BURNOUT IN MODERN WORK LIFE: CONCEPT AND CONSEQUENCES

Examined in different occupational groups in Norway

A PhD thesis by Ellen Melbye Langballe
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Paper I  
Paper II  
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SUMMARY

The present thesis is part of a large, longitudinal project in which the objective is to learn more about burnout and the burnout process. Data from representative samples of eight different occupational groups in Norway were collected twice (in 2003 and 2005) by postal questionnaires. Participants were bus drivers, lawyers, physicians, nurses, teachers, church ministers, information technology workers and people working in advertisement. Most investigations within the burnout field are on antecedents and risk factors whereas the number of studies on possible concomitants and consequences are a lot less. The primary aim of this thesis was to increase our knowledge on burnout and its relationship with two potential outcomes which constitute important public health problems: musculoskeletal pain and work-related sickness absence.

All analyses were conducted within the framework of structural equation modeling. A modified version of Maslach Burnout Inventory – General Survey (MBI-GS) assessing a three dimensional burnout construct (i.e. exhaustion, disengagement and sense of reduced professional efficacy) was used to measure burnout. In Paper I, the factorial validity of this burnout measurement was examined in a multi-group confirmatory factor analysis using the cross-sectional data from the first survey. The results indicated that the modified MBI-GS had acceptable model fit in all occupations except for the group of people working within advertisement. The latter group was therefore not included in paper II and III.

In paper II, musculoskeletal pain was measured by a latent construct including pain in the head, neck, shoulders and back. When the association between burnout and musculoskeletal pain was examined in a multi-group regression analysis, the results indicated a positive and mostly moderate to strong co-occurrence between the exhaustion dimension and musculoskeletal pain in all groups. In contrast, disengagement and musculoskeletal pain were moderately, but negatively associated in some groups. The latter finding raises the question whether disengagement should be considered an integral part of the burnout syndrome or rather as an efficient coping mechanism when exposed to excessive workplace demands. The professional efficacy dimension was weakly and inconsistently (i.e. both positively and negatively) associated with musculoskeletal pain in some of the groups.
In paper III, data from both surveys were used in the latent growth curve analyses conducted to examine whether changes in burnout scores predicted changes in work-related sickness absence. In most groups, changes in burnout scores explained a considerable share of the variance of changes in work-related sickness absence.

Overall, the findings indicate that burnout is associated with musculoskeletal pain and work-related sickness absence. Whereas burnout is mostly considered a psychological syndrome, this thesis supports that burnout includes somatic aspects and that the phenomenon may have important social consequences, and thus has to be treated as an interdisciplinary health problem. A challenge for future research is to learn more about the somatic and psychosocial impacts burnout may have on individual levels, on close social relationships such as family and friends, and on organizational levels. The implications of burnout in a general health perspective (i.e. prevention, diagnosis and treatment strategies) should also be further explored.
ACKNOWLEDGEMENTS

(will be enclosed later)
LIST OF PAPERS


INTRODUCTION

"Work, after all, is a form of religion in our secular world. Burning out in it amounts to a crisis of faith."


The academic interest in research on burnout started in the 1970s, triggered by Herbert Freudenberger's descriptions of what he called 'burn out' among some of his colleagues working at a free health care clinic (Freudenberger, 1974). These people changed from being motivated workers to gradually lose their commitment and energy, and get more and more frustrated and exhausted. According to Freudenberger, burnout often surface as negative attitudes such as anger, irritability, inflexibility and cynicism.

Particularly in the early phases of research a central issue was how to understand the underlying dynamics of burnout. According to an existential theory, if much of one’s identity and hopes are put into work the results of failure may be burnout (Pines, 1993). In line with this perspective, one of the early assumptions was that the emotional demands and the imbalance between the caregiver and the recipient in health services are the main contributors to the development of burnout (Cherniss, 1980; Maslach, 1988; Roness, 1995; Söderfeldt, 1997). Recent studies, however, have demonstrated that general job stressors, such as workload, time pressure, and role conflicts may be just as important as client-related stressors. It is therefore argued that burnout can be a potential problem in all occupational sectors (Maslach, Schaufeli, & Leiter, 2001; Toppinen-Tanner, Kalimo, & Mutanen, 2002) and an important public health problem in modern work life (Shirom, 2005).

The burnout syndrome

Although there are many definitions of burnout, the most often cited states that “burnout is a psychological syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that can occur among individuals who work with other people in some capacity” (Maslach, 1993, p. 20). According to the theory behind this definition,
the first out of three main phases of burnout is when people are getting emotionally exhausted by excessive work demands. The second phase is called depersonalization, but should not be confused with the psychiatric meaning of the term as an extreme alienation from oneself and the world (Schaufeli & Enzmann, 1998). People may develop cynical feelings and mentally distance themselves from their workplace, either as a consequence of exhaustion, or as a way to cope with it. In the third phase, individuals who feel exhausted and are ‘depersonalized’ may feel that they no longer perform at work according to their original hopes and ambitions. This third phase thus corresponds to feelings of reduced personal accomplishment. Hence, burnout is often referred to as a psychological syndrome including a combination of emotional exhaustion, depersonalization and reduced personal accomplishment at work.

The operationalization of the most widely used questionnaire on burnout, the Maslach Burnout Inventory (MBI), is based on the above definition (Schaufeli & Enzmann, 1998). The development of the questionnaire has been criticized for being derived by factor analyzing a rather arbitrary set of items (Shirom, 2005, p.267) instead of being grounded in sound theories or clinical observations (Taris, Le-Blanc, Schaufeli, & Schreurs, 2005). Maslach, Jackson and Leiter (1996) have thoroughly described how the MBI was developed. First, a factor analysis of 47 items from interviews and questionnaire data collected earlier was conducted. Based on this first analysis, 22 items were excluded. The remaining 25 items all had factor loadings over .40, a relatively low percentage of respondents checking the “never” response category, and a high item-total correlation. These 25 items were examined in a new set of data. The new factor analysis resulted in a four factor solution in which three factors had eigenvalues greater than unity. These three factors were considered as sub-scales of the MBI (Maslach et al., 1996).

According to the Maslach definition, burnout develops through three phases, emotional exhaustion, depersonalization and feelings of reduced personal accomplishment, whereas the burnout state is supposed to involve a simultaneous occurrence of these three dimensions. As other researchers have pointed out, the contradiction in this assumption and in the MBI manual instructions (Maslach, Jackson, and Leiter, 1996) is that each sub-scale should be considered separately, and not be combined into a single score (Kristensen, Borritz, Villadsen & Christensen, 2005;
Shirom, 2005). Hence, even though the internal consistency of the three dimensions and
the factorial validity of the MBI have been investigated and found to be satisfactory in
many studies (see Schaufeli & Enzmann, 1998), there is an ongoing discussion about the
psychometric properties of the MBI. Also, in a recent review of studies on the causal
relationship between the three dimensions of the MBI the findings concerning the
sequential ordering of the three burnout dimensions were inconclusive (Taris et al.,
2005).

In this thesis, burnout was investigated in several different occupational groups.
To assess burnout in specific occupations and outside the human service profession,
several new instruments have been developed. To date, however, most of these
instruments have not demonstrated sufficient factorial validity (Demerouti, Bakker,
Vardakou, & Kantas, 2003). Thus, even though the psychometric quality of the original
MBI is mixed (Schaufeli & Enzmann, 1998), it was decided to measure burnout by an
inventory based on Maslach Burnout Inventory – General Survey (MBI-GS) (Schaufeli,
Leiter, Maslach, & Jackson, 1996) in the papers included in the present thesis. The MBI-
GS is a version of the MBI particularly aiming to assess burnout among people in
different lines of work by the removal of references to clients and recipients of health
care services. Some changes of the original MBI-GS that were done in this study to
improve the psychometric quality of the instrument are described in the method section.
The factorial validity of this instrument was evaluated in the first paper included in this
thesis.

Signs and symptoms of burnout
Several different psychological, behavioral and physical signs and symptoms may
indicate that a person is burned out (Dunham, 1992; Gold & Roth, 1993; Maslach et al.,
2001; Schaufeli & Buunk, 2003; Schaufeli & Enzmann 1998). Burnout may surface as
depression, resignation, irritability, detachment, headaches, sleeping problems, negative
attitudes, concentration problems, stomach problems, musculoskeletal pain and more.
Expressions commonly used to describe the experience of burnout are “hitting the wall,”
“feeling completely drained,” and “having nothing more to give.” However, there is no
explicit set of characteristics or uniform understanding of what characterizes the burnout
state, either within research or clinical work (Hallsten, 1993; Schamer & Jackson, 1996).
In other words, burnout is not a clear cut concept. Nevertheless, the burnout state appears to be a negative consequence of a process that has proceeded over a period of time due to demanding factors at work. The burnout state includes the experience of excessive exhaustion accompanied by strong, negative, sometimes aversive, feelings towards one’s work, but these characteristics seldom belong to the personal traits of the affected individual. Hence, burnout involves emotional, attitudinal and behavioral changes.

A theoretical framework - burnout and health

Because the scientific construct “burnout” emerged from empirical observations rather than being deduced from theory, it can be argued that the construct has a strong ecological validity. However, the theoretical understanding of the concept (in terms of how the different aspects are related to each other as well as how burnout relates to contextual factors) is complicated.

(Hallberg, 2005, p.11).

After more than 30 years of research on burnout, the above statement pretty much sums up the status quo within this field. The numbers of stressors that may contribute to the burnout process are many, and the signs, symptoms and consequences that may accompany a burned out state are diverse. In this thesis, burnout is investigated within the framework of health psychology. Health psychology is a relatively new psychological discipline which is related to behavioral medicine and sociology. It involves the application of psychological principles to physical health areas in addition to identifying correlates of illness such as for instance the impact of behavioral factors on health.

In WHO's Constitution of 1948, “health” is defined as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (WHO, 1998). This definition considers health as a positive state. However, the WHO health definition has been criticized for being too vague (Larson, 1996). For instance: How do people know that they are healthy? When is a person in need of special care or attention? Can health be considered an onedimensional condition or is it
multidimensional? The WHO definition of health fails to clarify a set of important questions, which are highly relevant also within the burnout field. The burnout syndrome as described in the literature can be criticized for being both elusive and overinclusive (e.g. Hallsten, 1993). Symptoms of burnout may range from minor to major complaints. Where along this continuum does a person lose his good health, according to the WHO definition?

Most of the burnout research focuses on organizational predictors, finding that several different pathways may lead to the burned out state. Some comprehensive reviews of the previous research on burnout exist, for instance, Burke & Richardsen (2001), Schaufeli and Enzmann (1998) and Maslach, Schaufeli and Leiter (2001). Leiter and Maslach have identified six potential organizational factors that are often associated with burnout in the many studies within this field; workload, control, reward, community, fairness and values. However, the relationship between the possible risk factors of burnout that may play a part in the burnout process is complex (Leiter & Maslach, 2005). Being exposed to what is perceived as stressors may produce both physiological and cognitive stress reactions (Brannon & Feist, 1997; Lazarus & Folkman, 1984). Hence, both physiological and cognitive stress theories are central for the understanding of the relationship between stress and health. The different perspectives should not be considered contradictory, but rather complementary to each other and to Pine’s existential theory for the basic understanding of the development of burnout.

**Stress and burnout**

The endocrinologist Hans Seyle (1907-1982), was one of the first to study living organisms’ responses to stressful events. By exposing animals to unpleasant experiences he identified the physiological stress responses. These were categorized into three broad phases which according to Seyle should be regarded as common for all living organisms, including humans (Seyle, 1993). His physiological understanding of stress has been criticized for neglecting the individual evaluation of different stimuli. Some people live very hectic lives but are never ill whereas others may get physically or mentally ill shortly after exposure to moderately demanding situations. In a cognitive perspective, stress is defined as exposure to a given stimulus (stressor) that is perceived by the
individual to exceed ones’ resources or threatens ones’ well-being (Lazarus & Folkman, 1984). Personality, physical and mental constitution and perceptions are assumed to influence individuals responses to the environment (Hobfoll, 1989). When exposed to stressful situations personal or environmental factors may make some individuals more vulnerable than others for the development of, for instance, sleeping problems, infective diseases, burnout and musculoskeletal pain.

In the Conservation of Resources (COR) model, stress is defined as a reaction to the environment in which there are actual or perceived threats to one’s resources. Resources are defined as “…those objects, personal characteristics, conditions, or energies that are valued by the individual or that serve as a means for attainment of these objects, personal characteristics, conditions, or energies” (Hobfoll, 1989, pp. 516). Loss may involve a net loss of resources (actual loss), threat of a net loss of resources (perceived loss), or a lack of resource gain following the investment of resources (insufficient gain). The theory underlying this model is that people strive to retain, protect and build resources. When applied to burnout, the COR model assumes that if the work demands are greater than the rate to which resources are replenished, this may cause stress and the employees may burn out over time (Hobfoll & Freedy, 1993). The COR theory postulates that those who lack resources are not only more vulnerable to resource loss, but that initial loss promotes future loss. Moreover, those who possess the necessary resources in given situations are more capable of gaining additional resources. In other words, initial resource gain promotes further gain. These mechanisms are called “loss spirals” and “gain spirals” respectively (Hobfoll, 1989, 2001).

In a Stress-Strain-Outcomes (SSO) model suggested by Koeske and Koeske (1993) strain is defined as a mediating factor that arises from perceived stress and predisposes for negative outcomes. In this regard, the SSO models strain factor is the equivalence to burnout. Negative consequences of exposure to stressors may be prevented at an early stage, or be the beginning of a process toward a burned out state with a wide range of potential concomitants or consequences, as illustrated in figure 1.

The stress theories above are not tested per se in this thesis. However, these models found the basis for the underlying assumption that burnout may be associated with different health complaints and consequences such as musculoskeletal pain and
work-related sickness absence. Figure 1 is a simplified illustration of the pathways that may be involved in a burnout process.

![Figure 1: A theoretical model of the complex interaction between stress, burnout and outcomes](image)

So far, studies on burnout have mostly been concerned with establishing the effects of work related factors that may trigger and sustain the burnout reactions in individuals (Hallberg, 2005; Lee & Ashforth, 1996). Compared to the amount of studies on possible causes of burnout, studies on the possible impact of the syndrome such as substance use, psychosomatic complaints and sickness absence are surprisingly few (Schaufeli & Enzmann, 1998). Obviously, understanding the pathways leading from burnout to other health outcomes is important for informing prevention, intervention and other public policy efforts since burnout is likely to represent a pressing social problem in the years to come (Shirom & Melamed, 2005).

**How can burnout be differentiated from related constructs?**

"The exhaustion syndrome" was recently introduced as a diagnostic category in Sweden to enable general practitioners to sick-list people suffering from burnout (Socialstyrelsen, 2003). However, to date, burnout is not a clinical diagnosis in Norway, or according to any of the international diagnostic manuals ICD-10 or DSM-IV (Falkum, 2000; Hallsten, 1993). Burnout can therefore be difficult to separate from related concepts and diagnoses. One concept closely related to burnout is stress. Burnout is regarded as a specific outcome of exposure to one- or more stressful conditions. Since the dominating theories within this field assume that burnout develops as a result of occupational stress and that it involves a set of unspecific signs and symptoms, it is an essential question how it is
possible to differentiate between different stress reactions and burnout. Stress does not necessarily cause burnout. By definition stress may involve immediate over-reactive emotions, whereas the burnout state is characterized by reduced motivation, drive and energy caused by prolonged exposure to one or more environmental stressors (Maslach & Schaufeli, 1993; Smith, Davy & Everly, 2006). Little has been done to investigate this distinction. However, a recent study using structural equation modeling found that burnout and stress are highly correlated but at the same time separate constructs. The study supported the hypothesis that the extent to which one is subject to stressors may ultimately influence one’s tendency to ‘burn out’ (Smith et al., 2006). Since burnout is assumed to reflect the combined influence of chronic stressors (Shirom & Melamed, 2005) it can be viewed as a proxy variable to assess work-related stress that has depleted people’s coping resources (Melamed, Shirom, Toker, Berliner & Shapira, 2006).

Some examples of diagnoses associated with burnout are depression, neurasthenia, and chronic fatigue syndrome (CFS). These diagnoses are usually not linked to any specific etiology in the same way as burnout is with work-related strain. Different life-domains may have played a dominant role in the development of a clinical state in different individuals but they may still fulfill the same diagnostic criteria. Depressive disorders include major depression, dysthymia, and depressive disorders not otherwise specified (APA, 1994). Defining symptoms and duration differ from one disorder to another. Depressive disorders are relatively common. A previous study has shown that a family predisposition for depressive disorders may enhance the risk of burnout (Nyklicek & Pop, 2005). Another study showed that the probability of having a depressive disorder increased with a rising level of burnout (Ahola et al., 2005). About half of those with severe burnout had a depressive disorder. Of the depressive disorders, major depressive disorder was more common (40.2%) among persons with severe burnout than dysthymia (8.9%) or a minor depressive disorder (7.6%). A study among Norwegian physicians found a correlation between burnout and depression as high as 0.72 (Falkum, 2000). These results support that burnout and depression are related but not identical concepts.

Whereas depressive disorders are quite common, the neurasthenia diagnosis, on the other hand, seems to be used more rarely than before. People formerly diagnosed
with neurasthenia often had excessive physical and mental fatigue and muscle weakness (Taylor, 2001). Physicians can use the term “work-related neurasthenia” to sick list people suffering from burnout, but because of a “diagnostic drift,” CFS is probably one of several diagnoses used today that has taken over for the neurasthenia diagnosis (see Taylor, 2001). A difference between burnout and CFS is that CFS tend to be causally attribute to physical processes (Butler, Chalder & Wessely, 2001) whereas burnout is primarily considered a psychosocial problem caused by external factors at the workplace (Huibers et al., 2003).

In Norway as in many other countries, individuals that have health problems corresponding to the burnout syndrome may have got the above psychiatric diagnoses but also a wide range of established somatic diagnoses. One such diagnosis is musculoskeletal pain.

**Burnout and musculoskeletal pain**

People rarely report musculoskeletal complaints in just one body site, but mostly feel pain in different sites simultaneously (Carnes et al., 2007). The great variety of musculoskeletal pain disorders is the most prevalent cause of illness and disability in Norway (Svalund, 2005). According to the National Insurance Administration Statistical Yearbook from 2005, muscle pain explains about 46 percent of sick leaves in the country. Even though research on musculoskeletal pain is voluminous, most hypotheses on causal physiological mechanisms that may be involved cannot fully explain how neural activity produces sensations of pain (Knardahl, 2005). Burnout is frequently associated with somatic symptoms such as headache, nausea, dizziness, and muscle pain, but these relationships are rarely investigated (Schaufeli & Enzmann, 1998). The relationship between physical pain and burnout has mainly been examined in clinical samples (Soares, Grossi, & Sundin, 2007). The few studies on the association between somatic complaints and burnout have found positive correlations, particularly concerning the emotional exhaustion dimension (Greenglass, Burke, & Konarski, 1997; Greenglass, Burke, & Konarski, 1998; Schaufeli & van Dierendonck, 1993; Schaufeli & Enzmann, 1998). Both burnout (Schaufeli & Enzmann, 1998) and musculoskeletal pain in the back (Linton,
2001) and the upper extremities (Larsman, 2006) are likely to be reactions to perceived stressors at work. It is reasonable to assume that increased psychological strain over a period of time may produce muscular tension that can result in loss of muscular strength and mobility (Soares & Jablonska, 2004). Pain in the upper and lower back, neck, shoulders and head often lack clear organic causes and may partly be explained by different psychosocial factors (Reichborn-Kjønnerud et al., 2002). Conversely, different types of somatic pain may impact negatively on job motivation and thereby promote the development of burnout.

Only two studies have directly investigated the relationship between burnout and musculoskeletal pain, using the same nationwide representative sample of the Finnish population. One of these studies demonstrated that burnout symptoms were more prevalent among respondents reporting shoulder pain than among respondents reporting no pain (Miranda, Viikari-Juntura, Heistaro, Heliovaara, & Riihimaki, 2005). The other study found that musculoskeletal disorders increased by severity of burnout, particularly among women (Honkonen et al., 2006).

Previous studies have shown gender differences in self-reported pain. In a review article, Bingefors and Isacson (2004) suggest that these differences are due to gender disparities at work, economy, daily living, and expectations between women and men. For diagnostic and treatment purposes, it is essential to learn more about the extent to which burnout and musculoskeletal pain co-occur among males and females in different occupational groups.

**Burnout and sickness absence**

Burnout can be understood as a continuum ranging from the presence of some symptoms to a severe, disabling state (Huibers et al., 2004), but the experience of burnout symptoms does not necessarily indicate the start of an irreversible, negative development (Kristensen et al., 2005). Burnout symptoms can be alleviated before they progress to a clinical state. Both the complexity of the syndrome and the lack of diagnostic criteria complicate the use of burnout as a health indicator. However, when a person is too burned out to cope with his or her everyday life, the burnout process has reached a
clinical stage that may result in sickness absence from work. The scientific knowledge about the consequences of being on sick leave is surprisingly limited, given the economic cost to society (Aleksanderson & Nordlund, 2004). Sickness absence obviously often forwards recovery from illness and general physical and mental rehabilitation. Nevertheless, sickness absence may also lead to problems such as impeded career opportunities, poorer personal economy and negative effects on social relationships (i.e. colleges, managers).

Sickness absence is influenced by many factors: the individual’s health status, conceptions of illness, social insurance systems, work environments, and commitment to work (Allebeck & Mastekaasa, 2004; Hensing, Alexanderson, Allebeck, & Bjurulf, 1998). It is often assumed that burnout may lead to sickness absence, but compared to the vast amount of research conducted on burnout, studies on this relationship are scarce (Borritz, Rugulies, Christensen, Villadsen, & Kristensen, 2006). Some of the previous research indicates that burnout and sickness absence are related (Borritz et al., 2006; Firth & Britton, 1989; Harvey & Burns, 1994; Pierce & Molloy, 1990; Toppinen-Tanner, Ojajarvi, Vaananen, Kalimo, & Jappinen, 2005). However, different study designs, particularly the use of different assessments of burnout and sickness absence in the different investigations, make it difficult to compare results. The attribution of the present study is that we examined to what extent changes in burnout scores predicted changes in sickness absence perceived as work-related by the respondents in each occupational group using latent growth curve models.
RESEARCH OBJECTIVES

Figure 2 show the theoretical model that forms the basis for the three studies included in this thesis. Stressors are in gray to illustrate that even though included in the model as a basic tenet in the burnout process, the emphasis is on the parts of the model outlined in black. The objectives for the three investigations were:

I. To examine the factorial validity of the modified version of MBI-GS used to assess burnout across different occupational groups in the present study.

II. To examine the relationship between burnout and musculoskeletal pain.

III. To examine the effect of changes in burnout scores on changes in work-related sickness absence.

Figure 2: Stressors, burnout and consequences, the focus of this thesis.
MATERIALS AND METHODS

The respondents

Eight occupational groups from different work life sectors were included in this study: lawyers, physicians, nurses, teachers, church ministers, bus drivers and employees in information technology (IT) and advertisement. For each occupational group, a random sample of 1000 employed at the time of the first survey was drawn from the central Norwegian registers of employees and employment by the Statistics Norway (SN). An exception was made for church ministers, since this group contained only 401 women altogether 599 men were asked to participate. Several different registers constitute the basis for the “employment register”, and the Statistic Norway description of how the samples were selected based on these registries is enclosed in appendix I (in Norwegian only). One of the registers includes both employees, self-employed and those who are serving compulsory military service between 16 to 74 years of age that have worked at least one hour during the reference week, or is just temporarily away from work. Another of the registries which is updated weekly includes those who are actively employed at a given time, except for the self-employed and those who are serving compulsory military service. An active employment is defined as work weeks exceeding four hours and that has lasted for more than six days. Employers in Norway are obliged to report all active employments. Workers selected for this investigation were drawn from these different registers based on educational codes and business codes by Statistics Norway.

The respondents were asked to complete an extensive questionnaire on burnout and related issues twice (letters to the samples and questionnaire included in appendix II). The first data were collected in October 2003. The respondents from the first survey were asked to participate again in October 2005 (letters to the samples in appendix III).
Descriptions of the different occupational groups included in this thesis

**Advertisement:** The advertisement group consists of decorators, designers, art directors, distributors of commercial advertisement and others doing different work tasks within the advertisement industry. Because of the overlapping use of different titles, people having work tasks not necessarily associated with the advertisement business may have been included in this group.

**Bus drivers:** Included bus drivers and tram conductors. The work tasks included mainly the transport of passengers, but also of mail or cargo. The bus driver may be responsible for keeping the vehicle in approved form and selling/controlling tickets. Ambulance personnel and long distance transportation drivers of goods or passengers were not included in this group.

