From stress to engagement
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Chapter 1

Introduction

The main objectives of this thesis are to evaluate the assessment of stress complaints in occupational health surveillance; to evaluate the extent to which two stress-reducing programs are able to reduce psychological complaints and sickness absence; to study the role of coping in the sickness absence process; and to identify predictors of burnout and work engagement. As these objectives make clear, stress and the management of stress are central themes of the thesis.

Job stress: A short introduction

The roots of modern occupational health services can be traced back to doctors in the late-19th century who not only treated patients with work-related injuries or illnesses, but also recommended preventive measures (Gochfeld 2005a). Thackrah (1831), for example, recognized that dust affected the lungs of miners and metal workers, and drew a connection between trades involving high levels of exposure to dust and tuberculosi. He wrote a treatise on the removal of workplace hazards and campaigned to promote longevity. Thackrah is an exponent of an era in which particular attention was paid to social and physical occupational health issues, such as setting limits on the number of hours that women and children could work, workers' compensation, and compensability of various diseases (Josephson, 1934). In addition, it was an era in which occupational health services were developed in a number of industries in the United States (Gochfeld 2005b).

The practice of the occupational physician has evolved since that time, keeping pace with the needs of society, organizations, employers, and the modern workforce (Hooker 2004). The focus of occupational health has changed as a result. Occupational health services are now driven by one of the hallmarks of modern society: the fact that organizations and self-employed workers have to adapt to rapidly-changing markets,
increased competition and growing demand. This transition has had
negative consequences for managers and employees, however. Changing
conditions have generated high levels of job stress for many managers
and employees, impacting on their health and well-being, and resulting in
particular attention being paid to what had been a relatively new area in
occupational health practice.

To counter the negative aspects of modern labor conditions, occupational
health services are increasingly focused on issues such as mental workload,
job stress, and the resulting strain and consequences for workers’ health.
And not without reason; the Fourth European Working Conditions Survey
(Parent-Thirion et al. 2007), which was commissioned by the European
Foundation for the Improvement of Living and Working Conditions,
reveals that job stress affects more than two out of every ten (22.3%)
European workers. In the Netherlands, the figures are even more alarming:
in 2006, circa 29% of employees reported working under stress (Van den
Bossche et al. 2007). Moreover, the societal costs of related absenteeism
and disability are enormous. The percentage of sickness absence due to
work- and stress-related Repetitive Strain Injuries, and work- and stress-
related mental disorders in the Netherlands is estimated to be 3.8-6.2%
and 3.6-6.3% respectively (Blatter et al. 2005).

In order to limit the economic costs of treatment, more prevention and
health promotion is needed. Treatment of stress in the workplace has
been predominantly studied from the perspective of the individual, with
the aim of reducing the effects of stress, instead of dealing with actual
stressors in the workplace (Jordan et al. 2003). One reason for this may be
that in general, managers only act when forced to do so and when clear
intervention strategies are available. Nevertheless, several authors (Jordan
et al. 2003; Elo et al. 1998) promote the merits of preventive interventions
at earlier stages in the process, maintaining that it is better to prevent than
to cure. Little research exists, however, on the effectiveness of preventive
interventions, and those findings that are available are inconclusive
(Houtman 2005).

Very recently, the focus of job-related stress practice and research shifted in
the opposite direction, towards “work engagement”, a state characterized by
high levels of energy, dedication, and immersion in work activities (Schaufeli
and Salanova 2007). This new focus is in line with health-promotion programs
and coincides with the rise of so-called “positive psychology”, which focuses on individuals’ strengths and optimal functioning. Unfortunately, the potential positive effects of work, such as work engagement, are still underestimated in occupational health practice.

