seconden en 5 minuten O
tussen 5 minuten en 20 minuten O
meer dan 20 minuten O

56B. Indien deze kortdurende werkzaamheden minder dan 20 minuten duren, welk percentage van uw totale dagtaak komen deze kortdurende werkzaamheden voor?

bijna de hele tijd O
ongeveer driekwart van de tijd O
ongeveer de helft van de tijd O
ongeveer een vierde van de tijd O
zelden (minder dan 25% van de tijd)/nooit O

Autonomie

57.	Kunt u zelf beslissen hoe u het werk uitvoert/doet?	ja O	nee O
58.	Bepaalt u zelf de volgorde van uw werkzaamheden?	ja O	nee O
59.	Beslist u zelf wanneer u een taak uitvoert?	ja O	nee O
60.	Kunt u makkelijk even weg van de plaats waar u werkt?	ja O	nee O
61.	Kunt u uw werk, als u dat nodig vindt, zelf onderbreken?	ja O	nee O
62.	Kunt u zelf het werktempo regelen?	ja O	nee O
63.	Kunt u, indien nodig, het tijdstip waarop iets klaar moet zijn uitstellen?	ja O	nee O
64.	Wordt uw werkwijze in grote mate voorgeschreven?	ja O	nee O
65.	Kunt u een eigen werkwijze kiezen?	ja O	nee O

Organiserende taken

66.	Heeft u invloed op de beslissingen van uw werkteam/taakgroep/afdeling?	ja O	nee O
67.	Kunt u bij eventuele problemen mensen uit andere afdelingen inschakelen?	ja O	nee O
68.	Bespreekt u met anderen hoe de taken worden verdeeld? (Wie doet wat?)	ja O	nee O
69.	Bespreekt u met anderen hoe de taken gepland moeten worden?	ja O	nee O
70.	Hoe vaak heeft u overleg tijdens het werk?		

eens per week of vaker O
eens per twee weken O
eens per maand O
eens per twee maanden of minder vaak O
nooit O

Informatievoorziening

71.	Hoort u van uw leidinggevende hoe goed uw product/dienst is?	ja O	nee O
72.	Hoort u van uw collega's hoe goed uw product/dienst is?	ja O	nee O
73.	Krijgt u informatie over de prestaties van uw bedrijf?	ja O	nee O
74.	Krijgt u voldoende informatie over het doel van uw werk?	ja O	nee O
75.	Krijgt u voldoende informatie om mee te werken?	ja O	nee O
76.	Komt de informatie die u nodig heeft meestal op tijd?	ja O	nee O
77.	Moet u vaak wachten op de informatie die u nodig heeft?	ja O	nee O
78.	Krijgt u tegenstrijdige opdrachten in uw werk?	ja O	nee O
79.	Wordt u in uw werk geconfronteerd met tegenstrijdige verwachtingen?	ja O	nee O
80.	Zijn de gegevens die u krijgt meestal juist?	ja O	nee O
81.	Zijn de opdrachten die u krijgt duidelijk?	ja O	nee O

Werkdruk

82.	Moet u erg snel werken?	ja O	nee O
83.	Moet u heel veel werk doen?	ja O	nee O
84.	Moet u extra hard werken?	ja O	nee O
85.	Heeft u over het algemeen genoeg tijd om al uw werk af te krijgen?	ja O	nee O
86.	Is uw werk hectisch/Is het op uw werk een gekkenhuis?	ja O	nee O
87.	Is het materiaal waarmee u werkt doorgaans van slechte/onvoldoende kwaliteit?	ja O	nee O
88.	Zijn de hulpmiddelen waarmee u werkt vaak van slechte/onvoldoende kwaliteit?	ja O	nee O
89.	Vertraagt het wachten op werk van andere mensen of afdelingen vaak uw eigen werk?	ja O	nee O
90.	Beïnvloedt de snelheid waarmee u werkt het tempo van andermans werk?	ja O	nee O
91.	Loopt het werk vaak anders dan gepland?	ja O	nee O
92.	Heeft u regelmatig met storingen in uw werk te maken?	ja O	nee O
93.	Moet u vaak improviseren om een opdracht uit te voeren?	ja O	nee O

Emotionele belasting

94.	Wordt u beroepshalve geconfronteerd met dood, ziekte of ander menselijk leed?	ja O	nee O
95.	Wordt er op het werk gediscrimineerd vanwege huidskleur?	ja O	nee O
96.	Wordt er op het werk gediscrimineerd vanwege sekse?	ja O	nee O
97.	Is uw werk gevaarlijk voor uzelf?	ja O	nee O
98.	Moet u voortdurend bedacht zijn voor gevaarlijke situaties?	ja O	nee O
99.	Moet u veel werken met agressieve pupillen/klanten/patiënten?	ja O	nee O
100.	Zijn uw pupillen/klanten/patiënten lastig?	ja O	nee O

Verandering in de taak		**altijd**	**vaak**	**soms**	**nooit**
101.	Treden er belangrijke veranderingen op in uw taken?	O	O	O	O
102.	Vindt u het moeilijk om u aan te passen aan verandering in uw taken?	O	O	O	O
103.	Geeft het veranderen van uw taken problemen?	O	O	O	O
104.	Heeft het veranderen van uw taken negatieve gevolgen voor u?	O	O	O	O
105.	Worden voorgenomen veranderingen in uw taken goed geïntroduceerd?	O	O	O	O

Leiding & collega's

106.	Vindt u de onderlinge sfeer op het werk goed?	ja O	nee O
107.	Ergert u zich vaak aan anderen op het werk?	ja O	nee O
108.	Werkt u onder goede dagelijkse leiding?	ja O	nee O
109.	Heeft de dagelijkse leiding een juist beeld van u in uw werk?	ja O	nee O
110.	Houdt de dagelijkse leiding voldoende rekening met wat u zegt?	ja O	nee O

Fysieke arbeidsomstandigheden

111.	Heeft u in het werk veel hinder van wisseling in temperatuur?	ja O	nee O
112.	Heeft u in het werk veel hinder van droge lucht?	ja O	nee O
113.	Heeft u in het werk veel hinder van gebrek aan frisse lucht?	ja O	nee O
114.	Heeft u in het werk veel hinder van lawaai?	ja O	nee O
115.	Heeft u in het werk veel hinder van stank?	ja O	nee O
116.	Vindt u dat het in orde is met de veiligheid in het werk?	ja O	nee O

Lichamelijke inspanning		**altijd**	**vaak**	**soms**	**nooit**
117.	Moet u tijdens het werk veel tillen of sjouwen?	O	O	O	O
118.	Moet u tijdens het werk regelmatig veel bukken?	O	O	O	O
119.	Moet u tijdens het werk regelmatig te hoog reiken?	O	O	O	O
120.	Moet u tijdens het werk langdurig achtereen steeds dezelfde beweging maken?	O	O	O	O
121.	Is het werk lichamelijk erg inspannend?	O	O	O	O
122.	Vereist uw werk lichaamskracht?	O	O	O	O
123.	Werkt u in ongemakkelijke of inspannende houdingen?	O	O	O	O

Arbeidsvoorwaarden

124.	Is uw loon voldoende voor het werk dat u doet?	ja O	nee O
125.	Kunt u het tijdstip waarop u begint of stopt met werken zelf kiezen?	ja O	nee O
126.	Kent u uw werkrooster langer dan een maand van tevoren?	ja O	nee O
127.	Kunt u zelf kiezen wanneer u pauzeert?	ja O	nee O
128.	Kunt u verlofdagen opnemen wanneer u dat zelf wilt?	ja O	nee O
129.	Is uw werkzekerheid goed?	ja O	nee O
130.	Liep u in het laatste jaar kans om werkloos te worden?	ja O	nee O
131.	Verwacht u promotie te maken in de komende vijf jaren?	ja O	nee O
132.	Zullen over vijf jaar uw kennis en vaardigheden nog steeds nuttig zijn voor uw huidige werk?	ja O	nee O
133.	Zullen over vijf jaar uw kennis en vaardigheden nuttig zijn voor andere bedrijven?	ja O	nee O

VRAGEN OVER WAT U IN UW WERK BELANGRIJK VINDT EN HOE TEVREDEN U DAAROVER BENT

In het volgende deel van de vragenlijst worden per kenmerk van het werk steeds twee vragen gesteld. In de eerste vraag wordt gevraagd hoe belangrijk u dat kenmerk van het werk vindt. Hier kunt u aangeven hoe u dat kenmerk graag zou zien. In de tweede vraag wordt u gevraagd om aan te geven hoe tevreden u met dat kenmerk in uw werk bent. Hier kunt u aangeven in hoeverre het werk aan uw wensen tegemoet komt. Dit zijn twee heel verschillende vragen en de antwoorden op de eerste en tweede vraag hoeven helemaal niet hetzelfde te zijn. Het kan best zo zijn u een bepaald kenmerk heel belangrijk vindt, maar dat het in uw huidige werk onvoldoende aan bod komt. Het is juist de bedoeling van deze vragen om dit soort verschillen op te sporen.