**Church ministers:** This group mainly consists of church ministers, but also includes other people employed in clergy positions, such as catechists and missionaries.

**Information technology workers:** This occupational group includes workers doing a wide variety of tasks such as programming, research, development of new data tools for administrative, communication and information purposes, testing of data programs, designing and implementing new systems, user assistance, installation of new programs and the like. Competence levels, work tasks and titles are diverse in this occupational group.

**Lawyers:** Lawyers in this investigation include people doing all kinds of work tasks within law such as giving advice, helping private and business clients in court, formulating contracts and deals, formulating wills and providing advice in the bank, industry and insurance businesses.

**Nurses:** This group includes ordinary nurses, midwifes and nurses with some sort of specialization. Tasks are treatment, caring an guidance of sick or wounded individuals.

**Physicians:** Includes public and private practitioners (specialists and non-specialists) doing clinical, administrative or scientific work within the medical field.

**Teachers:** This occupational group consists of teachers working within the Norwegian school system, in both public and private schools, and with children between six and 19 years of age (from the first grade through high school).
The first wave

The overall response rate was 64 percent in the first survey, ranging from 52 percent in workers within advertisement to 70 percent in church ministers. The response rates and mean age with standard deviations in each occupational group in the first wave are presented in table 1.

Table 1: The number of respondents, response rate (percent), female/male ratio (percent) and mean age (years) with standard deviations for each occupational group in the first wave

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<tr>
<td>Female/ Male %</td>
<td>53/47</td>
<td>54/46</td>
<td>50/50</td>
<td>40/60</td>
<td>51/49</td>
<td>50/50</td>
<td>53/47</td>
<td>56/44</td>
</tr>
<tr>
<td>Mean age (St.dev.)</td>
<td>38.8 (10.2)</td>
<td>44.7 (10.9)</td>
<td>41.1 (10.0)</td>
<td>46.2 (10.7)</td>
<td>44.2 (10.4)</td>
<td>45.7 (11.1)</td>
<td>38.3 (8.9)</td>
<td>37.6 (9.8)</td>
</tr>
</tbody>
</table>

The second wave

Respondents from the first survey who were considered capable to answer a questionnaire two years after the first data collection (alive, not emigrated and not hospitalized) were asked to participate again during the autumn of 2005. Out of the 4969 persons that received the second questionnaire, 3475 responded. The overall response rate was 71%. The response rates and mean ages with standard deviations in each occupational group in the second wave are presented in table 2.

Table 2: The number of respondents, response rate (percent) female/male ratio (percent) and mean age (years) with standard deviations for each occupational group in the second wave

<table>
<thead>
<tr>
<th></th>
<th>Lawyers</th>
<th>Physicians</th>
<th>Nurses</th>
<th>Church Ministers</th>
<th>Bus drivers</th>
<th>Teachers</th>
<th>Information Technology</th>
<th>Advertisement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response</td>
<td>412/71</td>
<td>523/77</td>
<td>496/73</td>
<td>500/74</td>
<td>381/66</td>
<td>504/75</td>
<td>358/61</td>
<td>301/60</td>
</tr>
<tr>
<td>Female/ Male %</td>
<td>53/47</td>
<td>60/40</td>
<td>56/44</td>
<td>38/62</td>
<td>50/50</td>
<td>49/51</td>
<td>52/48</td>
<td>55/46</td>
</tr>
<tr>
<td>Mean age (St.dev.)</td>
<td>41.0 (10.2)</td>
<td>46.8 (11.0)</td>
<td>43.3 (9.8)</td>
<td>48.6 (10.5)</td>
<td>46.8 (10.0)</td>
<td>48.3 (10.8)</td>
<td>40.9 (8.8)</td>
<td>39.9 (9.4)</td>
</tr>
</tbody>
</table>
Non-respondents

Missing data are almost always a problem in longitudinal research. Statistic Norway’s evaluation whether the samples were representative for each of the occupational populations they were supposed to reflect (Wedde, Holmøy, Skaare, & Villund, 2004; Skaare, 2006) in the two waves and totally are reported in table 3.

Table 3: Deviations in the responses of the randomly selected samples in the first and second wave, and totally.

<table>
<thead>
<tr>
<th>Occupation</th>
<th>First wave</th>
<th>Second wave</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lawyers</td>
<td>Females are overrepresented with 3,7 pp and the age group 40-49 underrepresented with 2,0 pp. Otherwise, only small deviations not considered to influence the estimates</td>
<td>Only small deviations that are not considered to influence the estimates</td>
<td>Females are overrepresented with 3,1 pp and the age group 40-49 underrepresented with 1,9 pp. People from Oslo and Akershus are underrepresented by 3,2 pp.</td>
</tr>
<tr>
<td>Bus drivers</td>
<td>The age group 50-59 overrepresented with 3,3 pp. Otherwise only small deviations that are not considered to influence the estimates</td>
<td>The age group 50-59 overrepresented with 3,3 pp and the age group 30-39 are underrepresented with 1,8 pp.</td>
<td>The age group 40-49 and 50-59 overrepresented with 3,7 and 4,7 pp and the age group under 30 and 30-39 are underrepresented with 3,3 and 4,7 pp. Oslo and Akershus are underrepresented with 3,5 pp.</td>
</tr>
<tr>
<td>IT workers</td>
<td>Females are overrepresented with 3,0 pp, the age group under 30 are underrepresented with 3,5 pp and the age group 40-49 are overrepresented with 2,1 pp. Otherwise the deviations are so small that they are not considered to influence the estimates</td>
<td>The age group 30-39 are underrepresented with 1,8 pp and the age group 40-49 are overrepresented with 2,7 pp. Otherwise the deviations are so small that they are not considered to influence the estimates</td>
<td>Females are overrepresented with 2,4 pp. The age group under 30 are underrepresented with 6,3 pp. The age group 40-49 are overrepresented with 4,9 pp.</td>
</tr>
<tr>
<td>Physicians</td>
<td>Females are overrepresented with 3,8 pp. Otherwise the deviations are so small that they are not considered to influence the estimates</td>
<td>Females are overrepresented with 2,5 pp Otherwise the deviations are so small that they are not considered to influence the estimates</td>
<td>Females are overrepresented with 9,8 pp. Agder and Rogaland are overrepresented with 1,9 pp and Nord-Norge is underrepresented with 3,8 pp</td>
</tr>
<tr>
<td>Teachers</td>
<td>The age group under 30 are underrepresented with 2,1 pp. Otherwise only small deviations that are not considered to influence the estimates</td>
<td>The age group under 30 are underrepresented with 2,5 pp. Otherwise only small deviations that are not considered to influence the estimates</td>
<td>The age group 40-49 and 50-59 overrepresented with 1,9 and 3,3 pp and the age group under 30 and 30-39 are underrepresented with 3,4 and 1,9 pp. Nord-Norge is underrepresented with 1,5 pp. Vestlandet is overrepresented with 1,5 pp.</td>
</tr>
</tbody>
</table>

Note: pp = percentage points
Table 3. continues: Deviations in the responses of the randomly selected samples in the first and second wave, and totally.

| Church ministers | Only small deviations that are not considered to influence the estimates | Males are overrepresented with 1,6 pp Oslo and Akershus county are overrepresented with 1,5 pp. Hedemork, Oppland, Østfold, Agder and Rogaland are underrepresented with 1,5-1,9 pp. | Trøndelag county is overrepresented with 2,1 pp and Østlandet is underrepresented with 2,2 pp. |
| Advertisement | Females are overrepresented with 5,5 pp, the age group under 30 are underrepresented with 2,2 pp and the age group 30-39 are overrepresented with 2,1 pp. Otherwise the deviations are so small that they are not considered to influence the estimates | The age group 30-39 are underrepresented with 2,2 pp, the age group 40-49 are overrepresented with 2,7 pp. Oslo and Akershus county are overrepresented with 1,8 pp. | Females are overrepresented with 4,4 pp, the age group under 30 are underrepresented with 5,0 pp and the age group 30-39 and 40-49 are overrepresented with 2,9 and 5,4 pp. The age groups 50-59 and over 60 are underrepresented with 1,8 and 1,5 pp. |
| Nurses | Only small deviations that are not considered to influence the estimates | Only small deviations that are not considered to influence the estimates | Females are overrepresented with 6,2 pp. The age group under 30 is underrepresented with 1,9 pp. Hedemark and Oppland are overrepresented with 2,2 pp whereas Oslo and Akershus are underrepresented with 1,8 pp. |

Note: pp = percentage points

The estimations shown in table 3 indicate that the sample deviations from population for age, gender and county do not constitute major threats to the representativity of the different samples. However, whereas the average non-respondents rate was 36 percent in the first survey, the corresponding figures for the second data collection compared to the gross number of potential respondents initially contacted (Skaare, 2006, table 21, pp.29) was 64 percent (range 47 percent – 69 percent). A misprint of page 2 and 11 (information from these pages were not used in the present thesis) in the questionnaire in the second survey to an unknown number of respondents may have lead to an even lower response rate than we otherwise could have expected. The final non-respondents rates indicate that generalization, especially from the second wave data, should be done with caution.
Assessments

Burnout

The Maslach Burnout Inventory – General Survey (MBI-GS) (Leiter & Schaufeli, 1996) describes three burnout dimensions: exhaustion, cynicism, and professional efficacy. The inventory was translated into Norwegian by the authors and back-translated by a bilingual native English speaking psychologist. Respondents were asked to what degree different statements corresponded to their own experiences the last month. The original MBI and MBI-GS scales include categories that are not mutually exclusive, such as categories 1 and 2: “a few times a year or less” and “once a month or less” (Barnett, Brennan, & Gareis, 1999). Instead, the present study applied a five-point scale ranging from 1 (“do not agree”) to 5 (“totally agree”).

The exhaustion dimension was measured by the five original MBI-GS items, whereas the cynicism and professional efficacy dimensions were changed. The main aim of changing the cynicism variable was to improve the reliability and validity by focusing on disengagement from work in general and to reduce the conceptual overlap with the two other dimensions. In previous studies the internal consistency of the cynicism dimension has been low (Bakker, Schaufeli, Sixma, Bosveld & van Dieren, 2000; Demerouti et al., 2003; Demerouti, Bakker, Nachreiner & Schaufeli, 2001; Schutte, Toppinen, Kalimo & Schaufeli, 2000), possibly reflecting multidimensionality in this construct (Schaufeli et al., 1998). In accordance with some previous studies (Salanova & Schaufeli, 2000; Schutte et al., 2000), the cynicism item “I just want to do my job and not be bothered” was excluded. In addition to indicating cynicism, it may be interpreted as describing high job engagement (Schutte et al., 2000). The two items “I have become more cynical about whether my work contributes to anything”, and “I doubt the significance of my work” were clearly ambiguous, and conceptually overlapping the professional efficacy dimension. These three excluded MBI-GS cynicism items were replaced by two items from the disengagement scale of the Oldenburg Burnout Inventory (OLBI) (Demerouti et al., 2003) (“It happens more and more often that I talk about my work in a derogatory way” and “Lately, I have tended to think less during my work and...
just execute it mechanically”) and one item formulated by the authors of the present study ("what I previously thought was challenging at work is now mostly a nuisance"). The intention was to remove the described ambiguity and to add behavioral and cognitive aspects to this burnout dimension. Because the modified cynicism dimension focuses on change from involvement to disengagement, it has been labeled "disengagement" in paper II and III.

In paper I, a confirmatory analysis of the modified MBI-GS showed that the two original MBI-GS items “I have become less enthusiastic about my work” and “I have become less interested in my work since I started this job” had a high amount of shared error variance, probably reflecting precision alternatives of the same subject. When the first item of these two was excluded from the analysis, model fit improved (Langballe, Falkum, Innstrand & Aasland, 2006). In other words, both conceptual and statistical reasons indicated that this item should be removed, and this was done in paper II and paper III in the present study.

Professional efficacy was measured by five of the original six MBI-GS items. The original MBI-GS item “I feel exhilarated when I accomplish something at work” was excluded from the present study due to its potential multidimensionality. A low score may be interpreted as a feeling of low professional efficacy as well as a lack of engagement in one’s work (i.e., disengagement/cynicism). The original MBI-GS item “At my work, I feel confident that I am effective at getting things done” was worded slightly different in the Norwegian translation: “At work I have a good feeling of being of use.” The intention was to make the item more relevant to occupations in which effectiveness in the narrow sense is not necessarily a primary goal (e.g. church ministers). Whereas the original MBI-GS included 16 items, the modified MBI-GS used in the study II and III included 14 items measuring three correlated factors: exhaustion (five items), disengagement (four items), and professional efficacy (five items) (see appendix IV).

In line with reviewers’ advice, the different burnout models were tested in one sample in paper I, merging individuals from all occupations together. As a consequence interesting information on the three factor model used to assess burnout in the different occupational groups was not reported in paper I. Factor loadings, correlations between the burnout dimensions and variances and covariances of the latent variables obtained in
the multi-group analyses of the 15 item inventory, and the 14 item inventory, are therefore reported in Appendix V. Even though the three factor structure of the burnout measure is supported across the different occupations in both analyses, further insight in the theoretical structure in the different groups when using a 15 item inventory opposed to a 14 item inventory can be derived by examining the correlations, covariances and variances of the latent factors. Whereas the correlations between exhaustion and disengagement were high in all groups, professional efficacy correlated only moderately with the two other dimensions. A central finding for the interpretation of the following analyses in this thesis is that the correlation between exhaustion and disengagement increased from a mean correlation of 0.72 (range 0.69-0.76) to 0.82 (range 0.80-.84) when one item was omitted from the disengagement scale. Because of the high correlation between exhaustion and disengagement in all groups in the 14 item inventory used in paper II and III, multicollinearity had to be adjusted for and discussed. Our results indicated that the number of factors and the pattern of factor loadings were equivalent across all three groups. According to Byrne (1991), instruments are often group specific in the way they operate and, thus, to expect the final model to be completely identical for each group would be unrealistic.

Musculoskeletal pain
A total of nine items from The Subjective Health Complaint Inventory (SHC) concerning subjective health complaints experienced the last month were included in our questionnaires. The responses were scored on a four point scale ranging from “not at all” to “severe” (Eriksen, Ihlebaek, & Ursin, 1999). Six of these indicators, measuring pain in the head, neck, shoulders, upper back, lower back and arms, had clustered with factor loadings above 0.40 in a previous study using principal component analysis with Varimax rotation (Eriksen et al., 1999). Pain in these body sites are often associated with exposure to psychosocial work environmental stressors (Bernard, 1997; Larsman, 2006). A multigroup confirmatory factor analysis including all eight groups was conducted prior to the main analysis in paper II to investigate the factorial validity of a latent variable consisting of these six items assumed to measure general stress-related musculoskeletal

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pain. However, the original six item model proved to have poor fit to the observed data in our CFA analysis ($\chi^2(142)=894.7$, RMSEA=0.096, NNFI=0.94, CFI=0.93) whereas a model where the item measuring pain in the arms was excluded showed good model fit ($\chi^2(96)=338.6$, RMSEA=0.066, NNFI=0.97, CFI=0.97). This latter five item SHC model was used to analyze the relationship between burnout and musculoskeletal pain in paper II.

**Sickness absence**

The respondents were asked to report how many days they were absent from work due to sickness during the previous six months at both Time 1 and Time 2. If they had sickness absence during this period they were asked whether they attributed it to physical or psychological work strain (low, medium, or high degree), or if it was not at all related to work factors. The sickness absence variable was highly skewed with an overweight of respondents reporting no absence at all, or only a few days during the last six months. The subjective ability to recall the exact number of absence days was assumed to vary considerably. To decrease the skewness, the sickness absence variable was converted into a variable with four categories according to the number of absence days reported the last six months: 1= no absence days, 2= 1-5 absence days, 3= 6-14 absence days, and 4= 15 absence days or more. We wanted to investigate the relationship between burnout and sickness absence attributed to physical or psychological strain at work. Hence, the sickness absence variable used in the analyses included both respondents with no absence at all and those stating that the sickness absence was due to physical or psychological work strain. Respondents with sickness absence attributed to factors outside of the work domain were excluded from the analyses.

**Statistical analyses**

In all studies, input data consisted of raw data that were stored in SPSS 14.0. In all papers included in this thesis, structural equation modeling (SEM) (Bollen, 1989; Byrne, 1998; Hoyle, 1995) was used for the statistical analyses by means of LISREL (Linear Structural RELationship) (Jöreskog & Sörbom, 1996). SEM has several advantages compared to
older generations of multivariate procedures. It has a confirmatory, hypothesis testing approach (see Bollen, 1989), meaning that both the measurement and the structural model are tested simultaneously. Both latent and observed variables can be used for the analyses (Byrne, 1998). Measurement errors are corrected for when latent variables are included in SEM analyses. Papers I and II are based on the cross-sectional data from Time 1 whereas in paper III, material from both data collections were used for the analyses. In paper I, confirmatory factor analysis (CFA) was used to investigate the factorial validity of the modified version of the Maslach Burnout Inventory - General Survey. In paper II, regression analysis using Cholesky factorization and covariance structure latent means is used to investigate the relationship between burnout and musculoskeletal pain. Cholesky factorization was implemented to control for potential multicolinearity between two of the dependent factors in the regression analysis. Instead of simultaneous estimations of the independent latent variables, Cholesky factorization is a hierarchical procedure within the structural equation framework (De Jong, 1999). The regression coefficient is first estimated for one of the dependent latent variables. Then, when the second dependent latent variable is added to the model, the regression coefficient is estimated while controlling for the first dependent latent variable in the model.

In paper III, the relationships between the three burnout dimensions of the MBI-GS and sickness absence were investigated using latent growth curve models, which is a unique procedure to measure change (Bollen & Curran, 2006). Repeated measures and ANOVA and mixed linear models (MLM) are special cases of latent growth curve models (Meredith & Tisak, 1990), and the different methods share some characteristics. The three procedures can provide the same growth estimates such as mean levels and variation, but latent growth curve models have some advantages compared to the other two methods. It provides more flexibility in the measurement of change than ANOVA because of its ability to approximate random changes in measurement errors, and compared with both ANOVA and MLM, latent growth curve has the ability to use variables as independent and dependent in the same model and analyze inter-individual differences in change simultaneously (Duncan, Duncan, Strycker, Fuzhong & Anthony, 2006). The data collection was conducted in 2003 and 2005. Representative sample of each occupational group were drawn and burnout was measured at two occasions with a
relatively long time interval. The respondents may have been in the beginning or in the
middle of their careers or close to pension age when the questionnaire was sent out the
first time. Hence, a basic assumption is that the individuals may well have different
intercept levels at time 1 and different trajectories from time 1 to time 2. In latent growth
curve analysis, it is possible to measure individual processes and incorporate time-
specific measurement error in the analysis of longitudinal data when individuals are
assumed to differ not only in their intercept levels at the start of the process but also in
trajectories over time (Meredith & Tisak, 1990). Because we had relatively few
respondents compared to the number of parameters being analyzed in the longitudinal
investigation in paper III, it was decided not to separate female and male respondents.
However, to enhance the statistical power of the analyses, missing data was imputed by
matching, or so called Similar Response Pattern Imputation (SRPI) (Brown, 1994;
Jöreskog, 2005).
MAIN FINDINGS

Paper I
The factorial validity of the Maslach Burnout Inventory – General Survey in representative samples of eight different occupational groups

Background: The Maslach Burnout Inventory - General Survey (MBI-GS) is designed to measure three sub-dimensions, exhaustion, cynicism and professional efficacy, of burnout in a wide range of occupations. The aim of this paper was to examine the factorial validity of a modified version of the MBI-GS across eight different occupational groups in Norway: lawyers, physicians, nurses, teachers, church ministers, bus drivers and people working within advertisement and information technology (N=5024). The modifications of the MBI-GS were based on findings from previous studies. Most changes concerned the cynicism dimension, where three out of the five original items were replaced by other items considered less multifactorial and ambiguous. One of the professional efficacy items was not included in the analyses, and another was slightly changed.

Method: Multigroup confirmatory factor analysis using LISREL.

Results: In the first procedure, confirmatory factor analyses in each occupational group showed that the hypothesized three factor model had sufficient fit in all occupations except for the group of people working within advertisement. An inspection of the modification indices revealed a high amount of shared error variance in all groups between the two original MBI-GS cynicism items “I have become less interested in this work since I started in this job” and “I have become less enthusiastic about my work” in the cynicism dimension. A high degree of shared error variance may indicate precision alternatives of the same subject. In four out of eight occupations, the differently worded professional efficacy item “At work I have a good feeling of being of use” (original: “At my work, I feel confident that I am effective at getting things done”) was suggested to
also load on the latent cynicism dimension to improve the model fit. Hence, even though the change from effectiveness to a more general experience of usefulness was done to increase the relevance in different lines of work, the different wording of this item did, unfortunately, not remove the previously demonstrated ambiguity of the original item.

All occupations, except the group of people working within advertisement, were then combined into one sample to test different factor models of burnout suggested in previous studies (i.e. a one factor model, two different two-factor models and a three factor model). The intention was to focus more on the model testing as such than on the minor differences between the professions. Therefore, the model tests from the multigroup analysis were re-run with the complete 15-item inventory and a 14-item inventory where one item was omitted from the original inventory based on the outcome of the previous analyses. The three factor model had clearly better fit than the alternative one-factor and two factor models. An additional analysis of the advertisement group was conducted to investigate whether the alternative one factor or the two different two factor models would provide a better model fit. This proved not to be the case.

**Conclusion:** Given the modifications of the burnout measurement in the present study, the results provide support for the three factorial structure of the modified MBI-GS measurement in several occupations. The exception was for the advertisement group. To date, very little research has been done to examine burnout in this occupation.
Background: This study investigated the relationship between burnout and musculoskeletal pain in the head, neck, shoulders and back in representative samples of lawyers, physicians, nurses, teachers, church ministers, bus drivers and people working in information technology in Norway (N=4507).

Method: The cross-sectional data from the first survey round were analyzed using multigroup covariance structure latent mean analysis with Cholesky factorization.

Results: The exhaustion dimension of burnout was positively associated with musculoskeletal pain in all groups, and the strength of the relationship ranged from moderate to strong. The disengagement dimension of burnout was negatively associated with musculoskeletal pain in some groups, but the association was not as strong as the exhaustion-musculoskeletal pain relationship. Professional efficacy was slightly weaker and inconsistently (i.e. both positively and negatively) associated with musculoskeletal pain in some groups. The results also disclosed larger differences in the strength of the relationships between different occupational groups than between males and females within the same profession.

Conclusion: The study indicates that the burnout components exhaustion and disengagement are related to musculoskeletal pain, but the strength of the associations varies by occupation and gender. This indicates that working conditions may be a stronger predictor of the co-occurrence of burnout and musculoskeletal pain than gender. It is noteworthy that an increase in disengagement scores in some of the occupations was associated with a decrease in musculoskeletal pain. These findings suggest that whereas exhaustion may lead to physical tension and musculoskeletal pain, disengagement from work may have the opposite effect. The demonstrated co-occurrence of burnout and musculoskeletal pain in most of the occupational groups may inform both preventive, diagnostic and treatment considerations.
Paper III
Burnout and Work-Related Sickness Absence. A Longitudinal Study Among Seven Different Occupational Groups in Norway.
Submitted to Journal of Organizational Behavior.

Background: In this study we examined the association between burnout and sickness absence attributed to stressors at work in a two-wave study including samples of seven different occupational groups in Norway (N=2450). We wanted to examine whether changes in burnout scores were reflected in changes in sickness absence when the sickness absence was attributed to work-related strain by the respondents.

Method: Latent growth curve analysis by means of LISREL.

Results: Of the three burnout dimensions (exhaustion, disengagement and professional efficacy), exhaustion was the one strongest associated with sickness absence at baseline in all occupational groups. Changes in burnout scores explained a substantial share of the changes in the sickness absence variable in physicians (27.4%) and a relatively high share in church ministers (18.4%), lawyers (14.3%), information technology workers (16.6%) and bus drivers (15.0%). Low predictive values were found among nurses (4.7%) and teachers (9.2%).

Conclusion: Surprisingly low predictive values of changes in burnout scores on changes in work-related sickness absence were found in nurses and teachers. These are classical human service professions originally assumed to have high risks of burnout. Thus, it was expected that changes in burnout scores would explain a considerable amount of the variance of changes in work-related sickness absence. However, vacation among teachers and part-time work among nurses may act as buffers against sickness absence in addition to the fact that both these groups are characterized by early exits from the labor market. For the other occupational groups, the predictive value of changes in burnout scores on changes in sickness absence attributed to work-related strain both within and outside the human service sector was considerable. The most important implication of the present study concerns the importance of making an effort to detect symptoms of burnout at an early stage. By implementing the necessary steps to maintain the workers’ workability, burnout and sickness absence may be reduced.
DISCUSSION

Research on the relationship between burnout and health outcomes has been limited (Maslach, 2001, p. 609). The aim of this thesis was to increase our knowledge on burnout and its association with musculoskeletal pain and work-related sickness absence in different occupational groups. The specific findings of each of the empirical studies are discussed in the papers. In this section methodology and general implications of the studies are discussed as well as suggestions for future research.

