General introduction
General introduction

“We want to rank among the top five of the world” ([1], p.17). This is not the Dutch national soccer coach speaking, it was the ambition as formulated by the Dutch government at the time of conducting this thesis, in the education paragraph of their coalition agreement. Good education supposedly ensures the competitive power of the economy. Education in the Netherlands is already of high standards, as evidenced by the top 10 notation for mathematics, science and reading skills in the influential OECD Programme for International Student Assessment [2]. However, to transform ‘good education’ into ‘excellent education’, the teacher and school organization are of quintessential importance [3]. If the general level of teaching is improved, the general level of education will improve [4, 5]. And the level of teaching will more easily improve if the school organization is functioning well [6]. However, a major threat to the improvement of teaching, is the high level of work stress among teachers [7]. This thesis aims to explore ways to decrease work stress in teachers, thereby contributing to the realization of the government’s ambition.

The topic is introduced in this chapter by a description of the prevalence and consequences of work stress (paragraph ‘Prevalence of work stress in education’). In order to successfully find ways to decrease work stress, it is necessary to outline the several definitions of work stress, because the definition also determines the character and scope of interventions (paragraph ‘Theory and definition of work stress’). Furthermore, existing interventions should be taken into account in the exploration of ways to decrease work stress in teachers (paragraph ‘Existing interventions for work stress’). The relevance of approaching the work stress problem from an individual, organizational and (intervention) evaluation perspective is reasoned. This chapter concludes with the aim and outline of the current thesis.

Prevalence of work stress in education

One third of the workers in European Union countries reports a high work intensity, which is related to work stress [8]. Work stress is especially common among workers in education [7]. More specifically, stress levels of teachers more than doubled (42%) those found in other occupations (20%) [9]). Also in the Netherlands the educational sector is front runner in work stress. According to a representative survey almost one in five employees in education suffers from work stress compared to one in eight in the general working population [10]. These employees feel emotionally drained and exhausted by their work, especially at the end of the work day. They also feel tired when they get up in the morning and are confronted with their work [11].

Across occupations work stress seems to result in several health problems, negative organizational outcomes, and economic costs. Firstly, work stress can result in a range of mental health problems including burnout [12], depression [13, 14], and anxiety [15]. With regard to physical health, research has convincingly demonstrated that work stress can result in coronary heart disease years later [16]. In the shorter term, work stress might also lead to a range of health problems such as musculoskeletal problems [17], specifically, of the low back, neck, shoulder and forearm [18], gastrointestinal problems [19], and headache disorder (i.e. migraine, severe headaches [20]). Secondly, work stress might impact organizational outcomes negatively. For example, work stress has been related to decreased productivity [in terms of presenteeism; [21]] and work performance [22]. Also relations have been found with (long term) sickness absence from work [23, 24], and with turnover to another job within the same occupation as well as to other occupations [25]. Furthermore, longitudinal evidence from a study among older workers convincingly demonstrated that psychological health problems predict unemployment and early retirement [26]. Thirdly, the consequences of work stress can be regarded in terms of societal costs. Sickness absence due to work stress sum up to a reduced employability of the work force, which is costly. Work days lost due to presenteeism and sickness absence associated with mental health problems summed up to 2.7 billion Euros in 2008 in the Netherlands alone [27, 28].

These three types of work stress consequences all seem to be present in the educational sector as reflected in the finding that for 7% of the workers in Dutch education work stress results in being overworked or burned out, including long term sickness absence [10]. The high level of work stress among teachers is especially challenging because of the ageing working population. A little over half of the employees in education in the Netherlands are aged 45 years or older [51%] [10], compared to 43% in the general working population. Employees in education are not only older in general, the outflow of the occupation is also more prominent than in the general working population. Many teachers retire before reaching the official retirement age [29], whereas approximately half of all novice teachers leave the sector within the first five years [6].

In sum, work stress has substantial consequences, which are especially alarming in the light of an already shrinking workforce. Some of these consequences might be prevented if adequate measures are taken. Formulating adequate measures starts with a clear conceptualization of work stress and its causes.