Met betrekking tot de Arbeidsinhoud
Antwoordmogelijkheden: **1** = zeer belangrijk/tevreden, **7** = zeer onbelangrijk/ontevreden

		1	**2**	**3**	**4**	**5**	**6**	**7**
134.	Hoe belangrijk is het voor u dat u mogelijkheden heeft voor ontwikkeling en ontplooiing?	O	O	O	O	O	O	O
135.	Hoe tevreden bent u over de mate waarin uw werk mogelijkheden biedt voor ontplooiing?	O	O	O	O	O	O	O
136.	Hoe belangrijk is voor u dat u het werk exact moet uitvoeren?	O	O	O	O	O	O	O
137.	Hoe tevreden bent u over de mate waarin u uw werk exact moet uitvoeren?	O	O	O	O	O	O	O
138.	Hoe belangrijk is voor u een regelmatige afwisseling tussen eenvoudige en moeilijke taken?	O	O	O	O	O	O	O
139.	Hoe tevreden bent u over de mate waarin in uw werk moeilijke en makkelijke taken regelmatig worden afgewisseld?	O	O	O	O	O	O	O
140.	Hoe belangrijk is het voor u om regelmatig nieuwe dingen te doen?	O	O	O	O	O	O	O
141.	Hoe tevreden bent u over de mate waarin u in uw werk regelmatig iets nieuws kunt doen?	O	O	O	O	O	O	O

142.	Hoe belangrijk is het om regelmatig met collega's te moeten overleggen over het werk?	O	O	O	O	O	O	O
143.	Hoe tevreden bent u over het regelmatig met collega's moeten overleggen over het werk?	O	O	O	O	O	O	O
144.	Hoe belangrijk is het dat uw werk om nieuwe ideeën van u vraagt?	O	O	O	O	O	O	O
145.	Hoe tevreden bent u over de mate waarin uw werk van u om nieuwe ideeën vraagt?	O	O	O	O	O	O	O
146.	Hoe belangrijk is voor u het ontwikkelen van uw kennis en vaardigheden?	O	O	O	O	O	O	O
147.	Hoe tevreden bent u over de mate waarin u uw kennis en vaardigheden verder kunt ontwikkelen?	O	O	O	O	O	O	O
148.	Hoe belangrijk is voor u dat uw werkzaamheden gecontroleerd kunnen worden?	O	O	O	O	O	O	O
149.	Hoe tevreden bent u over de mate waarin uw werkzaamheden gecontroleerd kunnen worden?	O	O	O	O	O	O	O
150.	Hoe belangrijk is voor u dat uw werkzaamheden aan u worden voorgeschreven?	O	O	O	O	O	O	O
151.	Hoe tevreden bent u over de mate waarin uw werkzaamheden aan u worden voorgeschreven?	O	O	O	O	O	O	O
152.	Hoe belangrijk is het dat u zelfstandig kunt beslissen om een bepaalde dag wat minder hard te werken?	O	O	O	O	O	O	O
153.	Hoe tevreden bent u over de mate waarin u zelfstandig kunt beslissen om een bepaalde dag wat minder hard te werken?	O	O	O	O	O	O	O
154.	Hoe belangrijk is het voor u dat u zelfstandig kunt beslissen welke werkzaamheden u op een bepaalde dag gaat doen?	O	O	O	O	O	O	O
155.	Hoe tevreden bent u over de mate waarin u zelfstandig kunt beslissen welke werkzaamheden u op een bepaalde dag gaat doen?	O	O	O	O	O	O	O

156.	Hoe belangrijk vindt u dat u uw werktempo zelf kunt bepalen en niet wordt gedicteerd door de snelheid van de apparatuur waarmee u (moet) werk(en)t?	O	O	O	O	O	O	O
157.	Hoe tevreden bent u over de mate waarin u zelf het werktempo kunt bepalen?	O	O	O	O	O	O	O
158.	Hoe belangrijk is het zelf kunnen bepalen wanneer u uw werk onderbreekt?	O	O	O	O	O	O	O
159.	Hoe tevreden bent u over de mate waarin u zelf kunt bepalen wanneer u uw werk onderbreekt?	O	O	O	O	O	O	O
160.	Hoe belangrijk is dat de verschillende werkzaamheden die u moet verrichten goed op elkaar aansluiten?	O	O	O	O	O	O	O
161.	Hoe tevreden bent u over de mate waarin de verschillende werkzaamheden die u moet verrichten goed op elkaar aansluiten?	O	O	O	O	O	O	O
162.	Hoe belangrijk vindt u het dat uw werk niet uit een herhaling van dezelfde eenvoudige werkzaamheden bestaat?	O	O	O	O	O	O	O
163.	Hoe tevreden bent u over de mate waarin in uw werk herhaling van dezelfde eenvoudige werkzaamheden wordt voorkomen?	O	O	O	O	O	O	O

Met betrekking tot de Arbeidsverhoudingen

Antwoordmogelijkheden: **1** = zeer belangrijk/tevreden, **7** = zeer onbelangrijk/ontevreden

		1	**2**	**3**	**4**	**5**	**6**	**7**
164.	Hoe belangrijk is het hebben van goed georganiseerd werk?	O	O	O	O	O	O	O
165.	Hoe tevreden bent u over de organisatie van het werk?	O	O	O	O	O	O	O
166.	Hoe belangrijk is voldoende werkoverleg?	O	O	O	O	O	O	O
167.	Hoe tevreden bent u over de frequentie van het werkoverleg?	O	O	O	O	O	O	O
168.	Hoe tevreden bent u over de onderwerpen die in het werkoverleg aan bod komen?	O	O	O	O	O	O	O

169.	Hoe belangrijk is een goede dagelijkse leiding?	O	O	O	O	O	O	O
170.	Hoe tevreden bent u over de dagelijkse leiding?	O	O	O	O	O	O	O
171.	Hoe belangrijk is een goede sfeer op het werk?	O	O	O	O	O	O	O
172.	Hoe tevreden bent u over de sfeer op het werk?	O	O	O	O	O	O	O
173.	Hoe belangrijk is goede samenwerking met collega's?	O	O	O	O	O	O	O
174.	Hoe tevreden bent u over uw collega's?	O	O	O	O	O	O	O

Met betrekking tot de Arbeidsvoorwaarden
Antwoordmogelijkheden: **1** = zeer belangrijk/tevreden, **7** = zeer onbelangrijk/ontevreden

		1	**2**	**3**	**4**	**5**	**6**	**7**
175.	Hoe belangrijk is de zekerheid om niet ontslagen te worden?	O	O	O	O	O	O	O
176.	Hoe tevreden bent u over de zekerheid om niet ontslagen te worden?	O	O	O	O	O	O	O
177.	Hoe belangrijk vindt u een goede verlofregeling die aansluit op uw huiselijke omstandigheden?	O	O	O	O	O	O	O
178.	Hoe tevreden bent u over de verlofregelingen?	O	O	O	O	O	O	O
179.	Hoe belangrijk vindt u dat de werktijden flexibel zijn, zodat de aanvangs- en beëindigingstijden zo gunstig mogelijk aansluiten bij uw privé situatie?	O	O	O	O	O	O	O
180.	Hoe tevreden bent u met uw werktijden?	O	O	O	O	O	O	O
181.	Hoe belangrijk vindt u dat de tijdsdruk altijd beperkt blijft?	O	O	O	O	O	O	O
182.	Hoe tevreden bent u met de mate waarin u onder tijdsdruk moet werken?	O	O	O	O	O	O	O
183.	Hoe belangrijk vindt u dat het inkomen dat u met uw werk verdient goed is?	O	O	O	O	O	O	O
184.	Hoe tevreden bent u met het inkomen dat u voor uw werk krijgt?	O	O	O	O	O	O	O

185.	Hoe tevreden bent u met uw inkomen in vergelijking met anderen?	O	O	O	O	O	O	O
186.	Hoe tevreden bent u met de verhouding tussen uw inkomen en uw arbeidsinzet?	O	O	O	O	O	O	O
187.	Hoe belangrijk vindt u dat de reistijd naar uw werk beperkt blijft tot maximaal 30 minuten?	O	O	O	O	O	O	O
188.	Hoe tevreden bent u met de reistijd naar uw werk?	O	O	O	O	O	O	O

De vragen in het volgende blok wijken een beetje af van de voorgaande vragen. In de eerste vraag wordt u nu gevraagd hoe bezwaarlijk u een bepaald kenmerk over het algemeen vindt. Hiermee kunt u aangeven hoe onwenselijk u een situatie vindt waarin dat kenmerk voorkomt. De tweede vraag over uw tevredenheid met het kenmerk blijft wel hetzelfde. Hier geeft u aan hoe tevreden u bent over uw huidige situatie.