The economic consequences of job stress

Stress has become a major problem in the Netherlands, especially for organizations, employees, and employers. In Dutch organizations, work-related stress has increasingly become a mental, rather than physical, phenomenon (Van der Klink and Van Dijk 2003). Nearly 30% of employees are working under stress in the Netherlands (Smulders and Van den Bossche 2007). This corresponds with earlier research carried out by Bültmann et al. (2002), which found a stress prevalence of 23% in a large cohort of workers in the Netherlands; and by Verhaak (1995), who estimated a 15-25% prevalence of stress in western populations in the mid-1990s. Despite these figures, and despite the impact of stress on workers’ performance and productivity, and on organizations’ profitability and success (Tangri 2003), many organizations feel uncomfortable when it comes to dealing with stress. This is partly due to the fact that stress can appear nebulous and hard to quantify. Another reason is that the causes of stress can be linked to personal issues that are not related to an individual’s job.

Stress has an effect on people’s health, and thus on employees. A number of mental and physical disorders have been linked to stress, including: depression (Munce et al. 2006; Wiesner et al. 2005; Wang and Patten 2001); anxiety (Melchior et al. 2007); hypertension (Peter and Siegrist 1997; Luders et al. 2006); susceptibility to infections (Mohren et al. 2003); heart attacks (Kivimaki et al. 2006; Hemingway and Marmot 1999); cancer (Bryla 1996); rheumatoid arthritis (Straub et al. 2005); and multiple sclerosis (Heesen et al. 2007; Mohr 2007). Curiously, only one meta-analytic study (Yu et al. 2007) has addressed job stress and general health outcomes for diseases other than coronary heart disease. This study analyzes 354 journal articles and dissertations that investigate the association between stress and health in Taiwan between 1980 and 2003. Meta-analytic correlations between general stress and general health, as well as between general stress and various health indicators, show an average of 0.36. According
to Cohen’s guidelines (Lipsey and Wilson 2001), this can be qualified as a “medium” size effect ($r \geq 0.25$), bordering on “large” ($r \geq 0.40$).

Lastly, aside from its impact on employees' health and well-being, stress also has a significant economic impact on organizations. Sickness absence in the Netherlands due to work- and stress-related RSI, and to work- and stress-related mental disorders, results in annual costs of 2.1 billion euros and 4 billion euros respectively (Blatter et al. 2005). This corresponds with data from Koningsveld et al. (2003), who calculate that 45% of the total costs of absenteeism and disability in the Netherlands (12 billion euros) is due to job stress-related sick-leave and disability. A survey of employers in the UK reveals that absenteeism costs business around 10.5 billion pounds annually (CBI/PPP 2000). The UK Health and Safety Executive (HSE) estimates that 10.5 million working days were lost in Britain in 2005-2006 due to stress, work-related depression, or anxiety (HSE 2006). Since job stress appears to lead to diagnosable depression and anxiety in previously healthy workers (Melchior et al. 2007), these figures are in line with a European work-related public health report on cardiovascular diseases and mental ill-health (Bödeker and Klindworth 2007). In this report, mental disorders are associated with a loss of three times more working days than for people with no mental disorder, and constitute 30% of the total number of early retirements in Sweden and Germany. Mental disorders are also responsible for poor workplace performance or loss of productivity (“presenteeism”). In the Netherlands, one in four employees report complaints suffered during sickness absence as (largely) work-related (Houtman et al. 2006). According to this latter study, the main work-related causes of sickness absence (35%) are job demands and job stress.

We should briefly comment on estimations of stress-related costs. The New York Times reported on 5 September 2004 that “workplace stress costs the nation more than 300 billion dollars each year in health care, missed work and the stress-reduction industry that has grown up to soothe workers and keep production high”. At the same time, the International Labour Organization (ILO) cites a study by the European Agency for Safety and Health at Work which states that half of the 550 million working days lost each year due to absenteeism are stress-related. These figures result from taking different approaches to the same problem. The 300 billion-dollar price tag comes from the American Institute of Stress (AIS), which explains that this figure includes: “accidents, absenteeism, employee
turnover, diminished productivity, direct medical, legal, and insurance costs, workers’ compensation awards as well as tort and FELA [Federal Employers’ Liability Act] judgments”. Notably, the AIS derives its statistics from Albrechts’ book, *Stress and the Manager* (1979). In this book, the author warns that, “Any attempt to estimate a dollar cost of chronic stress in a business organization or in American business in general, would of course involve gross guesswork and speculation”. Consequently, the author himself speculates as follows: he guesses an absenteeism rate due to stress; guesses a turnover rate due to stress; guesses an “overstaffing” cost for reduced productivity due to stress; and estimates a cost per absentee day per worker. Taken as a whole, then, our suggestion would be not to over-state the accuracy of such figures.