Theory and definition of work stress

Since the first introduction of the term ‘stress’ in science in 1936, the concept gradually found its way to the spoken language. The term is now often used by the general public to describe a range of symptoms, feelings, states, causes or consequences. This diverse use of the term resembles the scientific search for a definition and theorization of ‘stress’.

According to the first stress theory, stress was considered a psychological or physiological response to a threatening situation [30]. A threatening situation can be any external stimulus, for example a biological agent, an environmental
condition or event and is often referred to as ‘stressor’. The bodily response to a stressor, also named General Adaptation Syndrome (GAS), is characterized by three states: the alarm state, the resistance state, and the exhaustion state. The alarm state lasts shortly, it is characterized by physiological changes that prepare the body to show a stress response, such as freeze, flight or fight. In the resistance state, the body tries to cope with the threat, thereby gradually depleting its resources. In the third state, either recovery or exhaustion takes place. If recovery occurs, the body’s adaptation system was successful in adapting to the stressor, and the body returns to normal functioning, whereas the opposite is the case in the exhaustion state. In case the exhaustion state endures, the body can be damaged, possibly resulting in physical and mental illness.

In the following years, the biologically oriented definition of stress as a response to the environment, was extended by psychological insights based on theories such as the Appraisal Theory [31], the Michigan model [32], the Person-Environment-Fit model [33]. These theories have in common that the stress response is considered the result of an interaction between an individual and the environment. More specifically, the environment is the source of a stressor, the individual employee is the place were stress effects become visible. It was assumed that the individual appraisal or perception of a stressor determines the scope and duration of a stress response. Applied to the work context, this would mean that stress occurs if an employee cannot meet the demands posed on him/her by the environment and the employee perceives this as threatening.

This work paved the way for the most influential model as proposed by Karasek [34], the Job Demand-Control model (JDC model). The model assumes that perceived job demands such as a high workload, a high work rate or emotionally demanding tasks are not stressors per se, but only if they coincide with a lack of control over the work, for instance due to poor decision latitude. Demands by the work and control over the work are considered dimensions that can be either low or high, resulting in four quadrants: active jobs (high demands, high control), passive jobs (low demands, low control), high strain jobs (high demands, low control), low strain jobs (low demands, high control). Each quadrant represents a different risk for stress and its consequences. The most desirable situation is the ‘active job’, because it is assumed to increase motivation and learning on the job. The least desirable situation is the ‘high job strain’, since it is likely to lead to psychological strain and physical illness.

In testing the JDC-model, social support was discovered as an important additional work characteristic for the occurrence of work stress [35]. This dimension was added and the model was renamed Job Demand Control-Support model (JD-C(S) model). Social support of colleagues and supervisor is considered an accelerator of positive and negative effects; good social support stimulates the positive effects of high job demands and high control on the one hand, and if social support is absent the negative effects of too high job demands without control will be larger on the other. In the JD-C(S) model, individual factors are disregarded in order to avoid the inclination that an individual employee is held responsible for both his or her experience of work stress as well as for the solution of work stress.

Based on these earlier insights the Job Demands-Resources-model (JD-R model) [22, 36] was formulated. In line with earlier models, the JD-R model assumes that the balance between positive and negative work characteristics (i.e. job resources and job demands) determines whether positive or negative work-related outcomes occur (e.g. work engagement and burnout, respectively). The model differs from its predecessors in the assumption that any work characteristic can be a potential demand or resource, instead of proposing a set of predetermined, specific positive and negative characteristics [37]. Job demands are generally considered the physical, social or organizational aspects of the job that require sustained physical or psychological effort [36]. Job demands are related to the work content (e.g. workload, work schedule) or work context (e.g. organizational culture) [38]. Job resources on the other hand are the physical, social or organizational aspects of the job that may reduce job demands, help to achieve goals and stimulate learning and development [36].

Examples of job resources are social support by colleagues or supervisor, or decision latitude. Even though any work characteristic can be a demand or resource according to the JD-R model, it has been demonstrated that patterns of common job demands and job resources exist across and within occupational groups [39]. And therefore work stress interventions are probably most successful if they are tailored to a specific occupational sector or group. In sum, determinants of work stress differ as a function of occupation and should be taken into account in the design of workplace interventions.