Methodological considerations

Reliability and validity

Structural equation modeling (SEM) was chosen for the analyses of the hypothesized models because of the ability of these procedures to correct for measurement errors and test latent variables and their relationships simultaneously in complex models. A score is unreliable to the degree that it contains measurement error (Neale & Liebert, 1973). Reliability refers to the consistency of a measure and to whether a "true" score has been obtained in a survey (Kline, 1993). If items do not represent anything systematic they do not represent the intended construct. In other words; "A reliable measure is one that is repeatable and consistent whereas an unreliable measure provides results that are unrepeatable and inconsistent" (Zeller & Carmines, 1980, p.48). Chronbach's $\alpha$ is one of the most commonly used measures of internal consistency. In this study, except for professional efficacy in bus drivers (a=.64 in females, $a=.68$ in males) and musculoskeletal pain in physicians ($a=.66$ in females, $a=60$ in males), male lawyers ($a=.64$) and church ministers ($a=.69$), the $a$ for each sum-score indices were $.70$ or higher, indicating acceptable levels of internal consistency (Nunnally, 1978). Since sickness absence was analyzed using only one observed variable, neither measurement error nor Cronbach alpha could be estimated. All the analyses in this thesis are based on self-reported data, and in the sickness absence variable difficulties in recalling the exact number of absence days was assumed to be present. This may constitute a threat to the
reliability of this variable. On the other hand, the registration of sickness absence
attributed to strain at work increased our chance to make valid interpretations of the
relationship between burnout and sickness absence perceived as work-related by the
respondents.

Validity refers to whether a variable measures what it is supposed to measure
(Bollen, 1989). The measurements used to assess burnout and musculoskeletal pain were
found to have good psychometric properties and to conform adequately with the intended
operationalisations in this thesis. In paper II and III, validity issues concerned to what
extent conclusions about causal relationships could be drawn between the independent
and the dependent variable. A major difference between the study designs of the papers II
and III in this thesis is that paper II had a cross-sectional design and paper III had a
longitudinal design. In a cross-sectional study, a directional path can be assumed, but
when measured at the same point in time it is impossible to test whether one factor is the
precursor or consequence in a hypothesized relationship. In the case of paper II, we found
associations between the investigated variables, but it must be underscored that the
relationships could be bidirectional. Paper III was based on a two-wave study, examining
different dimensions developing at the same time. The parallel process model involves
some limitations concerning to what extent the causal direction is tested. The model
examines the extent to whether changes in the three burnout dimensions combined
predict changes in the sickness absence dimension, but the study design does not preclude
that the direction of the relationship may be the opposite of the one in the specified
model. In different explanatory models, it is important to separate between correlations
and explanations (Føllesdal, Walløe & Elster 1992). In this case, a “theoretical common
sense” indicates that burnout occurs before sickness absence (even though it is not
completely illogical that sickness absence may cause illness).

Stability of the burnout measure

Only linear trajectories can be measured in a two-wave study, and estimations of stability
and change may therefore have limited reliability. A relevant question in this regard is the
extent to which burnout scores should be expected to increase or decrease with time, or to
remain rather stable. A multi-group analysis including all groups except for respondents working in advertisement was conducted to test the stability of the MBI-GS used to assess burnout from time 1 to time 2 in the present datasets. The results showed a good model fit to the observed data ($\chi^2=6622.8$, df=2478, RMSEA=0.069, CFI=0.96, NNFI=0.96) and all of the 28 items loaded significantly on the predicted burnout factor. The Time 1/Time 2 correlations ranged from 0.58 to 0.72 for exhaustion, from 0.44 to 0.65 for disengagement and from 0.56 to 0.67 for professional efficacy. Burnout is supposed to assess a state that is influenced by current situational characteristics (Schaufeli & Enzmann, 1998). In light of the long time span between measurements, and how the situations may have changed for the different individuals in this period, these stability estimates may be considered moderate to high. The findings are in line with previous studies, and may reflect that burnout is more a chronic than transient problem (see e.g. Hallberg, 2005; Schaufeli & Enzmann, 1998).

**Generalization**

Can the findings be generalized to the populations from which the samples are drawn? The first two papers in this thesis were based on cross-sectional data from the first survey round in which missing data did not constitute a serious problem in most groups. Hence, the results from paper I and paper II are considered fairly generalizable to the occupational groups included in the investigation. When data from the second survey round were included and respondents with sickness absence not related to working conditions were excluded in paper III, the low number of respondents was considered a serious threat to both generalizability to the populations in question, but also to the statistical power of the analyses. In paper III, males and females were analyzed combined within each occupational group to enhance the statistical power. However, this approach has reduced generalizability of the findings because sub-group effects may be disclosed. Future studies with numbers of respondents large enough to investigate gender differences in the burnout – sickness absence relationship in representative samples are recommended.
Strengths and limitations

The research questions in the two first papers were examined in large representative samples (see the section above), and all the analyses were conducted using modern methods within the SEM framework. However, this thesis also has some limitations. A major difficulty within this field of research is the persisting conceptual problems: When is a person burned out? What characterizes the burnout state? Burnout is not a clinical diagnosis in Norway, and the questionnaire data collected cannot be used to categorize respondents as either burned out or not. In all the studies included in this thesis, burnout was therefore analyzed as a continuous variable, and the main focus was to learn more about the relationship between burnout and other factors, not to monitor the occurrence of burnout in society.

Burnout is a complex syndrome involving several signs and symptoms, and a multitude of etiologies are suggested (Schaufeli & Enzmann, 1998). The findings in the present thesis can be used for general information on burnout and health related issues in given populations, but do not directly concern the individual, psychological mechanisms involved. To learn more about this, interview-based research on sick listed, burned out people from different occupational groups is needed.

In the group of people working in advertisement the model fit to the observed data was poor for all of the examined models. Interpretations of the latter findings were complicated mainly by two factors. Firstly, due to an overlapping use of different titles people not necessarily in the advertisement business may also have been included in this group. Secondly, the response rate in this group was low (52%). Theoretically there is no obvious reason why the modified version of MBI-GS should have a poorer model fit in this group than the other occupations. In addition, the low response rate and the mixture of people included in this group make it difficult to ascertain that the sample is really representative for people working in advertisement. For these reasons, it was decided to preclude the advertisement group in the analyses reported in paper II and III.

Statistical power is critical to the detection of meaningful differences. In paper III, to enhance statistical power, males and females within the same occupation were analyzed together and missing data were imputed by matching, so called Similar Response Pattern Imputation (SRPI) (Brown, 1994; Jöreskog, 2005). This imputation
method is available in the PRELIS software package and replaces missing values with observed data from cases having similar response patterns for a set of matching variables. With ordinary listwise deletion, 1444 responses remained in the dataset before imputation was conducted. When SRPI had been implemented, the total sample used in the analyses included 2450 respondents, a change that clearly increased the statistical power.

Notwithstanding the advancements provided by SEM compared to other available statistical methods, a drawback is that more complex models tend to increase the number of parameters compared to the number of respondents.

Another limitation concerns the changing of the scale and the items included in the cynicism/disengagement variable. Although considered an improvement of the MBI-GS inventory, it may complicate comparisons with other studies using the original scale and items.

**General findings and their implications**

In paper I the factorial validity of a modified version of MBI-GS was investigated. Particularly the cynicism dimension had been changed to add behavioral and cognitive aspects. In all occupations except in the group of people working within advertisement the three dimensional model had an acceptable, and much better model fit to the observed data than the one- and two-dimensional models that were analyzed. The results lend support to the assumption that burnout is a syndrome consisting of three distinct but related constructs and that the modified MBI-GS can be used to assess burnout in different occupational groups in Norway. These findings are in line with a Norwegian study testing the factorial validity of the original MBI-GS in four different occupational groups (police officers, air traffic controllers, journalists and construction managers) (Richardsen & Martinussen, 2005)

The results of paper II showed that exhaustion and musculoskeletal pain were moderately to strongly associated in both genders in all occupations. One of the main findings was that the strength of the relationship differed more by occupation than by gender. Disengagement and musculoskeletal pain were associated in some groups, but this relationship was negative, indicating that increased disengagement may decrease
musculoskeletal pain. Professional efficacy was slightly weaker and inconsistently (i.e. both positively and negatively) associated with musculoskeletal pain in some groups. In paper III it was found that changes in burnout scores predicted changes in work-related sickness absence in the majority of the investigated occupations. The findings from paper II and III can be summed up for each occupational group like this:

- Bus drivers: The association between burnout and musculoskeletal pain was strong and the relationship between burnout and work-related sickness absence was relatively high.

- Lawyers: Burnout was moderately associated with musculoskeletal pain and work-related sickness absence.

- Nurses: The association between burnout and musculoskeletal pain was strong whereas the relationship between burnout and work-related sickness absence was relatively weak.

- Information technology workers: Burnout was clearly associated with musculoskeletal pain and moderately associated with work-related sickness absence.

- Church ministers: The association between burnout and musculoskeletal pain was strong, particularly in females, and there was a moderate relationship between burnout and work-related sickness absence.

- Teachers: The association between burnout and musculoskeletal pain was strong in females whereas the relationship between burnout and work-related sickness absence for both genders combined was relatively weak.

- Physicians: The association between burnout and musculoskeletal pain was relatively low whereas the relationship between burnout and work-related sickness absence was high.

Occupational characteristics that may explain the findings are discussed in the papers. In more general terms, the moderate to strong associations found between exhaustion and musculoskeletal pain in all groups may have developed from complex mechanisms.
including physiological, biomechanical and psychosocial factors. Musculoskeletal disorders cause a considerable share of the official sickness absence rates in Norway (Svalund, 2005), as in the rest of the western world (Brooks, 2006). The results of this thesis suggest that burned out cases can be hidden behind musculoskeletal diagnoses, or any of the other related diagnoses presented in the introduction of this thesis. Medical work includes establishing a diagnosis, assessing work capacity and discussing the pros and cons of sick leave with patients. Even though many physicians must make decisions on sickness certifications, few studies have addressed physicians' practices in this area (Alexanderson & Nordlund, 2004; Epstein et al., 2006). In the present study, burnout was directly reflected in sickness absence perceived as work-related in many of the different occupations. This implies that burnout may constitute a social and political problem in modern work life. Remarkably few scientific studies have however investigated the potential consequences of sickness absence (Alexanderson & Nordlund, 2004). From an occupational health perspective, the social implications for the burned out person, as well as the implications for his colleagues, friends, and family members that either step in or care for the burned out individuals represent a major concern.

**Future research**

For preventive purposes, research is needed to better understand the interaction between the complex physiological and psychosocial factors involved in the relationship between burnout and musculoskeletal pain, preferably with longitudinal designs. For diagnostic and treatment purposes, research should address the relationship between burnout and possible consequences such as drug abuse, smoking habits and other lifestyle factors that in the long run may affect the somatic and mental health. Knowledge of the sickness absence (the duration's of the absence spells and the number of spells) associated with, or caused by burnout is scarce. For work organizations and health care providers such insight could inform both treatment interventions and work rehabilitation on the individual level. Furthermore, the rapid changes in modern work organizations and the demands resulting from them should be continuously and scientifically monitored and analyzed on a public health level.
Conclusion

The findings of this thesis support the use of the modified MBI-GS to assess burnout in different professions. The results also indicate that burnout may involve somatic symptoms or outcomes, such as musculoskeletal pain, in addition to the psychological ones, and that it may cause work-related sickness absence. The strength of the relationships in the different occupational groups varied, demonstrating that a multitude of factors may be involved in the generative process. An overall conclusion may be that occupation seems to have some impact on how burnout is expressed by the individuals, either in symptoms or in consequences, underscoring the importance of continued interdisciplinary research in this field. Musculoskeletal pain and sickness absence constitute serious problems in a public health perspective. The clear relationship found in several groups between these two health outcomes and burnout suggest that workplaces and organizations will gain from detecting and dealing with symptoms of burnout among the employees at an early stage.
REFERENCES


The Factorial Validity of the Maslach Burnout Inventory–General Survey in Representative Samples of Eight Different Occupational Groups

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The Maslach Burnout Inventory–General Survey (MBI-GS) is designed to measure the three subdimensions (exhaustion, cynicism, and professional efficacy) of burnout in a wide range of occupations. This article examines the factorial validity of the MBI-GS across eight different occupational groups in Norway: lawyers, physicians, nurses, teachers, church ministers, bus drivers, and people working within advertising and information technology (N = 5,024). Separate confirmatory factor analyses using LISREL showed that the hypothesized three-factor model had sufficient fit in all occupational groups except for the group of people working in advertising. In a multigroup analysis including all occupations but the latter one and in an analysis of all individuals combined into one sample, the three-factor model had a clearly better fit than the alternative one-factor and two-factor models.
The results support that MBI-GS provides a suitable measurement to assess burnout across a diversity of professions.

Keywords: burnout, Maslach Burnout Inventory-General Survey, confirmatory factor analysis, factorial validity

INTRODUCTION

According to Maslach (1993), burnout is “a psychological syndrome of emotional exhaustion, depersonalization and a feeling of reduced professional accomplishment that can occur among individuals working with other people in some capacity” (p. 20). Emotional exhaustion is considered a typical stress reaction due to prolonged exposure to work demands, whereas depersonalization is believed to be a way of coping with exhaustion by mentally distancing oneself from one’s work particularly in relationship to the service recipient. As a consequence of exhaustion and depersonalization, a sense of reduced professional accomplishment or inefficacy may arise. Consistent with this theory, burnout is the endpoint of a sequential process that develops over time. It is assumed that common characteristics in the human service professions are central in the development of burnout due to the emotionally charged contact between caregiver and recipient, a contact often governed by principles of inequality (Buunk & Schaufeli, 1993; Van Dierendonck, Schaufeli, & Buunk, 2001). The most commonly used burnout assessment instrument, the Maslach Burnout Inventory (MBI), is based on the aforementioned definition.

Burnout Outside the Human Service Professions

Recent studies have demonstrated that general job stressors such as workload, time pressure, and role conflicts may be just as important as client-related stressors in the development of burnout (Maslach, Schaufeli, & Leiter, 2000). It has therefore been argued that burnout can be a potential health problem in all occupational sectors (Bakker, Demerouti, & Schaufeli, 2002; Leiter & Schaufeli, 1996; Toppinen-Tanner, Kalimo, & Mutanen, 2002). To assess burnout outside the human service professions, several new instruments have been developed. To date however, most of these instruments have not demonstrated sufficient factorial validity (Demerouti, Bakker, Vardakou, & Kantas, 2003). The MBI-GS is a modified version of the MBI designed to assess burnout in occupations that involve working closely with people as well as in professions without direct contact with service recipients (Leiter & Schaufeli, 1996). The MBI-GS consists of three dimensions that are parallel to the dimensions of MBI: exhaustion, cynicism, and professional efficacy. Instead of focusing on the worker’s relation to service recipients, the items of MBI-GS describe general aspects of the work
experience (Leiter & Schaufeli, 1996). The exhaustion dimension covers affective aspects of exhaustion in general, whereas the cynicism dimension is constructed to reflect active disengagement from work. In the professional efficacy dimension in MBI-GS the focus is more directly on efficacy expectations (Bandura, 1977), as in expectations of effectiveness at work, compared to the parallel in MBI (Leiter & Schaufeli, 1996).

The Dimensionality of Burnout

Even though the three-dimensional structure of MBI has been supported in several studies, both fewer and additional dimensions have been reported (Densten, 2001; Schaufeli, Enzmann, & Girault, 1993). The dimensionality and the processes involved in the development of burnout have been frequently discussed in recent studies and publications. According to some researchers (Cox, Kuk, & Leiter, 1993; Leiter, 1993), the so-called existential model of burnout (Pines, 1993) and the phase model proposed by Golembiewski (Golembiewski, Scherb, & Boudreau, 1993) are considered one dimensional as they represent burnout as a single state. The three-dimensional model on the other hand defines burnout as scoring high on emotional exhaustion and depersonalization and low on personal accomplishment (Schaufeli & Enzmann, 1998). In the existential model, burnout is described as a state of “physical, emotional and mental exhaustion” and is measured by the widely used Burnout Measure (BM). In BM, the degree of burnout is assessed with a single score (Enzmann, Schaufeli, Janssen, & Rozeman, 1998). The phase model proposed by Golembiewski is based on the three MBI subdomains (high/low scores) and considers burnout as the endpoint of a virulent process that develops progressively through eight phases (Golembiewski et al., 1993). Nevertheless in the phase model, burnout is computed by a single burnout score (Schaufeli & Enzmann, 1998). Both of these models were designed to measure burnout outside of the human service professions. Proponents of the three-factor theory hold that the strong focus on exhaustion in these models implies that important information is lost (Cordes & Dougherty, 1993; Enzmann et al., 1998; Leiter, 1993; Schaufeli & Enzmann, 1998; Schaufeli, Leiter, & Kalimo, 1995).

According to some researchers, exhaustion or exhaustion combined with depersonalization (assuming a parallel progression of these two dimensions) constitute the core elements of burnout (Lee & Ashforth, 1996; Leiter, 1993). In some early studies where the original MBI was used to assess burnout outside the human services, the emotional exhaustion and depersonalization dimensions tended to collapse into one factor (Leiter & Schaufeli, 1996). Hence, an alternative to the proposed three-factor model is a two-factor model in which exhaustion and cynicism constitute the first factor and professional efficacy the second factor.

Whereas exhaustion and cynicism are most often viewed as consequences of work overload and social conflicts, reduced professional efficacy is primarily believed to be caused by lack of relevant resources, defined as role ambiguity,
lack of feedback, and lack of participation in decision making (Enzmann et al., 1998; Maslach et al., 2000). It has been demonstrated in several studies that a sense of reduced efficacy develops independently from the other two dimensions (Lee & Ashforth, 1996; Leiter, 1993; Söderfeldt, 1997). Cordes and Dougherty (1993) suggested that reduced personal accomplishment may reflect perceived lack of skills or a feeling of personal failure. In sum, professional efficacy is considered to be the weakest burnout dimension in terms of its relationship with predictor variables (Demerouti et al., 2003; Lee & Ashforth, 1996; Schaufeli & Enzmann, 1998). Consequently, in a second alternative model, exhaustion and cynicism are defined as the core elements of burnout, thereby excluding the professional efficacy dimension. The Oldenburg Burnout Inventory (OLBI) is based on this assumption. This inventory consists of the two dimensions exhaustion and disengagement from work. Contrary to the MBI and the MBI-GS, the OLBI covers physical and cognitive aspects as well as affective ones in both dimensions, whereas disengagement refers to distancing oneself from one's work in general (Demerouti et al., 2003).

The Purpose of the Present Study

With only one exception so far (Salanova & Schaufeli, 2000), the majority of the studies that have used structural equation modeling (SEM) to investigate the factorial validity of the MBI-GS support the proposed three-factor model (Bakker et al., 2002; Demerouti et al., 2003; Kitaoka-Higashiguchi et al., 2004; Leiter & Schaufeli, 1996; Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002; Schutte, Toppinen, Kalimo, & Schaufeli, 2000; Storm & Rothmann, 2003; Taris, Schreurs, & Schaufeli, 1999). Superior fit of the three-factor model compared to the alternative one- and two-factor models has been reported (Bakker et al., 2002; Kitaoka-Higashiguchi et al., 2004; Schutte et al., 2000). An interesting analysis by Taris et al. (1999) revealed that a second-order burnout model fitted the data as well as the proposed three-factor model. This may indicate that burnout can be considered a unidimensional construct. However, to ensure that relevant information is not lost, the three-dimensional construct is generally regarded as more appropriate when studying predictors and consequences of burnout. Leiter and Schaufeli (1996), who developed MBI-GS, suggested that additional work is necessary to consider the applicability of the inventory. To our knowledge, the factorial structure of MBI-GS has not previously been examined by SEM in a Norwegian population. In the present study, the factor structure of the MBI-GS was examined in large representative samples of eight different occupations: bus drivers, lawyers, nurses, people working in advertising and information technology, physicians, church ministers, and teachers. We hypothesized that the three-factor model would have acceptable fit to the observed data in each occupational group when analyzed separately. We also hypothesized that the fit of the three-factor model would be better than those of the alternative one- and two-factor models. This assumption was tested by a multigroup analysis and in an analysis
where all occupational groups were combined into one sample. The intention of the present study was to investigate the applicability of the MBI-GS across groups in a Norwegian setting and if well founded, suggest substantively interpretable changes to improve the inventory.

METHOD

Participants and Procedures

The data included in this study are part of a longitudinal research project on burnout in eight different occupational groups in Norway. For each occupation, a stratified random sample of 1,000 persons was drawn from the central Norwegian registers of employees and employment by the Statistics Norway (SN). The SN administered the person codes and the collection of questionnaires in October 2003. Equal numbers of men and women were drawn from all occupations except in the population of church ministers, which contained only 401 women. Among bus drivers, employees between 50 and 59 years were somewhat overrepresented. Otherwise, the samples were representative of the total population of employees in each occupation. The overall response rate was 64%, and the final sample included 583 bus drivers, 588 lawyers, 684 nurses, 683 physicians, 685 church ministers, 684 teachers, 601 employees in IT, and 517 people working in advertising (Wedde, Holmøy, Skaare & Villund, 2004).

Measures

The MBI-GS

The MBI-GS was translated to Norwegian and slightly modified by the authors. The exhaustion dimension was measured by the five original MBI-GS items, whereas the cynicism dimension was changed. In some previous studies the internal consistency of the cynicism dimension has been low (Demerouti et al., 2003; Schutte et al., 2000). This may be a reflection of multidimensionality in this construct (Schaufeli & Enzmann, 1998). The content of three of the cynicism items in the original MBI-GS seems clearly ambiguous. These three items were replaced by two items from the OLBI Disengagement Scale and one item formulated by the authors of the present study. The purpose was to increase the reliability of this dimension by focusing on disengagement from work in general and to reduce the conceptual overlap with the two other dimensions. One of the excluded items was “I just want to do my job and not be bothered.” This item may indicate cynicism but may at the same time be interpreted as high job engagement (Schutte et al., 2000). For this reason, this item was also excluded from analysis in some previous studies (Salanova & Schaufeli, 2000; Schutte et al., 2000). The two other excluded items were “I have become more cynical
about whether my work contributes anything" and "I doubt the significance of my work." These may overlap with the professional efficacy items due to their emphasis on the social value of one's work. The new items included in the present study were considered less ambiguous and add behavioral and cognitive aspects to the cynicism dimension: "It happens more and more often that I talk about my work in a derogatory way" (OLBI), "Lately, I have tended to think less during my work and just execute it mechanically" (OLBI), and "What I previously thought was challenging at work is now mostly a nuisance" (formulated for this present study).

Professional efficacy was measured by five of the original six MBI-GS items. The original MBI-GS item "I feel exhilarated when I accomplish something at work" was excluded from the present study because of its multidimensionality. A low score may be interpreted as a feeling of low professional efficacy as well as lack of engagement in one's work (i.e., disengagement/cynicism). One professional efficacy item, "At my work, I feel confident that I am effective at getting things done," was worded slightly differently in the Norwegian translation: "At work I have a good feeling of being of use." The intention was to make the item more relevant to occupations in which effectiveness in the narrow sense is not necessarily a primary goal (e.g., church ministers). This change contrasts somewhat with the initial change from personal accomplishment to the more effectiveness-oriented professional efficacy dimension in the MBI-GS but is considered a relevant step toward a more global assessment of burnout.

The original MBI and MBI-GS scales include categories that are criticized for not being mutually exclusive, as for instance Category 1 and 2 "a few times a year or less" and "once a month or less" (Barnett, Brennan, & Gareis, 1999). Hence, a scale where the scores 1 through 5 are equivalent to do not agree/totally agree and point 6 is equivalent to irrelevant was chosen in this study. Persons who reported 6/irrelevant were excluded from the analysis.

The Frequency Distribution

The frequency distribution of the items was examined to assess deviation from normality. Skewness did not exceed 2.0, and kurtosis did not exceed 7.0 for any of the 15 items in any of the occupational groups. Thus, the assumptions of normality were not violated (Curran, West, & Finch, 1996), and the conditions for estimating model parameters with the maximum likelihood method were considered met.

Statistical Analysis

LISREL 8.54 was used for the statistical analyses. Three sets of analyses were conducted.

1. In the first statistical procedure, the factorial validity of the hypothesized model of burnout was examined by separate confirmatory factor analyses (CFAs) in each occupational group. The original three-factor model was specified and fitted to the data. In the separate analyses, the modification indices (MI) were used to inspect specific characteristics of the
MBI-GS indicators. If the modifications suggested were conceptually justifiable, they were applied until reasonable fit was obtained. The use of MI implies that the nature of these analyses change from confirmatory to exploratory. The findings are described in the result section.