<u>Met betrekking tot de Arbeidsomstandigheden</u>
Antwoordmogelijkheden eerste vraag: **1** = helemaal niet bezwaarlijk (dit kenmerk is wenselijk), **7** = heel erg bezwaarlijk (dit kenmerk is onwenselijk)
Antwoordmogelijkheden tweede vraag: **1** = zeer tevreden, **7** = zeer ontevreden

		1	**2**	**3**	**4**	**5**	**6**	**7**
189.	Hoe bezwaarlijk vindt u over het algemeen werk dat lichamelijke inspanning vereist?	O	O	O	O	O	O	O
190.	Hoe tevreden bent u over de mate waarin uw huidige werk lichamelijke inspanning vereist?	O	O	O	O	O	O	O
191.	Hoe bezwaarlijk vindt u over het algemeen werk waarin u regelmatig in een lawaaierige omgeving moet werken?	O	O	O	O	O	O	O
192.	Hoe tevreden bent u over de mate waarin u regelmatig in een lawaaierige omgeving moet werken?	O	O	O	O	O	O	O
193.	Hoe bezwaarlijk vindt u in het algemeen werk waarin u regelmatig moet blootstaan aan weer en wind?	O	O	O	O	O	O	O

194.	Hoe tevreden bent u met het in uw huidige werk blootstaan aan weer en wind?	O	O	O	O	O	O	O
195.	Hoe bezwaarlijk vindt u over het algemeen werken in extreme temperaturen?	O	O	O	O	O	O	O
196.	Hoe tevreden bent u met de mate waarin u in uw huidige werk blootstaat aan extreme temperaturen?	O	O	O	O	O	O	O
197.	Hoe bezwaarlijk vindt u over het algemeen werken in een stinkende werkomgeving?	O	O	O	O	O	O	O
198.	Hoe tevreden bent u met de mate waarin u te maken heeft met stank in de werkomgeving?	O	O	O	O	O	O	O
199.	Hoe bezwaarlijk vindt u over het algemeen vuil worden tijdens het werk?	O	O	O	O	O	O	O
200.	Hoe tevreden bent u met de mate waarin u vuil wordt van uw werk?	O	O	O	O	O	O	O
201.	Hoe bezwaarlijk vindt u over het algemeen een grote kans om gezondheidsproblemen te krijgen door uw werkzaamheden?	O	O	O	O	O	O	O
202.	Hoe tevreden bent u met de kans op het krijgen van gezondheidsproblemen door uw werk?	O	O	O	O	O	O	O

VRAGEN OVER DE GEVOLGEN DIE UW WERK HEEFT

Geef voor de onderstaande vragen aan of u het ermee eens (‘ja’) bent of niet (‘nee’).

Herstelbehoefte

203.	Ik vind het moeilijk om me te ontspannen aan het einde van een werkdag.	ja O	nee O
204.	Aan het einde van een werkdag ben ik echt op.	ja O	nee O
205.	Mijn baan maakt dat ik me aan het eind van een werkdag nogal uitgeput voel.	ja O	nee O
206.	Na het avondeten ben ik meestal nog vrij fit.	ja O	nee O
207.	Ik kom meestal pas op de tweede vrije dag tot rust.	ja O	nee O
208.	Het kost mij moeite om me te concentreren in mijn vrije uren na het werk.	ja O	nee O
209.	Ik kan weinig belangstelling opbrengen voor andere mensen, wanneer ik zelf net thuis ben gekomen.	ja O	nee O
210.	Het kost mij over het algemeen meer dan een uur voordat ik helemaal hersteld ben na mijn werk.	ja O	nee O
211.	Als ik thuis kom moeten ze mij met rust laten.	ja O	nee O
212.	Het komt vaak voor dat ik na een werkdag door vermoeidheid niet meer toekom aan andere bezigheden.	ja O	nee O
213.	Het komt voor dat ik tijdens het laatste deel van de werkdag door vermoeidheid het werk niet meer zo goed kan doen.	ja O	nee O

Piekeren

214.	Als ik mijn werk verlaat, blijf ik me zorgen maken over werkproblemen.	ja O	nee O
215.	Ik kan mijn werk heel gemakkelijk van me afzetten.	ja O	nee O
216.	Ik maak me als ik vrij ben vaak zorgen over mijn werk.	ja O	nee O
217.	Ik lig ’s nachts vaak wakker omdat mijn werk door mijn hoofd blijft spoken.	ja O	nee O

Plezier in het werk

218.	Ik kan wel zeggen dat ik tegen mijn werk opzie.	ja O	nee O
219.	Ik doe mijn werk omdat het moet, daarmee is alles wel gezegd.	ja O	nee O
220.	Meestal vind ik het wel prettig om aan de werkdag te beginnen.	ja O	nee O
221.	Na zo'n vijf jaar heb je het in dit werk wel gezien.	ja O	nee O
222.	Ik vind mijn werk nog steeds boeiend, elke dag weer.	ja O	nee O
223.	Het idee dat ik dit werk nog tot mijn pensioen moet doen benauwt me.	ja O	nee O
224.	Ik heb plezier in mijn werk.	ja O	nee O
225.	Ik moet telkens weerstand bij mezelf overwinnen om mijn werk te doen.	ja O	nee O
226.	Ik moet mezelf er vaak toe zetten om een werkopdracht uit te voeren.	ja O	nee O

Betrokkenheid bij de organisatie

227.	Ik vind dat mijn eigen opvattingen sterk overeenkomen met die van deze organisatie.	ja O	nee O
228.	Ik vind het belangrijk dat ik een bijdrage kan leveren aan de taak van deze organisatie.	ja O	nee O
229.	Deze organisatie gaat me echt ter harte.	ja O	nee O
230.	Ik voel me uitstekend thuis in deze organisatie.	ja O	nee O
231.	Ik heb zoveel van mezelf in deze organisatie gestopt, dat het me moeilijk zou vallen om ontslag te nemen.	ja O	nee O
232.	Ik voel me ten opzichte van deze organisatie eigenlijk wel verplicht nog een aantal jaren te blijven.	ja O	nee O
233.	Er hoeft bij deze organisatie maar weinig in negatieve zin te veranderen, of ik vertrek.	ja O	nee O
234.	Vergeleken met de meeste andere banen die ik zou kunnen krijgen, is het werken bij deze organisatie erg aantrekkelijk.	ja O	nee O

Verandering van baan

235.	Ik denk er wel eens over om van baan te veranderen.	ja O	nee O
236.	Ik denk er wel eens over om werk buiten deze organisatie te zoeken.	ja O	nee O
237.	Ik ben van plan om het komend jaar van baan te veranderen.	ja O	nee O
238.	Ik ben van plan om het komend jaar werk buiten deze organisatie te zoeken.	ja O	nee O

Gevolgen voor de werknemer met betrekking tot de gezondheid

Heeft u gedurende de afgelopen maand de onderstaande ervaringen tijdens uw werk gehad? En zo ja, hoe vaak?

		nooit	**soms**	**regelmatig**	**zeer vaak**
239.	Trilden uw handen wel eens zodanig, dat u er zich ongerust over maakte?	O	O	O	O
240.	Was u ongerust over kortademigheid, terwijl u geen vermoeiend werk deed en niet in beweging was?	O	O	O	O
241.	Maakte u zich ongerust over plotselinge hartkloppingen?	O	O	O	O
242.	Maakte u zich wel eens ongerust, dat uw hart sneller klopte dan normaal?	O	O	O	O
243.	Maakte u zich wel eens ongerust over een van streek geraakte maag, of maagpijn?	O	O	O	O
244.	Uw handen zweetten zo, dat ze vochtig en klam aanvoelden.	O	O	O	O
245.	U had vlagen van duizeligheid.	O	O	O	O
246.	U had aanvallen van hoofdpijn.	O	O	O	O
247.	U verkeerde in een slechte gezondheidstoestand, hetgeen uw werk beïnvloedde.	O	O	O	O

En is het de laatste maanden wel eens voorgekomen,...