The most recent versions of the JD-R model furthermore differ from the JD-C(S) model in the incorporation of individual factors. Since the stress response is considered the result of an interaction between the individual and the environment, incorporating individual factors might help explain the occurrence and course of work stress. These factors are mostly known as ‘personal resources’ and defined as: “the psychological characteristics or aspects of the self that are generally associated with resiliency and that refer to the ability to control and impact one’s environment successfully” [37]. In line with the definition of job resources, personal resources are presumed to help in achieving goals and to stimulate learning and development. Examples are self-efficacy, self-esteem, or intrinsic work motivation. According to a critical review of the JD-R model by Schaufeli and Taris, personal resources have to date been integrated in the model in five ways [37]. First, as a direct influence on work stress (e.g. [40]). Second, as a moderator between job demands/job resources and work stress (e.g. [41]). Third, as a mediator in the relation between job demands/job resources and work stress (e.g. [42]). Fourth, as an antecedent of job demands/job resources [43]. And fifth, as a confounding variable (e.g. [44]). Nevertheless, it seems relevant to include personal resources in the exploration of ways to decrease work stress.

Somewhat parallel to the development of the JD-C, the JD-C(S) and the JD-R model, another line of stress research focused on recovery [45, 46]. Recovery is defined as “a process of psychophysiological unwinding after effort expenditure” (p. 482, [46]) and is considered a central element in the stress process. Recovery after work seems all the more relevant when recovery during work is insufficient. If
physiological activation continues after work and recovery is insufficient, evidence indicates that this will eventually result in chronic health impairment [46].

In this thesis on decreasing work stress in teachers, the JD-R model was the leading theoretical framework, because of its generic applicability and widespread use. The definition of work stress by the International Labour Organization (ILO) was used, which is in line with the JD-R model. "Work" stress is the harmful physical and emotional response caused by an imbalance between the perceived demands and the perceived resources and abilities of individuals to cope with those demands [i.e. personal resources] ([47], italics by current author). In order to decrease work stress in organizations, job demands, job resources, and personal resources seem to be the starting point for interventions, conducted within a specific sector.

Existing interventions for work stress

Primary, secondary and tertiary prevention

Work stress interventions are often classified by the aim one has with the intervention, often labeled as primary prevention (prevent work stress before it ever occurs), secondary prevention (reduce impact of occurring work stress), or tertiary prevention (treat the consequences of occurring work stress, such as cardiovascular disease). Examples of primary preventive interventions are: job redesign in order to maintain a balance between demands and resources, or the enhancement of social support (e.g. [48]). Secondary preventive interventions on the other hand could be cognitive behavioral therapy sessions wherein problem solving skills are enhanced (e.g. [49]) or coaching sessions wherein coping skills are enhanced (e.g. [50]). An illustration of tertiary preventive interventions could be counseling or return-to-work programs after sickness absence due to work stress (e.g. [51]).

An occupational health principle with regard to interventions is the 'hierarchy of (hazard) controls' [52, 53]. The proposition of the principle is that methods that eliminate or substitute a stressor (i.e. prevention through design) are to be preferred over methods that protect workers from the stressor (e.g. personal protective equipment). Eliminating or substituting the stressor is believed to result in more sustainable effects than protecting workers from the stressor [54]. Eliminating or substituting stressors requires a change in the work environment and work organization, which can be done by conducting organizational-level interventions [54].