2. In the second procedure, the different factor models suggested in previous studies were cross-validated in a multigroup analysis: (a) a one-factor model, (b) a two-factor model including professional efficacy (exhaustion and cynicism were regarded as one dimension), (c) a two-factor model excluding professional efficacy, and (d) the original three-factor model. The factor loadings were set to be invariant in all of the multigroup analyses. The models tested in the present study are illustrated in Figure 1, and the results are presented in Table 1 in the Results section.

3. In the third analysis, all occupations except the group of people working within advertisement were combined into one sample. The intention was to focus more on the model testing as such than on the minor differences between the professions. Therefore,
the model tests from the multigroup analysis were rerun with the complete 15-item inventory and a 14-item inventory where 1 item was omitted from the original inventory based on the outcome of the previous analyses. The results are presented in Tables 2 and 3 in the Results section.

CFAs are statistical procedures within the structural equation modeling framework where models of the relations between latent variables and observed variables are estimated and their correspondence to data are evaluated (Bollen, 1989). In this study, CFA was performed on the covariance matrix of the items. In large samples, the risk of Type I error (i.e., rejecting a true null hypothesis) is present if conclusions are made on the basis of the $\chi^2$-tests only (Hoyle, 1995). The LISREL program provides several other fit indices that are less sensitive to sample size. The fit indices used in this study are the Non-Normed Fit Index (NNFI), the Comparative Fit Index (CFI), and the root mean square error of approximation (RMSEA). The NNFI represents the proportion of the total variance among the observed variables explained by the target model compared with the null model adjusted for degrees of freedom (Hu & Bentler, 1995). The CFI indexes the relative lack of fit by comparing the target model with a null model (Hoyle & Panter, 1995) and is a population measure of model misspecification recommended for model comparison and evaluation of the efficiency of the estimates (Goffin, 1993). Generally, NNFI and CFI scores below 0.9 indicate that the model fit can be improved. Hu and Bentler (1999) suggested that CFI should be close to 0.95 before it can be assumed that there is a good fit between the hypothesized model and the observed data. The RMSEA estimates the overall amount of error per degree of freedom. A RMSEA of 0.05 or less indicates an excellent model fit, 0.05 to 0.08 indicates a reasonable fit whereas 0.08 to 0.10 indicates a mediocre fit. A RMSEA exceeding 0.10 is considered to reflect an unacceptable fit to the observed data (Diamantopoulos & Siguaw, 2000). The internal consistency of the dimensions was measured by Cronbach’s $\alpha$.

RESULTS

Internal Consistency

The internal consistencies of the dimensions were higher than 0.73 in all the samples except for professional efficacy in bus drivers ($\alpha = 0.66$). The exhaustion reliabilities ranged from 0.83 to 0.87, whereas the corresponding ranges for the cynicism and professional efficacy scales were 0.84 to 0.87 and 0.66 to 0.78, respectively.

Separate Confirmatory Factor Analysis of the Three-Factor Model

Assuming that each item loaded on only one factor and that the measurement errors were uncorrelated, separate CFAs were conducted to examine the
three-factor model fit to the observed data in each occupational group separately. The results showed that the proposed unmodified three-factor model provided mediocre fit to the observed data for lawyers, bus drivers, people working in IT, physicians, teachers, church ministers, and nurses (RMSEA = 0.081 to 0.095, NNFI = 0.94 to 0.97, and CFI = 0.95 to 0.97). After just one or two conceptually justifiable modifications suggested by the modification indices, the model fits to the observed data improved considerably and were well within acceptable limits in all these groups. For people working in advertising, however, the initial model fit was poor (RMSEA = 0.111, NNFI = 0.92, and CFI = 0.93), and several modifications had to be conducted to obtain an acceptable result. For all of the occupational groups included in this study, the MI indicated that the fit would improve significantly if the error terms of Items 7 (“I have become less interested in my work since I started this job”) and 8 (“I have become less enthusiastic about my work”) were allowed to correlate. In addition, for lawyers, bus drivers, IT workers, and teachers, the MI indicated it would have a significant impact on the fit if Item 12 (“At work I have a good feeling of being of use”) was allowed to load on both the professional efficacy dimension and the cynicism dimension. For nurses and physicians, the MI suggested that Item 4 (“I feel burned out from my work”) was allowed to load both on the exhaustion and the cynicism factor, whereas for church ministers, it was suggested that the error terms of Items 13 and 14 were allowed to correlate.

In all occupations the items loaded significantly on the intended factors. Except for the relatively low loading of Item 11 (“I have accomplished many worthwhile things in this job”) on the professional efficacy dimension (0.32) among bus drivers, the factor loadings ranged from 0.47 to 0.90. The correlations between the dimensions ranged from 0.66 to 0.77 between exhaustion and cynicism, from 0.35 to 0.61 between cynicism and professional efficacy, and from 0.33 to 0.60 between exhaustion and professional efficacy.

Cross-Validation
Multigroup analyses were conducted to compare the model fits to the observed data for the one-, two-, and three-factor models. In the multigroup analysis, people working in advertising were excluded due to the mediocre fit obtained in the separate analysis. Invariant factor loadings across occupations were specified, and four different factor models were investigated. The results are summarized in Table 1.

Table 1 displays that the fit of the three-factor model was acceptable and superior to those of the one-factor and two-factor models.

One Total Sample
The first analysis showed that the differences in the model fits and the modifications suggested for the MBI-GS instrument were negligible for seven out of
### Table 1

Multigroup Analysis of the Overall Fit of the Alternative Factor Models Measured by the Maslach Burnout Inventory—General Survey (MBI-GS) in Seven Different Occupational Groups (Invariant Factor Loadings Across Samples in All Models)

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>RMSEA</th>
<th>90% CI</th>
<th>NNFI</th>
<th>CFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Null</td>
<td>56970.7</td>
<td>735</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One-factor</td>
<td>9004.7</td>
<td>714</td>
<td>0.145</td>
<td>0.143-0.148</td>
<td>0.87</td>
<td>0.88</td>
</tr>
<tr>
<td>Two-factor (exhaustion and cynicism collapsed into one factor)</td>
<td>6210.0</td>
<td>701</td>
<td>0.120</td>
<td>0.117-0.122</td>
<td>0.92</td>
<td>0.92</td>
</tr>
<tr>
<td>Two-factor (only exhaustion and cynicism)</td>
<td>1901.9</td>
<td>286</td>
<td>0.098</td>
<td>0.936-0.102</td>
<td>0.96</td>
<td>0.96</td>
</tr>
<tr>
<td>Proposed three-factor</td>
<td>3406.8</td>
<td>681</td>
<td>0.085</td>
<td>0.082-0.088</td>
<td>0.95</td>
<td>0.96</td>
</tr>
</tbody>
</table>

Note. RMSEA = root mean square error of approximation; CI = confidence interval; NNFI = non-normed fit index; CFI = comparative fit index.

The eight occupational groups included in this study. Hence, the fit of the three-factor model versus those of the one- and two-factor models was also investigated in the total sample including all individuals from seven of the occupational groups in the present study. The results of the model testing of the full 15-item inventory and a 14-item version of the inventory are presented in Tables 2 and 3.

As shown in Tables 2 and 3, for both versions of the inventory (15 item and 14 item, respectively) the proposed three-factor model had a better fit to the data than the alternative models. Especially the one-factor model and the two-factor model with exhaustion and cynicism collapsed into one factor had poor model fit. The fit of the proposed three-factor model was mediocre for the 15-item inventory. According to a delta chi-square test, the fit of the three-factor model was significantly better for the 14-item inventory ($\Delta\chi^2 = 764, df = 13, p = .001$) and well within acceptable limits.

### DISCUSSION

In this study, the proposed three-factor model of the Maslach Burnout Inventory—General Survey had a reasonable fit to the observed data among lawyers, bus drivers, people working in IT, physicians, teachers, church ministers, and nurses, whereas the fit was poor among people working in advertising. The latter result was unexpected. An additional analysis of this group was conducted to investigate whether the alternative one-factor or the two different two-factor models would provide a better model fit. This proved not to be the case. To date, very little research is done to examine burnout among people working in advertising. This
Table 2
Overall Fit of the Alternative Factor Models Measured by the Maslach Burnout Inventory—General Survey (MBI-GS) in Seven Different Occupational Groups Analyzed as One Single Sample (N = 3,854; 15 items)

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>RMSEA</th>
<th>90% CI</th>
<th>NNFI</th>
<th>CFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Null</td>
<td>55349.47</td>
<td>105</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One-factor</td>
<td>8148.90</td>
<td>90</td>
<td>0.152</td>
<td>0.150-0.155</td>
<td>0.87</td>
<td>0.89</td>
</tr>
<tr>
<td>Two-factor (exhaustion and cynicism collapsed into one factor)</td>
<td>5732.05</td>
<td>89</td>
<td>0.128</td>
<td>0.125-0.131</td>
<td>0.91</td>
<td>0.92</td>
</tr>
<tr>
<td>Two-factor (only exhaustion and cynicism)</td>
<td>1576.52</td>
<td>34</td>
<td>0.104</td>
<td>0.100-0.109</td>
<td>0.96</td>
<td>0.97</td>
</tr>
<tr>
<td>Proposed three-factor</td>
<td>2677.62</td>
<td>87</td>
<td>0.088</td>
<td>0.085-0.091</td>
<td>0.95</td>
<td>0.96</td>
</tr>
</tbody>
</table>

Note. RMSEA = root mean square error of approximation; CI = confidence interval; NNFI = non-normed fit index; CFI = comparative fit index.

Table 3
Overall Fit of the Alternative Factor Models Measured by the Maslach Burnout Inventory—General Survey (MBI-GS) in Seven Different Occupational Groups Analyzed as One Single Sample (N = 3,859; 14 items)

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>RMSEA</th>
<th>90% CI</th>
<th>NNFI</th>
<th>CFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Null</td>
<td>44630.97</td>
<td>91</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One-factor</td>
<td>5750.55</td>
<td>77</td>
<td>0.138</td>
<td>0.135-0.141</td>
<td>0.89</td>
<td>0.90</td>
</tr>
<tr>
<td>Two-factor (exhaustion and cynicism collapsed into one factor)</td>
<td>3438.23</td>
<td>76</td>
<td>0.107</td>
<td>0.104-0.110</td>
<td>0.92</td>
<td>0.94</td>
</tr>
<tr>
<td>Two-factor (only exhaustion and cynicism)</td>
<td>792.56</td>
<td>26</td>
<td>0.084</td>
<td>0.079-0.089</td>
<td>0.97</td>
<td>0.98</td>
</tr>
<tr>
<td>Proposed three-factor</td>
<td>1914.02</td>
<td>74</td>
<td>0.080</td>
<td>0.077-0.083</td>
<td>0.96</td>
<td>0.96</td>
</tr>
</tbody>
</table>

Note. RMSEA = root mean square error of approximation; CI = confidence interval; NNFI = non-normed fit index; CFI = comparative fit index.

indicates that the characteristics in this line of work and the applicability of the MBI-GS for this profession should be explored further.

Psychometrics of the MBI-GS
For lawyers, bus drivers, people working in IT, physicians, teachers, church ministers, and nurses, the model fit improved considerably when the uniqueness of Items 7 ("I have become less interested in my work since I started this job") and 8...
Unless there are clear theoretical or methodological reasons for allowing measurement errors to covary, it should be avoided (Diamantopoulos & Siguaw, 2000). Correlated error terms produce multidimensional factor scores that are difficult to interpret. In this case, the content similarity of Items 7 and 8 indicates that they represent precision alternatives of the same subject. This is the most plausible explanation for the high amount of shared error variance. Consequently, a suggestion for future research would be to exclude one of these items from the MBI-GS. The model fit increased further when Item 12 (“At work I have a good feeling of being of use”) was allowed to load on both the cynicism and the professional efficacy dimensions in four out of the eight of the occupational groups included in the study, indicating that there are alternative interpretations of this item. As intended, the wording of Item 12 in the present study changed the focus from effectiveness to a more general experience of usefulness. However, this does not really seem to have removed the previously demonstrated ambiguity of the item (Leiter & Schaufeli, 1996). The two dimensionality of Item 4 (“I feel burned out from my work”) shown among physicians and nurses is in line with the conception that burnout is a state characterized by both exhaustion and cynicism. If exhaustion and cynicism are supposed to be studied as two different dimensions within the burnout concept, it would be an improvement to the model if this item were reformulated to be more distinctly associated with exhaustion (or cynicism) to prevent an artificially high correlation between the two dimensions. In our view, the inclusion of disengagement items in the cynicism dimension and the moderated focus on effectiveness by reformulating one item have improved the applicability of the MBI-GS to a broad range of occupations.

The Three-Dimensional Model Versus the Alternatives

All the analyses in the present study supported the three-dimensional model, whereas the one- and the two-dimensional models assuming a parallel progression of exhaustion and cynicism were clearly rejected. When cross-validated among seven different occupational groups, the three-factor model of MBI-GS had superior fit to the alternative models, but the fit of the proposed model was only mediocre. The same was the case when the model tests were rerun in the total sample including all the individuals from seven occupational groups. The one-factor and the two different two-factor models did not fit the observed data well. Similar results were obtained by Leiter and Schaufeli (1996). The results of the present research are mainly in accordance with most previous studies that have examined the factorial validity of MBI-GS. In the one sample analysis, the three-dimensional model fit increased significantly when Item 8 was omitted, providing a sound fit to the observed data. Whereas the burnout model with only the two factors exhaustion and cynicism (professional efficacy excluded) showed poor fit in most of the analyses, it had a mediocre but acceptable fit when the
14-item inventory was applied. Nevertheless, in this study, the three-dimensional model of MBI-GS was superior to the alternative models.

**Strengths of the Present Study**

Within psychological research in general and the burnout field in particular, the respondents have a tendency to be recruited from accessible groups of people, for instance students, workers in specific companies, or via advertisements in newspapers or on the Internet. This may lead to biased samples that are nonrepresentative of the population in question. The reliability of a generalization will depend on how well the sample mirrors the population. The fact that the analyses in this research are conducted on large representative data sets with samples of relatively similar sizes provides the tests with solid statistical power (Kaplan, 1995) and warrants generalization of the findings to the specific occupational groups in Norway.

**Limitations and Future Research**

The focus of psychology has mainly been on negative rather than on positive states (Diener, Suh, Lucas, & Smith, 1999; Maslach et al., 2000). However, the aspects of positive psychology are gaining increasingly more ground (Schaufeli et al., 2002). MBI and MBI-GS have been criticized for being vulnerable to response bias because of the one-sidedness of the item wordings in the inventory (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Demerouti et al., 2003). Whereas the exhaustion and the depersonalization/cynicism items are negatively worded, the items of the personal accomplishment/professional efficacy dimension are positively worded. Items with the same sign may easily cluster (Lee & Ashforth, 1990; Tomas & Oliver, 1999). The effects of wording are recognized, but it is not clear whether they represent methodological artifacts or conceptually meaningful distinctions or what analytic approaches should be employed to examine these effects (Horan, DiStefano, & Motl, 2003). Research on the wording effects, for instance by including positively worded items in the exhaustion and cynicism dimensions and negatively worded items to the professional efficacy dimension, is recommendable. Another area that requires further research is the relevance of the burnout construct in the advertisement profession.

**Final Conclusion**

In line with previous research, the assumption that the burnout syndrome consists of three distinct but related factors is strengthened by the findings of the present study. Furthermore, given the modifications of the measurement assessment in the present study, the results provide substantial support for the factorial validity of the MBI-GS across several occupations within and outside the human services.
REFERENCES


The Relationship between Burnout and Musculoskeletal Pain in Seven Different Occupational Groups

By Ellen M. Langballe, Siw T. Innstrand, Knut A. Hagtvæt, Erik Falkum & Olaf G. Aasland

Abstract: This study investigated occupational and gender differences in the relationship between burnout and musculoskeletal pain in the head, neck, shoulders, and back. Representative samples of lawyers, physicians, nurses, teachers, church ministers, bus drivers, and information technology workers in Norway (N=4507) were analyzed using structural equation modeling. The exhaustion dimension of burnout was positively associated with musculoskeletal pain in all groups, and the strength of the relationship ranged from moderate to strong. The disengagement dimension of burnout was negatively associated with musculoskeletal pain in five groups, but it was not as strong as the exhaustion-musculoskeletal pain relationship. Professional efficacy was slightly weaker, and inconsistently (i.e. both positively and negatively) associated with musculoskeletal pain in four of the groups. The results also disclosed larger differences in the strength of the relationships between the occupational groups than between males and females within the same profession. The present study indicates that burnout and musculoskeletal pain are related, but the strength of the associations varies both by gender and occupation. However, occupational factors seem to be stronger predictors of the co-occurrence between burnout and musculoskeletal pain than gender.

Keywords: burnout, musculoskeletal pain, occupational groups, gender, structural equation modeling
INTRODUCTION

Burnout can be viewed as an affective response to work stress in which one’s professional attitudes and behavior change [1]. It is considered a negative state that reflects exposure to one or more stressors over a period of time, and can thus be viewed as a proxy variable to assess work-related stress that has depleted people’s coping resources [2,3]. Burnout is frequently associated with somatic symptoms such as physical exhaustion, headache, nausea, dizziness, and muscle pain [4], but studies on the relationship between burnout and physical health are relatively rare [2,4,5].

Musculoskeletal pain is generally considered a major health problem in the industrialized world [6]. Whereas the underlying pathomechanisms are poorly understood, there is increasing evidence that psychosocial factors related to the job and work environment play a role in the development of musculoskeletal disorders of the upper extremity and back [7,8]. Different psychological reactions and complex neuroendocrine mechanisms are involved when people are exposed to situations perceived as demanding [9]. Physiological, emotional, behavioral and cognitive components influence a person’s perception of pain. Psychobiological sensations involving both the central nervous system and psychological mechanisms may lead to health problems that are difficult to measure objectively [10]. Nevertheless, the individual may perceive them as intolerable [11]. A recent study showed that among those with chronic musculoskeletal pain, only one in four have single-site chronic pain. The rest have pain in multiple sites [12]. This indicate that pain in different body sites most often cannot be considered as isolated cases and that several different biomechanical and psychosocial factors can be involved in the development [13].

Both burnout [4] and musculoskeletal pain [14] are thought to be reactions to perceived stressors at work. It is reasonable to assume that increased psychological strain over a period of time may produce muscular tension, resulting in loss of muscular strength and mobility [15]. The linkage between work-related factors and health outcomes of all varieties is often complex and influenced by a multitude of conditions [7,13,16,17]. Perhaps poor psychosocial work environment may make workers report more injury and illness. However, in an experimental study where subjects were asked to
perform standard lifting under psychosocial stressed and unstressed conditions, the same physical challenge resulted in much greater spine loadings in stressed than in unstressed conditions [18]. This finding indicates a direct interaction between psychosocial stress and biomechanical responses that may partly explain why psychosocial factors can increase the risk for musculoskeletal pain and disorders [18].

Several studies have examined the relationship between musculoskeletal pain and different types of organizational stress (see the recent reviews, 19-21), but so far only two on burnout and musculoskeletal pain. These two studies, both using a nationwide representative sample of the Finnish population, found that burnout symptoms were more prevalent among respondents reporting shoulder pain than among respondents without such pain [22] and that musculoskeletal disorders increased with the severity of burnout, particularly among women [5]. It is well documented that a considerable share of sickness absences and disability pensions are related to musculoskeletal pain in Western societies (see, 23), and it has been reported that the duration of disability caused by musculoskeletal pain tends to be longer if it is associated with burnout [24].

A recent study of physicians' responses to patients with medically unexplained symptoms indicates that potential stressors in the home or work environment often are not sufficiently investigated by the general practitioner. The study revealed that the physicians did not examine psychosocial concerns more thoroughly among patients with unexplained symptoms than among a group of patients with gastroesophageal reflux disease [25]. The finding indicates that medically unexplained health complaints (e.g. burnout and musculoskeletal pain) may in some cases be insufficiently examined by the general practitioners.

The aim of the present study
Whereas the relationship between burnout and gender is not clear-cut [4], previous studies have shown that there are gender differences in self-reported pain, with a higher prevalence of musculoskeletal pain found in women than in men [26]. However, according to a recent study by Bingefors and Isacson [27], the primary explanation probably includes gender disparities at work, economy, daily living, and expectations in women and men. The main research question in this investigation was whether burnout
and musculoskeletal pain are related, and in case, how strong is the relationship in females and males in the different occupational groups?

**METHOD**

*Participants and Procedures*

This paper is based on a survey on burnout in different occupational groups in Norway carried out by the Norwegian medical association and Statistics Norway. The data analyzed in the present study were collected in 2003 and include lawyers, physicians, nurses, teachers, church ministers, bus drivers, and information technology (IT) employees.

For each occupational group a random sample of 1000 persons was drawn from the central Norwegian registers of employees and employment by the Statistics Norway. Equal numbers of men and women were drawn from all occupations except from the population of church ministers, which contained only 401 women, and 599 male church ministers were asked to participate. Among bus drivers, employees between 50 and 59 years were somewhat overrepresented. Otherwise, the samples were representative of each gender in each occupation. The respondents were asked to complete an extensive questionnaire on burnout and related issues. The overall response rate was 64 percent, ranging from 60 percent among lawyers to 70 percent among church ministers. The final sample of 4507 respondents included 583 bus drivers, 588 lawyers, 684 nurses, 683 physicians, 685 church ministers, 684 teachers, and 601 IT workers. The mean age (standard deviation in parentheses) in each occupational group was 38.8 years (10.2) in lawyers, 44.7 years (10.9) in physicians, 41.1 years (10.0) in nurses, 46.2 years (10.7) in church ministers, 44.2 years (10.4) in bus drivers, 45.7 years (11.1) in teachers, and 38.3 years (8.9) in IT workers.

*Measures*

*Burnout.* A modified version of The Maslach Burnout Inventory – General Survey (MBI-GS) was used in the present study. It measures three burnout dimensions: exhaustion, disengagement, and professional efficacy. The inventory was translated into Norwegian
by the authors and back-translated by a bilingual native English speaking psychologist. Respondents were asked to what degree different statements corresponded to their own experiences the last month. The present study applied a five-point scale ranging from “do not agree” to “totally agree”.

Whereas the items in the exhaustion dimension in this study were similar to the MBI-GS originals, professional efficacy was measured by five of the original six MBI-GS items. One professional efficacy item was excluded due to its multidimensionality. The cynicism dimension has been criticized for low reliability and conceptual overlap with the two other dimensions in previous studies [28-30]. For these reasons this dimension was changed. It includes one original MBI-GS item, two items from the Oldenburg Burnout Inventory and one item formulated by authors. The new items were considered less ambiguous and add behavioral and cognitive aspects to the cynicism dimension. Because this modified dimension now focuses more on change from involvement to disengagement from work than the original, it was labeled Disengagement in this study. Hence, the modified MBI-GS used in the present study included 14 items measuring three correlated factors: exhaustion (five items), disengagement (four items), and professional efficacy (five items). This three factor burnout construct has shown a reasonably good model fit in a previous multigroup confirmatory factor analysis [31].

Musculoskeletal pain. Musculoskeletal pain most often occurs in multiple body sites [12]. A critical review of the existing studies on work-related musculoskeletal disorders concluded that the evidence for a relationship between psychosocial factors and upper extremity disorders appears to be strong for neck/shoulder disorders and musculoskeletal symptoms in general [7]. In this study the latent variable Musculoskeletal pain was assessed by five items from The Subjective Health Complaint Inventory (SHC) measuring pain in the head, neck, shoulders, upper back and lower back. In the SHC inventory, respondents are asked to report pain experienced in different body sites during the last month on a four-point scale ranging from “not at all” to “severe” [32].
Statistical analysis

The data were analyzed using structural equation modeling (SEM) with Lisrel 8.80. The association between the burnout dimensions and musculoskeletal pain was examined in a multigroup regression model using covariance matrices. Measurement invariance [33] was tested because invariance constraints are necessary to allow the model to be fitted to several samples simultaneously. In the first model, no restrictions were specified. In the second model, the factor loadings were set to be invariant across the different samples. Lacks of measurement invariance indicate that items may have different meanings in different groups, so that conclusions about group differences (or lack of differences) cannot be accurately interpreted [34-36]. The researcher has to consider whether a violation of the invariance restriction interferes with the intended use of the scale, which in this case was to investigate the relationship between constructs in different occupational groups on a common metric.