		nooit	**soms**	**regelmatig**	**zeer vaak**
248.	Dat u geen eetlust had?	O	O	O	O
249.	Dat u moeite had om ‘s nachts te slapen?	O	O	O	O
250.	Dat u nogal eens hartkloppingen of bonzingen in de hartstreek had?	O	O	O	O
251.	Dat u wel eens pijnen in uw borst of hartstreek had?	O	O	O	O
252.	Dat u zich sneller dan gewoonlijk moe voelde?	O	O	O	O
253.	Gebruikt u wel eens slaapmiddelen?	O	O	O	O
254.	Gebruikt u wel eens kalmerende middelen?	O	O	O	O
255.	Gebruikt u regelmatig andere medicijnen?	O	O	O	O

Het onderwerp van de volgende vragen is hoe u zich voelt tijdens uw werk. Kunt u aangeven hoe vaak u zich zo voelt?

		bijna nooit	**soms**	**vaak**	**zeer vaak**
256.	Ik voel mij kwaad.	O	O	O	O
257.	Ik voel mij ontspannen.	O	O	O	O
258.	Ik voel mij verward.	O	O	O	O
259.	Ik voel mij opgewekt.	O	O	O	O
260.	Ik voel mij zenuwachtig.	O	O	O	O
261.	Ik voel mij neerslachtig.	O	O	O	O
262.	Ik voel mij rustig.	O	O	O	O
263.	Ik voel mij gefrustreerd.	O	O	O	O
264.	Ik voel mij eenzaam.	O	O	O	O
265.	Ik voel mij onverstoorbaar.	O	O	O	O
266.	Ik voel mij geïrriteerd.	O	O	O	O

Hiermee bent u aan het einde van deze vragenlijst gekomen.

HARTELIJK DANK VOOR UW MEDEWERKING.

Appendix 2: Statistical tests

Test on normality
Manova tables on differences between categories

Test on normality of the scales in the questionnaire.

Skewness and kurtosis are important indicators for testing the normality of distributions. In the following two tables I present the values of skewness and kurtosis. For normal distributions the ratio skewness/standard error of skewness and the ratio kurtosis/standard error of kurtosis should be between –2.5 and 2.5 (Hoijtink and Molenaar, 1997). These tests are conducted on the whole data set (n=1,189).

Scale	**Skewness**	**Standard error of skewness**	**Skewness / SE skewness**
Difficulty of work	-.469	.073	-6.5
Variety in work	.159	.072	2.1
Completeness of work	.553	.071	7.8
Interaction potential	.353	.072	4.9
Work organization	.879	.072	12.5
Monotony of work	.649	.107	6.1
Autonomy	.290	.073	4.0
Organizing tasks	.873	.073	12.0
Information	.642	.073	8.8
Workload	.458	.074	6.2
Emotional stress	1.856	.072	25.8
Task changes	.640	.072	8.9
Executives and colleagues	.555	.072	7.7
Physical working conditions	.802	.072	11.1
Physical strain	-.200	.072	-2.8
Terms of employment	.188	.073	2.6
Orientation on job content	1.305	.071	18.4
Orientation on work relations	3.341	.071	47.1
Orientation on working conditions	-.432	.071	-6.1
Orientation on terms of employment	2.127	.071	30.0
Perception of job content	.231	.071	3.3
Perception of work relations	.463	.071	6.5
Perception of working conditions	.498	.071	7.0
Perception of terms of employment	.320	.071	4.5
Need for recovery	.833	.075	11.1
Brooding about the work	1.440	.072	20.0
Work satisfaction	2.410	.073	33.0
Commitment	.280	.075	3.7
Inclination to leave	.789	.072	11.0
Health/physical reactions	1.878	.073	25.7
Feelings/emotional reactions	.756	.074	10.2

Scale	Kurtosis	Standard error of kurtosis	Skewness / SE kurtosis
Difficulty of work	-.686	.146	-4.7
Variety in work	-.200	.144	-1.5
Completeness of work	.226	.142	1.6
Interaction potential	-.402	.144	-2.8
Work organization	-.325	.144	-2.3
Monotony of work	-.639	.214	-3.2
Autonomy	-.776	.145	-5.4
Organizing tasks	-.443	.146	-3.0
Information	-.336	.146	-2.3
Workload	-.475	.148	-3.2
Emotional stress	6.132	.145	42.3
Task changes	1.043	.144	7.2
Executives and colleagues	-.920	.145	-6.3
Physical working conditions	-.056	.144	-.4
Physical strain	-.219	.144	-1.5
Terms of employment	.078	.146	.5
Orientation on job content	3.239	.142	22.8
Orientation on work relations	15.677	.142	110.0
Orientation on working conditions	-.458	.142	-3.2
Orientation on terms of employment	7.575	.142	53.3
Perception of job content	.085	.142	.6
Perception of work relations	-.342	.142	-2.4
Perception of working conditions	-.043	.142	-.3
Perception of terms of employment	-.070	.142	-.5
Need for recovery	-.549	.149	-3.7
Brooding about the work	.948	.144	6.6
Work satisfaction	5.999	.145	41.4
Commitment	-.896	.150	-6.0
Inclination to leave	-.496	.144	-3.4
Health/physical reactions	5.062	.145	34.9
Feelings/emotional reactions	1.045	.148	7.1

Contrast analysis for gender (Multivariate analysis)

Scale N=681	**Men** (90)	**Women** (591)	**Contrast** (Women-Men)	**Signifi-cance**
Difficulty of work	.5864	.6212	.035	.263
Variety in work	.5007	.4079	-.093	.000
Completeness of work	.4008	.3656	-.035	.136
Interaction potential	.2352	.3832	.148	.000
Work organization	.5378	.2298	-.308	.000
Autonomy	.3383	.3978	.060	.040
Organizing tasks	.4289	.2237	-.205	.000
Information	.4505	.3404	-.110	.000
Workload	.5009	.3287	-.172	.000
Task changes	.3222	.2867	-.035	.025
Executives and colleagues	.3867	.3266	-.060	.101
Physical working conditions	.3889	.2341	-.155	.000
Physical strain	.5063	.5419	.036	.166
Orientation on job content	2.3097	2.3797	.070	.451
Orientation on work relations	1.5739	1.4794	-.094	.288
Orientation on terms of employment	2.1296	1.7263	-.403	.000
Orientation on working conditions	4.4894	4.4561	-.033	.823
Perception of job content	3.6080	3.3477	-.206	.021
Perception of work relations	3.7167	3.0550	-.662	.000
Perception of terms of employment	3.4776	3.1003	-.425	.000
Perception of working conditions	3.0447	2.9366	-.108	.394
Need for recovery	.3747	.2592	-.116	.001
Brooding about the work	.1667	.1929	.026	.429
Work satisfaction	.2247	.0757	-.149	.000
Commitment	.4653	.4133	-.052	.083
Inclination to leave	.3889	.2652	-.124	.001
Health/physical reactions	.1095	.0931	-.016	.137
Feelings/emotional reactions	.3077	.2446	-.063	.000

Contrast analysis for sector and teamwork (Multivariate analysis)

Scale N=683	**Contrast sector** (bicycle-care)	**Signifi-cance**	**Contrast team** (team-traditional)	**Signifi-cance**
Difficulty of work	-.050	.096	.074	.013
Variety in work	.112	.000	.002	.920
Completeness of work	.028	.219	-.065	.004
Interaction potential	-.183	.000	.041	.077
Work organization	.330	.000	.129	.000
Autonomy	-.008	.027	.122	.000
Organizing tasks	.249	.031	-.095	.002
Information	.089	.001	.002	.953
Workload	.190	.000	.048	.054
Task changes	.035	.022	.005	.729
Executives and colleagues	.064	.069	.047	.176
Physical working conditions	.223	.000	-.060	.016
Physical strain	-.038	.122	-.015	.538
Orientation on job content	.006	.948	-.041	.650
Orientation on work relations	.083	.337	-.018	.835
Orientation on terms of employment	.384	.000	.044	.635
Orientation on working conditions	-.021	.883	.021	.885
Perception of job content	.213	.050	.219	.044
Perception of work relations	.701	.000	.170	.209
Perception of terms of employment	.436	.000	.265	.018
Perception of working conditions	.225	.067	-.042	.735
Need for recovery	.123	.000	.051	.117
Brooding about the work	.027	.394	.021	.512
Work satisfaction	.138	.000	.013	.478
Commitment	.064	.026	.066	.023
Inclination to leave	.094	.008	.098	.005
Health/physical reactions	.016	.141	-.019	.071
Feelings/emotional reactions	.073	.000	.017	.896