Organizational level and individual level interventions

Interventions aiming to change the work environment and work organization in order to decrease work stress are often labeled 'organizational level interventions' [55], as opposed to interventions targeting (personal resources of) individual employees, which have been termed 'individual level interventions'. In the field of work stress the proposition of the 'hierarchy of controls' principle – translated as organizational level interventions producing more sustain-
for example by conducting process evaluations of these type of interventions [62]. Even though the importance of the process evaluation as a relevant tool for assessing implementation is increasingly recognized over the last decade [63], there is no consensus on which process variables should be assessed in work stress interventions in order to grasp the often complex implementation process [64, 65]. A third explanation for the inconclusive evidence with regard to the effectiveness of organizational level interventions for work stress, could be that the study design was not suitable for detecting results [66]. In order to assess whether occupational health interventions decreased work stress effect evaluations are conducted. In intervention evaluation research, the randomized controlled trial (RCT) is the preferred research design (a ‘gold standard’) because of the possibility to draw causal inferences about the effects of the intervention under study. However, in the occupational setting practical and ethical challenges might exist that hamper the (correct) application of this design [67]. In intervention research in education this is evidenced by the results from a Cochrane review: the few studies that found effects of organizational interventions on well-being of teachers all were of low methodological quality [68]. There is thus a clear need within occupational health research for alternative research designs, which allow for (some degree of) causal inference. This underlines the relevance of the (intervention) evaluation perspective in this thesis wherein, amongst others, alternative research designs are explored, in order to ultimately decrease work stress in teachers.

Aim

As described in the previous paragraphs the evidence on the most effective ways to decrease work stress in teachers is inconclusive. More specifically, more theory-based knowledge on the individual and organizational determinants of work stress for specific occupational groups is needed. Furthermore, the research could be improved methodologically. The main objective of this thesis is therefore to explore ways to decrease work stress by combining the individual, organizational and intervention evaluation perspective, in the specific occupational group of teachers. The combination of evidence from these combined perspectives is believed to provide more insight into the main research question, i.e. how can we decrease work stress in teachers, than any of the three perspectives alone. Each perspective corresponds with a key question that will be addressed in this thesis:

1. How can we decrease work stress in teachers from an individual perspective?
2. How can we decrease work stress in teachers from an organizational perspective?
3. How can we gather the most relevant evidence in intervention studies in the occupational setting, for example to decrease work stress?

Outline of the thesis

How can we decrease work stress in teachers from an individual perspective?

In part one, the individual perspective is addressed by assessing the role of a personal resource in the decrease of work stress in a cohort of older teachers (chapter 2). More specifically, the interplay was explored between mastery and work-related factors (i.e. job demands and job resources) in influencing work stress related outcomes (i.e. depression and work engagement). Mastery was hypothesized to mediate the longitudinal effects of job demands and job resources on depression and engagement. For this chapter longitudinal data from the Study on Transitions in Employment, Ability and Motivation (STREAM) were used, which is a four-year longitudinal cohort study among older persons (aged 45-64 years) in the Netherlands [69].

How can we decrease work stress in teachers from an organizational perspective?

In part two, the organizational perspective is addressed by the evaluation of a practice-based, participatory prevention program for employees in schools. The evaluation was conducted within a controlled trial among 356 employees from two secondary vocational schools in the Netherlands. It was hypothesized that the prevention program would decrease need for recovery and increase vitality primarily. Several secondary outcomes relevant in relation to work stress were assessed as well (i.e. psychological job demands, decision authority, social support, work ability, job satisfaction, commitment, work engagement, occupational self-efficacy, and organizational efficacy). The prevention program and the study design are described in chapter 3. Whether implementation of the prevention program was successful was assessed using a comprehensive theoretical framework [70]. The framework included components with regard to the intervention design and implementation, the context, and mental models of the participants. A detailed evaluation of the implementation process is given in chapter 4. Whether the prevention program rendered the hypothesized effects is described in chapter 5, by comparing the effects in the intervention group to those in the control group on the primary and secondary outcomes.

How can we gather the most relevant evidence in intervention studies?

Part three of this thesis, the evaluation perspective on decreasing work stress by means of interventions, comprises a systematic review on process variables (chapter 6) and a narrative review on study designs for effect evaluations (chapter 7). The systematic literature review aimed to explore which process variables are used in evaluations of interventions to decrease work stress. The
narrative review on study designs for effect evaluations describes challenges in applying the RCT design in intervention studies in the occupational setting, and provides an overview of alternative observational and experimental study designs for the evaluation of occupational health interventions.

This thesis concludes with a summary of the main findings and a discussion of designs for the evaluation of occupational health interventions.

References