Because of a high correlation between the exhaustion and the disengagement dimensions in the different occupational groups (range 0.78-0.91), multicollinearity was considered a potential problem that had to be dealt with. Multicollinearity may occur when highly correlated factors are included in the same regression model. The higher the correlation between the predictor variables the less the chance that unique predictive information is provided by each of them. The regression coefficients may change in magnitude and even in sign. The consequence can be unstable coefficients that are difficult to interpret [37]. For this reason, a regression analysis based on Cholesky factorization was applied to correct for the potential multicollinearity problems. An illustration of the model is presented in figure 1.
In the Cholesky factorization procedure a sequential decomposition of variance was introduced based on the hypothesized causal sequence in the burnout process in which exhaustion is followed by disengagement, which in turn is followed by perceived efficacy at work. First, the regression coefficient of exhaustion on musculoskeletal pain was estimated with a free variance; thus, it was not decomposed. Each of the subsequent burnout dimensions were then predicted by their precursors. According to this method for computing fixed-order regression [38], disengagement and professional efficacy were regressed as phantom factors that do not have their own indicators. Hence, a multigroup analysis with Cholesky factorization was conducted, with 14 groups (gender x occupation), to allow for a comparison of the strength of the relationships on a common scale (common metric completely standardized solution).

In large samples the risk of type I error (i.e., rejecting a true null hypothesis) exists if conclusions are made on the basis of the $\chi^2$-tests only [39]. The Lisrel program provides several other fit indices that are less sensitive to sample size. The fit indices used in this study are the Non-Normed Fit Index (NNFI) [40], the Comparative Fit Index
(CFI), and the Root Mean Square Error of Approximation (RMSEA). Generally, NNFI and CFI scores below 0.9 indicate that the model fit can be improved, but Hu and Bentler [41] suggest that CFI should be close to 0.95 before it can be assumed that there is a good fit between the hypothesized model and the observed data. The RMSEA estimates the overall amount of error per degree of freedom. A RMSEA of 0.05 or less indicates a close model fit, 0.05-0.08 indicates a fair fit, and 0.08-0.10 indicates a mediocre fit. A RMSEA exceeding 0.10 is considered to indicate a poor fit to the observed data [42,43].

RESULTS

Frequency distribution
Mean scores with standard deviation of the observed variables and internal consistencies (Cronbach α) for the three burnout dimensions exhaustion, disengagement and professional efficacy, and musculoskeletal pain are presented in Table 1.
Table 1: Mean scores on observed variables with standard deviations for Exhaustion, Disengagement, Professional Efficacy and Musculoskeletal Pain, and Cronbach $\alpha$ (exhaustion/disengagement/professional efficacy/musculoskeletal pain) for each occupational group and gender (F=Females, M=Males)

<table>
<thead>
<tr>
<th></th>
<th>Exhaustion</th>
<th>Disengagement</th>
<th>Professional efficacy</th>
<th>Musculoskeletal Pain</th>
<th>Cronbach $\alpha$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>Lawyers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>2.41</td>
<td>0.79</td>
<td>1.99</td>
<td>0.80</td>
<td>2.17</td>
</tr>
<tr>
<td>M</td>
<td>2.28</td>
<td>0.74</td>
<td>1.90</td>
<td>0.71</td>
<td>2.08</td>
</tr>
<tr>
<td>Bus drivers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>2.57</td>
<td>1.00</td>
<td>2.31</td>
<td>0.99</td>
<td>2.26</td>
</tr>
<tr>
<td>M</td>
<td>2.40</td>
<td>0.98</td>
<td>2.30</td>
<td>0.91</td>
<td>2.15</td>
</tr>
<tr>
<td>IT workers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>2.50</td>
<td>0.89</td>
<td>2.30</td>
<td>0.86</td>
<td>2.24</td>
</tr>
<tr>
<td>M</td>
<td>2.36</td>
<td>0.59</td>
<td>2.28</td>
<td>0.89</td>
<td>2.12</td>
</tr>
<tr>
<td>Physicians</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>2.55</td>
<td>0.63</td>
<td>1.94</td>
<td>0.75</td>
<td>2.08</td>
</tr>
<tr>
<td>M</td>
<td>2.42</td>
<td>0.70</td>
<td>2.04</td>
<td>0.70</td>
<td>2.06</td>
</tr>
<tr>
<td>Teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>2.80</td>
<td>0.86</td>
<td>2.06</td>
<td>0.81</td>
<td>2.19</td>
</tr>
<tr>
<td>M</td>
<td>2.64</td>
<td>0.90</td>
<td>2.21</td>
<td>0.83</td>
<td>2.06</td>
</tr>
<tr>
<td>Church Ministers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>2.59</td>
<td>0.80</td>
<td>1.98</td>
<td>0.80</td>
<td>2.08</td>
</tr>
<tr>
<td>M</td>
<td>2.36</td>
<td>0.80</td>
<td>1.83</td>
<td>0.68</td>
<td>2.10</td>
</tr>
<tr>
<td>Nurses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>2.48</td>
<td>0.86</td>
<td>1.99</td>
<td>0.76</td>
<td>2.11</td>
</tr>
<tr>
<td>M</td>
<td>2.45</td>
<td>0.82</td>
<td>2.23</td>
<td>0.82</td>
<td>2.08</td>
</tr>
</tbody>
</table>

Note: Range for the burnout dimensions: 1-5: 'do not agree'-'totally agree.' Range for musculoskeletal pain: 0-3: 'not at all'- 'severe'

For all four dimensions, the Cronbach $\alpha$ was acceptable in all groups, indicating good internal reliability and validity. Skewness and kurtosis ranged from -1.2 to 1.3 and from 1.2 to 2.6 respectively for the 14 MBI-GS items in the 14 groups included in this study. For the five musculoskeletal pain items skewness ranged from 0.2 to 2.7 and kurtosis from -1.3 to 3.6, except in four groups, in which the item measuring pain in the upper back had a kurtosis between 5.2 and 8.1. With the exception of the high kurtosis in one of the items in four groups, the assumptions of normality were mainly not violated, and the conditions for estimating model parameters with the maximum likelihood method were considered to be met.

The model fit to the observed data

The path analysis of the four-factor model using the Cholesky factorization procedure showed a reasonably good model fit to the observed data both when there were no model
constraints across groups and when the factor loadings were set to be invariant. The result of the invariance test is presented in Table 2.

Table 2: Multigroup regression analysis of the four factor model - burnout (three dimensions) and musculoskeletal pain (one dimension). Males and females in each of the seven occupational (14 groups) are included in the analyses.

<table>
<thead>
<tr>
<th></th>
<th>$\chi^2$</th>
<th>df</th>
<th>RMSEA (90%CI)</th>
<th>NNFI</th>
<th>CFI</th>
<th>$\Delta \chi^2$ (df)</th>
<th>$\Delta$ CFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Null model</td>
<td>58694.3</td>
<td>2394</td>
<td>0.064 (0.061-0.067)</td>
<td>0.955</td>
<td>0.961</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No common parameters</td>
<td>4247.7</td>
<td>2044</td>
<td>0.066 (0.063-0.068)</td>
<td>0.953</td>
<td>0.957</td>
<td>507.2 (195)</td>
<td>-0.004</td>
</tr>
<tr>
<td>Invariant factor</td>
<td>4754.9</td>
<td>2239</td>
<td>0.066 (0.063-0.068)</td>
<td>0.953</td>
<td>0.957</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The configural invariance criteria were considered met by the good model fit shown in the multigroup analysis with no common parameters across groups. When the two models were compared, the chi square difference test was significant, indicating measurement non-invariance across groups. However, alternative methods to evaluate measurement invariance such as delta CFI and model fit suggested adequate measurement invariance. The delta CFI test was well below the -0.01 limit suggested by Cheung and Renvold [44,45], and the multigroup model exhibited an excellent model fit to the data [46]. According to Byrne [47], instruments are often group specific in the way they operate and, thus, to expect the final model to be completely identical for each group would be unrealistic. Since the homogeneity of variance assumption was not rejected by the delta CFI test and model fit indices, group comparison of the relationship between burnout and musculoskeletal pain was based on the so called metric invariance, or weak invariance [36], where the factor loadings are set to be invariant across groups. Invariant factor loadings on the intended latent construct for exhaustion, disengagement, professional efficacy and musculoskeletal pain, loaded between 0.65-0.84, 0.62-0.77, 0.48-0.69 and 0.41-0.83, respectively.

The relationship between burnout and musculoskeletal pain

There was a significant, positive relationship between musculoskeletal pain and exhaustion in all the occupational groups in both females and males. When compared on
a common metric, the strength of the relationship in one group can be evaluated against the strengths in the other groups. The regression coefficients presented in Table 3 revealed that the strength of the relationship ranged from 0.26 in female physicians to 0.64 in male bus drivers. In male and female bus drivers, and in male IT workers, church ministers and nurses, increased disengagement scores were associated with decreased musculoskeletal pain. Relatively weak relationships with both positive and negative signs were found between professional efficacy and musculoskeletal pain among male nurses, male teachers, and IT workers of both genders.

Table 3: Multigroup analysis of the association between the three burnout dimensions and musculoskeletal pain, regression coefficients. Common metric completely standardized solution.

<table>
<thead>
<tr>
<th></th>
<th>Exhaustion</th>
<th>Disengagement</th>
<th>Professional Efficacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lawyers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>-0.21*</td>
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</table>

*p<0.05.
Note: Factor loading are invariant across groups in the multigroup analysis.

In general, the results of the multigroup regression analysis disclose larger differences in the strengths of the relationships between different occupational groups than between females and males within the same profession. The strength of the significant associations in this study maximally differs by 0.16 between females and males within the same profession (bus drivers) whereas the discrepancy in the association is much larger.
between some of the occupational groups (e.g. lawyers and physicians compared to bus drivers).

DISCUSSION

The main research question in this investigation was whether burnout and musculoskeletal pain are related, and in case, how strong is the relationship in females and males in different occupational groups. The relationship between burnout and musculoskeletal pain was examined among lawyers, physicians, nurses, teachers, church ministers, bus drivers, and information technology (IT) employees. In five of the seven occupational groups the association between exhaustion and musculoskeletal pain was higher among female than among male employees. In line with previous research [5] these findings demonstrate that burnout and musculoskeletal pain often co-occur to a slightly higher degree in females than males within the same occupation. Even so, the results indicated that the association between the three burnout dimensions and musculoskeletal pain varied more between occupations than between males and females within the same profession. This suggests that factors related to occupation may be stronger predictors of a co-occurrence of these two health complaints than gender.

The results showed that the exhaustion dimension of burnout was significantly and positively associated with musculoskeletal pain irrespective of profession and gender. The relationship was moderate to high in all groups, and particularly high in bus drivers. Investigations of burnout in bus drivers are scarce (see, 48,49), and the impact of stress and work-related psychosocial factors on musculoskeletal pain is poorly understood [49]. This study implicates that musculoskeletal pain and burnout symptoms are likely to co-occur in bus drivers. Hence, a comprehensive approach, considering both the physical and the psychological work environment, may be the most efficient way to overcome these sorts of health problems in this occupational group. Moreover, the relationship between exhaustion and musculoskeletal pain was relatively high in information technology workers and nurses of both genders, and in female teachers and church ministers. Static working positions among IT-workers and physically demanding work
tasks such as heavy lifting among nurses may increase the risk for musculoskeletal pain. Interactions between biomechanical and psychosocial factors may therefore partly explain the findings in both these occupational groups. Physical explanatory factors in the work environment are less obvious in female teachers and church ministers. We assume that emotionally demanding work tasks are the most important factors in the two latter groups, but further research in this field is needed.

In the present study the disengagement dimension of burnout was associated with decreased musculoskeletal pain whereas in a previous study high cynicism levels were associated with increased musculoskeletal pain [5]. However, because this burnout dimension were measured with different items and analyzed with different statistical procedures it is difficult to compare the results, but the contradictory findings indicate that the relationship between disengagement and musculoskeletal pain should be further investigated. Nevertheless, in this study significant negative relationship between disengagement and musculoskeletal pain was displayed in bus drivers, and in male IT workers, church ministers and nurses. The strength of this relationship was moderate to low, with the strongest association found among female bus drivers. It is noteworthy that an increase in disengagement scores in these occupations was associated with a decrease in musculoskeletal pain. The findings may imply that whereas exhaustion may lead to physical tension and musculoskeletal pain, disengagement from work may have the opposite effect. Disengagement or cynicism is considered a way to cope with feelings of exhaustion caused by strain at work [1,50-52] and is a significant component of burnout since it may have negative effects on the employee’s productivity and health [53]. On the other hand, it has been argued that disengagement or cynicism is first and foremost a coping strategy, and should not be considered part of the burnout syndrome [54]. The negative relationship between disengagement and musculoskeletal pain found in this study accords with the assumption that disengagement may be regarded as a coping mechanism. At the same time, the high correlations between exhaustion and disengagement may indicate that the two dimensions are indeed related concepts that can be viewed as parts of the same syndrome. In general, there is a need to learn more about potential positive outcomes of different coping mechanisms involved in the stress process [55].
Professional efficacy was weakly and inconsistently (i.e. both positively and negatively) associated with musculoskeletal pain in this study, a result in line with Schaufeli and Enzmann’s [4] conclusion that this third burnout dimension is the least strongly related to potential correlates.

Limitations and future research
The data collection procedures and the acceptable response rate in most groups allow for generalization of the findings to these specific occupations in Norway. The cross-sectional design of the present study may be considered a limitation because it precludes causal interpretations. The interaction between burnout and musculoskeletal pain may intensify the total experience of illness, implying that more interdisciplinary research on the interaction between the psychosocial and physiological mechanisms involved in the burnout process is needed. There is also still more to learn about how burnout and musculoskeletal pain are expressed in different occupations and genders. To be able to study the processes involved it would be valuable to obtain qualitative data from the participants in the quantitative study [55].

Final conclusion
In line with expectations, the findings of the present study indicate a co-occurrence of musculoskeletal pain and both exhaustion and disengagement. The association between exhaustion and musculoskeletal pain was particularly strong and found in all of the investigated groups may. This may indicate that the association is more generally valid. The strength of the relationship varies by occupation and partly by gender. Hence, the present study contributes to increase our knowledge on how burnout may be differently related to physical outcomes such as musculoskeletal pain. The demonstrated association of burnout and musculoskeletal pain may inform occupational specific preventive, diagnostic, and treatment considerations.
REFERENCES


Burnout and work-related sickness absence: A longitudinal study among seven different occupational groups in Norway

By Ellen M. Langballe, Siw T. Innstrand, Erik Falkum, Knut A. Hagtvet & Olaf G. Aasland

Abstract: Sickness absence is considered a potential consequence of burnout, but surprisingly few studies have investigated this relationship. In this study we examine the association between burnout and sickness absence attributed to stressors at work in a two-wave study including seven different occupational groups in Norway (N=2450). Latent growth curve analysis demonstrated that the predictive value of changes in burnout on changes in sickness absence was high among lawyers, bus drivers, IT workers, church ministers and physicians, but low among nurses and teachers. For the majority of the included occupations, the findings imply that work related sickness absence may be reduced if burnout scores are reduced, and conversely, that an increase in burnout scores may contribute to increased sickness absence.

Keywords: Burnout, sickness absence, occupational groups, latent growth curve analysis
INTRODUCTION

The World Health Organization (WHO) considers the workplace one of the most important environmental factors affecting our mental state (WHO, 2005). The influence of the workplace on mental health may be both positive (Lindstrom, 2005) and negative (Lazarus, 1991). Modern work life has gone through major changes during the last decades (McDaid, Curran & Knapp, 2005). Increasing use of information technology, downsizing, outsourcing, subcontracting, and globalization are some of the new challenges working populations have to cope with. Ongoing transitions from industrial to information economies require more mental capacity of the employees, and stress has become one of the most prevalent causes of worker disability (De Vries & Wilkerson, 2003). One potentially negative outcome of exposure to persisting occupational stress that has received increasing attention in the last 30 years is burnout.

The burnout syndrome is considered an emotional reaction to what is perceived as job stress (Cordes & Dougherty, 1993). Several different stressors are potential antecedents of burnout, such as work overload or lack of control, reward, value, community and fairness (see Leiter & Maslach, 2005). Whereas burnout is regarded as a specific outcome of exposure to one- or more stressful conditions combined over a period of time, being burned out is strenuous in itself. The experience of stress can be considered by the individual as a positive force toward a goal or as a meaningful component of life. Whereas stress may involve over-reactive emotions, the state of burnout is characterized by reduced motivation, drive and energy. In other words, burnout can be viewed as a proxy variable to assess work-related stress that has depleted people’s coping resources (Melamed, Shirom, Toker, Berliner & Shapiro, 2006). Hence, by definition stress and burnout are related, but conceptually different. A recent study using structural equation modeling found that these two concepts are highly correlated, but clearly distinct constructs (Smith, Davy & Everly, 2006).

Burnout is often defined as excessive exhaustion, cynicism (or disengagement), and feelings of inefficacy at work (Maslach, Schaufeli & Leiter, 2001). This three-dimensional definition was the basis for the development of the Maslach Burnout Inventory (MBI), the most widely used inventory to assess burnout within this field of
research. The definition above describes burnout as an emotional syndrome whereas symptoms of burnout involve a continuum ranging from minor complaints to a severe, disabling condition (Huibers et al, 2004). The experience of some warning signs may not necessarily indicate the start of a negative development going from bad to worse as in a one-way process (Kristensen, Borritz, Villadsen & Christensen, 2005). If the development, however, reaches a point where a person is too burned out to cope with his or her everyday life, it may be reflected in sickness absence.

Burnout has so far not been acknowledged as a clinical diagnosis (Falkum, 2000). To be able to sick list people suffering from burnout, physicians in Norway have to use other, related diagnoses such as depression, neurasthenia or musculoskeletal pain. Consequently, there are no official reports on the number of people sick listed from burnout.

The association between occupational stress, psychosocial work factors and sickness absence has been the research objective in many investigations, but surprisingly few investigations have directly examined the relationship between burnout and sickness absence from work (Maslach et al; Toppinen-Tanner, Ojajarvi, Vaananen, Kalimo & Jappinen, 2005), and of these studies only the minority had the relationship between burnout and sickness absence as the primary focus. Main research aims were for instance the effect of affectivity on organizational stressors, burnout and absenteeism (Iverson, Olekalns, & Erwin 1998), job stress and work support (Parker & Kulik, 1995), vacation (Westman & Etzon, 2001), reorganization (Harvey & Burns, 1994), variables related to psychiatric sick leave (Moriana & Herruzo, 2006), aggressive passengers (Van Dierendonck & Mevissen, 2002), the job-demand resources (JD-R) model (Bakker, Demerouti, De Boer & Shaufeli, 2003) or conservation of resources (COR) model (Neveu, 2007) as predictor of absence, and family influence on absence (Erickson Nichols & Ritter, 2000; Bekker, Croon & Bressers, 2005). In two different studies among nurses burnout was a significant predictor of both sickness absence and job turnover (Firth & Britton, 1989; Baba, Galperin, & Lituchy, 1999). A study among teachers comparing high and low burnout groups found that higher levels of burnout were associated with poorer physical health and more absenteeism (Pierce & Molloy, 1990). Recently, the relationship between burnout and sickness absence was directly
investigated among workers in the human service sector (Borritz et al., 2006; Kristensen, Borritz, Villadsen, & Christensen, 2005) and industrial employees (Toppinen-Tanner et al., 2005). However, the methodological heterogeneity and discrepancy in study designs and assessments of burnout and sickness absence in all these previous studies makes it difficult to compare and interpret the findings (Borritz et al., 2006; Schaufeli & Enzmann, 1998).

Sickness absence is influenced by many factors such as the individual’s health status, social insurance systems, work environments, attitudes, and commitment to work (Hensing, Alexanderson, Allebeck & Bjurulf, 1998). Sickness absence can also under certain premises be regarded as not just as a reflection of ill health but also a coping strategy to get control over demanding situations (Borritz et al., 2006; Hobfoll & Freedy, 1993; Kristensen, 1991; Peter & Siegrist, 1997). A resent study have investigated three different COR based theories in relationship to burnout and negative correlates such as depression and absenteeism (Neveu, 2007). The investigation found that people are fully aware of the disruptive consequences of repeated absenteeism, and sickness absence may therefore be considered the last resort coping strategy. This implicates that complex methodological and operational issues have to be taken into consideration when measuring and analyzing sickness absence (Steel, 2003).

In the present study sickness absence was reported by the respondents. They were asked to report the number of sickness absence days and to what degree they attributed the absence to work or non-work factors. By focusing on the sickness absence attributed to either physical or psychological work-related factors, other potential causes for sickness absence (e.g. injuries from leisure activities, infections and so on) that may produce an underestimation of the relationship were excluded from the analysis.

The research question is; when the sickness absence is attributed to work-related strain, will changes in burnout scores be reflected in changes in sickness absence? Latent growth curve analysis is used to examine this relationship in a wide range of different occupational groups. Since burnout is a state assumed to potentially occur in any line of work (Maslach et al., 2001) and is associated with reduced mental and physical health (Shirom & Melamed, 2005), we expect that:
Hypothesis: Changes in burnout will be manifested in changes in work related sickness absence in all occupations included in this longitudinal study.

METHOD

Participants
This paper is based on data from two survey rounds in a longitudinal study on burnout in different occupational groups carried out by the Norwegian medical association and Statistics Norway (SN). The first survey was in October 2003 (time 1) and the second in October 2005 (time 2). The seven different occupational groups included in the present analyses are lawyers, physicians, nurses, teachers, church ministers, bus drivers, and employees in information technology (IT). The main intention of this research project was to learn more about what characterizes the burnout syndrome and the burnout process in different occupations.

For each group a random sample of 1000 persons was drawn from the central Norwegian registers of employees and employment by SN. Equal numbers of men and women were drawn from all occupations, except from the population of church ministers, which contained only 401 women altogether. Otherwise, the samples were representative of the total population of each gender in each occupation. The respondents were asked to complete the same extensive questionnaire on burnout and related issues at both occasions. The questionnaire covered topics such as demographics, time pressure, workplace conditions, different health complaints, sickness absence, coping strategies, work-family balance and major life events.

Time 1: The overall response rate was 64% and the final sample of 4507 respondents comprised 583 (60%) bus drivers, 588 (60%) lawyers, 684 (69%) nurses, 683 (69%) physicians, 685 (70.3%) church ministers, 684 (69%) teachers, and 601 (61%) employees in IT. The female/male ratio within the occupational group ranged from 40.0%/60.0% (church ministers) to 53.9%/46.1% (physicians). The age distribution ranged from 38.3 (SD=8.9) years (IT workers) to 46.2 (SD=10.7) years (church ministers). In the first wave, 43.0% of the total sample (N=1937) reported that they had sick leave from work one day or more during the last six months, ranging from 32.3%
among lawyers to 53.3% among bus drivers. About half of these respondents \((N=942)\) attributed the absence to either physical or psychological work strain. In each occupational group the percent of self-reported sickness absence attributed to work related strain were 12.1% in lawyers, 30.9% in bus drivers, 20.0% in IT-workers, 13.3% in physicians, 23.2% in teachers, 20.1% in church ministers and 26.8% in nurses. The share of respondents reporting not-work related sickness absence were 25.5% in lawyers, 28.3% in bus drivers, 35.0% in IT-workers, 26.2% in physicians, 28.1% in teachers, 22.0% in church ministers and 32.5% in nurses.

**Time 2:** Respondents from the first survey that were capable (alive and not hospitalized) to answer the second questionnaire were asked to participate again during the autumn of 2005. Out of the 4464 persons that received the second questionnaire, 3174 responded. The overall response rate was 71% including 381 (66%) bus drivers, 412 (71%) lawyers, 496 (73%) nurses, 523 (77%) physicians, 500 (74%) church ministers, 504 (75%) teachers, and 358 (61%) employees in IT. The female/male ratio between the occupational groups ranged from 38.3%/61.7% (church ministers) to 59.9%/40.1% (physicians). In the total sample 41.2% \((N=1308)\) reported that they had sickness absence from work one day or more during the last six months, ranging from 30.1% among lawyers to 50.4% among nurses. Less than half of these respondents \((N=602)\), attributed the absence to either physical or psychological work strain. The percent of self-reported sickness absence attributed to work related strain were 10.0% in lawyers, 26.5% in bus drivers, 20.4% in IT-workers, 15.1% in physicians, 19.6% in teachers, 19.4% in church ministers and 22.8% in nurses. The share of respondents reporting not-work related sickness absence were 22.6% in lawyers, 23.9% in bus drivers, 38.5% in IT-workers, 25.4% in physicians, 27.2% in teachers, 28.8% in church ministers and 35.3% in nurses. The age distribution ranged from 40.9 \((SD=8.8)\) years (IT workers) to 48.6 \((SD=10.5)\) years (church ministers).