Means for age groups (Anova)

Scale N=1189	**Age group**	**Mean**	**Significance of differences**
Difficulty of work	< 26	.4992	.000
	26-35	.5257	
	36-45	.6187	
	46-55	.6484	
	56-65	.6009	
Variety in work	< 26	.5390	.000
	26-35	.4580	
	36-45	.4100	
	46-55	.4097	
	56-65	.3603	
Completeness of work	< 26	.3880	.015
	26-35	.4015	
	36-45	.3732	
	46-55	.3496	
	56-65	.3280	
Interaction potential	< 26	.2785	.001
	26-35	.3480	
	36-45	.3805	
	46-55	.3907	
	56-65	.3774	
Work organization	< 26	.3408	.006
	26-35	.2965	
	36-45	.2628	
	46-55	.2533	
	56-65	.1585	
Autonomy	< 26	.3803	.093
	26-35	.3985	
	36-45	.3802	
	46-55	.4221	
	56-65	.4010	
Organizing tasks	< 26	.4282	.000
	26-35	.2921	
	36-45	.2469	
	46-55	.2513	
	56-65	.2340	
Information	< 26	.3245	.343
	26-35	.3676	
	36-45	.3616	
	46-55	.3725	
	56-65	.3106	
Workload	< 26	.3762	.126
	26-35	.3764	
	36-45	.3366	
	46-55	.3514	
	56-65	.3032	

[See next page]

[Continued]

Scale N=1189	**Age group**	**Mean**	**Significance of differences**
Task changes	< 26	.2901	.081
	26-35	.2991	
	36-45	.2905	
	46-55	.2854	
	56-65	.2385	
Executives and colleagues	< 26	.3167	.040
	26-35	.3430	
	36-45	.3356	
	46-55	.3545	
	56-65	.2039	
Physical working conditions	< 26	.3819	.000
	26-35	.2782	
	36-45	.2412	
	46-55	.2514	
	56-65	.2233	
Physical strain	< 26	.5473	.178
	26-35	.5449	
	36-45	.5179	
	46-55	.5362	
	56-65	.4743	
Orientation on job content	< 26	2.5196	.295
	26-35	2.3864	
	36-45	2.4036	
	46-55	2.3070	
	56-65	2.3965	
Orientation on work relations	< 26	1.6459	.443
	26-35	1.5531	
	36-45	1.4866	
	46-55	1.5166	
	56-65	1.6453	
Orientation on terms of employment	< 26	1.9689	.457
	26-35	1.7789	
	36-45	1.7646	
	46-55	1.7930	
	56-65	1.7579	
Orientation on working conditions	< 26	4.2239	.578
	26-35	4.3660	
	36-45	4.3571	
	46-55	4.2887	
	56-65	4.5871	
Perception of job content	< 26	3.4761	.021
	26-35	3.4419	
	36-45	3.3545	
	46-55	3.3674	
	56-65	2.9321	
Perception of work relations	< 26	3.2505	.008
	26-35	3.3218	
	36-45	3.1886	
	46-55	3.1374	
	56-65	2.6151	

[See next page]

[Continued]

Scale N=1189	**Age group**	**Mean**	**Significance of differences**
Perception of terms of employment	< 26	3.1649	.021
	26-35	3.2168	
	36-45	3.1948	
	46-55	3.0760	
	56-65	2.7342	
Perception of working conditions	< 26	2.9761	.851
	26-35	3.0161	
	36-45	2.9550	
	46-55	2.9536	
	56-65	3.1210	
Need for recovery	< 26	.3013	.286
	26-35	.2973	
	36-45	.2515	
	46-55	.2936	
	56-65	.2727	
Brooding about the work	< 26	.1563	.017
	26-35	.1493	
	36-45	.2015	
	46-55	.2242	
	56-65	.1923	
Work satisfaction	< 26	.1868	.000
	26-35	.1320	
	36-45	.0854	
	46-55	.0822	
	56-65	.1024	
Commitment	< 26	.4556	.000
	26-35	.4132	
	36-45	.3911	
	46-55	.3343	
	56-65	.2235	
Health/physical reactions	< 26	.1158	.501
	26-35	.0928	
	36-45	.0958	
	46-55	.1018	
	56-65	.0990	
Feelings/emotional reactions	< 26	.3030	.000
	26-35	.2808	
	36-45	.2573	
	46-55	.2429	
	56-65	.2142	

Summary

In the past century and especially the most recent decades, work and working conditions have changed dramatically due to the introduction of new technology, competition from other countries, access to new markets, fluctuations in the demographic situation, etc. This study deals with the effects of these changes on the quality of working life.

Chapter 1 presents some labor trends in The Netherlands that are illustrative of these changes. First, the employment structure has changed from highly agrarian into a service economy. A second important trend is the emergence of the phenomenon of mass unemployment since the seventies. Most striking, although today there is a labor shortage, is the structural character of the unemployment, due to an imbalance between job demands and workers' competencies. This results in long-term unemployment.

Trends in working population concern the growing participation degree of women and the increasing number of flexible labor contracts. This results in changes in household situations as well as in the work situation. Although many of these developments can be interpreted as improvements of the quality of working life, increased workloads are an obvious drawback. Next to work pressure, work stress and burnout, this is one of the emerging risks that can have a negative impact on safety and health at work. Because of the growing problems with regard to workload and its consequences, it is interesting to elaborate on the quality of working life.

There is not a universal definition of the quality of working life, and the research field is complex and widespread. *Chapter 2* presents different theoretical viewpoints. Different theories and approaches use different definitions and take different positions regarding the content of the concept of quality of working life. Theories differ with respect to the dimensions of working life they cover, the theoretical perspectives to which they adhere, the objectivity of the norms they use to judge the quality of working life, and the way they measure the quality of working life. The most important discussions in this regard concern the theoretical perspectives and the objectivity of the norms. Usually, discussions on these aspects are closely linked and choices for a theoretical perspective often determine the objectivity of the

norms. Moreover, the dimensions and the way of measuring are related to these discussions as well.

Three theoretical perspectives can be distinguished from the different theories and approaches: characteristics of the work (e.g., difficulty, autonomy, industrial relations), characteristics of the worker (e.g., gender, education, work orientation, household situation), and the relationship between work and worker (e.g., education utilization, fulfillment of need strength). Different approaches value these perspectives differently, in the sense that they do or do not use characteristics of the worker and the fit in their analyses. Taking the fit into account means that the work characteristics as well as those of the worker should be used in the analyses. My view is that all three perspectives are equally important in the study of the quality of working life.

This view is summarized in the conceptual model for this study (see Figure 2.2). On the right hand side are the outcomes of the work (e.g., commitment, satisfaction, physical and mental reactions, health). These are the dependent variables in the model. The independent variables (on the left hand side) are the three perspectives work characteristics, fit, and characteristics of the worker. The relations between the dependent and independent variables are derived from three different approaches. The relationship between the characteristics of the work and the outcomes of the work is based on Sociotechnical Systems Theory (SST). The relationship between characteristics of the worker and the outcomes of the work is deduced from the Delft Measurement Kit (DMK). The relationship between the fit and the outcomes of the work is based on fit models, such as the Job Characteristics Model (JCM). To the best of my knowledge, these different relationships have never been tested and compared with each other in the same study; this is the main goal of this study.

Based on the conceptual model, the main question in this study (presented in *Chapter 3*) reads as follows: What are the contents, determinants and range of the quality of working life? This question is divided into the following three research questions, each representing another dimension of the discussions:

1. What are the results of different ways of measuring the quality of working life? (empirical dimension)
2. What are the most important determinants of quality of working life? (theoretical dimension)
3. How can the quality of working life be improved? (practical dimension)

To answer these questions, I gathered data in four organizations (n = 1,189): two organizations for home care and two bicycle factories. In each sector, one organization is traditionally designed and the other has a team-based design. This was to test the sociotechnical assumption that team-based organizations should report better quality of working life than traditionally designed organizations.

To measure the concepts in the conceptual model, I used two methods: an expert instrument and a questionnaire. The expert instrument for judging the quality of working life was WEBA (Vaas et al., 1995), which is based on SST and therefore particularly suited to test the sociotechnical assumptions regarding the quality of working life. The questionnaire was constructed from existing scales in other questionnaires. The work characteristics were derived mainly from the NOVA-WEBA questionnaire (Dhondt and Houtman, 1992), which is based on the WEBA method.

Fit and worker characteristics originated mainly from a questionnaire used by Van der Parre (1996). The outcome variables originated mainly from VBBA (Van Veldhoven, 1996).