The management of job stress: The need for care

It is clear that giving guidance on how to manage job stress, including the resulting strain, health problems, and in particular the mental workload, has become increasingly important. Companies, governments, occupational health care services, and other health organizations are trying to cope with these problems by developing interventions to prevent or reduce work-related stress. These interventions can be roughly categorized as organizational-focused programs (aiming to change the occupational environment) and individual-focused programs (aiming to increase individual mental resilience) (Van der Klink et al. 2001). These are usually referred to as “job redesign” and “stress management training” respectively (Murphy et al. 1995; Semmer 2006). Although the term “stress management training” implies a relatively uniform set of intervention strategies, it generally refers to a mixture of treatment techniques. In practice, two main intervention types can be distinguished: psychological interventions, such as cognitive-behavioral and client-centered approaches; and physical interventions, such as muscle relaxation and physical exercise. Both types of programs aim to improve mental health, but each uses a different approach. Interventions including muscle relaxation and physical exercise aim to improve mental health by reducing physiological arousal (Benson et al. 1975; Salmon 2001; Byrne and Byrne 1993; Folkins and Sime 1981; Plante and Rodin 1990). By contrast, individual-focused interventions based on cognitive behavioral therapy-oriented techniques aim to reduce complaints by means of changing appraisal processes (cognition) and enhancing
coping skills (behavior) (Lazarus and Folkman 1984; Meichenbaum and Deffenbacher 1988a; Meichenbaum and Deffenbacher 1988b).

The management of job stress: From cure to prevention

Until now, in their attempts to reduce “stress” in the work setting, occupational physicians have mainly focused on the reduction of the psychological, social, medical, and economic effects, instead of dealing with the early signs of stress (such as initial feelings of strain) and related interventions, or interventions to control the stressors themselves. This is reflected in companies’ and employers’ investments. Most companies have invested substantially in stress management programs, such as individual stress management training that is focused on individuals suffering from stress or its consequences, without giving due attention to sources of strain or stress in the organization. One reason for this might be that no evidence-based strategies are available to deal with particular stressors or the first indications of strain (Cooper et al. 2001).

When dealing with the prevention of stress in the workplace, several options are available. These can be termed primary, secondary, and tertiary levels of stress intervention (Murphy 1988). **Primary prevention** eliminates the sources of stress in organizations by focusing on changing the physical and psychosocial environment. One logical consequence of this, for example, is to match work to individual needs, and to grant workers more control over their work environment (Cooper et al. 2001). Improving communication processes, redesigning jobs, and involving employees in decision-making processes are all examples of primary prevention interventions. **Secondary prevention** helps at-risk workers to manage stress as the first point of departure, with or without trying to eliminate or modify job stressors themselves. Stress management programs help workers to identify symptoms of stress and to acquire or improve their coping skills. **Tertiary prevention** strategies aim to assist individuals who are experiencing ongoing problems arising either from the work environment or from their jobs. The purpose of such programs is to adapt individual behavior and lifestyles, with little reference to job stressors.

According to Kompier and Cooper (1999), stress intervention practice is currently more focused on secondary and tertiary prevention strategies.
than on primary prevention. That is, practice is concentrating on reducing the effects of stress on individuals, and failing to reduce actual stressors from work. Interventions designed to reduce occupational stress that aim to change the occupational context are relatively scarce, and difficult to analyze. The absence of a widely-accepted taxonomy for organizational interventions makes it difficult to analyze their effectiveness (Wensing et al. 2006). Moreover, it is difficult for the occupational physician to analyze and influence the wide range of organizational approaches to changing occupational contexts, such as those focusing on leadership, process redesign, breakthrough series, organizational culture interventions, organizational learning, and so forth. Organizational interventions are therefore not the first concern of this thesis.