Compared to the populations the samples were selected from there were some minor deviations in age, gender and distribution of respondents according to county. The particular deviations in each occupational group is reported in Skaare (2006).
Measures

The Maslach Burnout Inventory – General Survey (MBI-GS) (Leiter & Schaufeli, 1996), which describes the three burnout dimensions exhaustion, cynicism, and professional efficacy, was translated into Norwegian by the authors. The exhaustion dimension was measured by the five original MBI-GS items, whereas the cynicism and professional efficacy dimensions was changed.

The main reason for changing the cynicism variable was to improve the reliability and validity by focusing on disengagement from work in general and to reduce the conceptual overlap with the two other dimensions. In previous studies the internal consistency of the cynicism dimension has been low (Bakker, Schaufeli, Sixma, Bosveld & Van Dierendonck, 2000; Demerouti, Bakker, Vardakou & Kantas, 2003; Demerouti, Bakker, Nachreiner & Schaufeli, 2001; Schutte, Toppinen, Kalimo & Schaufeli, 2000) possibly reflecting multidimensionality in this construct (Schaufeli & Enzmann, 1998). In accordance with some previous studies (Salanova & Schaufeli, 2000; Schutte et al., 2000), the cynicism item “I just want to do my job and not be bothered” was excluded. In addition to indicate cynicism it may be interpreted as high job engagement (Schutte et al, 2000). The two items “I have become more cynical about whether my work contributes to anything”, and "I doubt the significance of my work ” were clearly ambiguous, and conceptually overlapping with the professional efficacy dimension. These three excluded MBI-GS cynicism items were thus replaced by two items from the disengagement scale of the Oldenburg Burnout Inventory (OLBI) (Demerouti et al., 2003) (“It happens more and more often that I talk about my work in a derogatory way” and “Lately, I have tended to think less during my work and just execute it mechanically”) and one item formulated by the authors of the present study (“what I previously thought was challenging at work is now mostly a nuisance”). Because the modified cynicism dimension focuses on change from involvement to disengagement, it has been labeled Disengagement in the present study. In a previous study conducted on the present data set a confirmatory analysis of the MBI-GS factorial validity showed that the two MBI-GS cynicism items “I have become less enthusiastic about my work” and “I have become less interested in my work since I started this job” had a high amount of shared error variance, probably reflecting precision alternatives of the same subject. When the first item of these two latter items was
excluded from the analysis, the model fit improved. This item is therefore of both
categorical and statistical reasons not included in the present study.

Professional efficacy was measured by five of the original six MBI-GS items. The
original MBI-GS item “I feel exhilarated when I accomplish something at work” was
excluded from the present study due to its potential multidimensionality. A low score
may be interpreted as a feeling of low professional efficacy as well as a lack of
engagement in one’s work (i.e., disengagement/cynicism). Hence, whereas the original
MBI-GS included 16 items, the modified MBI-GS used in the present study included 14
items measuring three correlated factors: exhaustion (five items), disengagement (four
items), and professional efficacy (five items).

The original MBI and MBI-GS scales include categories that are not mutually
exclusive, such as categories 1 and 2: “a few times a year or less” and “once a month or
less” (Barnett, Brennan & Gareis, 1999). Instead, the present study applied a five-point
scale ranging from 1 (“do not agree”) to 5 (“totally agree”).

_Sickness absence_

The respondents were asked to report how many days they were absent from work due to
sickness during the previous six months. If they had sickness absence during this period
they were asked whether they attributed it to physical or psychological work strain (low,
medium, or high degree), or if it was not at all related to work related factors.

The sickness absence variable was highly skewed with an overweight of
respondents reporting no absence at all or only a few days during the last six months.
Inaccuracy in the subjective ability to remember the exact number of absence days is
assumed. To decrease the skewness, and to be able to calculate more correct estimates of
the associations that were investigated, the sickness absence was therefore converted into
an ordinal variable with four categories. The reported number of days were categorized
according to the number of absence days the last six months: 1= no absence days, 2= 1-5
absence days, 3= 6-14 absence days, and 4= 15 absence days or more.

We wanted to investigate the relationship between burnout and sickness absence
attributed to physical or psychological strain at work. Hence, the sickness absence
variable used in the analyses included both respondents with no absence at all and those
stating that the sickness absence was due to physical or psychological work strain. Respondents with sickness absence attributed to factors outside of the work domain were excluded from the analyses.

**Analyses**

The relationship between the three burnout dimensions of the MBI-GS and sickness absence were investigated using latent growth curve models, which is a unique procedure to measure change within the structural equation modeling (SEM) framework (Bollen & Curran, 2006). The analyses were conducted by means of the LISREL software program (Jöreskog & Sörbom, 1996). Within SEM the association between latent variables and observed variables are estimated and their correspondence to data are evaluated (Bollen, 1989). Latent growth curve analysis has the advantage of being able to measure individual processes and incorporate time-specific measurement error in the analysis of longitudinal data when individuals are assumed to differ not only in their intercepts levels at the start of the process but also in trajectories over time (Meredith & Tisak, 1990).

In this study, the intercept variable describes the latent scores of each of the three burnout dimensions at the beginning of the process and is the standard from which change is measured. If the variance of the intercept factor is significant, it means that there are significantly different starting values between the individuals within the sample. The slope factor represents the rate of growth, or change, between the times of measurement. The slope parameter in this study describes the latent growth from time 1 to time 2 of the measured variables within each occupational group. Since this was a two-wave study, the investigated association in the present paper can only be measured as a linear relationship even though we realize that several individual trajectories may have occurred.

The focus of the present study is to what extent changes in burnout scores can explain changes in sickness absence within each occupational group. In the specifications of the model it is assumed that the intercepts of the three burnout dimensions are correlated with each other and with the intercept of sickness absence. It is also assumed that changes in the three burnout dimensions are correlated and may produce changes in the sickness absence variable. The model analyzed is presented in figure 1.
In large samples the risk of type I error (i.e., rejecting a true null hypothesis) is present if conclusions are made on the basis of the χ²-tests only (Hoyle, 1995). The Lisrel program provides several other fit indices that are less sensitive to sample size. Different model fit indices indicate to what degree the hypothesized model corresponds to the observed data. The fit indices used in this study are the Non-Normed Fit Index (NNFI), the Comparative Fit Index (CFI) and the Root Mean Square Error of Approximation (RMSEA). Generally, NNFI and CFI scores below 0.9 indicate that the model fit can be improved. Hu and Bentler (1999) suggest that CFI should be close to 0.95 before it can be assumed that there is a good fit between the hypothesized model and the observed data. The RMSEA estimates the overall amount of error per degree of freedom. A RMSEA of 0.05 or less indicates a close model fit, 0.05-0.08 indicates a fair fit, and 0.08-0.10 indicates a
mediocre fit. A RMSEA exceeding 0.10 is considered to reflect a poor fit to the observed
data (Browne & Cudeck, 1993; Diamantopoulos & Siguaw, 2000).

Considerations of non-normality
Skewness did not exceed 1.2 and kurtosis did not exceed 2.4 for any of the 14 MBI-GS
items used in the analysis for any of the occupational groups, neither at time 1 nor at time
2. Thus, the assumptions of normality were not violated for the MBI-GS items (Curran,
West & Finch, 1996), and the conditions for estimating model parameters with the
maximum likelihood method (ML) were considered met. However, because the sickness
absence variable was highly skewed, the Sattora-Bentlers asymptotic covariance matrix
correction for non-normality was used in the analyses (Sattora & Bentler, 1994). Since
the sickness absence variable were analyzed on an ordinal scale the thresholds were set to
be equal in time 1 and time 2 within each occupational group.

Imputation
To enhance the statistical power of the analyses missing data was imputed by matching,
so called Similar Response Pattern Imputation (SRPI)(Brown, 1994; Jöreskog, 2005).
This imputation method is available in the PRELIS software package and replaces
missing values with observed data from cases having similar response pattern over a set
of matching variables. With ordinary listwise deletion, 1444 remained in the dataset
before imputation was conducted. When SRPI had been implemented the total sample
used in the analyses included 2450 respondents.

RESULTS
A preliminary multi-group analysis was conducted to test the factorial invariance of the
inventory used to assess burnout in time 1 and time 2. The results showed a good model
fit to the observed data, $\chi^2 (2478)=6622.8$, RMSEA=0.069, CFI=0.96, NNFI=0.96, and
all of the 28 items loaded significantly on the predicted burnout factor (i.e. exhaustion,
disengagement or professional efficacy). These findings indicate that it is the same
syndrome that we measure at both occasions.
The internal consistencies (Cronbach $\alpha$) observed of the three burnout dimensions in the different occupational groups were high, ranging between 0.83-0.88 in exhaustion, between 0.79-0.81 in disengagement, and between 0.66-0.79 in professional efficacy at time 1. At time 2 Cronbach $\alpha$ ranged between 0.84-0.87 in exhaustion, between 0.79-0.83 in disengagement, and between 0.67-0.79 in professional efficacy. The baseline intercept correlations of the latent variables in the different occupational groups were between 0.66-0.79 for exhaustion and disengagement, between 0.40-0.56 for disengagement and professional efficacy and between 0.32-0.55 for exhaustion and professional efficacy. The baseline correlations between the three burnout dimensions and sickness absence were respectively 0.41-0.57 for exhaustion, 0.34-0.47 for disengagement and 0.12-0.38 for professional efficacy.

*Longitudinal analysis of the influence of burnout on sick absence*

The assumptions of a relationship between the slopes of exhaustion, disengagement, and professional efficacy and the slope of sickness absence were tested in separate analyses of each occupational group. Assuming that each item loaded on only one factor and its measurement errors in the two different surveys were correlated with each other, the proposed model provided a sufficient fit to the observed data in each occupational group. The fit indices, the explained variances of changes in sickness absence due to changes in burnout scores and individual regression coefficients of each burnout dimension on sickness absence in each occupational group are presented in table 1.
Table 1: Growth curve analyses. Model fit to the observed data in each occupational group and the explained variance of changes in three burnout dimensions on change in sickness absence.

<table>
<thead>
<tr>
<th>Occupational groups</th>
<th>Model fit</th>
<th>Regression coefficients</th>
<th>Total explained variance of all three burnout dimensions on sickness absence</th>
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<td>$\chi^2$</td>
<td>df</td>
<td>RMSEA</td>
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<td>Lawyers (N=310)</td>
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<td>Bus drivers (N=312)</td>
<td>839.0</td>
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<td>0.058</td>
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<td>Information technology (IT) (N=311)</td>
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<td>0.057</td>
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<tr>
<td>Physicians (N=361)</td>
<td>779.0</td>
<td>410</td>
<td>0.049</td>
</tr>
<tr>
<td>Teachers (N=377)</td>
<td>913.8</td>
<td>410</td>
<td>0.057</td>
</tr>
<tr>
<td>Church ministers (N=418)</td>
<td>869.7</td>
<td>410</td>
<td>0.052</td>
</tr>
<tr>
<td>Nurses (N=341)</td>
<td>931.2</td>
<td>410</td>
<td>0.061</td>
</tr>
</tbody>
</table>

*p<0.05

Note: $\chi^2$= chi square, df= degrees of freedom, RMSEA= Root Mean Square Error of Approximation, NNFI= Non-Normed Fit Index, CFI= Comparative Fit Index

The model fit is considered to be good in each occupational group with RMSEA ranging from 0.048 to 0.061, and NNFI and CFI ranging from 0.96-0.98. The variance of changes in sickness absence explained by changes in the three burnout dimensions ranged from 4.7% to 27.7%. Changes in exhaustion had a significant impact on changes in sickness absence among bus drivers, information technology workers and physicians, whereas changes in disengagement had a significant impact on changes in sickness absence among lawyers, church ministers, and nurses. Among teachers no significant relationships were demonstrated. The regression coefficients of each burnout dimension reveal that in none of the groups did changes in the professional efficacy have any significant effect on changes in sickness absence.
DISCUSSION

The main objective of this two-wave study was to investigate the predictive value of burnout on work related sickness absence in lawyers, bus drivers, information technology workers, physicians, teachers, nurses and church ministers. The findings indicate that changes in burnout scores may predict changes in sickness absence in most of the investigated occupations. In physicians changes in burnout scores explained a substantial share of the changes in the sickness absence variable (27.4%). Furthermore, changes in burnout scores explained a relatively high share of changes in the sickness absence variable in church ministers (18.4%), lawyers (14.3%), information technology workers (16.6%) and bus drivers (15.0%). The findings are consistent with a Danish investigation among workers within the human service sector. The researchers found that an increase in burnout levels predicted increased sickness absence and that decreased burnout levels predicted a decrease in the sickness absence (Borritz et al., 2006). Since these are classical human service professions, surprisingly low predictive values were found among nurses (4.7%) and teachers (9.2%). Many nurses in Norway work part-time. Moreover, early exit from this occupation is known to be high, with an average pension age of 55 years (Midtsundstad, 2004). Nurses have work tasks such as heavy lifting that may challenge their physical health (Trinkoff, Storr & Lipscomb, 2001). Hence, physical workload is likely to partly explain the low average retirement age and sickness absence in this occupational group. To be included in this investigation the respondents had to be employed at the time of the first survey. This means that the samples are representative for the working males and females within each occupational group, but we have limited information about people educated as nurses, teacher, lawyers, physicians and church ministers who for some reason are no longer part of the working force or has chosen another profession before reaching retirement age. Since so many for different reasons leave the nursing profession at an early age, the findings of this study can be an underestimation of the relationship between burnout and sickness absence.

Teachers in many international and national studies have higher exhaustion scores compared to other occupational groups (Midtlyng, 1997; Schaufeli & Enzmann, 1998). A study by Westman & Etzion (2001) among blue-collar workers in the Israeli industry found that straight after vacation, burnout scores were much lower than just before
vacation. Four weeks after vacation the burnout scores were on the same levels as before the time off from work. Teachers in Norway have twice as much vacation (10 weeks) than other occupational groups (five weeks). Except for six weeks off during summer, the holiday breaks are evenly distributed across the year. The data in the present study were at both occasions collected in October, only a few weeks after a long summer holiday and about the time when teachers have a one-week autumn-break. We do not know how this may have affected the results. Whereas previous studies have shown that teachers' sickness absence level is low in Norway (Løvås, 1998; Mykletun, 2002), 85 percent leave the profession before the age of 67, with an overall average pension age as low as 60 years (Wik, 2006). Thus, perhaps a way to understand the results of the present study is that vacation among teachers and part-time work among nurses may act as buffers against sickness absence in addition to the fact that both these groups are characterized by early exits from the labor market.

In the present study a significant proportion of the variance of changes in sickness absence in bus drivers were predicted by changes in burnout scores. Bus drivers have physically demanding working conditions as uncomfortable working positions (Boedeker, 2001) and vibrating steering wheels (Tse, Flin & Mearns, 2006). These physical factors may explain a considerable part of the changes in sickness absence in this occupational group. However, changes in burnout scores clearly have an impact on changes in sickness absence in this occupation too. Psychological work demands for bus drivers include at the same time handling the traffic, passengers and being precise according to the bus route. Consistent with our findings, absenteeism was related to exhaustion in a study of trolley drivers and aggressive passengers, conflict and burnout (van Dierendonck & Mevissen, 2002). The present results also accord with the conclusion made in a review of bus drivers well-being that by focusing on the 'human side' of the working conditions the situation for this professional group can be improved (Tse et al., 2006).

There have only been a few studies on burnout among information technology workers (Salanova, Peiro & Schaufeli, 2002), and as far as we know, none on burnout and sickness absence. At the time of the first survey in 2003, there were uncertainties in the world economy and investors were reluctant to put money into the IT business. Many
firms had to down-size or shut down, resulting in unemployment for some and often extra work-load to the IT-workers that remained in the different companies. In 2005 this situation had stabilized, and the IT sector was again growing. In other words, within this profession it was a tenser situation at time 1 than at time 2. If these social economic trends have had an influence on the results, the predictive value of changes in burnout scores on changes in sickness absence may have been underestimated.

The findings of this present study revealed that when physicians are away from work due to sickness attributed to work related strain, the relationship with burnout is very strong. Physicians work is characterized by psychologically demanding work tasks, long working hours, and a high degree of responsibility. They must be scientifically updated on the developments within their specialty, handle clients and be able to balance long working hours with their outside life. A study examining the determinants of sickness absence among hospital physicians found that poor team work contributed more than traditional psychosocial risk factors such as overload and low job control (Kivimäki et al, 2001).

Work related stressors for church ministers involve unseen, spiritual goals, the open ended nature of ministry, diffuse roles and personal relationships (Miner, 2007). A study on burnout among Dutch reformed pastors found that pastoral care was the most difficult work task for most of the respondents (Evers & Tomic, 2003). The present study clearly indicates that changes in burnout scores predicted changes in work related sickness absence in Norwegian church ministers. The same is the case among lawyers in this investigation. Lawyers have to cope with high demands from employers and clients and they have to keep up with changes within their field of the law. A previous study has shown that workload, conflict, social support, decision making policies, autonomy and organizational commitment are important potential predictor of burnout among lawyers (Jackson, 1987), but very few studies have investigated burnout among lawyers and none the relationship between burnout and sickness absence.

The three burnout dimensions and sickness absence
Out of the three burnout dimensions, exhaustion had the highest correlations with sickness absence at baseline in the present study. In two previous studies, personal
accomplishment was associated with sick leave among nurses (Parker & Kulik, 1995) and health care workers respectively (Iverson, Olekalns & Erwin, 1998). However, when the influence of each burnout dimension was inspected in the present study, the professional efficacy (equivalent to personal accomplishment, except for the removal of the reference to clients and costumers) was not significantly associated with changes in sickness absence in any of the occupational groups. Whereas changes in exhaustion was the sole predictor of changes in sickness absence among physicians, bus drivers and information technology workers, disengagement was the only predictor of changes in sickness absence among lawyers, church ministers and nurses. For nurses, this finding is not in line with Firth & Britton (1989)’s study where there was an association between emotional exhaustion and sickness absence, but depersonalization (MBI equivalent to disengagement) and personal accomplishment (MBI equivalent to professional efficacy) were not significantly related. However, the high correlations between the exhaustion and disengagement dimensions (0.66-0.79) in the present study indicate that these results should be interpreted with some caution since they may be a result of multicolinearity.

**Strength and limitations**

The strength of the present study is the focus on work-related sickness absence associated with burnout. Nevertheless, the design of the present investigations has some limitations. It does for instance not provide any means to reveal to what extent burnout is the predictor of early retirement and job turnover, or the duration of the sickness absence when related to a burnout state. When burnout is the main cause of sickness absence does it lead a high frequency of short spells or mostly absence of long durations? For organizational and treatment reasons these questions constitute important challenges for future research. On an individual level an intriguing subject is whether it is possible to “refill the empty batteries” and return to the same occupation and working conditions as before after being absent from work because of burnout. To learn more about this, interview-based research on people sick from burnout is needed.

Missing data is an almost inevitable problem in longitudinal studies that may threaten the representativity of the samples. In this study, missing data involved non-respondents at both surveys. Statistics Norway did report mostly small deviations in the
data in most groups according to either age, gender or geographical distribution compared to the original samples (Skaare, 2006). The only known systematic loss of respondents in this study is the exclusion of those with sickness absence not attributed to work.

Because of the low share of respondents with sickness absence it was decided to analyze each occupational group with both males and females combined. This means that there may be sub-groups effects according to gender between burnout and sickness absence within each occupational group that cannot be revealed in the present study. Mastekaasa (2005) found in a large Norwegian study that the gender composition of both the workplace and occupation was only weakly related to sickness absence in females, and not at all in males. However, many factors may influence the sickness absence (see i.e. Nielsen, Rugulies, Christensen, Smith-Hansen & Kristensen, 2006), and the potential differences in male and female workers’ relationship between burnout and work-related sickness absence clearly presents a challenge for future research.

Final conclusion and implication of findings
In this study, the predictive value of changes in burnout scores on changes in sickness absence attributed to work-related strain in different occupational groups within and outside the human service sector was considerable. It can be argued that measures of self-attribution primarily are measures of cognitive schemas and not actual situations. However, there are no objective ways to assess burnout or the psychological mechanisms underlying sickness absence from work. Even though self-reported sickness absence may be inaccurate and subjective, the opportunity to analyze the respondents’ personal attributions was considered an advantage because it enabled us to examine to what degree the respondents themselves relate the sickness absence to strenuous conditions at work.

The most important implication of the present study is that the different workplaces and organizations have a lot to gain from making an effort to detect symptoms on burnout at an early stage. By implementing the necessary steps to maintain the workers workability burnout and sickness absence may be prevented.
REFERENCES


Oaks: Sage.


APPENDIX I

Descriptives by Statistics Norway of the Norwegian registers of employees and employment used to select potential respondents for this survey

www.ssb.no/emner/06/90/notat_200448.pdf/notat
APPENDIX I

Descriptives by Statistics Norway of the Norwegian registers of employees and employment used to select potential respondents for this survey

www.ssb.no/emner/06/90/notat_200448.pdf/notat
14 Om Arbeidstakerregisteret og andre sysselsettingsregistre i forbindelse med trekking av utvalg til sporreundersøkelse for Den norske lægeforening


14.1 Bakgrunn for Arbeidstakerregisterdata

14.2 Omfang
Arbeidstakerstatistikken omfatter de arbeidstakere som står registrert med aktivt arbeidsforhold i Arbeidstakerregisteret ved et gitt tidspunkt. For arbeidstakere med flere registrerte arbeidsforhold, blir et av disse ("hovedarbeidsforholdet") valgt ut som tellende i statistikken. Se pkt. 4.2 for krav til arbeidsforhold for at det skal være meldepliktig til A/A-registeret. Vernepliktige og selvstendig næringsdrivende er ikke med i datagrunnlaget.

14.3 Datakilder
A/A-registeret danner grunnlaget for arbeidstakerstatistikken. I tillegg benyttes også Enhetsregisteret og Bedrifts- og Foretaksregisteret (BoF) i SSB for å bestemme næring. For enkelte grupper arbeidstakere som mangler data om relevant arbeidstedskommune bruokes bostedskommune fra Det sentrale personregisteret. Dette gir en mer korrekt geografisk fordeling av arbeidstakene.

14.4 Kontroll og revisjon

Omfattende kontroll og revisjon av A/A-registeret. Feil som oppdages rettes i statistikken, samtidig som det sendes melding til RTV og Enhetsregisteret, for at feilen skal bli rettet opp i selve registeret også. Av typer feil kan en nevne næringskode, arbeidstedskommune og mangelfull oppdeling av bedrifter. Korrigeringene i statistikken gjøres på bedriftsnivå og ikke på person. Det er
derfor ikke mulig å gi konsistente tall som bygger på grupperinger etter personbaserte kjennemerker.

For sjøfolk, ansatte i forsvaret og avislav settes arbeidsstedskommune lik bostedskommune. Bostedskommune hentes fra Det sentrale personregister.

14.5 Definisjon av arbeidstaker


14.6 Feilkilder og usikkerhet

Erfaring viser at en del meldinger til arbeidstakerregisteret kommer for sent inn. Det gjør at den utviklingen statistikken viser, ligger noe etter den faktiske utviklingen (3-6 måneder). Av samme grunn gjøres datauttaket fra registeret først 16 uker etter referansedato for statistikken. Dette sikrer at de fleste meldinger som gjelder referansedatoen kommer med i statistikken. Under revisjonen av registeret rettes mangelfull fordeling av ansatte, feil arbeidsstedskommune og næring. Dette gir ingen garanti for at det blir riktig, men det er vår mening at det er mer korrekt enn utgangspunktet i registeret.

15 Bakgrunn for registerbasert sysselsettingsstatistikk


15.1 Datakilder

Data for den registerbaserte sysselsettingsstatistikken er basert på flere ulike registre. De viktigste er Rikstrygdeverkets (RTV) arbeidstakerregister, lønns- og trekkoppgaveregisteret og
Selvangivelsesregisteret administrert av Skattedirektoratet, registeret over vernepliktige og sivilarbeidere fra henholdsvis Vernepliktsverket og Siviltjenesteadministrasjonen, og Enhetsregisteret/ Bedrifts- og foretaksregisteret.


15.2 Datainnsamling

15.2.1 Arbeidstakerregisteret:
Statistisk sentralbyrå (SSB) mottar fra RTV ukentlig filer over endringsmeldinger til arbeidstakerregisteret. I tillegg tas det årlig et totaluttak.

15.2.2 Lønns og trekkoppgaveregisteret:
Når det gjelder opplysninger fra Skattedirektoratets lønns- og trekkoppgaveregister gjøres det to uttrekk; et foreløpig uttrekk i mars, og et uttrekk i mai/juni som danner grunnlaget for tallene i denne statistikken.

15.2.3 Selvangivelsesregisteret:
Alle likningskontorene gjør bruk av IT i behandlingen av likningen, og opplysninger fra den personlige selvangivelsen er tilgjengelig på elektronisk form. SSB innhenter årlig et uttrekk av datamaterialet fra Skattedirektoratet.