The data gathered using these methods in the four organizations form the basis for answering the three research questions. *Chapter 4* answers the first question (What are the results of different ways of measuring the quality of working life?). WEBA and NOVA-WEBA are both based on SST, however WEBA results in an observer's rating and NOVA-WEBA presents questionnaire results from workers. Since both instruments have the same background, their results should be the same. To test this hypothesis, I compared these instruments with regard to construct, predictive and content validity. The conclusion is that construct validity is low, because the results are different. Predictive validity is higher for NOVA-WEBA, because the relations between independent and dependent variables are stronger. Content validity, however, is better for WEBA, because it generates more detailed information about the origins of the risks with respect to the quality of working life. This means that questionnaire data are better suited to answer the question about the most important determinants of the quality of working life. Observers' ratings are better suited to serve as risk audits and as a basis for measures to improve the quality of working life. However, observers' ratings are very time-consuming and expensive. In order to save time and money in organizations with many jobs, it is recommended to use a Cascade approach: first use a questionnaire for determining the jobs in which risks are present, then use observers' ratings to determine the origins of the risks in those jobs.

As a result, to answer the second research question (What are the most important determinants of the quality of working life?), in *Chapter 5*, I used the questionnaire data. With the help of several regression analyses I tested the explanatory powers of characteristics of the work, the worker, and the fit. The most important conclusion of these analyses is that the work characteristics (particularly control need) are the most important determinants of the quality of working life. This conclusion confirms the sociotechnical assumption that adheres to a conditional approach regarding the quality of working life; it is a function of the structure of the division of labor and the possibilities for sufficient control capacity in this structure. Therefore, according to SST, the quality of working life is determined by the work characteristics (more specifically, the balance between control need and control capacity) independent from the worker who carries out the work.

However, alternative ways of testing the sociotechnical assumption result in a more differentiated conclusion. If the sociotechnical assumption regarding the quality of working life is valid (as the regression analyses show), respondents in organizations or jobs designed according to sociotechnical standards should report better quality of working life than do other respondents. I tested this hypothesis by comparing the results of traditionally designed and team-based organizations; I also compared jobs that meet WEBA standards and those that do not. These comparisons do not result in significant differences. Therefore, I cannot confirm this hypothesis: the organizations and jobs in this study that meet sociotechnical standards do not report better quality of working life.

This results in a paradoxical conclusion with respect to the sociotechnical assumption regarding the quality of working life. On one hand, this study confirms the hypothesis that work characteristics are the most important determinants; on the other, it shows that work designed according to sociotechnical standards does not result in better quality of working life. Reasons for this paradox can be found in the empirical results. The design differences between traditional and team-based organizations are not as large as hoped for. Besides this, the team-based organization for home care is still in the process of change. This negatively influences the results of the questionnaire, however it shows that work characteristics are not the only determinants of the quality of working life. Moreover, the regression analyses show that the fit between work and worker is also an important determinant of the quality of working life. In the same analyses, the characteristics of the worker proved not important. Overall, this means that it is not only important to investigate the work characteristics, but to take into account the fit between work and worker as well. This has important practical implications.

These implications are the topic of *Chapter 6*, which answers the third research question: How can the quality of working life be improved? There is a close relationship between determinants of quality of working life and measures to improve this quality. Many times, determinants can be considered measures as they turn out parameters that can be altered. Based on the conclusions in Chapter 5, measures must be aimed at the work and fit characteristics in order to be effective. In general, measures can be work-bound or person-bound. This results in three types of measures for improving the quality of working life: organizational design, organizational change, and personnel development.

Organizational design measures are work-bound and aim at improving the work characteristics. Sociotechnical redesign, which aims at decreasing control need and increasing control capacity, is a fine example of this kind of measure. An important concern is to avoid sub-optimization by partial measures. However, a complete organizational redesign is fairly rigorous, and one of the most frequent criticisms of SST is that it lacks an intervention strategy for successful organizational change. Therefore, measures based on organizational change theories might be very helpful in successful implementation of these work-bound measures. Organizational change measures are work-bound and aim at fit improvement. This kind of measure focuses on the process of organizational change and accounts for the employment relationships in organizations. There are two general approaches to organizational change: a design and a development approach.

The design approach is particularly suited in stable and predictable situations where problems and solutions are known. In this approach, top management initiates, directs and controls the change process, which is aimed mostly at reducing organizational complexity. A development approach is suited when the problems are not yet clearly defined and the directions of the change are not yet clear. Most characteristic of this approach is the continuous tuning between design (or direction of change) and development (or stage) of the change process. There is an important role for all concerned parties in the change process; keywords are participation and learning.

The third kind of measure consists of personnel development measures. These are person-bound and aim at fit improvement. Whereas organizational change aims at fitting the work to the worker, personnel development aims at fitting the worker to the work – allocating the right person to the right job. This has, thus far, been part of the area of personnel management. Instruments or techniques suited to allocate the right person to the right job consist of selection, recruitment, training and planning. In connection with organizational change, in which participation and learning are important, the most effective instruments are training and planning – competence management. At any rate, taking integrated measures (a coherent set of work-bound and person-bound measures) will be more effective than single of measures of either kind.

Finally, in *Chapter 7*, I present the most important theoretical conclusions and their practical implications. Additionally, I present a number of methodological comments regarding the design of the questionnaire and the selection of the cases (that do not fully accomplish the desired design). Notwithstanding these comments, the conclusions in this study give rise to the following definition of the quality of working life: The extent to which characteristics of the work offer opportunities to create such a balance between control need and control capacity, that meets the demands and competencies of the workers. This definition is a combination of a conditional and a fit approach. As a result of this definition, bad quality of working life, resulting in negative outcomes of the work, can be caused by a lack of opportunities for creating a balance between control need and control capacity (work characteristics), and a misbalance between these opportunities and the worker's demands and competencies (fit characteristics). This definition offers various possibilities for improving the quality of working life. First and foremost, the characteristics of the work must be the object of intervention. Then, the fit between work and worker should be the focus for improvements. This offers possibilities to create more dynamic and integrated approaches for dealing with occurring problems. In this respect there is an important role for Human Resource Management (HRM) theories that combine knowledge about organizational design, organizational development and personnel development.

In this chapter, I also present recommendations for risk audits concerning the quality of working life. This study shows that observers' ratings are best suited for serving as risk audits, as they generate the most detailed information about the origins of the risks. They are, however, very expensive and time-consuming. As a result, depending on the goal of the risk audit and the size of the organization, a questionnaire or cascade approach is useful as well.

These theoretical and practical implications show that it is important to strengthen the knowledge about the relations among quality of working life, quality of the organization and HRM, especially since organizations struggle with the question of how to attract and motivate their personnel in times of shortages on the labor market. Improving the quality of working life can be a major contribution to reaching this goal. Moreover, paying attention to and improving the balance between work and family may be a major contribution as well.

Samenvatting

Welzijn bij de Arbeid. Operationalisering, Determinanten en Verbetering van de Kwaliteit van de Arbeid.

In de afgelopen eeuw, en met name de laatste decennia, zijn werk en arbeidsomstandigheden aan grote veranderingen onderhevig geweest. Oorzaken hiervan zijn te vinden in de introductie van nieuwe technologieën, toegenomen concurrentie vanuit het buitenland, toetreding tot nieuwe markten, veranderingen in de demografische situatie, en dergelijke. Dit onderzoek richt zich op de effecten van deze veranderingen voor de kwaliteit van de arbeid.

Hoofdstuk 1 schetst een beeld van Nederlandse trends op het gebied van arbeid en arbeidsomstandigheden als gevolg van de genoemde veranderingen. In de eerste plaats is er de verschuiving van de werkgelegenheidsstructuur. Aan het begin van de 20e eeuw was nog 31% werkzaam in de agrarische sector. Aan het eind van die eeuw is het overgrote deel van de beroepsbevolking werkzaam in de dienstverlenende sector. Ten tweede doet sinds de zeventiger jaren zich het fenomeen van massawerkloosheid voor. Het meest opvallende aan de werkloosheid, ook in tijden van krapte op de arbeidsmarkt, is het structurele karakter als gevolg van een onbalans in termen van kwalificaties tussen vraag en aanbod op de arbeidsmarkt. Dit resulteert in langdurige werkloosheid. Er zijn ook belangrijke trends in de samenstelling van de beroepsbevolking. Met name wat betreft de groei in arbeidsdeelname van vrouwen en de groei van het aantal werknemers met flexibele (parttime) contracten.