The management of job stress: From prevention to health promotion

Until recently, occupational health services were predominantly concerned with ill-health and lack of well-being. Despite the many publications on stress, burnout, depression, anxiety disorders such as post-traumatic stress disorders, and related interventions indicated above, our knowledge of how optimal, “healthy” employees function is still very limited. Tetrick (2002) argues that it is unlikely that the same mechanisms underlying ill-health also constitute healthy and optimal functioning. Hence, traditional models that are based on malfunctioning and disorders need to be supplemented by “wellness” models that focus on positive aspects of occupational health. One such recent construct is that of “work engagement” (see Schaufeli and Salanova, 2007, for a review). Work engagement is a state characterized by high levels of energy, dedication, and immersion in work activities. Indeed, work engagement is considered to be the opposite of burnout, which is characterized by exhaustion and cynicism. By contrast, engaged workers are proactive, committed, and take initiative. Such employees are not classified as workaholics, however, because the latter are propelled by an inner drive that they cannot resist, rather than being intrinsically motivated (Schaufeli and Bakker 2004). Recent research has shown that work engagement is positively linked to job resources (e.g. social support), self-efficacy, good work performance, and positive attitudes (e.g. organizational commitment) (Schaufeli and Salanova, 2007). It is assumed that work engagement plays a crucial role in the motivational process that
leads to positive outcomes, such as high levels of performance at work (Schaufeli and Salanova, 2007).

**The origins of this thesis**

This thesis grew out of the “stress research line” that started during the 1980s, as outlined in the excellent account by Schaufeli and Kompier (2001). In the 1990s, the Dutch government initiated research programs on job stress in order to develop instruments, tools, and knowledge for professionals. The government did so in response to the fact that sickness absence and work disability rates due to work-related mental problems were rising at an alarming rate. One result of this investment was the *Work Stress Handbook* (Kompier and Marcelissen 1990), which provided both a theoretical and practical framework for the prevention of job stress at company level. It pleaded for a systematic and step-by-step approach, and for stress audits as a basis for preventive measures. Several instruments were developed, such as a practical instruction manual on stress prevention by which employers could measure stress and identify high-risk groups (Kompier et al. 1990). A number of studies on identifying risk factors and high-risk groups were carried out (Houtman and Kompier 1995), and questionnaires on job stress were developed (Houtman et al. 1998). The development of evidence-based practice guidelines for occupational health physicians was a key aim.

One such project was carried out in the Dutch telecommunications company, KPN Telecom, and the research items resulted in this thesis. A health survey was organized for KPN Telecom that was based on a manual written by Janssen et al. (1996), which contained detailed guidelines on how to set up programs in organizations to reduce job stress and to promote workers’ health. The manual puts forward a step-by-step approach. The five steps are: (1) preparation and introduction of the project; (2) problem identification and risk assessment; (3) choice of measures and planning of interventions; (4) implementation of interventions; (5) evaluation of interventions. In line with these steps, work on this thesis commenced in 1998. The immediate cause of the study was a request from the Board of KPN Telecom to perform an occupational health surveillance study that would focus on identifying stressed employees, so that KPN Telecom could offer them a stress reduction program.
KPN Telecom was, and still is, offering telecommunications services to both private consumers and business customers in the Netherlands. Its core activities are the provision of telephone and data services via the fixed network, and mobile telecommunications services. Almost two decades ago, the company was privatized. Due to market liberalization, it became increasingly important for the company to reduce prices, accommodate customer demands, and improve efficiency. As a consequence, KPN Telecom underwent many reorganizations, resulting in massive redundancies. This prompted the company to take even further-reaching measures, such as reassessing alliances, accelerating restructuring processes, and further reducing its workforce, all of which resulted in stress and strain for employees. Despite this, most employees loved their work and had long tenures with the company.