15.2.4 Registeret over sivilarbeidere og vernepliktige:
SSB mottar kvartalsvisse filer fra Vemnlktsverket og Siviltjenesteadministrasjonen på Hustad og Dillingøy. Dataene bearbeides og settes sammen til et register med årlig informasjon.

15.2.5 Enhetsregisteret/ Bedrifts- og foretaksregisteret:
Bedriftstrelaterte variable som arbeidsstedskommune og næring innhentes fra SSB's Bedrifts- og foretaksregister.
15.3 Kontroll og revisjon

For de tre mest sentrale registrene som ligger til grunn for produksjonen, skjer kontroll og revisjon på følgende måte:


15.4 Definisjon av sysselsatte

Sysselsatte er definert som personer som utførte inntektsgivende arbeid av minst én times varighet i referanseuken, samt personer som har et slikt arbeid, men som var midlertidig fraværende på grunn av sykdom, ferie, lønnet permisjon e.l. Personer som er inne til førstegangs militær- eller siviltjeneste regnes som sysselsatte. Personer på sysselsettingstiltak med lønn fra arbeidsgiver klassifiseres også som sysselsatte. For sysselsatte med flere arbeidsforhold i referanseuken, fastsettes ett som det viktigste. Opplysninger om personenes jobb- og bedriftsrelaterte kjennemerker gjelder det viktigste arbeidsforholdet. Utdanning er arbeidstakerens høyeste fullførte utdanning, som er kodet etter Standard for utdanningsgruppering (NOS C 617).

15.5 Standard grupperinger

Standard for næringsgruppering (SN94) (NOS C 182).
Standard for utdanningsgruppering (NUS2000) (NOS C617)

15.6 Ikke-utvalgsfeil

For personer som er definert som sysselsatte og lønnstakere kun på grunnlag av opplysninger fra lønns- og trekkoppgaveregisteret (omkring 10 prosent av lønnstakerne), er arbeidsforholdet ikke
datert. For rundt halvparten av denne massen innhentes informasjon fra andre administrative kilder, som er med på å tidfeste arbeidsforholdet. For de resterende legges informasjon om lønn til grunn for om en person anses som sysselsatt. Det er dermed knyttet en viss usikkerhet om arbeidsforholdet faktisk var aktivt i referanseuken.

Selvstendig næringsdrivende identifiseres ved hjelp av informasjon fra Selvangivelsesregisteret. Grunnet lang produksjonstid ligger opplysninger om næringsvirksomhet fra året før til grunn for utarbeidelse av statistikken. Som følge av denne tidsforskjynningen kan personer dermed feilaktig bli klassifisert som sysselsatte, hvis de avsluttet virksomheten det foregående året.

For personer som er definert som sysselsatte og lønnstakere kun på grunnlag av opplysninger fra lønns- og trekkoppgaveaveregisteret er arbeidsforholdet knyttet til et foretak. Her er det utarbeidet en rutine for på best mulig måte å identifisere bedriften. I de tilfeller hvor personen er ansatt i et flerbedriftsfaretak, kan det være usikkert om arbeidsforholdet faktisk blir knyttet til riktig bedrift, og dermed får korrekte opplysninger om næring og arbeidsted. For store foretak med mange bedrifter under seg, er fordelingen av ansatte i arbeidstakerregisteret til tider mangelfull. Det kan gi merkbare utslag på kommunenivå når slike feil oppstår og når de rettes.
APPENDIX II

Letters to the samples in the first survey and the questionnaire

From: www.ssb.no/emner/06/90/notat_200448.pdf/notat
Oslo, oktober 2003
Saksbehandlere: Sven Skaare og Elise Wedde
Seksjon for intervjuundersøkelser

9  Undersøkelse om belastninger, mestring og helse innenfor utsatte yrker
Statistisk sentralbyrå gjennomfører i høst en undersøkelse om belastninger, mestring og helse i åtte utvalgte yrkesgrupper, der i blant [navn på gruppe]. Formålet med undersøkelsen er å belyse hvordan personer i antatt utsatte yrkesgrupper opplever forholdet mellom utfordringer og belastninger i arbeidet og sin egen fysiske, og særlig psykiske helse. Hensikten er blant annet å få bedre forståelse for den såkalte utbrenningsprosessen, som de senere årene har vært mye omtalt i media. Undersøkelsen gjennomføres på oppdrag fra Den norske lægeforening. Vi tar sikte på å følge opp med et nytt intervju om to år.

Du er en av 1 000 [navn på gruppe]som er trukket ut fra Statistisk sentralbyrå sysselsettingsregister. Til sammen er 8 000 personer trukket ut. Alle som deltar i årets undersøkelse blir med i trekningen av ett gavekort til en verdi av 10 000 kroner og ti gavekort til en verdi av 1000 kroner. Det er frivillig å delta, men for at vi skal få så gode resultater som mulig, er det viktig at alle som er trukket ut blir med. Vi kan ikke erstatte deg med en annen. Du kan når som helst trekke deg fra undersøkelsen og kreve opplysningene slettet.

Alle som arbeider i Statistisk sentralbyrå har taushetsplikt. Undersøkelsen gjennomføres etter lovplagte regler og Statistisk sentralbyrå er underlagt kontroll både fra Datatilsynet og vårt eget personvernombud. Det vil aldri bli kjent utenfor Statistisk sentralbyrå hva enkeltpersoner har svart på undersøkelsen. For å få bedre utbytte av informasjonen vi samler inn, vil vi hente inn opplysninger fra Statistisk sentralbyrås inntekts- og utdanningsregister. Innen utgangen av 2006 vil vi anonymisere datamaterialet slik at identifisering av den enkelte ikke er mulig. Den norske lægeforening vil kun få tilgang til anonymiserte data.

Vi ber deg vennligst svare på spørsmålene i spørreskjemaet og returnere det til Statistisk sentralbyrå i den vedlagt frankerte svarkonvolutten så snart som mulig. Har du spørsmål om undersøkelsen kan du gjerne ringe oss gratis på telefonnummer 800 83 028, eller sende en e-post til sven.skaare@ssb.no eller elise.wedde@ssb.no. Spørsmål vedrørende personvern kan rettes til Statistisk sentralbyrås personvernombud, tel 21 09 00 00 eller e-post personvernombud@ssb.no.

På forhånd takk!
Vennlig hilsen

Svein Longva
administrerende direktør

Ole Sandvik
seksjonssjef
Oslo, oktober 2003
Saksbehandlarar: Sven Skaare og Elise Wedde
Seksjon for intervjuundersøkingar

10 Undersøking om belastningar, meistring og helse innanfor utsette yrke
Statistisk sentralbyrå gjennomfører i haust ei undersøking om belastningar, meistring og helse i åtte utvalde yrkesgrupper, mellom anna [navn på gruppe]. Formålet med undersøkinga er å sjå nærare på korleis personer i sannsynleg utsette yrkesgrupper opplever forholdet mellom utfordringar og belastningar i arbeidet og si eiga fysiske, og særleg psykiske helse. Formålet er mellom anna å få betre forståing for den såkalla utbrenningsprosessen, som dei seinare åra har vore mykje omtala i media. Undersøkinga blir gjennomført på oppdrag frå Den norske lægeforening. Vi tek sikte på å følgje opp med eit nytt intervju om to år.

Du er ein av 1 000 [navn på gruppe] som er trekt ut frå sysselsetjingsregisteret i Statistisk sentralbyrå. Til saman er 8 000 personar trekte ut. Alle som er med i undersøkinga i år blir med i trekninga av eitt gåvekort til ein verdi av 10 000 kroner og ti gåvekort til ein verdi av 1 000 kroner. Det er frivillig å vere med, men for at vi skal få så gode resultat som råd er, er det viktig at alle som er trekte ut blir med. Vi kan ikkje erstatte deg med ein annan. Du kan når som helst trekke deg frå undersøkinga og krevje opplysningane sletta.


Vi ber deg vere vennleg å svare på spørsmåla i spørreskjemaet og returnere det til Statistisk sentralbyrå i den frankerte svarkonvoluten som ligg ved så snart som mogleg. Har du spørsmål om undersøkinga kan du gjerne ringe oss gratis på telefonnummer 800 83 028, eller sende ein e-post til sven.skaare@ssb.no eller elise.wedde@ssb.no. Spørsmål som gjeld personvern kan rettast til personvernombodet i Statistisk sentralbyrå, tlf. 21 09 00 00 eller e-post: personvernombud@ssb.no.

På førehand takk!
Vennleg helsing

Svein Longva
administrerande direktør

Ole Sandvik
seksjonssjef
Takkebrev

Oslo, november 2003
Saksbehandler: Elise Wedde
Seksjon for intervjuundersøkelser

11 Takk for hjelpen!
Vi ønsker å takke alle som har sendt inn svar på skjemaet til undersøkelsen om belastninger, mestring og helse innenfor utsatte yrker. Til nå har vi fått inn mange svar.

Dersom du ennå ikke har rukket å fulle ut skjemaet, vil vi sette stor pris på om du tok deg tid til det i nærmeste fremtid. Det er selvfølgelig frivillig å delta, men det er svært viktig at så mange som mulig deltar. Da blir resultatene bedre og mer pålitelige.

Alle som fyller ut og returnerer skjemaet er med i trekkingen av en premie til en verdi av 10 000,- kroner og ti premier til en verdi av 1 000,- kroner.

Som vi har nevnt tidligere har alle som arbeider i Statistisk sentralbyrå taushetsplikt, og undersøkelsen er i tråd med retningslinjer gitt av Datatilsynet. Ingen opplysninger om hva enkelpersoner har svart på undersøkelsen vil noeninne bli offentliggjort.

Skulle du ha spørsmål om undersøkelsen, eller dersom du trenger et nytt spørreskjema (bokmål eller nynorsk), kan du ringe oss gratis på telefon 800 83 028, eller sende en e-post til wed@ssb.no eller svs@ssb.no.

Med vennlig hilsen,

Ole Sandvik
seksjonssjef
Oslo, november 2003

Saksbehandler: Elise Wedde
Seksjon for intervjuundersøkelser

12 Har du sendt inn spørreskjemaet?
For en tid tilbake fikk du tilsendt et spørreskjema i forbindelse med en undersøkelse om belastning, mestring og helse innenfor utsatte yrker. Da vi ikke kan se å ha mottatt noe skjema fra deg, tillater vi oss å minne om undersøkelsen. Det er frivillig å delta, men resultatet av undersøkelsen avhenger av at så mange som mulig av de som ble trukket ut deltager.

Har du allerede sendt inn skjemaet, ber vi deg se bort fra denne henvendelsen og takker for et verdifullt bidrag til undersøkelsen.

Dersom du ennå ikke har svart, vil vi være veldig takknemlige om du kunne fylle ut skjemaet og returnere det til oss i den frankerte svarkonvolutten så snart som mulig.

Alle som besvarer og returnerer spørreskjemaet er med i trekkingen av et gavekort på kr 10 000,- og ti gavekort til en verdi av kr 1 000,-.

Undersøkelsen gjennomføres etter lovplagte regler, og SSB er underlagt kontroll både fra Datatilsynet og vårt eget personvernombud. Det vil aldri bli kjent utenfor Statistisk sentralbyrå hva enkeltpersoner har svart på undersøkelsen.

Har du spørsmål om selve undersøkelsen kan du gjerne ringe oss gratis på telefonnummer 800 83 028, eller sende en e-post til wed@ssb.no eller svs@ssb.no. Vi viser også til informasjon i tidligere brev. Ta kontakt dersom du ønsker spørreskjema på nynorsk.

Generelle spørsmål vedrørende personvern i SSB kan rettes til SSBs personvernombud, telefonnummer 21 09 00 00 eller e-post personvernombud@ssb.no.

Vi ser fram til å motta ditt skjema!

Med vennlig hilsen

Ole Sandvik
seksjonssjef
Oslo, november 2003  
Sakshandsamar: Elise Wedde  
Seksjon for intervjuundersøkelser

13 Har du sendt inn spørjeskjemaet?  
For ei tid sidan fikk du tilsendt eit spørjeskjema i samband med ei undersøking om belastning, meistring og helse innanfor utsette yrker. Då vi ikkje kan sjå at vi har motteke skjema frå deg, tillet vi oss å minne om undersøkinga. Det er frivillig å delta, men resultatet av undersøkinga avhenger av at så mange som mogleg av dei som vart trekt ut deltek.

Har du allereie sendt inn skjemaet, ber vi deg om å sjå vekk frå dette brevet og takker for eit verdifullt bidrag til undersøkinga.

Dersom du ennå ikkje har svart, vil vi vere svært takksame om du kunne fylle ut skjemaet og returnere det til oss i den frankerte svarkonvoluten snarast.

Alle som svarer på og returnerer spørjeskjemaet er med i trekkinga av eit gavekort på kr 10 000,- og ti gavekort til ein verdi av kr 1 000,-.

Undersøkinga vert gjennomført etter lovåpølagde reglar, og SSB er underlagt kontroll både frå Datatilsynet og vår eige personvernombud. Det vil aldri verte kjent utanfor Statistisk sentralbyrå kva enkeltpersonar har svart på undersøkinga. Vi viser også til informasjon i tidlegare brev. Ta kontakt dersom du ønsker spørjeskjema på nynorsk.

Har du spørsmål om sjølve undersøkinga kan du ringje oss gratis på telefonnummer 800 83 028, eller sende ein e-post til wed@ssb.no eller svs@ssb.no. Vi viser også til informasjon i tidlegare brev. Ta kontakt dersom du ønsker spørjeskjema på nynorsk.

Generelle spørsmål om personvern i SSB kan rettast til SSB sitt personvernombod, telefonnummer 21 09 00 00 eller e-post personvernombud@ssb.no.

Vi ser fram til å motta skjemaet ditt!

Med venleg helsing

Ole Sandvik  
seksjonssjef
Undersøkelse om belastninger, mestring og helse innenfor utsatte yrker

De fleste spørsmålene i dette skjemaet besvarer du ved å sette ett kryss i ruten ved det svaret du vil gi. Når du sender inn ferdig utfylt spørreskjema er du med i trekningen av et gavekort på 10 000 kroner,- og ti gavekort på 1 000 kroner. Gavekortene kan brukes i et utvalg butikker.

Lykke til med utfyllingen!
YRKE OG ARBEIDSTID

Utvalget i denne undersøkelsen er trukket fra Statistisk sentralbyrås yrkesregister, men fordi registeret kan inneholde feil, ønsker vi likevel å spørre deg om yrket ditt.

1. Hvilket yrke har du: _________

2. Hva går arbeidet ditt i hovedsak ut på: ______________________________________

3. Arbeider du i privat eller offentlig virksomhet?
   1. ☐ Privat
   2. ☐ Offentlig

4. Hva er din avtalte arbeidstid i gjennomsnitt per uke? ____ timer

5. Hva er din faktiske arbeidstid i gjennomsnitt per uke? ____ timer

6. Dersom du har mindre enn 100% stilling, skyldes det:
   1. ☐ Omsorgsoppgaver
   2. ☐ For stor arbeidsbyrde ved full stilling
   3. ☐ Helsemessige årsaker
   4. ☐ Kombinasjon med uføretrygd
   5. ☐ Annet

TIDSPRESS OG DIN INNFLYTELSE PÅ DIN ARBEIDSSITUASJON

7. Hender det at du har så mye å gjøre at arbeidssituasjonen din blir oppjaget og masete, og i tilfelle hvor ofte?
   1. ☐ Sjelden eller aldri
   2. ☐ I perioder, men ikke daglig
   3. ☐ Daglig, mindre enn halvparten av arbeidstiden
   4. ☐ Daglig, mer enn halvparten av arbeidstiden

8. I hvilken grad kan du selv bestemme ditt arbeidstempo?
   1. ☐ I høy grad
   2. ☐ I noen grad
   3. ☐ I liten grad

9. I hvilken grad kan du vanligvis selv bestemme eller planlegge rekkefølgen i dine arbeidsoppgaver i løpet av dagen?
   1. ☐ I høy grad
   2. ☐ I noen grad
   3. ☐ I liten grad
10. Angi hvor ofte du synes at
(Se ett kryss på hver linje)

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1. du har tilstrekkelig mulighet til å diskutere organiseringen av ditt eget arbeid

2. du har tilstrekkelig innflytelse på avgjørelser som gjelder din arbeidsplan

3. du har så mye innflytelse på arbeidet ditt at du kan utsette saker som var planlagt, f.eks. når du får for mye å gjøre

4. du arbeider under et uakseptabelt arbeidspress

5. du har så mange arbeidsoppgaver at det hindrer deg i å arbeide effektivt

6. du har problemer med å kunne gjøre spesielle oppgaver uten å bli forstyrret

7. du har mulighet for på kort varsel å ta deg fri eller avspasere en halv eller en hel dag

11. I hvilken grad stemmer følgende utsagn for ditt forhold til overordnete
(Se ett kryss på hver linje)

1. Jeg har mulighet til å snakke med min nærmeste overordnede om vanskeligheter i arbeidet

2. Jeg får den oppmuntring og støtte jeg trenger av min nærmeste overordnede

3. Min nærmeste overordnede pleier å informere meg om forandringer av betydning for arbeidet mitt

4. Min nærmeste overordnede har samme syn som meg på hva min kompetanse består i

5. Min nærmeste overordnede legger til rette for at jeg skal kunne utvikle meg i jobben

12. Anerkjennelse av arbeidsinnsats. I hvilken grad opplever du at følgende utsagn stemmer for deg?
(Se ett kryss på hver linje)

1. Der jeg arbeider har ledelsen store muligheter for å belønne god arbeidsinnsats

2. Jeg får ofte ros og anerkjennelse fra mine overordnete

3. Jeg får ofte ros og anerkjennelse fra kolleger og arbeidskamerater

4. Jeg får ofte ros og anerkjennelse fra andre som jeg har med å gjøre i jobben (kunder, klienter, elever, samarbeidspartnere, etc)

5. Jeg synes lønnen min står i rimelig forhold til mitt ansvar og innsats på jobben
TILKNYTNING TIL ARBEIDET

13. I hvilken grad stemmer beskrivelserne nedenfor med dine egne opplevelser den siste måneden?

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1. Jeg føler at arbeidet temperer meg følelsesmessig

2. Jeg føler meg full av kraft og energi

3. Jeg føler meg sliten når jeg står opp om morgenen og vet at jeg må på jobb

4. Jeg føler at jeg har positiv innflytelse på andre menneskers liv gjennom det jeg gjør i jobben

5. Jeg føler meg oppbrukt når arbeidsdagen er over

6. Jeg synes ikke jeg strekker meg for langt for å klare kravene i jobben

7. Jeg føler meg frustrert i jobben

8. Jeg får ikke brukt ressursene mine så godt som jeg burde i jobben

9. Jeg har gjort mye som er verdifull innsatsen i denne jobben

10. Jeg føler meg utbrent i denne jobben

11. Jeg føler meg som regel kvikk og opplagt i jobben

12. Jeg får ikke utrettet stort i denne jobben

13. Det som før var utfordrende i jobben er nå mest en plage

14. Jeg føler at jeg ikke orker stor mer i denne jobben

15. I jobben har jeg en god følelse av å være til nytte

16. Jeg har som regel overskudd til fritidsyssel når jeg kommer hjem etter endt arbeidsdag

17. Jeg føler at mine av det jeg gjør i jobben er ganske bortkastet

18. Jeg føler ikke at jeg arbeider for hardt i jobben

19. Det er en god balanse mellom de kreftene jeg investerer i arbeidet og de jeg investerer i livet for øvrig

20. Det er virkelig stressende for meg å jobbe hele dagen

21. Jeg leser problemer som oppstår på jobben på en effektiv måte

22. Jeg synes jeg bidrar effektivt til å løse bedriftens oppgaver

23. Jeg er mindre interessert i jobben nå enn da jeg begynte i den

24. Efter hvert er jeg blitt mindre entusiastisk når det gjelder jobben

25. Jeg synes jeg gjør en god jobb

26. Jeg føler meg opplevet når jeg får til noe på jobben

27. Jeg vil bare gjøre jobben min og ikke noe mer
Spørsmål om TILKNYTNING TIL ARBEIDET fortsetter:

I hvilken grad stemmer beskrivelsene nedenfor med dine egne opplevelser den siste måneden?

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28. Det hender stadig oftere at jeg snakker nedsettende om jobben...  
29. Jeg trenger mer tid nå enn tidligere for å hente meg inn etter jobben...  
30. Jeg klarer belastninger i arbeidet mitt bra...  
31. I det siste har jeg arbeidet stadig mer mekanisk og tenkt mindre gjennom oppgavene...  
32. Jeg ser på jobben min som en utfordring...  
33. Med tiden har jeg mistet den dype interessen for arbeidet mitt...  
34. Av og til byr arbeidsoppgavene mig rett og slett i mot...  
35. Jeg kan ikke tenke meg noe annet yrke enn mitt eget...  
36. Jeg har glede av arbeidet jeg gjør...  
37. Jobben min engasjerer meg...  

SOSIAL DELTAKELSE

14. Hvor ofte har du kontakt med slekt eller venner som du ikke bor sammen med?

Sett ett kryss

1. Sjeldnere enn en gang i året
2. En eller flere ganger i året, men ikke hver måned
3. Omtrent hver måned, men ikke hver uke
4. Omtrent hver uke, men ikke daglig
5. Flere ganger i uka eller daglig

15. Har du noen personer du kan snakke helt fortrolig med?

1. Nei
2. Ja, en
3. Ja, flere

ULIKE HELSEPLAGER

16. Har du i løpet av den siste måneden vært plaget av:

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1. Nakkesmerter...
2. Smerter øverst i ryggen...
3. Smerter i korsrygg...
4. Smerter i armen...
5. Smerter i skuldre...
6. Smerter i fottene...
7. Fordøyelsesproblemer...
8. Brysismerton...
9. Andre plag...
17. Nedenfor finner du en liste med plager og problemer som man av og til kan ha
Angi hvor mye hvert enkelt problem har plaget deg eller vært til besvær i løpet av den siste måneden.
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18. Hvor mange dager har du vært borte fra jobb de siste 6 måneder grunnet egen sykdom?
Antall dager: __

Dersom du ikke har hatt sykefravær de siste 6 måneder, går direkte videre til spørsmålet 20

19. Hvis du har hatt sykefravær de siste 6 månedene, i hvilken grad skyldes det
Sett ett kryss på a) og ett på b)

<table>
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<tr>
<th></th>
<th>a) Fysisk arbeidspress</th>
<th>b) Psykisk arbeidspress</th>
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<tbody>
<tr>
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<td>I høy grad</td>
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<td>Ikke i det hele tatt</td>
<td>Ikke i det hele tatt</td>
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20. Føler du at du får nok søvn?
1 | Ja
2 | Nei

21. Hvor mange timer antar du at du i gjennomsnitt har sovet per natt den siste måneden?
Antall timer: ________ per natt
**PERSONLIGE KJENNETEGN OG INNSTILLINGER**

22. Nedenfor følger noen utsagn om personlige kjennetegn og innstillinger

Marker for hvert av utsagnene om du synes disse stemmer eller ikke stemmer for deg.

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23. Hvordan stemmer disse påstandene for deg?

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Spørsmål 23. fortsetter:

Hvordan stemmer disse påstandene for deg?
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<th>litt belastende</th>
<th>En del belastende</th>
<th>Ganske belastende</th>
<th>Svært belastende</th>
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<tbody>
<tr>
<td>12</td>
<td>Det er godt samsvar mellom mine egne yrkesverdier og verdiene i arbeidsorganisasjonen.</td>
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<tr>
<td>13</td>
<td>Jeg identifiserer meg sterkt med organisasjonens mål og rammer for arbeidet.</td>
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<tr>
<td>14</td>
<td>Jeg føler ofte at jeg må gå på akkord med mine verdier for å mestre kravene i arbeidet.</td>
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<tr>
<td>15</td>
<td>Samsvar mellom organisasjonens og mine egne mål gir en god følelse av fellesskap.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Organiseringen av arbeidet tilfører meg ikke å bruke mine kunnskaper og ressurser på en effektiv måte.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

24. Hvilke av følgende situasjoner/faktorer på jobb har du opplevd som belastende det siste året?
Med belastende mener vi opplevelse av stress og negative følelser, for eksempel i form av usikkerhet, irritasjon og anspenthet

Sett ett kryss på hver linje

<table>
<thead>
<tr>
<th>Nummer</th>
<th>Uttrykk</th>
<th>ikke belastende</th>
<th>litt belastende</th>
<th>En del belastende</th>
<th>Ganske belastende</th>
<th>Svært belastende</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ansvaret jeg har i jobben</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Konflikter med kolleger/medarbeidere</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Uretferdig fordeling av stillinger, oppgaver, lønn eller fordeler</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Andres urealistiske forventninger til meg i min rolle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Krav om effektivisering</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Krav om å holde meg faglig aktuell.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Stadig forandringer i jobbens rammevilkår (reformer, lovendringer, etc).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Konflikt mellom yrkesetiske verdier og krav om produksjon og effektivitet.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Kontakt med mennesker (pasienter, elever, klienter, kunder)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Uregelmessig arbeidstid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Å få til balanse mellom arbeid og privatliv</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Å stadig måtte ta med seg arbeidsoppgaver hjem</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Jobben går ut over sosialt liv.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Mangel på støtte hjemme, særlig fra ektefelle/samboer.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Bekymring for egen økonomi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## MESTRINGSSTRATEGIER

25. Nedenfor står en rekke utsagn som beskriver hvordan man kan mestre situasjoner når det røyner på og man virkelig opplever stress eller påkjennin. Hvor godt passer hvert av disse utsagnene for ditt vedkommende?