Veel van de ontwikkelingen op het gebied van arbeid en arbeidsomstandigheden worden gezien als verbeteringen op het gebied van de kwaliteit van de arbeid. Een opvallend negatief effect is de groei van het aantal werknemers dat te kampen heeft met hoge werkdruk. Naast werkstress en burn-out wordt dit gezien als een van de grote risico's voor veiligheid, gezondheid en welzijn bij de arbeid. Daarom is het van belang om aandacht aan te besteden aan kwaliteit van de arbeid en er dieper op in te gaan.

Van kwaliteit van de arbeid is er echter geen eenduidige definitie en het onderzoeksveld is complex. In *Hoofdstuk 2* bespreek ik een aantal theoretische modellen.

Verschillende theorieën hanteren verschillende definities en nemen verschillende posities in. Deze theorieën verschillen met betrekking tot de dimensies van de arbeid die van belang zijn, welk aangrijpingspunt ze hanteren, de mate van objectiviteit van de beoordelingen, en de manier waarop kwaliteit van de arbeid wordt gemeten. De belangrijkste discussies tussen de aanhangers van verschillende theorieën richten zich vooral op wat het aangrijpingspunt moet zijn (de arbeidsplaats, de arbeidskracht, of de afstemming daartussen) en de mate van objectiviteit van de normen die worden gehanteerd om de kwaliteit te meten. Vaak hangen deze discussies nauw met elkaar samen; een keuze voor een bepaald aangrijpingspunt bepaalt vaak ook welke normen er worden gebruikt. Daarnaast hangen ook de keuze voor de dimensies van arbeid (arbeidsinhoud, -verhoudingen, -omstandigheden, en –voorwaarden) en de manier van meten vaak samen met deze discussies.

Vanuit de verschillende theorieën komen er drie aangrijpingspunten voor de kwaliteit van de arbeid naar voren: kenmerken van het werk (bijvoorbeeld moeilijkheidsgraad, autonomie, verhoudingen), kenmerken van de werker (bijvoorbeeld geslacht, opleiding, voorkeuren), en de afstemming tussen werk en werker (bijvoorbeeld opleidingsbenutting, bevrediging van de voorkeuren). Verschillende benaderingen gebruiken deze op andere manieren, in die zin dat ze verschillen in de rol die ze toekennen aan de kenmerken van de werker of de afstemming tussen werk en werker. Naar mijn mening zijn alle drie de aangrijpingspunten van even groot belang.

Dit vindt zijn weerslag in het conceptuele model voor dit onderzoek (zie Figure 2.2.). Aan de rechterkant staan de gevolgen van het werk voor de werker (bijvoorbeeld betrokkenheid, tevredenheid, gezondheid) als afhankelijke variabelen. De onafhankelijke variabelen in het model (linkerkant) zijn de drie beschreven aangrijpingspunten: werk, werker, en afstemming. De relaties tussen de onafhankelijke en afhankelijke variabelen zijn afgeleid van verschillende theoretische benaderingen. De relatie tussen kenmerken van het werk en de gevolgen is afgeleid van de Moderne Sociotechniek (MST). De relatie tussen kenmerken van de werker en de gevolgen is afgeleid van het Delftse Model. De relatie tussen afstemming tussen werk en werker en de gevolgen, tenslotte, is afgeleid van het Job Characteristics Model (JMC). Voor zover mij bekend zijn deze benaderingen nooit in dezelfde studie met elkaar vergeleken. Dat is dan ook het belangrijkste doel van deze studie.

De centrale vraag in dit onderzoek, die ik in *Hoofdstuk 3* presenteer, is gebaseerd op dit conceptuele model en luidt als volgt: wat zijn de inhoud, oorzaken en reikwijdte van de kwaliteit van de inhoud? Deze vraag is onderverdeeld naar drie onderzoeksvragen, die elk een andere dimensie vertegenwoordigen:

1. Wat zijn de resultaten van verschillende manieren van meten van kwaliteit van de arbeid? (empirische dimensie)
2. Wat zijn de belangrijkste determinanten van de kwaliteit van de arbeid? (theoretische dimensie)
3. Hoe kan de kwaliteit van de arbeid worden verbeterd? (praktische dimensie)

Om deze vragen te beantwoorden heb ik in vier organisaties data verzameld (n=1189). Dit zijn twee thuiszorg organisaties en twee fietsenfabrieken. In elke branche is telkens één organisatie traditioneel (Tayloristisch) ingericht en de andere

werkt in teams. Op basis hiervan kan ik de sociotechnische stelling toetsen dat organisaties in teams een betere kwaliteit van de arbeid hebben dan traditioneel ingerichte organisaties.

Om de concepten in het conceptuele model te operationaliseren maak ik gebruik van twee methoden: een expertbenadering en vragenlijsten. De gebruikte expertbenadering is de WEBA methode (Vaas et al., 1995), die is gebaseerd op de MST en daardoor uitermate geschikt om de sociotechnische aannames met betrekking tot kwaliteit van de arbeid te toetsen. De vragenlijst is samengesteld uit al getoetste en gevalideerde schalen uit andere instrumenten. De schalen met betrekking tot werkkenmerken zijn vooral afkomstig uit de NOVA-WEBA (Dhondt en Houtman, 1992), die weer op de WEBA is gebaseerd. De kenmerken van de werker en de afstemming zijn vooral afkomstig van een vragenlijst van Van der Parre (1996). De uitkomstvariabelen komen vooral uit de VBBA (Van Veldhoven, 1996).

De data die ik met deze methoden heb verzameld vormen de basis voor het beantwoorden van de drie onderzoeksvragen. In *Hoofdstuk 4* beantwoord ik de eerste vraag: wat zijn de resultaten van verschillende manieren van meten van kwaliteit van de arbeid? WEBA en NOVA-WEBA presenteren hun uitkomsten op verschillende manieren. WEBA resulteert in een expertoordeel en NOVA-WEBA resulteert in van werkers afkomstige vragenlijstgegevens. Maar omdat ze allebei dezelfde theoretische achtergrond hebben, zouden de resultaten hetzelfde moeten zijn. Om dit te toetsen vergelijk ik beide methoden aan de hand van drie vormen van validiteit: convergerende (construct), predictieve, en inhoudsvaliditeit (content). De conclusie naar aanleiding van deze vergelijkingen is dat de convergerende validiteit laag is; de correlatie tussen de resultaten van beide methoden is laag. De predictieve validiteit is het hoogst voor NOVA-WEBA, want die vertoont de hoogste correlatie met de uitkomstvariabelen. De inhoudsvaliditeit is echter het best voor WEBA, want deze resulteert in de meest gedetailleerde informatie over de oorzaken van de welzijnsrisico's.

De WEBA methode lijkt dus het meest geschikt als risico-inventarisatie en als basis voor het nemen van maatregelen ter verbetering van de kwaliteit van de arbeid. Echter het is een tijdsintensief en duur instrument. Om tijd en geld te besparen verdient een Cascade-aanpak aanbeveling: eerst met een vragenlijst bepalen voor welke arbeidsplaatsen er risico's zijn, en vervolgens de oorzaken van die risico's alleen voor deze arbeidsplaatsen in kaart brengen met de WEBA methode.

Aangezien de vragenlijstmethode de beste predictieve validiteit heeft, gebruik ik de vragenlijstgegevens in *Hoofdstuk 5* voor het beantwoorden van de tweede onderzoeksvraag: wat zijn de belangrijkste determinanten van de kwaliteit van de arbeid? Met behulp van regressieanalyses toets ik de verklaringskracht van de kenmerken van het werk, de werker, en de afstemming tussen werk en werker. De belangrijkste conclusie is dat de werkkenmerken (met name regelvereisten en regelmogelijkheden) de belangrijkste determinanten van de kwaliteit van de arbeid zijn. Deze conclusie onderschrijft het sociotechnische uitgangspunt van een conditionele benadering waarin kwaliteit van de arbeid een functie is van de structuur van arbeidsverdeling; kwaliteit van de arbeid is het resultaat van de balans tussen regelvereisten en regelmogelijkheden, ongeacht of de werker daar gebruik van maakt.

Alternatieve tests om de sociotechnische aanname te toetsen geven echter een genuanceerder beeld. Als de sociotechnische aanname waar is (zoals uit de regressieanalyse blijkt), dan zouden organisaties of arbeidsplaatsen die aan sociotechnische normen voldoen, betere kwaliteit van de arbeid moeten vertonen dan organisaties en arbeidsplaatsen die niet aan die normen voldoen. Deze hypothese toets ik door verschillende organisaties (traditioneel ingericht versus teamontwerp) en arbeidsplaatsen met elkaar te vergelijken. Deze vergelijkingen resulteren niet in de verwachte verschillen. Daarom kan ik de genoemde hypothese niet aannemen: de teamgerichte organisaties en de arbeidsplaatsen die aan sociotechnische normen voldoen vertonen geen betere kwaliteit van de arbeid.