Given this situation, KPN’s Executive Board requested its occupational health services to establish a new occupational health surveillance service, focusing initially on occupational stress, and later on work engagement. At that time, KPN’s employees, managers, and executives were working under stressful circumstances. In addition to their daily work, the telecoms managers had to manage redundancy programs and mitigate the adverse effects of redundancy. Moreover, they had to coach the remaining employees and deal with fairness issues arising from the redundancies. Such managerial tasks called for social leadership whereas, as in many companies, most managers had been promoted because they were good at their jobs and had technical backgrounds.

The emergence of this thesis

There is an impressive body of published knowledge on stress, stress management, strain, stress-related problems, and its opposite, work engagement. Despite this, some questions remain. Within the context of occupational health surveillance, it has been possible to identify and address a number of these questions.

First, there has been relatively little research into instruments for assessing stress in occupational health care settings. A few years before this thesis commenced, Van der Klink et al. (2003) developed practice guidelines for occupational physicians in the Netherlands in relation to
mental health problems, with particular relevance to workers at KPN Telecom. The guidelines provided classification via a four-dimensional questionnaire (4DSQ) and recommendations for guidance and treatment on the basis of existing evidence and agreed procedures (Van der Klink and Van Dijk 2003). However, there was no evidence to demonstrate the psychometric properties of the 4DSQ in the general working population. In addition, it was not known how reliable this questionnaire would be as a screening instrument for psychological problems in the general working population. Adjusting the 4DSQ for the occupational health care setting identified the need of a cut-off point for distress that would be helpful for identifying high-risk groups for inclusion in preventive stress management programs. The validation of the 4DSQ, including the selection of a reliable cut-off point, could make a valuable contribution to evidence-based occupational health and is therefore the primary objective of this thesis.

Second, the effectiveness of the interventions needs to be addressed. To date, cognitive-behavioral interventions are considered to be superior to programs using relaxation techniques (Van der Klink 2001). Comparative outcome studies on the effectiveness of various interventions are rare, however. Comprehensive physically-oriented intervention programs have not been compared with cognitively-oriented intervention programs, for example. Furthermore, with a view to efficiency, a compact intervention program with a minimal number of sessions would be of interest. The second aim of this thesis, therefore, is to test the hypothesis that a compact, four-session, cognitively-oriented intervention is superior to a comparable physically-oriented intervention program.

The third issue to be addressed is the need to modify stress intervention programs to accommodate individual differences. A stressed employee’s decision to go on sick leave or continue working, for example, is not just the result of his or her health status, but also depends on factors such as the extent to which the employee is able to cope with job stress, and the employee’s personality. Identifying the mechanisms by which interventions are able to improve outcomes will facilitate the development of more effective and efficient prevention programs. Therefore, the final aim of this thesis is to study the role played by coping in the sickness absence process, and the role played by work characteristics and personality in the development of burnout and engagement.
Overview of the contents

In chapter one, the psychometric properties of the 4DSQ for a working population are evaluated. The results of an exploratory and confirmatory factor analysis are presented and discussed.

In the second chapter, a cut-off point for the 4DSQ's distress scale is established with a view to a challenging specificity and an appropriate negative predictive value.

The third chapter investigates the outcome effectiveness of the various interventions, in terms of the reduction of psychological complaints. The clinical significance of the effects is calculated.

In the fourth chapter, the effectiveness of cognitive- and physical-oriented interventions on sickness absence is evaluated. Five different measures of sickness absence periods are used: frequency, incidence rate, duration, length, and absenteeism-free intervals.

The fifth chapter looks at the role played by coping in the sickness absence process. Using the five dimensions of the Utrecht Coping List (UCL), the relationship between problem-solving coping strategies, reactive-passive coping strategies, and several sickness absence parameters is analyzed.

Chapter six identifies those job demands, job resources and personality factors that predict burnout and work engagement. This chapter reflects the shift in focus from a negative, disease-based orientation towards a positive, health-based orientation.

Lastly, the seventh chapter offers an overview of the main findings and conclusions from the previous chapters. The results are discussed at a more general level, and suggestions and recommendations are made regarding practical implications and future research.

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CHAPTER 1


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