*Sett ett kryss på hver linje*

<table>
<thead>
<tr>
<th>Utsagn</th>
<th>Passer ikke</th>
<th>Passer mindre godt</th>
<th>Både og</th>
<th>Passer ganske godt</th>
<th>Passer svært godt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Jeg prøver å inngå en slags avtale eller en overenskomst for å få noe positivt ut av situasjonen</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2. Jeg klandrer meg selv</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3. Jeg håper det vil skje et under</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4. Jeg prøver å se det positive i det hele; aldri så galt at det ikke er godt for noe</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5. Jeg skulle ønske jeg var sterkere, mer optimistisk og hadde mer krefter</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6. Jeg forsøker å ikke brene alle broer, men lar flere muligheter stå åpne</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>7. Jeg forsøker å holde følelsene mine for meg selv</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>8. Jeg forandrer meg eller vokser som menneske på en god måte</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>9. Jeg ønsker jeg kunne forandre måten min å føle på</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>10. Jeg legger en handlingsplan og følger den</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>11. Jeg får hjelp av fagfolk</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>12. Jeg kritiserer eller sier til meg selv hva jeg burde ha gjort</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>13. Jeg godtar det som er det nest beste i forhold til det jeg egentlig hadde ønsket</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>14. Jeg dagdrømmer eller tenker meg inn i en bedre tid eller et bedre sted enn den/der du er nå</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>15. Jeg tenker at jeg kommer sterkere og bedre rustet ut av hendelsen enn jeg gikk inn i den</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>16. Jeg sover mer enn vanlig</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>17. Jeg har fantasier eller ønsker om hvordan det skal gå til slut</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>18. Jeg forsøker å la være å handle overilt eller følge min første innskytelse</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>19. Jeg snakker med noen som kan gjøre noe med problemet</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>20. Jeg gjør en forandring slik at det vil gå bra til slut</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>21. Jeg spør en slektning eller en venn jeg respekterer om råd</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>22. Jeg forsøker å få det bedre ved å spise, drikke, røyke, ta medisiner e.l.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>23. Jeg innsen at jeg selv har skapt problemer</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
**Spørsmål 25 fortsetter:**

**Hvor godt passer hvert av disse utsagnene for ditt vedkommende?**

*Sett ett kryss på hver linje*

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passer ikke</td>
<td>Passer mindre godt</td>
<td>Både og</td>
<td>Passer ganske godt</td>
<td>Passer svært godt</td>
</tr>
</tbody>
</table>

24 Jeg unngår å være sammen med andre mennesker.
25 Jeg godtar følelsene mine, men forsøker å unngå å virke for mye inne på andre ting.
26 Jeg ønsker at situasjonen skulle bli bortet eller på et eller annet vis gå over av seg selv.
27 Jeg lar ikke andre få vite hvor ille det er.
28 Jeg forandrer noe ved meg selv så jeg takler situasjonen bedre.
29 Jeg snakker med noen om hvordan jeg har det.
30 Jeg nekter å tro at det har hendt.

### ARBEID OG FRITID

26. I hvilken grad opplever du at følgene utsagn stemmer for deg?

*Sett ett kryss på hver linje*

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stemmer ikke</td>
<td>Stemmer ganske dårlig</td>
<td>Stemmer delvis</td>
<td>Stemmer ganske godt</td>
<td>Stemmer helt</td>
</tr>
</tbody>
</table>

1. Min jobb gjør at jeg bidrar mindre hjemme.
2. Stress på jobben gjør meg irritabel hjemme.
3. Jobben gjør meg for trørt til å gjøre ting som trenger min oppmerksomhet hjemme.
5. Mine oppgaver på jobb gjør det lettere å takle personlige og praktiske problemer hjemme.
6. Mine oppgaver på jobb gjør meg til en mer interessant person hjemme.
7. Å ha en god dag på jobb gjør meg til en bedre partner når jeg kommer hjem.
8. Ferdigheter jeg utvikler på jobb kommer til nytte hjemme.
9. Forpliktelser hjemme reduserer min kapasitet på jobb.
11. Forpliktelser hjemme hindrer meg i å få tilstrekkelig med søvn som jeg behøver for å kunne gjøre en god jobb.
12. Stress hjemme gjør meg irritabel på jobb.
14. Ferdigheter jeg utvikler hjemme, er nyttige på jobb.
15. Kjærlighet og respekt som jeg får hjemme, gjør meg sikker på meg selv når jeg er på jobb.
16. Livet hjemme hjelper meg å slappe av og lade opp for neste dags jobb.
UTFORDRINGER I KONTAKT MED ANDRE MENNESKER

27. Her er en liste med problemer folk angir å ha i omgang med andre mennesker. Vennligst les listen under og marker i hvilken grad disse situasjonene oppleves som vanskelige for deg. Sett ett kryss på hver linje.

I. Det er vanskelig for meg å
1. stole på andre mennesker
2. delta i gruppe
3. holde ting hemmelig for andre mennesker
4. be en person om å slutte å plage meg
5. presentere meg for nye mennesker
6. være uenig med andre mennesker
7. fortelle personlige ting til andre mennesker
8. være bestemt når jeg trenger å være det
9. sette grenser overfor andre mennesker
10. føle nærhet til andre
11. virkelig bry meg om problemer andre mennesker har
12. slappe av og kose meg når jeg går ut med andre
13. tillate meg å kjenne meg sitt på noen jeg liker
14. ta imot råd og ordner fra folk som har myndighet over meg
15. glede meg over et annet menneskes lykke
16. la andre få vite når jeg er sitt
17. gi konstruktiv kritikk til andre
18. åpne meg og snakke om følelsene mine til andre
19. ta hensyn til mitt eget beste når en annen blir krævende
20. være trygg på meg selv når jeg er sammen med andre

II. Følgende er ting du gjør mye:
21. jeg krangler for mye med andre mennesker
22. jeg føler meg for ofte ansvarlig for å løse andres problemer
23. jeg er for åpen overfor andre mennesker
24. jeg er for aggressiv mot andre mennesker
25. jeg prøver å sterkt å tekkes andre mennesker
26. jeg lar for ofte andres behov gå foran mine egne
27. jeg mister beherskelsen for lett
28. jeg beskylder meg selv for ofte for å være skyld i andres problemer
29. jeg holder folk for mye på avstand
30. jeg lar andre mennesker i for høy grad utnytte meg
31. jeg føler meg for ofte flau overfor andre mennesker
32. jeg bekymrer meg for mye for hvordan andre skal reagere på meg

<table>
<thead>
<tr>
<th>Ikke vanskelig</th>
<th>Litt vanskelig</th>
<th>Både og</th>
<th>Ganske vanskelig</th>
<th>Veldig vanskelig</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Stemmer

1. Ikke ganske
2. Ganske dårlig
3. Både vanskelig
ganske
gode
4. Ganske godt
5. Helt
LIVSHENDELSER

28a. Nedenfor følger en liste over hendelser en kan oppleve i løpet av livet.
Hvis du har erfart noe av dette, sett kryss i ruten
1 □ Partners død
2 □ Barns død
3 □ Andre nære personers død
4 □ Alvorlig sykdom hos et nærtstående familiemedlem
5 □ Store økonomiske problemer
6 □ En opprivende separasjon/skilsmisse
7 □ Alvorlig fysisk sykdom (egen)
8 □ Vært utsatt for en alvorlig ulykke (trafikkulykke, brann, osv.)
9 □ Langvarige samlivsproblemer/familieproblemer

28b. Har du eventuelt hatt noen du kunne dele dine tanker med, søke råd hos og få støtte og oppmuntring hos i disse situasjonene?
   1 □ Ja
   2 □ Nei

29. Omtrent hvor ofte drikker du alkohol?
   0 □ Hver dag eller nesten hver dag
   1 □ 2-4 ganger i uken
   2 □ Omtrent en gang i uken
   3 □ 2-3 ganger i måneden
   4 □ Omtrent en gang i måneden
   5 □ Sjeldnere enn en gang i måneden
   6 □ Aldri i løpet av siste år

30. Hvilke røykevaner har du?
   1 □ Røyker daglig
   2 □ Røyker av og til
   3 □ Har røukt, men sluttet for mer enn 6 måneder siden
   4 □ Røyker ikke

31. Driver du vanligvis med noen form for mosjon eller trening?
   1 □ Drev regelmessig med mosjon/trening før, men sluttet for mindre enn 2 år siden
   2 □ Nei, driver ingen form for mosjon eller trening
   3 □ Ja, 1-2 ganger i uken
   4 □ Ja, 3-4 ganger i uken
   5 □ Ja, 5-7 ganger i uken

32. Hva er din sivilstand?
   1 □ Gift/registrettpartner
   2 □ Samboende
   3 □ Separert
   4 □ Skilt
   5 □ Enke/enkemann
   6 □ Ugift

33. Har du barn?
   1 □ Ja    Hvor mange? ________    Hvor gammelt er ditt yngste barn? _____ år
   2 □ Nei

Takk for at du tok deg tid til å delta i denne spørreundersøkelsen!
APPENDIX III

Letters to the samples in the second survey

From: www.ssb.no/emner/06/90/notat_200636.pdf/notat
Undersøkelse om belastninger, mestring og helse innenfor utsatte yrker

Statistisk sentralbyrå gjennomfører i høst en ny runde av undersøkelsen om belastninger, mestring og helse i åtte utvalgte yrkesgrupper. Du deltok for to år siden, og vi kontakter deg nå for å oppdatere opplysningene. Vi er svært takknemlige for at du deltok sist, og håper du også blir med denne gangen.

Formålet med undersøkelsen er å belyse hvordan personer i antatt utsatte yrkesgrupper opplever forholdet mellom utfordringer og belastninger i arbeidet og sin egen fysiske, og særlig psykiske helse. Hensikten er blant annet å få bedre forståelse for den såkalte utbrenningsprosessen som de senere årene har vært mye omtalt i media. Undersøkelsen gjennomføres på oppdrag fra Den norske lægeforening. Det kan bli aktuell med enda en oppfølgning av denne undersøkelsen. Vi vil i så fall kontakte deg i løpet av de neste tre årene.

Du er en av rundt 600 [yrke] som opprinnelig er trukket ut fra Statistisk sentralbyrås sysselsettingsregister. Til sammen er rundt 5000 personer trukket ut. Alle som deltar i årets undersøkelse blir med i trekkingen av ett gavekort til en verdi av 10 000 kroner og ti gavekort til en verdi av 1000 kroner. Det er frivillig å delta, men for at vi skal få så gode resultater som mulig, er det viktig at alle som er trukket ut blir med. Vi kan ikke erstatte deg med en annen. Du kan når som helst trekke deg fra undersøkelsen og kreve opplysningene slettet.

Alle som arbeider i Statistisk sentralbyrå har taushetsplikt. Undersøkelsen gjennomføres etter lovplagte regler og Statistisk sentralbyrå er underlagt kontroll både fra Datatilsynet og vårt eget personvemombud. Det vil aldri bli kjent utenfor Statistisk sentralbyrå hva enkeltpersoner har svart på undersøkelsen. For å få bedre utbytte av informasjonen vi samler inn, vil vi hente inn opplysninger om pensjonsforhold, uførebarhet, rehabilitering og fødeland fra Statistisk sentralbyrås registre. Innen utgangen av 2009 vil vi anonymisere datamaterialet slik at identifisering av den enkelte ikke er mulig. Den norske lægeforening vil kun tilgang til anonymiserte data.

Vi ber deg vennligst svare på spørsmålene i spørreskjemaet og returnere det til Statistisk sentralbyrå i den vedlagt frankerte svarkonvolutten så snart som mulig. Har du spørsmål om undersøkelsen kan du gjerne ringe oss gratis på telefonnummer 800 83 028, eller sende en e-post til sven.skaare@ssb.no. Spørsmål vedrørende personvern kan rettes til Statistisk sentralbyrås personvemombud, tel 21 09 00 00 eller e-post personvemombud@ssb.no.

På forhånd takk!
Vennlig hilsen

Øystein Olsen
administrerende direktør

Ole Sandvik
seksjonssjef

Ole Sandvik
Undersøkning om belastninger, meistring og helse innanfor utsette yrke

Statistisk sentralbyrå gjennomfører i haust ein ny runde med undersøkning om belastninger, meistring og helse i åtte utvalde yrkesgrupper. For to år sida var du med i tilsvarende undersøkning, og vi kontaktar deg nå for å oppdatere opplysningane. Vi er særstakksame for at du var med sist, og håper at du blir med nå også. Formålet med undersøkninga er å sjå nærmere på korleis personar i sannsynleg utsette yrkesgrupper opplever forholdet mellom utfordringar og belastningar i arbeidet og særleg psykiske helse. Formålet er mellom anna å få betre forståing for den såkalla utbrenningsprosessen, som dei seinare åra har vore mykje omtala i media. Undersøkinga blir gjennomført på oppdrag frå Den norske lægeforening. Det kan komme på tale å følge opp denne undersøkninga endå ei gong. Vi vil i så fall kontakte deg igjen innom dei tre neste åra.

Du er ein av rundt 600 [yrke] som opphavleg er trekt ut frå sysselsetjingsregisteret i Statistisk sentralbyrå. Til saman er rundt 5 000 personar trekte ut. Alle som er med i undersøkinga i år blir med i trekkinga av eitt gævekort til ein verdi av 10 000 kroner og ei gavekort til ein verdi av 1 000 kroner. Det er frivillig å vere med, men for at vi skal få så gode resultat som råd er, er det viktig at alle som er trekte ut blir med. Vi kan ikkje erstatte deg med ein annan. Du kan når som helst trekke deg frå undersøkinga og kreve opplysningane sletta.

Alle som arbeider i Statistisk sentralbyrå har tipeplikt. Undersøkinga blir gjennomført etter lovplagde reglar og Statistisk sentralbyrå er underordna kontroll både frå Datatilsynet og vårt eige personvernombud. Det vil aldri bli kjent utanfor Statistisk sentralbyrå kva enkeltpersonar har svart på undersøkinga. For å få betre utbytte av informasjonen vi samlar inn, vil vi hente inn opplysingar om pensjonar, ufurleik, rehabilitering og fødeland frå registra til Statistisk sentralbyrå. Innan utgangen av 2009 vil vi anonymmisere datamaterialet slik at identifisering av den enkelte ikkje er mogleg. Vi vil aldri offentleggjere eller formidle vidare opplysningar om kva den enkelte har svart. Den norske lægeforening vil berre få tilgang til anonymiserte data.

Vi ber deg vere vennleg å svare på spørsmåla i spørjeskjemaet og retur vore det til Statistisk sentralbyrå i den frankerte spørsmålsbrevet som ligg ved så snart som mogleg. Har du spørsmål om undersøkinga kan du gjerne ringe oss gratis på telefonna 800 83 028, eller sende ein e-post til sven.skaare@ssb.no. Spørsmål som gjeld personvern kan rettast til personvernombudet i Statistisk sentralbyrå, tlf. 21 09 00 00 eller e-post: personvernombud@ssb.no.

På forhand takk!
Vennleg helsing

Øystein Olsen
administrerande direktør

Ole Sandvik
seksjonssjef
Oslo, 20.10.2005

Saksbehandler: Sven Skaare
Seksjon for intervjuundersøkelser, Telefon: 800 83 028

Undersøkelse om belastninger, mestring og helse innenfor utsatte yrker

Vi beklager trykkfeil i spørreskjema
Du mottok for kort tid siden et spørreskjema fra Statistisk sentralbyrå i forbindelse med Undersøkelse om belastninger, mestring og helse innenfor utsatte yrker. I enkelte spørreskjema har det beklageligvis oppstått en trykkfeil, slik at side 2 og 11 i skjemaet mangler, mens side 1 og 12 opptrer to steder.


På forhånd takk!

Med vennlig hilsen

Ole Sandvik
seksjonssjef

Sven O. Skaare
planlegger
Oslo, november 2005
Saksbehandler: Sven Skaare
Seksjon for intervjundersøkelser

Har du sendt inn spørreskjemaet?
For en tid tilbake fikk du tilsendt et spørreskjema i forbindelse med en undersøkelse om belastning, mestring og helse inntil for utsatte yrker. Da vi ikke kan se å ha mottatt noe skjema fra deg, tillater vi oss å minne om undersøkelsen. Det er frivillig å delta, men resultatet av undersøkelsen avhenger av at så mange som mulig av de som ble trukket ut deltar.

Har du allerede sendt inn skjemaet, ber vi deg se bort fra denne henvendelsen og takker for et verdifullt bidrag til undersøkelsen.

Dersom du ennå ikke har svart, vil vi være veldig takknemlige om du kunne fylle ut skjemaet og returnere det til oss i den frankerte svarkonvolutten så snart som mulig.

Alle som besvarer og returnerer spørreskjemaet er med i trekkingen av et gavekort på kr 10 000,- og ti gavekort til en verdi av kr 1 000,-.

Undersøkelsen gjennomføres etter lovplagte regler, og SSB er underlagt kontroll både fra Datatilsynet og vårt eget personvernombud. Det vil aldri bli kjent utenfor Statistisk sentralbyrå hva enkeltpersoner har svart på undersøkelsen.

Har du spørsmål om selve undersøkelsen kan du gjerne ringe oss gratis på telefonnummer 800 83 028, eller sende en e-post til svs@ssb.no. Vi viser også til informasjon i tidligere brev. Ta kontakt dersom du ønsker spørreskjema på nynorsk.

Generelle spørsmål vedrørende personvern i SSB kan rettes til SSBs personvernombud, telefonnummer 21 09 00 00 eller e-post personvernombud@ssb.no.

Vi ser fram til å motta ditt skjema!

Med vennlig hilsen

Ole Sandvik
seksjonsjef
The original MBI-GS items and the changes made in the present thesis.

**Exhaustion:**
1. I feel emotionally drained from my work.
5. I feel used up at the end of the workday.
3. I feel tired when I get up in the morning and have to face another day on the job.
20. Working all day is really a strain for me.
10. I feel burned out from my work.

**Disengagement (Cynicism):**
23. I have become less interested in my work since I started this job.
24. I have become less enthusiastic about my work (excluded item in paper II and paper III).
- I just want to do my job and not be bothered (excluded item).
- I have become more cynical about whether my work contributes anything (excluded item).
- I doubt the significance of my work (excluded item).

**New items:**
28. It happens more and more often that I talk about my work in a derogatory way (OLBI).
31. Lately, I have tended to think less during my work and just execute it mechanically (OLBI).
13. What I previously thought was challenging at work is now mostly a nuisance (formulated by the authors).

**Professional efficacy:**
21. I can effectively solve the problems that arise in my work.
22. I feel I am making an effective contribution to what this organization does.
25. In my opinion, I am good at my job.
9. I have accomplished many worthwhile things in this job.
15. At my work, I feel confident that I am effective at getting things done (changed item) → At work, I have a good feeling of being of use.
- I feel exhilarated when I accomplish something at work (excluded item).
Multigroup analysis of the seven different occupational groups. Three factor model, invariant factor loadings across groups

Table A: The model fit. Multigroup analyses of the modified Maslach Burnout Inventory-General Survey (MBI-GS), three factor solution. Invariant factor loadings across groups.

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$ (df)</th>
<th>RMSEA (90%CI)</th>
<th>NNFI/CFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 item</td>
<td>3406.8 (681)</td>
<td>0.085 (0.082-0.088)</td>
<td>0.95/0.96</td>
</tr>
<tr>
<td>14 item</td>
<td>2541.7 (584)</td>
<td>0.078 (0.075-0.081)</td>
<td>0.96/0.96</td>
</tr>
</tbody>
</table>

Table B: Factor loadings, common metric completely standardized solution (all significant, P<0.05), 15 item/14 item inventories.

1. (EXHAUSTION) 0.72/0.68
3. (EXHAUSTION) 0.76/0.70
5. (EXHAUSTION) 0.73/0.71
10. (EXHAUSTION) 0.85/0.61
20. (EXHAUSTION) 0.63/0.61
13. (CYNICISM/DISENGAGEMENT) 0.69/0.75
23. (CYNICISM/DISENGAGEMENT) 0.89/0.66
24. (CYNICISM/DISENGAGEMENT) 0.90 (excluded in the 14 item inventory)
28. (CYNICISM/DISENGAGEMENT) 0.64/0.61
31. (CYNICISM/DISENGAGEMENT) 0.59/0.62
9. (PROFESSIONAL EFFICACY) 0.52/0.52
15. (PROFESSIONAL EFFICACY) 0.64/0.66
21. (PROFESSIONAL EFFICACY) 0.61/0.67
22. (PROFESSIONAL EFFICACY) 0.60/0.66
25. (PROFESSIONAL EFFICACY) 0.61/0.67
Table C: The 15item/14 item burnout models tested in this thesis. The latent factor correlations for the three burnout dimensions. Variances and covariances in parentheses for each of the different occupational groups. Common metric completely standardized solution. All significant, p<0.05.

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Exhaustion</th>
<th>Disengagement</th>
<th>Professional Efficacy</th>
</tr>
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<tbody>
<tr>
<td><strong>LAWYERS</strong></td>
<td></td>
<td></td>
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<tr>
<td>Exh</td>
<td>1.00 (0.81/0.79)</td>
<td>1.00 (0.91/0.76)</td>
<td>1.00 (1.02/1.11)</td>
</tr>
<tr>
<td>Dis</td>
<td>0.73/0.83 (0.62/0.64)</td>
<td>0.54/0.63 (0.52/0.58)</td>
<td></td>
</tr>
<tr>
<td>PE</td>
<td>0.48/0.49 (0.44/0.46)</td>
<td>0.41/0.43 (0.49/0.55)</td>
<td></td>
</tr>
<tr>
<td><strong>BUS DRIVERS</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Exh</td>
<td>1.00 (1.33/1.30)</td>
<td>1.00 (1.31/1.42)</td>
<td>1.00 (1.09/1.16)</td>
</tr>
<tr>
<td>Dis</td>
<td>0.76/0.84 (1.00/1.14)</td>
<td>0.41/0.43 (0.49/0.55)</td>
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</tr>
<tr>
<td>PE</td>
<td>0.38/0.39 (0.45/0.48)</td>
<td>0.41/0.43 (0.49/0.55)</td>
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<tr>
<td><strong>INFORMATION TECHNOLOGY WORKERS</strong></td>
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<tr>
<td>Exh</td>
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<td>1.00 (1.11/1.24)</td>
<td>1.00 (1.23/0.78)</td>
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<tr>
<td>Dis</td>
<td>0.71/0.83 (0.79/1.03)</td>
<td>0.45/0.50 (0.54/0.48)</td>
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<tr>
<td>PE</td>
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<td>1.00 (0.88/0.80)</td>
<td>1.00 (1.02/1.01)</td>
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<tr>
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<td>0.49/0.57 (0.46/0.53)</td>
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<td><strong>TEACHERS</strong></td>
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<tr>
<td>Exh</td>
<td>1.00 (1.10/1.08)</td>
<td>1.00 (1.08/1.05)</td>
<td>1.00 (0.88/0.95)</td>
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<tr>
<td>Dis</td>
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</tr>
<tr>
<td>PE</td>
<td>0.50/0.51 (0.49/0.52)</td>
<td>0.48/0.54 (0.47/0.53)</td>
<td></td>
</tr>
<tr>
<td><strong>NURSES</strong></td>
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<tr>
<td>Exh</td>
<td>1.00 (0.92/0.90)</td>
<td>1.00 (1.00/1.02)</td>
<td>1.00 (0.92/0.99)</td>
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<tr>
<td>Dis</td>
<td>0.74/0.82 (0.71/0.79)</td>
<td>0.59/0.66 (0.56/0.66)</td>
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<tr>
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<td>0.59/0.66 (0.56/0.66)</td>
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<td><strong>CHURCH MINISTERS</strong></td>
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<tr>
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<td>1.00 (0.74/0.76)</td>
<td>1.00 (0.85/0.91)</td>
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<tr>
<td>Dis</td>
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<tr>
<td>PE</td>
<td>0.52/0.53 (0.45/0.46)</td>
<td>0.52/0.62 (0.46/0.51)</td>
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