Dit resulteert in een paradoxale conclusie met betrekking tot de sociotechnische aannames aangaande kwaliteit van de arbeid. Enerzijds bevestigt dit onderzoek de hypothese dat werkkenmerken de belangrijkste determinanten zijn. Anderzijds geeft dit onderzoek aan dat sociotechnisch ingerichte arbeidsplaatsen niet zondermeer betere kwaliteit van de arbeid opleveren. Een mogelijke reden voor deze paradoxale conclusie is dat de verschillen tussen traditioneel ingerichte en teamgerichte organisaties kleiner zijn dan van tevoren gehoopt. Dit geldt met name voor de fietsenfabrieken. In de teamgerichte thuiszorg organisatie verkeert men nog steeds in het veranderingsproces. Dit kan de vragenlijstresultaten negatief beïnvloeden. Maar dat geeft ook aan dat werkkenmerken niet de enige determinanten van kwaliteit van de arbeid zijn. Dat blijkt ook uit de regressieanalyses die aangeven dat de afstemmingskenmerken ook belangrijke determinanten zijn. De kenmerken van de werker zijn echter niet van belang. Dit betekent dat het niet alleen van belang is om de werkkenmerken in de analyses mee te nemen, maar dat ook de afstemming tussen werk en werker van belang is. Dit heeft belangrijke gevolgen voor de praktijk.

Deze praktische gevolgen bespreek ik in *Hoofdstuk 6*. Hierin beantwoord ik de derde onderzoeksvraag: hoe kan de kwaliteit van de arbeid worden verbeterd? Er is een nauwe relatie tussen de determinanten van de kwaliteit van de arbeid en de maatregelen om het te verbeteren. Vaak blijken de determinanten de parameters te zijn die kunnen worden veranderd om verbeteringen aan te brengen. Naar aanleiding van de conclusies in Hoofdstuk 5 moeten maatregelen, om effectief te kunnen zijn, zijn gericht op de werkkenmerken en de afstemmingskenmerken. Over het algemeen kunnen maatregelen twee vormen aannemen: werkgebonden en persoonsgebonden. Dit resulteert in drie typen maatregelen om de kwaliteit van de arbeid te verbeteren: organisatieontwerp, organisatieverandering en personeelsontwikkeling.

Maatregelen in het kader van organisatieontwerp zijn werkgebonden en gericht op het verbeteren van de werkkenmerken. Een sociotechnisch herontwerp, gericht op vergroting van de regelmogelijkheden en verlaging van de regelbehoefte, is hier een goed voorbeeld van. Hierbij is het van belang om sub-optimalisatie, door het nemen van onsamenhangende maatregelen voor verschillende functies, te voorkomen. Een volledig herontwerp van de gehele organisatie is echter nogal ingrijpend. Daar komt bij dat een van de meest genoemde kritiekpunten op de MST is dat het een interventiestrategie mist. Daarom kunnen organisatieveranderingstheorieën behulpzaam zijn voor een succesvolle implementatie van deze werkgebonden maatregelen. Maatregelen in het kader van organisatieverandering zijn werkgebonden, maar gericht op verbetering van de afstemmingskenmerken. Deze maatregelen zijn

nadrukkelijk gericht op het proces van organisatieverandering. Daarin is er een belangrijke plaats voor de zogenaamde 'employment relationship', waarin de verschillende rollen en machtsprocessen in een organisatie tot uiting komen.

In het algemeen kunnen er twee veranderstrategieën worden onderscheiden: een ontwerpbenadering en een ontwikkelbenadering. De ontwerpbenadering is met name geschikt in voorspelbare en stabiele situaties waarin de oplossingsrichting duidelijk is. In deze benadering initieert het topmanagement de verandering en beheert en controleert het veranderingsproces. Dit proces heeft meestal als doel het verminderen van de complexiteit van de organisatie. De ontwikkelbenadering is meer geschikt in situaties waarin de problemen, en dus de oplossingsrichting, nog niet helder zijn. Kenmerkend voor deze benadering is het voortdurend afstemmen van het ontwerp en de ontwikkeling van het veranderingsproces. Er is een belangrijke rol voor alle betrokkenen en de sleutelwoorden zijn participatie en leren.

De derde vorm van maatregelen betreffen personeelsontwikkeling. Dit zijn persoonsgebonden maatregelen gericht op verbetering van de afstemming tussen werk en werker. Daar waar organisatieverandering is gericht op het aanpassen van het werk aan de werker, daar is personeelsontwikkeling gericht op aanpassing van de werker aan het werk. Dat komt neer op de juiste allocatie van mensen over het uit te voeren werk. Totnogtoe is dat vooral het terrein van personeelsmanagement geweest. Geschikte personeelsmanagementinstrumenten voor de juiste allocatie van medewerkers zijn met name instrumenten voor werving en selectie, training, en personeelsplanning; competentiemanagement. De beste effecten zijn echter niet te verwachten van losse maatregelen, maar van integrale maatregelen, waarin werkgebonden en persgebonden maatregelen worden gecombineerd en afgestemd.

In het laatste hoofdstuk (*Hoofdstuk 7*) presenteer ik de belangrijkste theoretische conclusies van dit onderzoek en de implicaties daarvan voor de praktijk. Daarnaast komen er ook enkele methodologische kanttekeningen aan bod over het gebruik van de vragenlijst en de keuze van de organisaties in dit onderzoek. Met name het feit dat de verschillen tussen de traditionele en team-based organisaties minder groot zijn dan gehoopt maakt de generaliseerbaarheid van de gevonden verbanden lastig. Niettemin geven de conclusies van dit onderzoek aanleiding om kwaliteit als volgt te definiëren: de mate waarin werkkenmerken de mogelijkheid bieden een zodanige balans tussen regelvereisten en regelmogelijkheden te bieden die tegemoet komt aan de wensen en competenties van de werkers. Deze definitie is een combinatie van een conditionele benadering en een fit-benadering. Op grond van deze definitie kan slechte kwaliteit van de arbeid, zoals die zich uit in negatieve gevolgen voor de werkers, het gevolg zijn van het gebrek aan mogelijkheden om een balans te creëren tussen regelvereisten en –mogelijkheden (werkkenmerken), en van een onbalans tussen deze mogelijkheden en de wensen en competenties van de werkers (fit). Als gevolg daarvan zijn er verschillende manieren om de kwaliteit van de arbeid te verbeteren, zowel gericht op de werkkenmerken als op de afstemming tussen werk en werker.

In dit hoofdstuk presenteer ik ook aanbevelingen voor het uitvoeren van welzijnsrisico-inventarisaties. Dit onderzoek toont aan dat de expertbenadering zeer geschikt is voor deze risico-inventarisaties, want ze genereren de meest gedetailleerde informatie over welzijnsrisico's en hun oorzaken. Expertbenaderingen zijn echter

wel tijdsintensief en duur. Daarom is, afhankelijk van het doel van de risico-inventarisatie en de omvang van de organisatie, het gebruik van vragenlijsten of van een cascade-aanpak ook geschikt.

De theoretische en praktische implicaties van dit onderzoek laten zien dat het belangrijk is om meer kennis te vergaren over de verbanden tussen kwaliteit van de arbeid, kwaliteit van de organisatie en HRM. Dit is vooral van belang, omdat tegenwoordig, met krapte op de arbeidsmarkt, veel organisaties moeite hebben om personeel aan te trekken en te behouden. Het verbeteren van de kwaliteit van de arbeid kan een belangrijke bijdrage leveren aan het bereiken van dat doel. Daarbij hoort ook een verbetering van de balans tussen werk en privé.

About the Author

Roel Schouteten was born on the 4th of November 1969 in Heerlen, The Netherlands. He studied Management and Organization at the University of Groningen. His master thesis concerned a risk audit with regard to well-being at work at the Rabobank Beek-Elsloo-Spaubeek. This master thesis was the basis for a project at the Occupational Health and Safety Service of the Rabobank Netherlands, in which he improved the risk audit module concerning well-being at work. Moreover, the master thesis was also the basis for the PhD research he started in 1996 and from which this dissertation is the result.

Next to the job as PhD researcher, he was also editorial secretary of Tijdschrift voor Arbeidsvraagstukken, from August 1997 until March 2001. Since April 2001, he works as assistant professor in Strategic Personnel Management at The Nijmegen School of Management, University of Nijmegen.

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